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**Maxwellian-Averaged
Neutron-Induced Cross Sections for
kT=1 keV to 100 keV, KADoNiS,
TENDL-2017,-2014, ENDF/B-VIII.0,
JEFF-3.3, JENDL-4.0u, and EAF-2010
nuclear data libraries**

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Executive Summary

This report focuses on use of astrophysical temperature-dependent integral Maxwellian cross sections to probe the microscopic capture cross sections up to a few hundred keV. This provides a set of integral measurements for incident-neutron nuclear data which robustly validates the data or identifies weaknesses within some combination of resolved and/or average resonance parameters, data formats, physical formalisms and systematic normalisations.

Maxwellian-averaged cross sections provide a rare source of high-quality information in the keV energy region which for many nuclides lack any differential information. For many applications that have to account for neutrons as incident particles this is wholly insufficient and spurious nuclear data may result in unphysical simulations. The energy range from eV to a few hundred keV is precisely where, for most of the nuclei, R-matrix theory is required to be connect with equilibrium Hauser-Feshbach and then pre-equilibrium models. The results of this coupling, from both a physical and nuclear data perspective, can have significant effects on simulated quantities of interests: microscopic and astrophysical Maxwellian cross section integrals, absorption, gas production, *etc.*

The TENDL-2017, ENDF/B-VIII.0, JEFF-3.3 and JENDL-4.0u nuclear data libraries, as well as recent, previous versions, are used to calculate Maxwellian-averaged, integral neutron capture cross sections from the microscopic evaluated cross sections. Values for a range of astrophysical temperatures from $kT=1$ keV to 100 keV have been compared with the Karlsruhe Astrophysical Database of Nucleosynthesis in Stars (KADoNiS). The comparisons provide many recommendations for re-analysis of the resonance regions.

Contents

1	Introduction	8
2	Reference database	9
3	Codes and libraries	10
4	Simulation methodologies	13
5	Comparison of results	15
5.1	Hydrogen	18
5.2	Helium	20
5.3	Lithium	21
5.4	Beryllium	22
5.5	Carbon	23
5.6	Nitrogen	26
5.7	Oxygen	28
5.8	Fluorine	30
5.9	Neon	31
5.10	Sodium	34
5.11	Magnesium	35
5.12	Aluminium	38
5.13	Silicon	40
5.14	Phosphorus	43
5.15	Sulfur	44
5.16	Chlorine	48
5.17	Argon	51
5.18	Potassium	55
5.19	Calcium	58
5.20	Scandium	66
5.21	Titanium	67
5.22	Vanadium	72
5.23	Chromium	74
5.24	Manganese	79
5.25	Iron	80
5.26	Cobalt	86
5.27	Nickel	87
5.28	Copper	94
5.29	Zinc	96
5.30	Gallium	102
5.31	Germanium	104
5.32	Arsenic	109
5.33	Selenium	110
5.34	Bromine	117
5.35	Krypton	119

5.36	Rubidium	128
5.37	Strontium	131
5.38	Yttrium	136
5.39	Zirconium	137
5.40	Niobium	144
5.41	Molybdenum	147
5.42	Technetium	155
5.43	Ruthenium	156
5.44	Rhodium	164
5.45	Palladium	165
5.46	Silver	172
5.47	Cadmium	175
5.48	Indium	185
5.49	Tin	188
5.50	Antimony	201
5.51	Tellurium	205
5.52	Iodine	213
5.53	Xenon	215
5.54	Caesium	225
5.55	Barium	228
5.56	Lanthanum	235
5.57	Cerium	237
5.58	Praseodymium	248
5.59	Neodymium	251
5.60	Promethium	259
5.61	Samarium	263
5.62	Europium	272
5.63	Gadolinium	277
5.64	Terbium	285
5.65	Dysprosium	287
5.66	Holmium	294
5.67	Erbium	296
5.68	Thulium	303
5.69	Ytterbium	306
5.70	Lutetium	314
5.71	Hafnium	316
5.72	Tantalum	324
5.73	Tungsten	328
5.74	Rhenium	334
5.75	Osmium	337
5.76	Iridium	345
5.77	Platinum	348
5.78	Gold	355
5.79	Mercury	357
5.80	Thallium	365

5.81 Lead	368
5.82 Bismuth	373
6 Discussion	375
A Summary of 5, 30 and 80 keV MACS	379

1 Introduction

Knowledge of the origin of heavy elements above iron was not well understood until the 1950s, with the seminal B²FH paper [1] establishing what is now known as stellar nucleosynthesis. Observations of technetium, of which ⁹⁸Tc has the longest half-life at 4 million years, within stars known to be several billion years old made it clear that some process other than fusion was responsible for the formation of heavy elements within stars. The ability to spectroscopically quantify the chemical composition of stars, coupled with models of stellar structure and nuclear reaction theory, has produced an active area of research into the processes which yield the nuclide inventories of the observable universe.

Stellar nucleosynthesis involves a variety of nuclear reactions, of which neutron capture plays a central role in the production of heavy nuclides. The combination of neutron capture and beta decay of neutron-rich nuclides allows stellar inventories to reach above iron. The two general regimes for neutron capture are defined by the relationship between beta decay and neutron capture rates; the *slow s*-process and *rapid r*-process. The *s*-process occurs when a relatively low neutron density results in a reaction rate less than the beta decay rate. As a result, *s*-process products lie along the valley of stability, tracing out paths with sequential capture and decay events. In contrast, the *r*-process occurs with tremendous reaction rates which out-pace the decays and allow many successive capture events to produce nuclides which are too neutron-rich to lie within the *s*-process path. A special case occurs when the capture reaction rate and decay rates are reasonably similar, allowing multiple branches in the *s*-process path where in some cases a nuclide undergoes multiple captures and in other cases a beta decay interrupts. These pathways are summarised in Figure 1.

Observations of the chemical composition of the observable universe provide us with peaked elemental distributions, schematically shown in the top-left subfigure of Figure 1. As nuclides experience multiple capture events and trace out the *s*-process path, they pass through the magic neutron numbers where capture cross sections drop off substantially. This results in build-up of whatever nuclides lie on the path at $N = 50, 80$ and 126 , and a peak in the nuclide concentration at those lines. Combined with the *r*-process paths and their associated build-up points, models of stellar nucleosynthesis have this global universal inventory to fit with the best available microscopic data for nuclear interactions.

The effort to collect experimental information on the neutron capture cross sections of nuclei has been primarily guided by the applications of nuclear industries. Power generation, medical, security and other terrestrial pursuits are concerned with a limited subset of all possible nuclides and only for specific energies and precision required for their applications. While capture reactions may seem intuitively important, the measurement of many non-threshold resonances for exotic nuclides is non-trivial and often unjustifiable. For many applications only integral quantities in a few characteristic environments are deemed important and these rarely have much overlap with plasma neutron spectra. As a result, the detailed microscopic cross sections, particularly within the resolved resonance ranges, of most *s*-process nuclides have limited experimental information with evaluated and processed resonance parameters. Moreover, for many *s*-process nuclides, no nuclear data evaluation has even been made for the well-known legacy libraries.

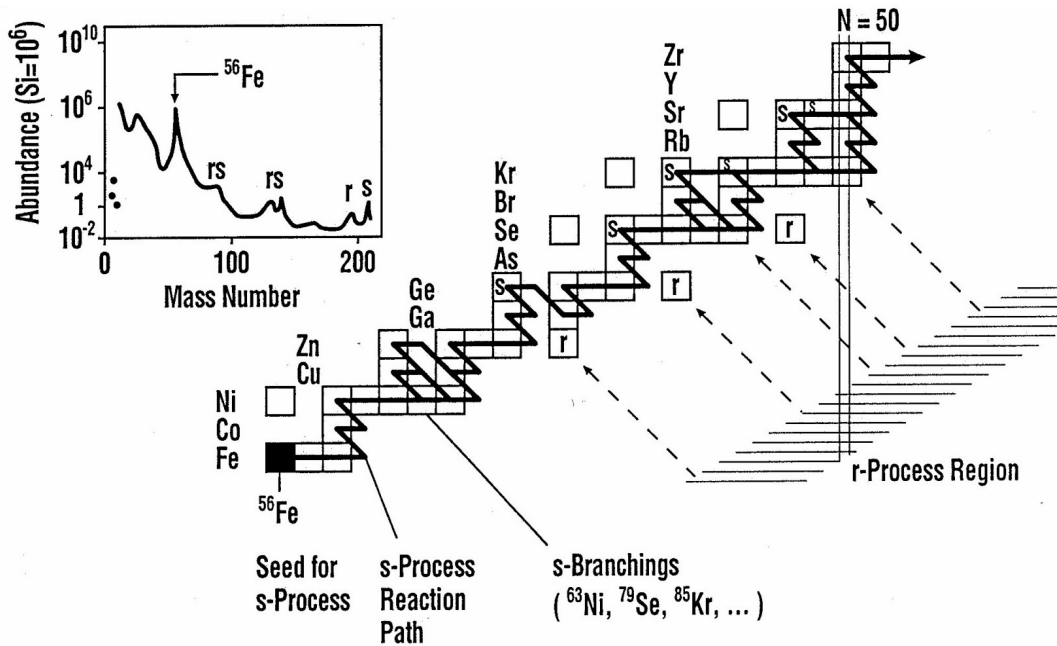


Figure 1: Schematic of the s-process nuclide path with r-process nuclides labelled by s and r, respectively. The sketch of solar abundance distribution shows characteristic bumps where the reactions encounter magic neutron numbers. Reproduced from [2].

2 Reference database

The persistence and dedication of a community of astrophysicists, experimental nuclear physicists and nuclear reaction theorists has resulted in a relatively complete Karlsruhe Astrophysical Database of Nucleosynthesis in Stars (KADoNiS) [3]. KADoNiS contains data for 357 nuclides over 11 temperatures from 5 keV (58 million K) to 100 keV (1.2 billion K). This database has benefited from many earlier datasets, largely drawing from them with the addition of more modern measurements. These are based on numerous experimental systems employing Van de Graaff, Pelletron and linear electron accelerators, as well as thermal reactors, fast fission piles and Sb-Be photoneutron sources. Neutron spectra are also measured in numerous methods, ranging from simple activation techniques to full time-of-flight characterisation. The main source used by the authors of this report to verify the data sources used in KADoNiS was Bao *et al* [4], which includes an impressive catalogue of experimental and theoretical sources. While investigation of the hundreds of experimental references is beyond the scope of this report, a set of references [5, 6, 7, 8]¹ were drawn upon for theoretically-derived cross sections without any direct experimental measurements. While several of those nuclides without experimental information have been updated with new measurements reflected in KADoNiS v0.3, **80 integral capture cross sections (22%) are still taken from these statistical model results.**

¹These provide large datasets for many nuclides, but several other sources were drawn upon for specific subsets, such as [9], which focuses in-depth on tungsten and rhenium. The end results are a mix of multiple theoretical models drawn from many sources and with weighting averaging all requiring expert knowledge of the data.

For nuclides with sufficient level density and for which direct capture plays a relatively limited role, neutron capture cross sections are typically calculated using the Hauser-Feshbach method, which involves statistical sampling of compound nuclei formation and their decay channels. The applicability of the model depends on the validity of the assumptions, which have been demonstrated to be reasonably valid for the temperatures required for stellar nucleosynthesis on a subset of the required nuclides [10].

While the 80 nuclides with theoretical MACS in the KADoNiS database are included in the following analysis, they are always identified and the reader should remain cautious when comparing with the results from the collapse of nuclear data files. Note that final recommended values in KADoNiS, for both the experimentally-derived and theoretical cross sections, are necessarily some weighted average of multiple data sources. In many cases, discrepancies between the various data prohibit the selection of a recommended value which lies within the uncertainty bands of the inputs. When comparing the results in this report, the reader should bear in mind the evaluated nature of KADoNiS and potentially interrogate the original experimental data.

3 Codes and libraries

In order to calculate Maxwellian-averaged cross sections from nuclear data files, a combination of energy-dependent neutron capture cross sections and codes which can broaden and collapse these data with the corresponding neutron spectra are required. Six different neutron-induced nuclear data libraries are used:

- **TENDL-2017** [11, 12, 13] General-purpose library containing 2809 target nuclides including all of the KADoNiS nuclides
- **TENDL-2014** [14, 12] General-purpose library containing 2632 target nuclides including all of the KADoNiS nuclides
- **ENDF/B-VIII.0** [15] American library containing 556 target nuclides which cover 338 of the 357 (95%) KADoNiS nuclides
- **JENDL-4.0** [16] Japanese library containing 406 target nuclides which cover 289 of the 357 (81%) KADoNiS nuclides
- **JEFF-3.3** [17] international library containing 562 target nuclides which cover 346 of the 357 (97%) KADoNiS nuclides
- **EAF-2010** [18] legacy, European activation library containing 816 target nuclides

This report benefits tremendously from the completeness of TENDL-2017, which does not miss any of the s-process nuclides within the KADoNiS database, allowing temperature-dependent comparisons between simulation and experiments. The low-Z nuclides $^1,2,3\text{H}$, $^3,4\text{He}$, $^6,7\text{Li}$, ^9Be , $^{10,11}\text{B}$, $^{12,13}\text{C}$, $^{14,15}\text{N}$, ^{16}O and ^{19}F are not generated by the TALYS code suite, but taken directly from the ENDF/B-VIII.0 library.

All evaluated nuclear data files are processed using the most recent PREPRO-2017 [19] to linearise at 0 Kelvin, Doppler broaden (using the ‘URR broaden’ feature), and calculate 660-group averages when required. To collapse the capture cross sections with

Maxwellian spectra, two different codes are used throughout the report to collapse all data for all nuclides:

- MAXWAV [20] A Fortran code developed by the Japanese Atomic Energy Research Institute to perform resonance region integration with high temperature Maxwellian spectra. Used for the calculations in [21].
- FISPACT-II [22, 23] A multi-purpose nuclear observables simulation code designed to accommodate sophisticated and extended nuclear data forms. Astrophysical Maxwellian collapses are performed using broadened group-wise nuclear data with full variance-covariance processing and arbitrary temperature-dependent Maxwellian spectra.

While the FISPACT-II calculations use group-wise data, it is stored in a fine 660 group structure below 30 MeV. While the collapse of this more processed data introduces its own inherent and subtle differences, the FISPACT-II simulation benefits from the full uncertainty quantification and propagation from the Bayesian Monte-Carlo covariance data within the TENDL-2017 files [24]. For energies above the resonance ranges, this occurs through the use of input parameter perturbation within TALYS [25]. For energies within the resonance energy regions, data on the uncertainties for resonance parameters are utilised in parameter sampling and full processing with the TARES and SAMMY codes [26, 27]. For those nuclides without knowledge of these uncertainties, the High-Fidelity Resonance method [28, 29] is employed, where CALENDF [30] is used to generate the distributions used by SAMMY. All of the resulting, sampled cross sections are then used to calculate the energy covariance matrices that are stored in the latest TENDL evaluations.

FISPACT-II utilises the full MF=33 covariance data, calculating one-group uncertainties for a given incident particle spectrum. This is done for every Maxwellian spectrum of each temperature, for example the $kT=30$ keV example shown in Figure 2. Collecting the uncertainties for every temperature, the full, temperature-dependent, covariance-collapsed uncertainties and averaged cross sections are shown in this report, as with the Fe55 example shown below in Figure 3. For incident energies where uncertainties are larger than the value of the cross section, the uncertainty bands are not shown.

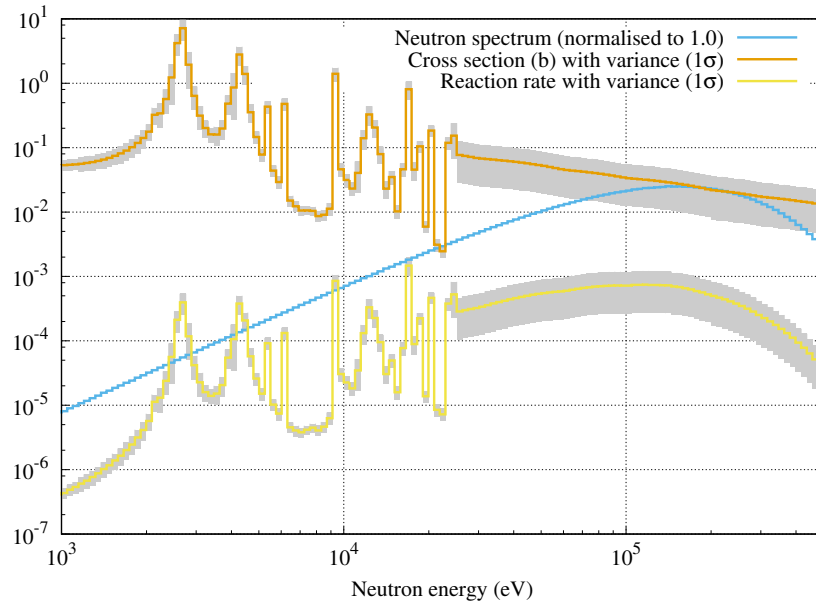


Figure 2: Fe55 capture 660 group differential cross sections (b) and uncertainties (variances shown) with the $kT=30$ keV Maxwellian spectrum and resulting, energy-dependent reaction rate with uncertainty.

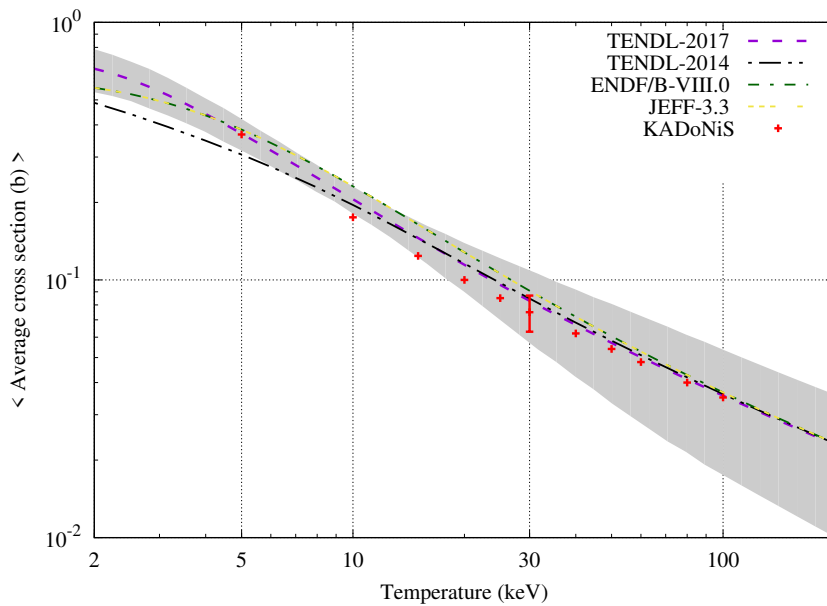


Figure 3: Temperature-dependent MACS for Fe55, including temperature-dependent, full covariance uncertainties calculated using TENDL-2017 and FISPACT-II.

4 Simulation methodologies

The Maxwellian-averaged cross section for a given temperature kT is defined as:

$$\sigma_{MACS}(kT) = \frac{\langle \sigma V \rangle}{v_T}, \quad (1)$$

where $\langle \sigma V \rangle$ is the velocity averaged cross section and v_T is the average velocity,

$$v_t = \sqrt{\frac{2kT}{\mu}}, \quad (2)$$

using the reduced neutron-target mass μ . For the Maxwellian distribution, this averaged cross section is given by

$$\sigma_{MACS}(kT) = \frac{2}{(kT)^2 \sqrt{\pi}} \int_0^\infty dE \sigma(E) E e^{-\frac{E}{kT}}. \quad (3)$$

The original nuclear data files used in this report are provided in an unprocessed form which is appropriate for resting target nuclei. To make these files relevant for the various applications where the target material is at some non-zero kelvin temperature, a Doppler broadening of the cross sections is performed. While this process is quite straightforward for relatively low temperatures, such as ‘room temperature’ or those temperatures experienced within a fission reactor (<2400 K), temperatures experienced within the plasma of a star require more extreme broadening which will mostly (except for high-energy and/or large width resonances) remove all of the complex resonance structures found in low temperature cross sections. The two methods employed are to correct for the relative energy between neutron and target directly through integration using the pointwise, or to broaden the pointwise file and perform a spectral collapse with the output. The former method is employed by the `maxwav` code [20, 21], by taking

$$\sigma_{MACS}(kT) = \frac{2a^2}{(kT)^2 \sqrt{\pi}} \int_0^\infty dE_n^L \sigma(E_n^L) E_n^L e^{-\frac{E_n^L}{kT}}, \quad (4)$$

where the constant a is defined as the ratio between the relative neutron-target energy E and the lab-frame neutron energy E_n^L

$$E = aE_n^L \equiv \frac{m_{target}}{m_n + m_{target}} E_n^L. \quad (5)$$

The alternative method considered requires computationally-expensive Doppler broadening of the point-wise files to temperatures between 5-100 keV. In these circumstances the resonance structure is ‘washed away’ as the target motion broadens out the resonances. Boundaries between different data regimes, particularly between the resolved and unresolved resonance ranges, as well as the end of the unresolved, can introduce non-physical discontinuities (already present in the evaluation if the evaluator has not matched this boundary) if the processing codes are not thoughtfully utilised, as can be

seen in Figure 4. One solution for this specific problem is to use the PREPRO-2017 unresolved broadening feature within SIGMA1 [19]. This overrides the standard treatment of the boundary and forces a continuous overlap. The resulting broadened files can then be collapsed with the FISPACT-II code, using multi-group data and Maxwellian neutron spectra partitioned into the 660 group structure below 30 MeV.

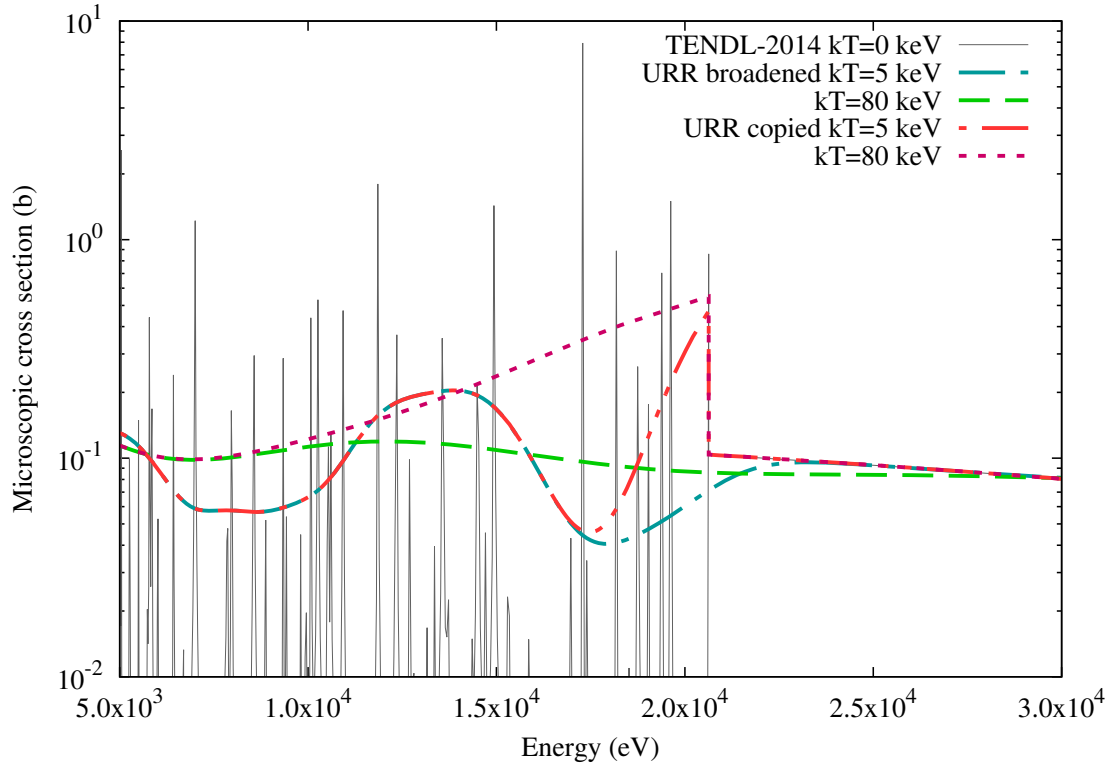


Figure 4: TENDL-2014 broadening with PREPRO-2015, showing the 0, 5 and 80 keV broadened data for neutron capture of Ba137. The two broadening methods either ‘copy the URR’ or broaden the URR, producing data which precisely agrees outside an energy region around the RRR/URR boundary. Without URR broadening, the processing produces unphysical results around the boundary.

The NJOY processing software [31] possesses a similar broadening capability using the BROADR module, but which does not offer a choice for naïve URR broadening. The result is a RRR which matches precisely with the PREPRO data below the boundary, but a discontinuity at the RRR/URR boundary where the cross section ‘jumps’ to the MF=3 URR value set by the evaluator, as can be seen in the groupwise data of Figure 5. Differences between these two methods above 20% are common for the groups overlapping and immediately after the RRR/URR boundary, which will often cover a large fraction of the energy-dependent reaction rate for several astrophysical temperatures of interest. While temperature-specific effects in the URR could be accounted for in a more sophisticated method and the discontinuity may be artificial, for this report the broadened data is used for reaction rate collapse calculations and therefore the PREPRO result is used.

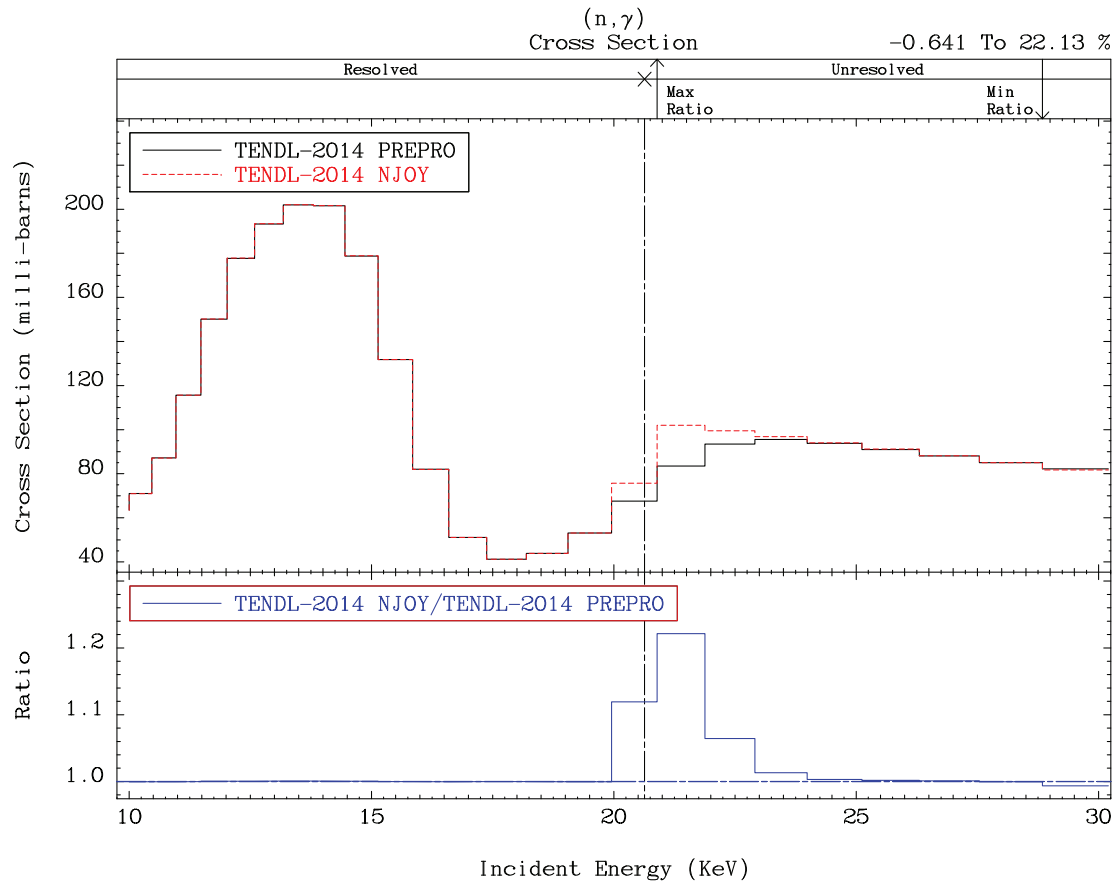


Figure 5: TENDL-2014 broadening with PREPRO-2015 and NJOY-2012, showing the 5 keV broadened data for neutron capture of Ba137. The two broadening methods agree below the RRR/URR boundary, but disagree in the URR where PREPRO offers an URR broadening functionality.

An alternative method for probing the temperature-dependent unresolved resonance range could be performed with the extension of the resolved range using statistically generated resonances with the CALENDF code [30]. This has the pleasing quality of allowing a consistent and uniform broadening method over the whole resonance range, but requires an individual sampling of resonances which is not as robust as the full probability table, based upon many samplings. Nonetheless, this remains in some ways superior to the simple processing of an MF=3 file and can allow for the survival of remaining structure which may non-negligibly affect the average cross section of some astrophysical temperatures. This is done, in TENDL, using the High-Fidelity Resonance method [28, 29].

5 Comparison of results

The KADoNiS database contains 357 nuclides and for the majority of these several integral quantities are provided. No individual integral quantity can tell us which resonance or region of resonances may be responsible for discrepancies with experiment, and indeed agreement may be due to compensating errors! However, each averaged cross section affords another collapsed quantity and the collection of multiple temperature-dependent

averaged cross sections gives information which, although not truly differential, allows us to probe different energy regions and identify issues in average resonance parameters. In order to probe the full energy region of KADoNiS, a range of temperatures are simulated with the three different methodologies outlined in the previous section:

- Calculation using `maxwav` and 0 Kelvin pointwise data in 49 T-dependent Maxwellians between 1 keV and 251 keV, using 20 equal log energies per decade.
- FISPACT-II collapse of 660 group files generated using URR broadening with PREPRO-2017 on Maxwellians with temperatures 5, 30 and 80 keV. These are used for energy-dependent reaction rate calculation
- FISPACT-II collapse of 660 group files with 0 Kelvin data in 49 temperature-dependent Maxwellians between 1 keV and 251 keV, using 20 equal log energies per decade

All of these calculations are performed with TENDL-2017, while the TENDL-2014, ENDF/B-VIII.0,-VII.1, JENDL-4.0u, JEFF-3.3,-3.2, and EAF-2010 libraries are similarly used with the `maxwav` code. Whenever possible², all of these simulations are presented together with the KADoNiS values, including the FISPACT-II uncertainties and KADoNiS 30 keV uncertainty. In the upper plot, the 0 K pointwise TENDL-2017 data is presented with the 5, 30 and 80 keV broadened cross sections in red, green and blue, respectively. The upper energy limit of the TENDL-2017 URR is shown as a vertical line with the value, E_h , printed in each figure. Alongside these curves, in darker shades of the respective colors, are the binned energy-dependent reaction rates normalised to the total effective cross section for each temperature. These are the output of the FISPACT-II collapse, which is given in the 660 group structure. In many cases these are very similar to pure Maxwellian distributions, convolved with some $1/v$ or relatively smooth microscopic cross section. Whenever resonance structure remains in the 10-1000 keV range after broadening, the reaction rate will reflect this and many complex features of the temperature-dependent averaged cross section curve can be directly related to the broadened microscopic data. Some particularly interesting cases are ^{13}C and ^{18}O , which possess strong first resonances around 100 keV. While the lower energy 5 keV Maxwellian does not ‘see’ these resonances, at 30 keV the combination of broadening and the range of the spectrum results in a strongly peaked reaction rate over the resonance and the temperature-dependent average cross section experiences an order-of-magnitude jump over the energies where the resonances become accessible.

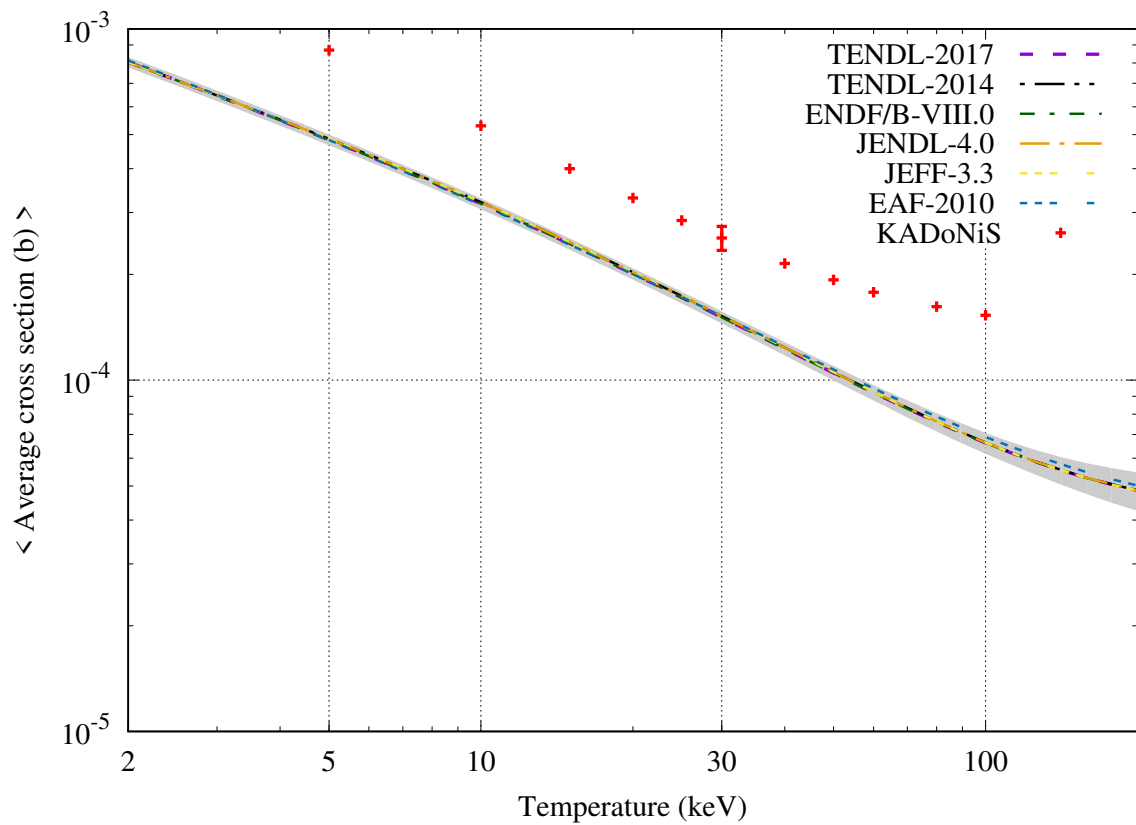
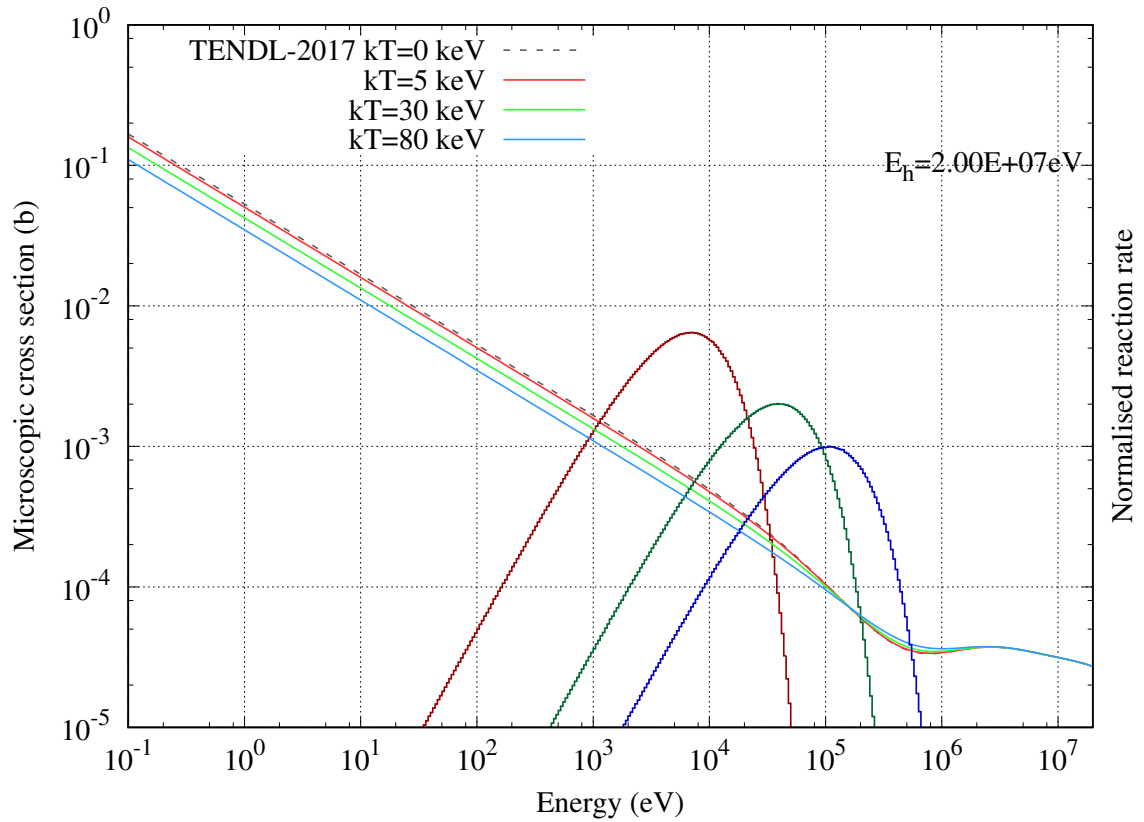
A complete summary of all 5, 30 and 80 keV MACS is provided in Table 1 of Appendix A. Note that these are calculated using `maxwav` on each of those temperatures and given as C/E values against the corresponding KADoNiS data. While a compendium of all predicted MACS for arbitrary temperatures (and potentially 2809 nuclides) could be easily generated using this method, the purpose of this report is to compare the data with astrophysical measurements and the data is restricted only to those which appear in KADoNiS.

All KADoNiS data which is the product of statistical model codes is presented in the following figures, but for every such case the page heading includes an appropriately red

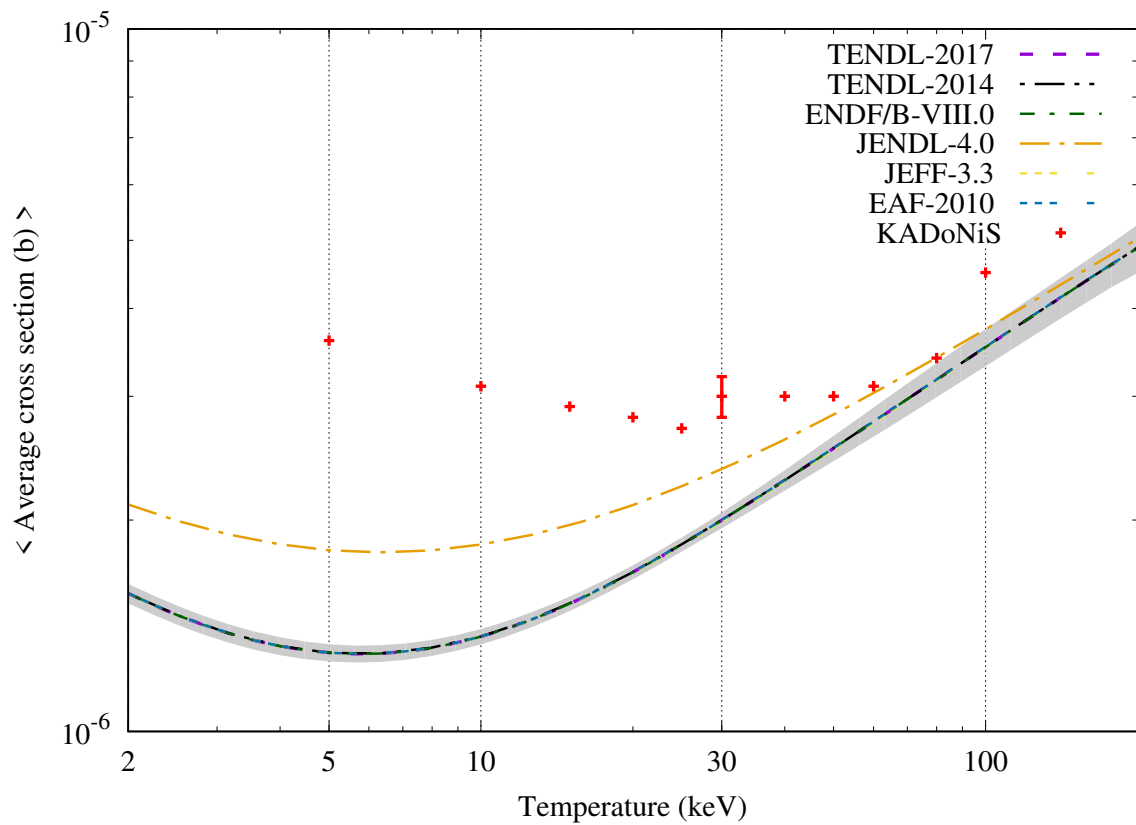
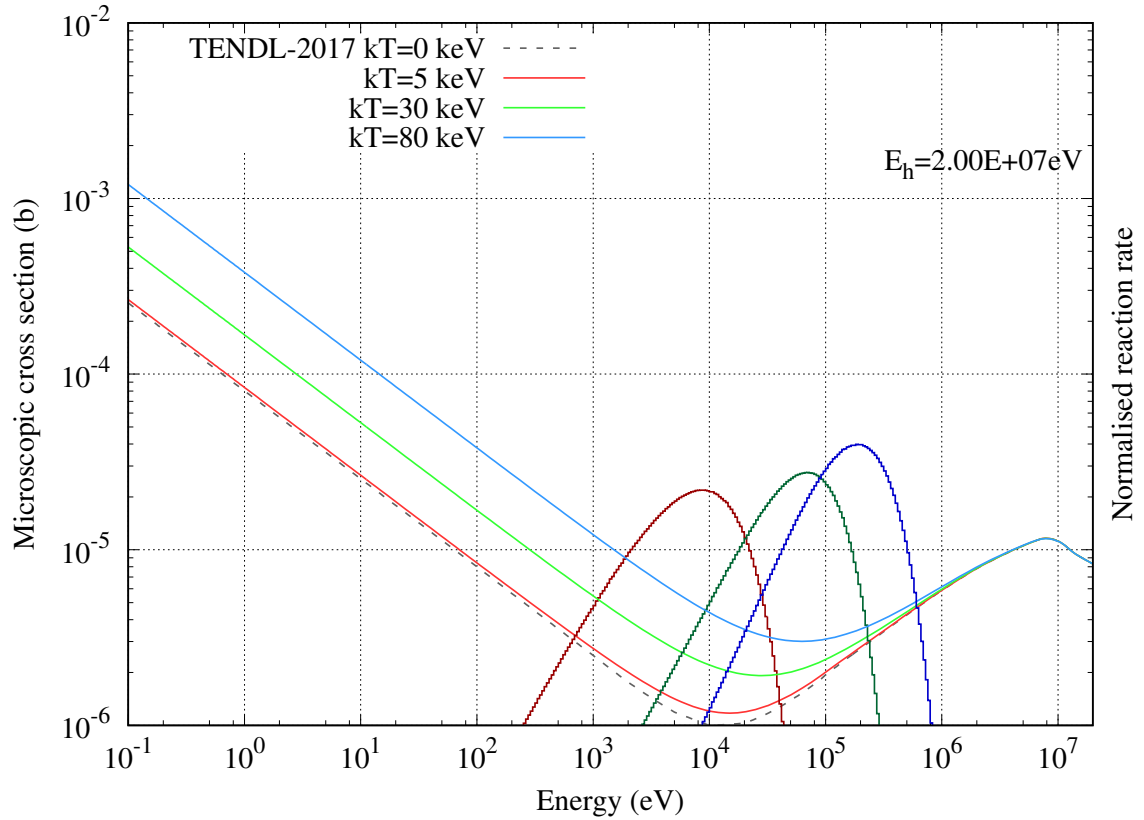
²Unfortunately ENDF/B-VIII.0 does not contain neutron-incident files for 19 KADoNiS nuclides, JEFF-3.3 does not contain 11 and JENDL-4.0 does not contain 68.

warning: (KADoNiS=SMC). These cases should be treated with greater care, as the theoretical models and assumptions regarding level densities *etc* may not be accurate and the quoted uncertainty may be insufficient.

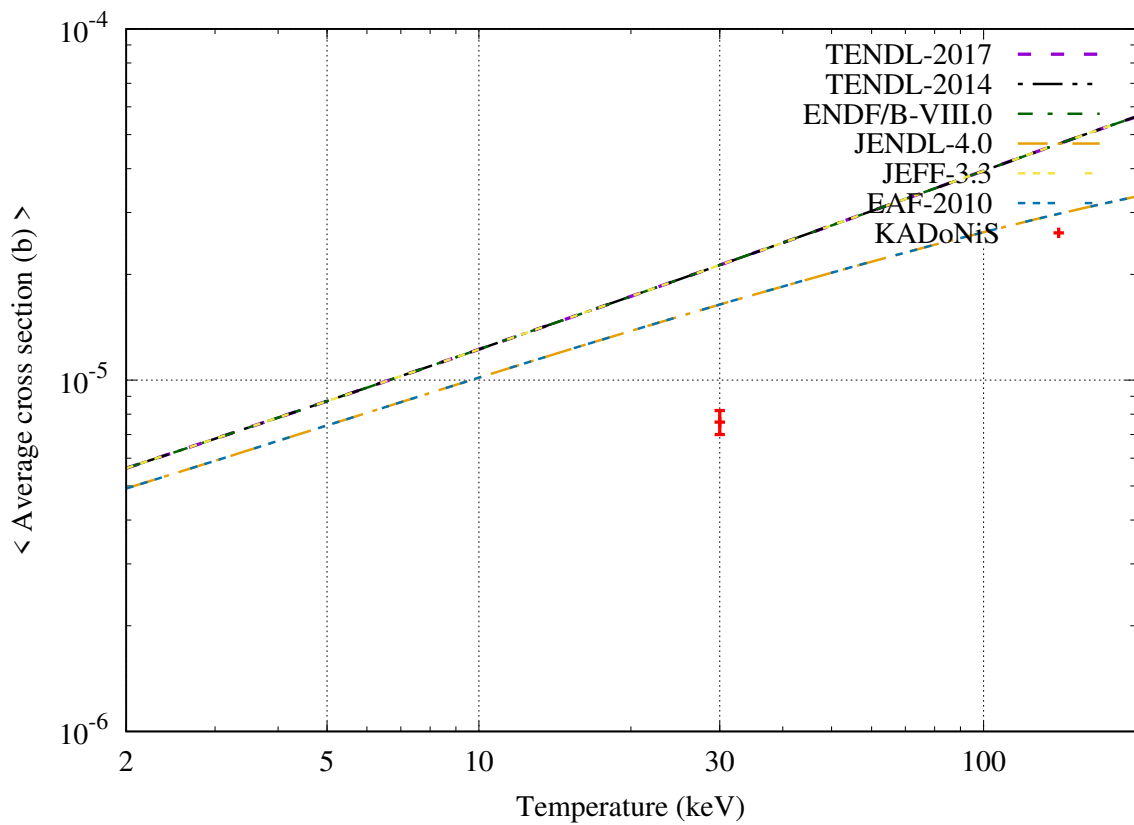
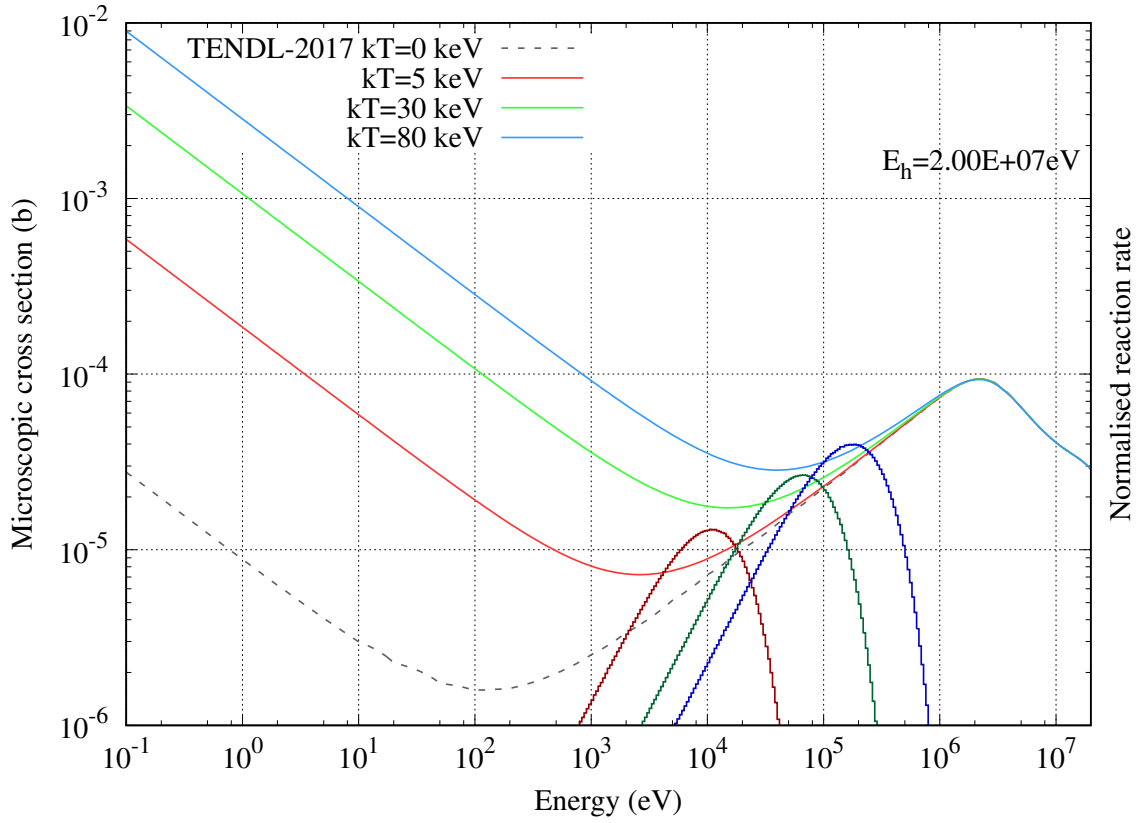
$^1\text{H}_1$ [Stable]



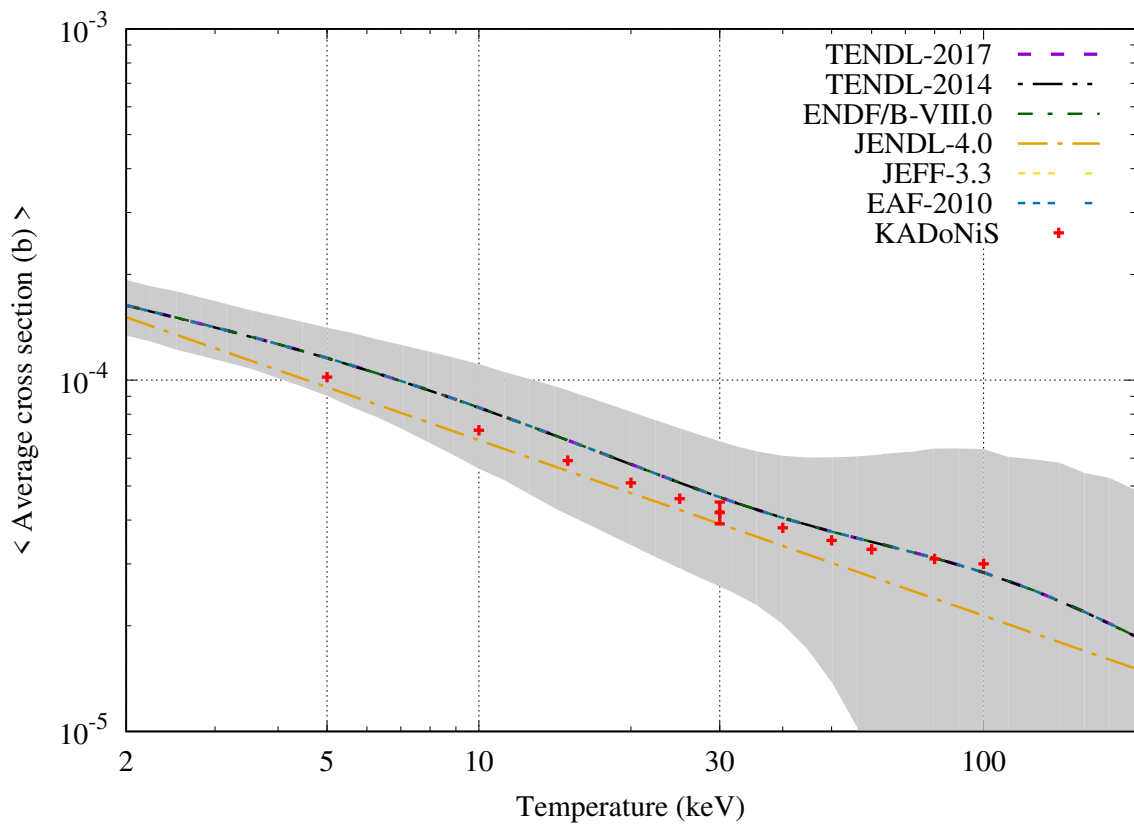
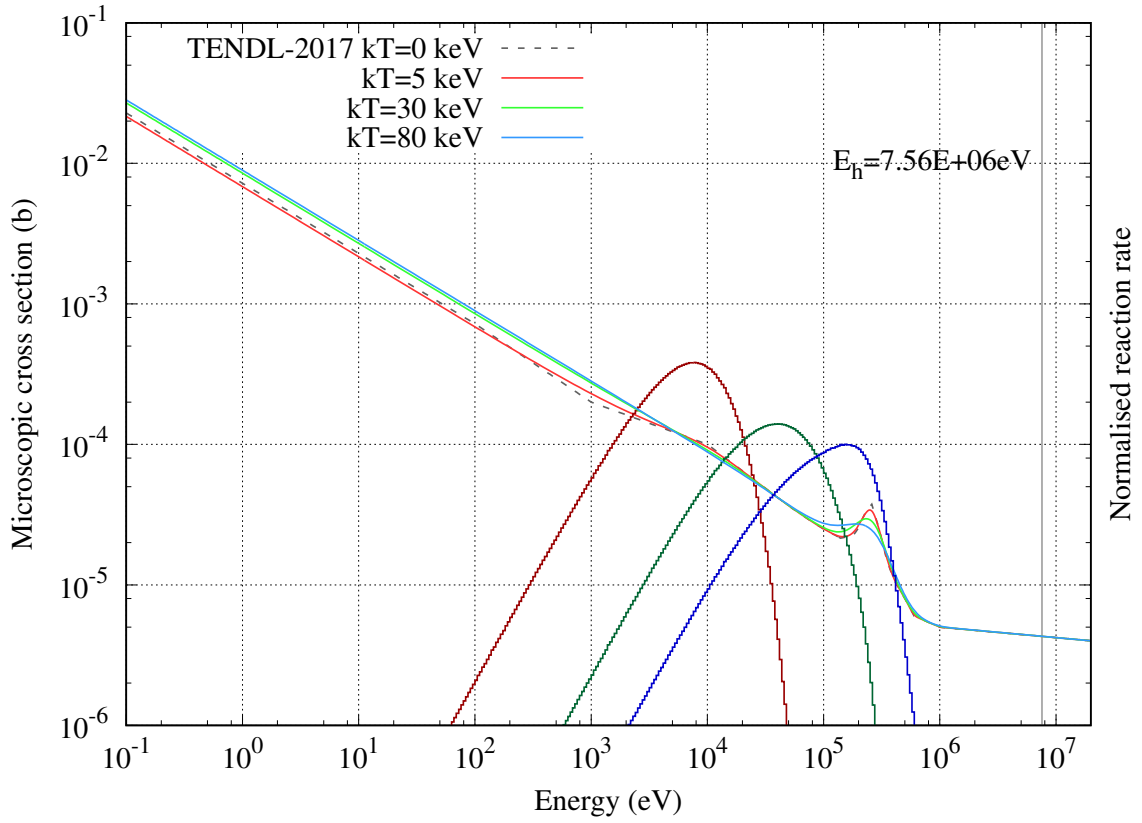
$^2\text{H}_1$ [Stable]



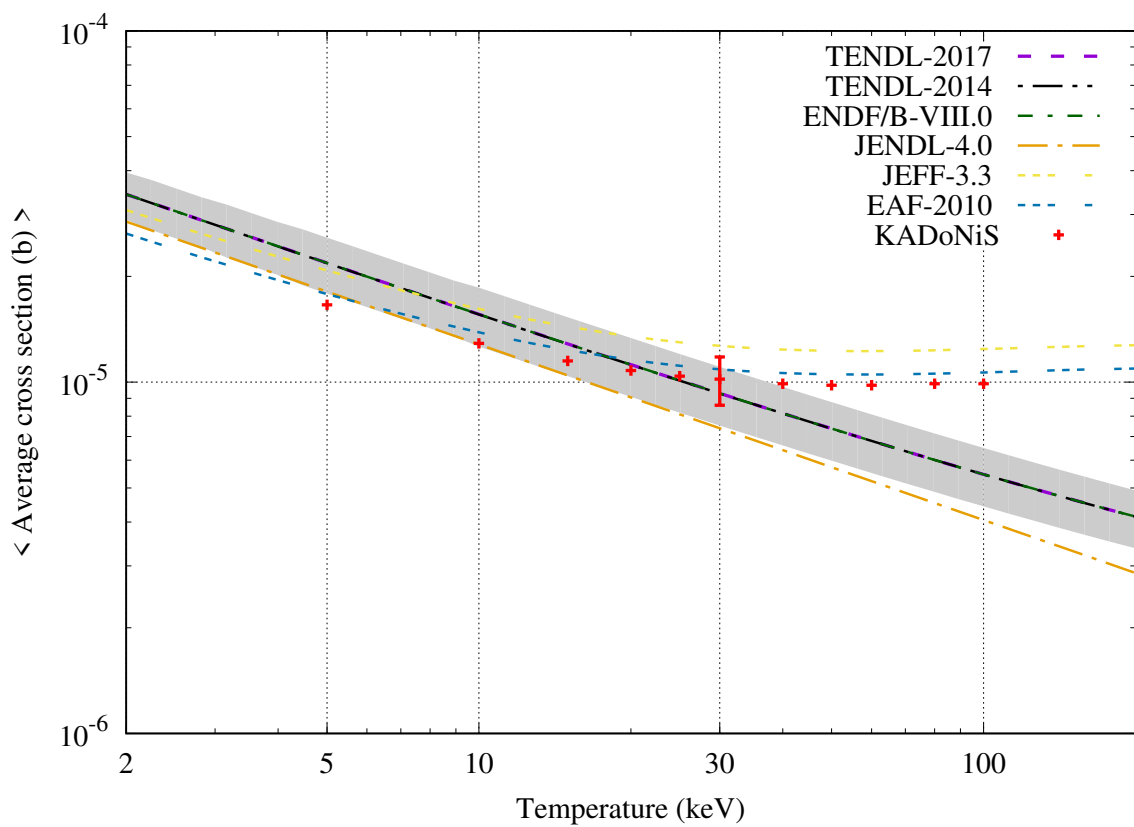
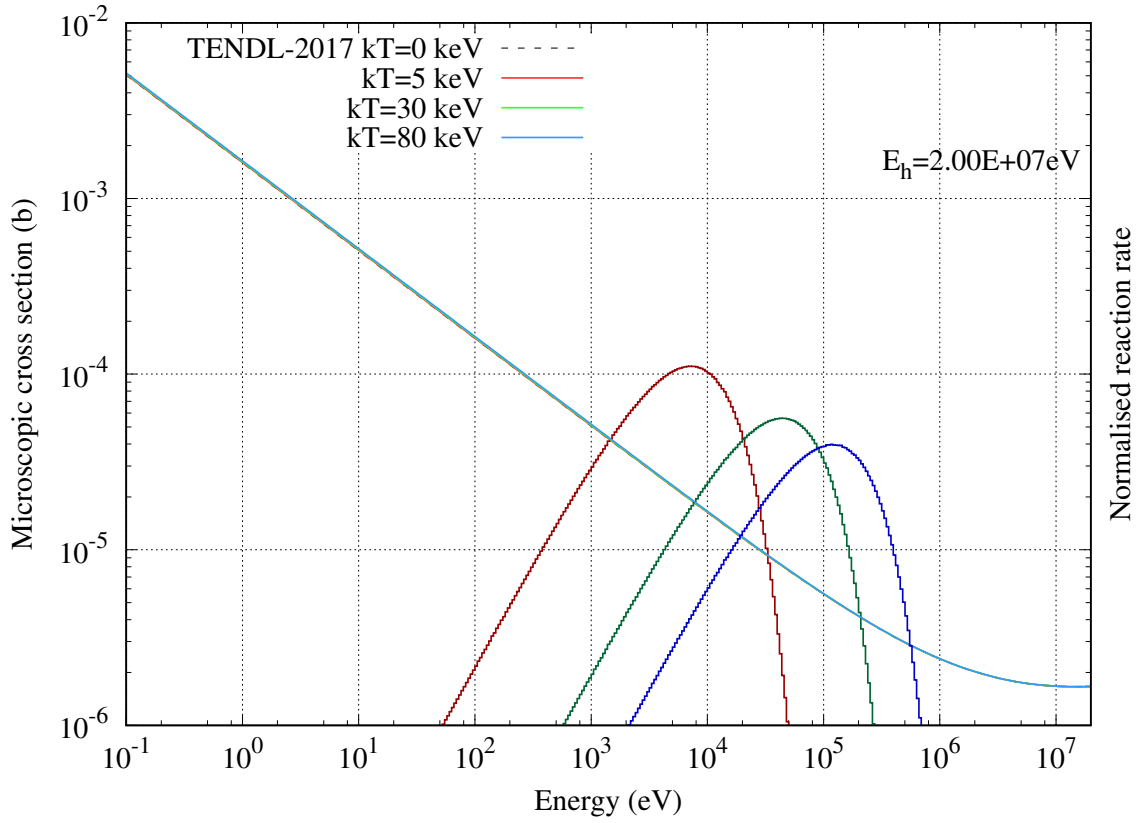
${}^3\text{He}_2$ [Stable]



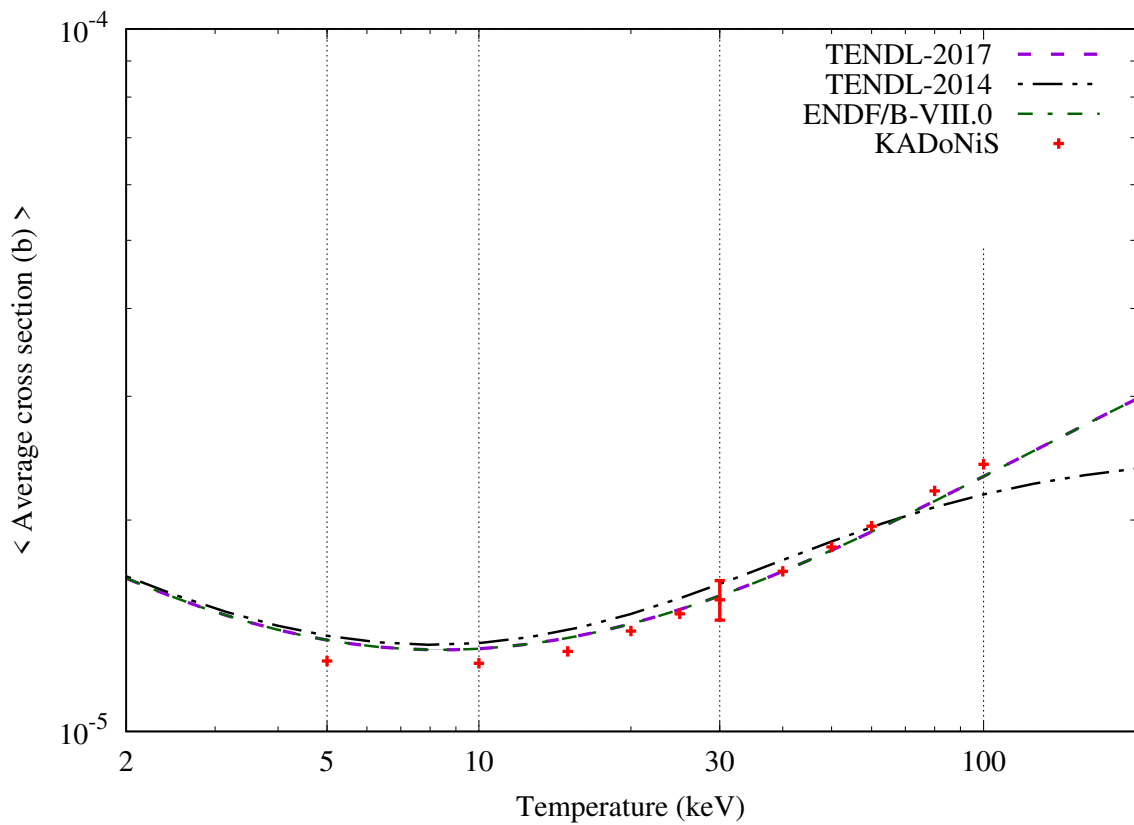
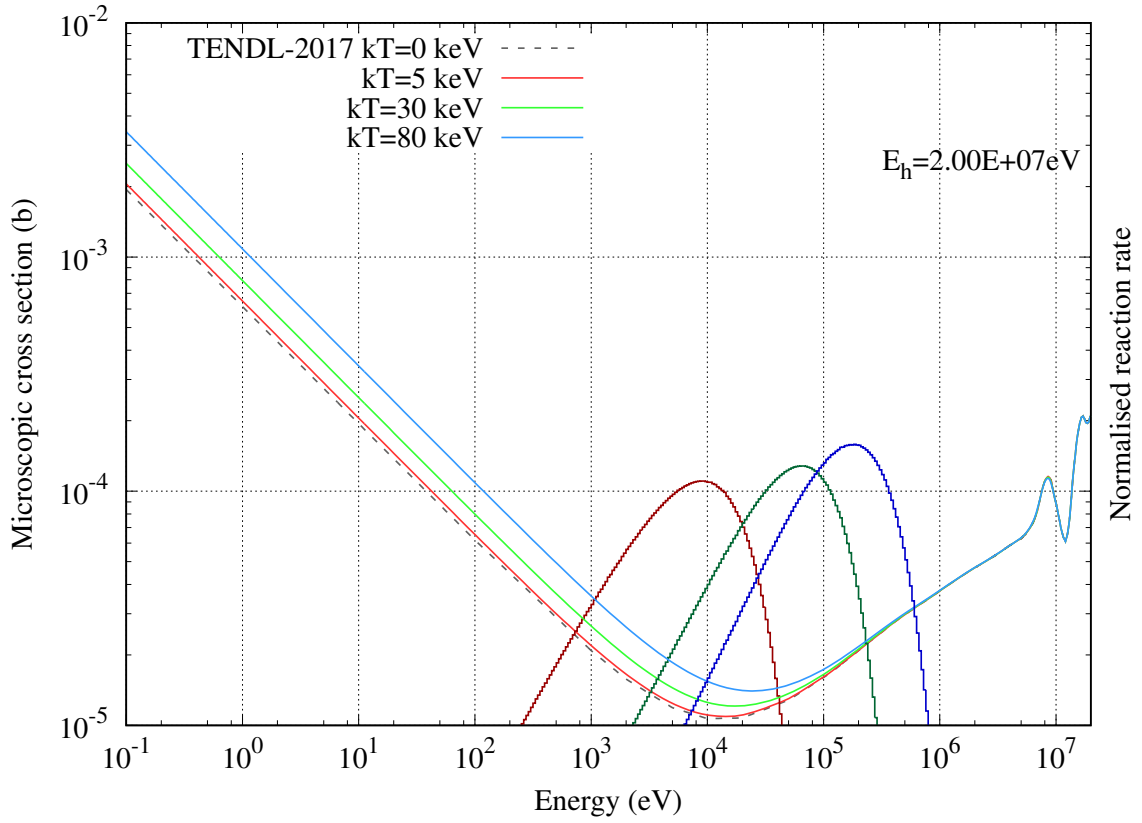
${}^7\text{Li}_3$ [Stable]



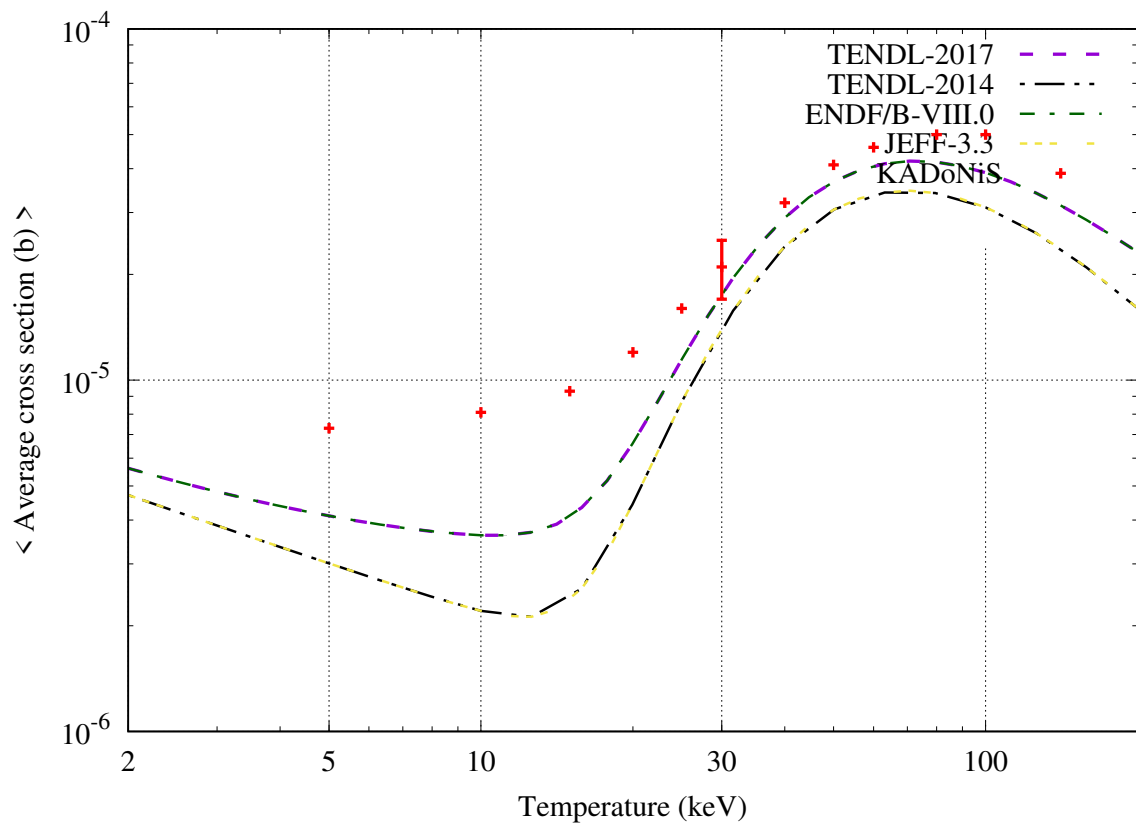
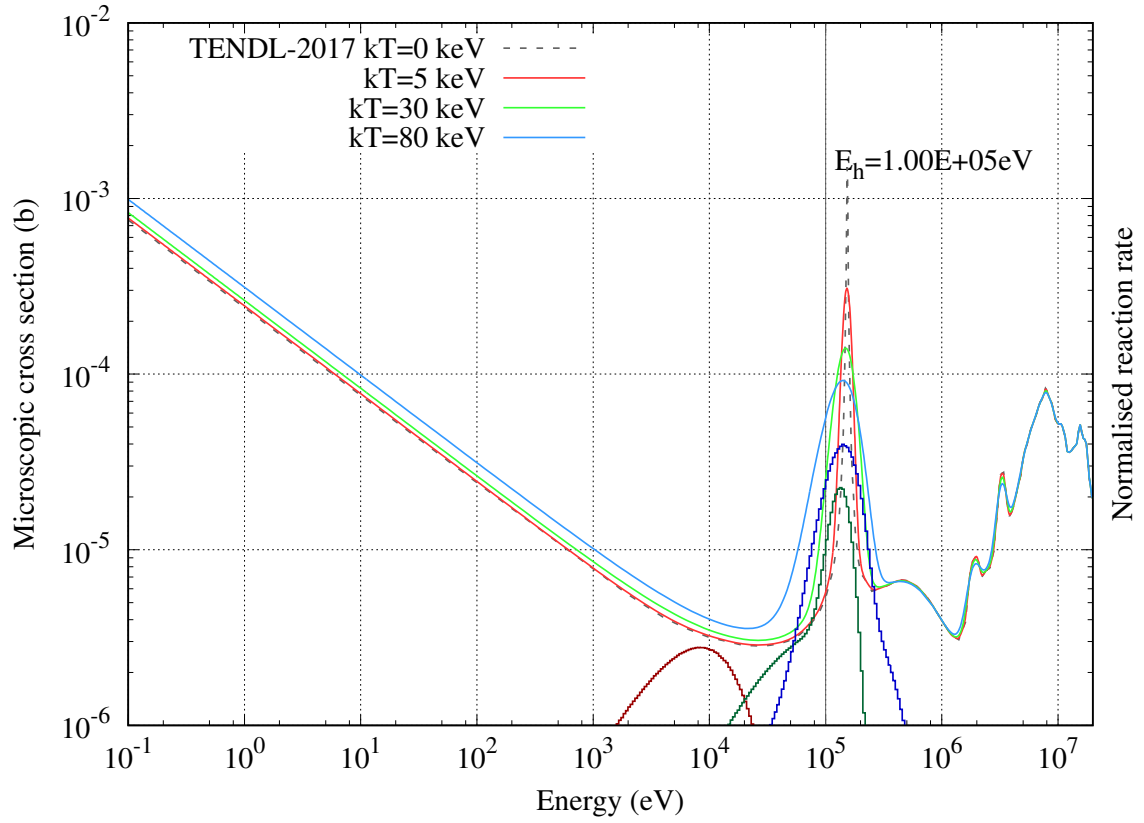
${}^9\text{Be}_4$ [Stable]

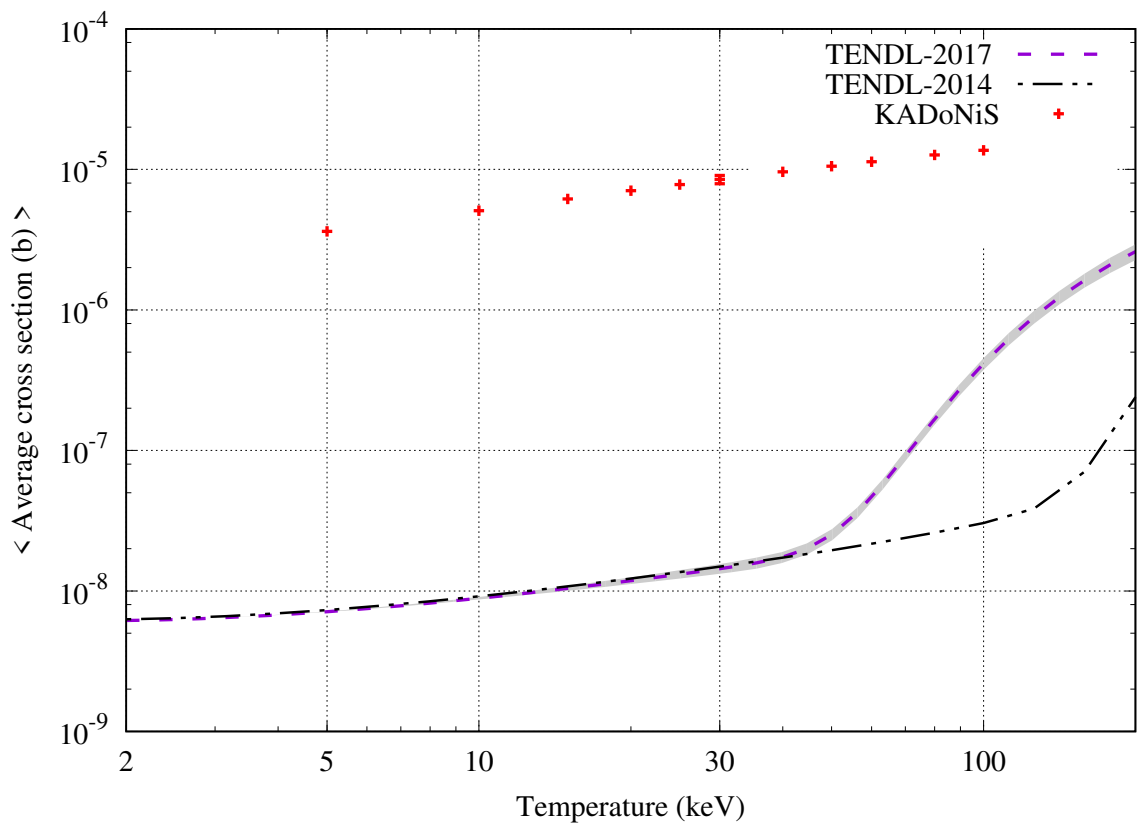
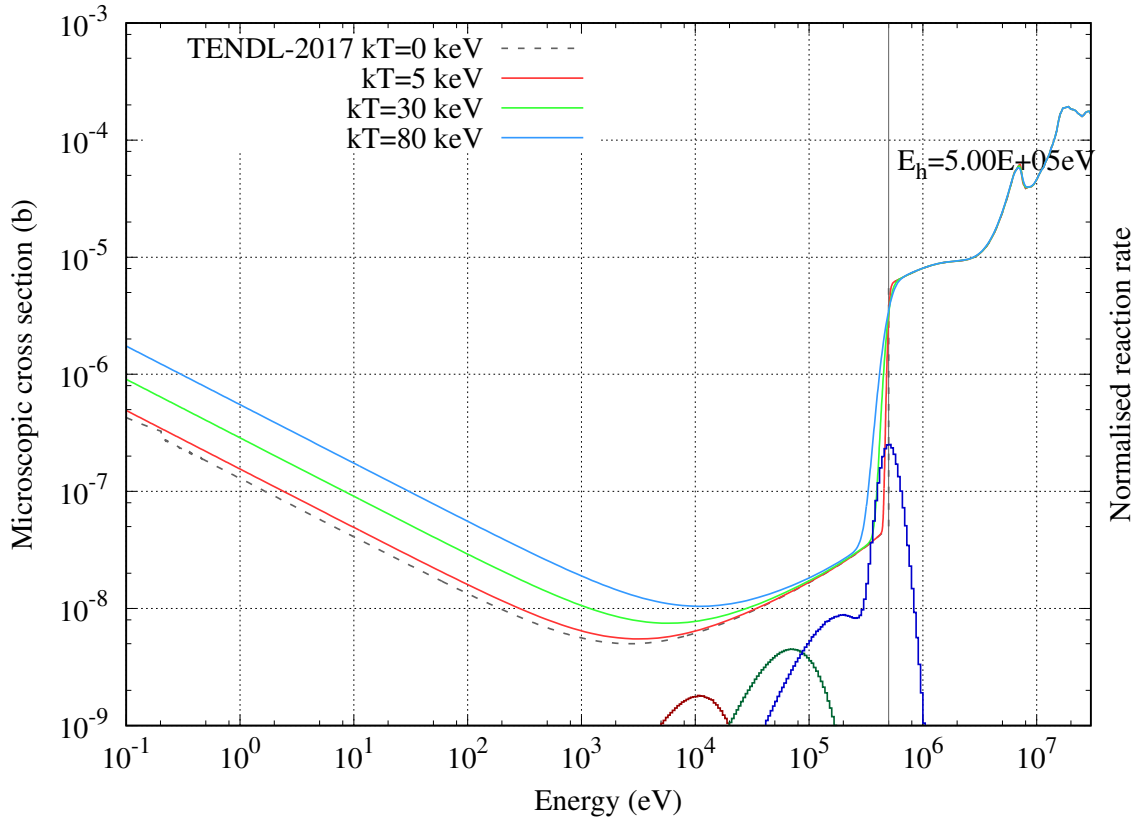
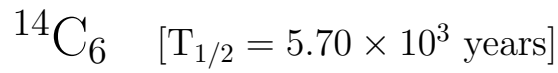


$^{12}\text{C}_6$ [Stable]

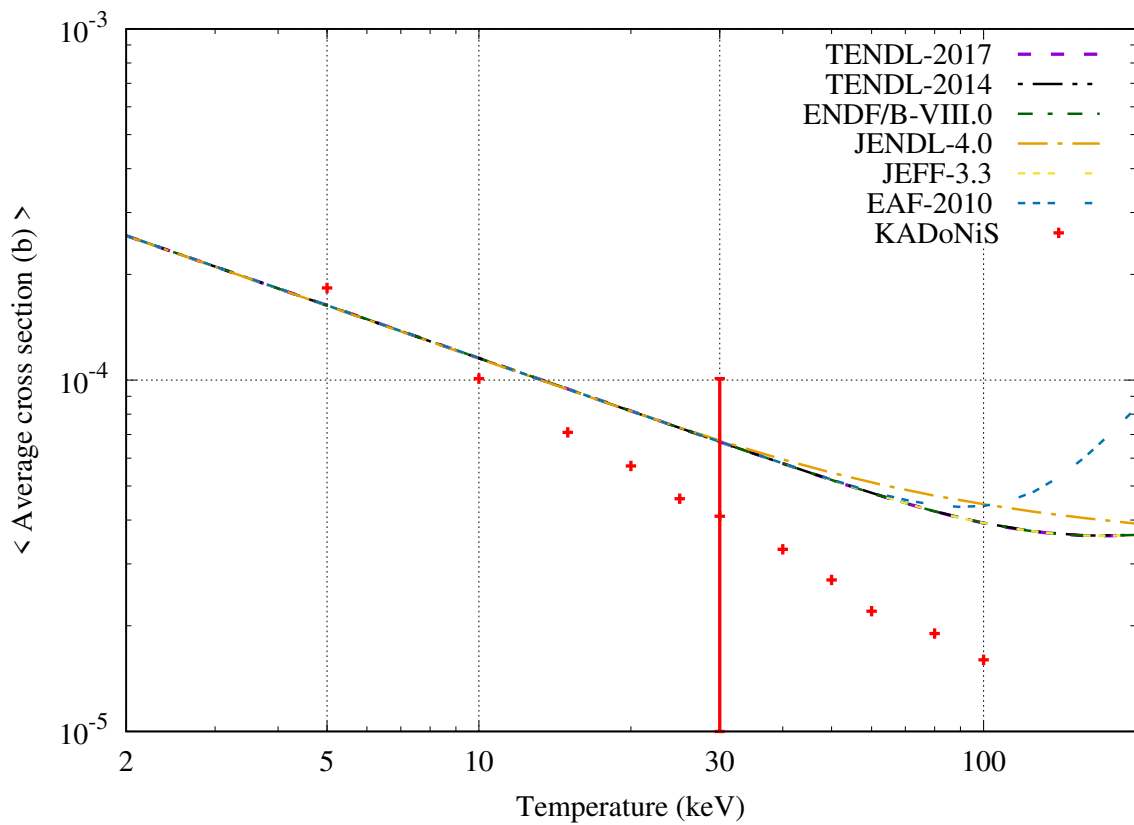
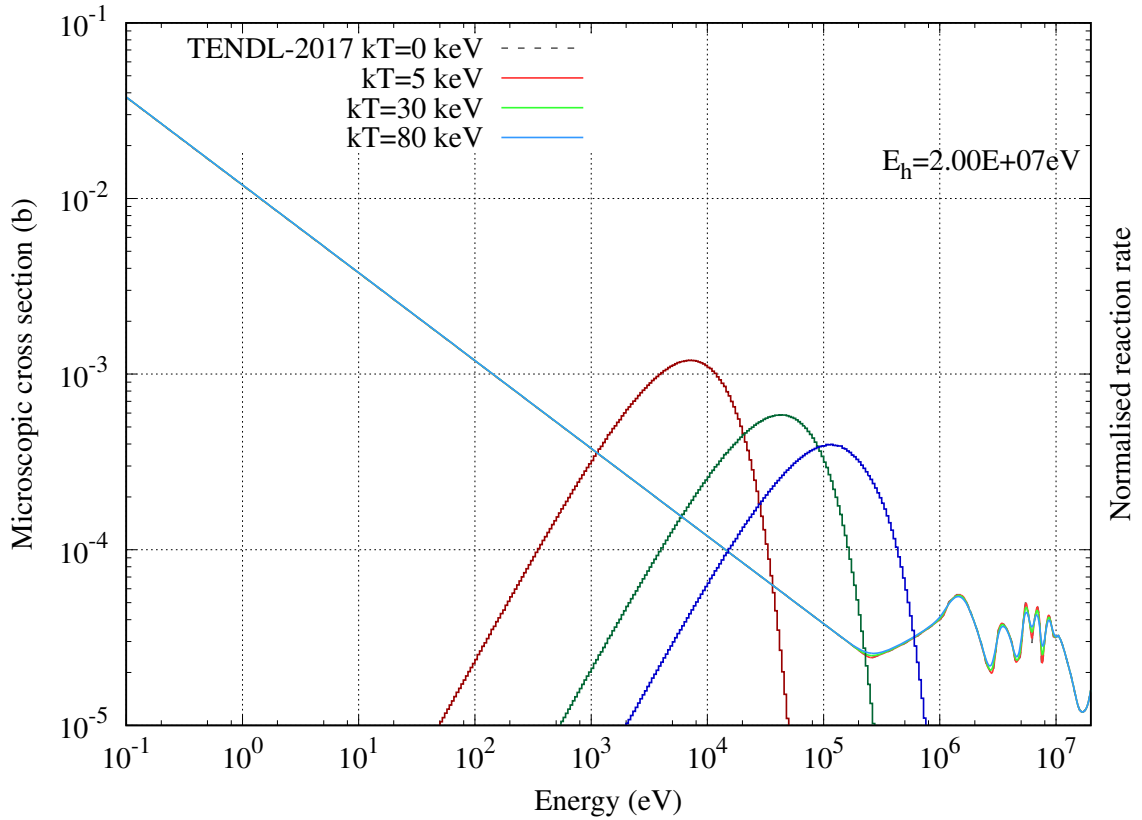


$^{13}\text{C}_6$ [Stable]

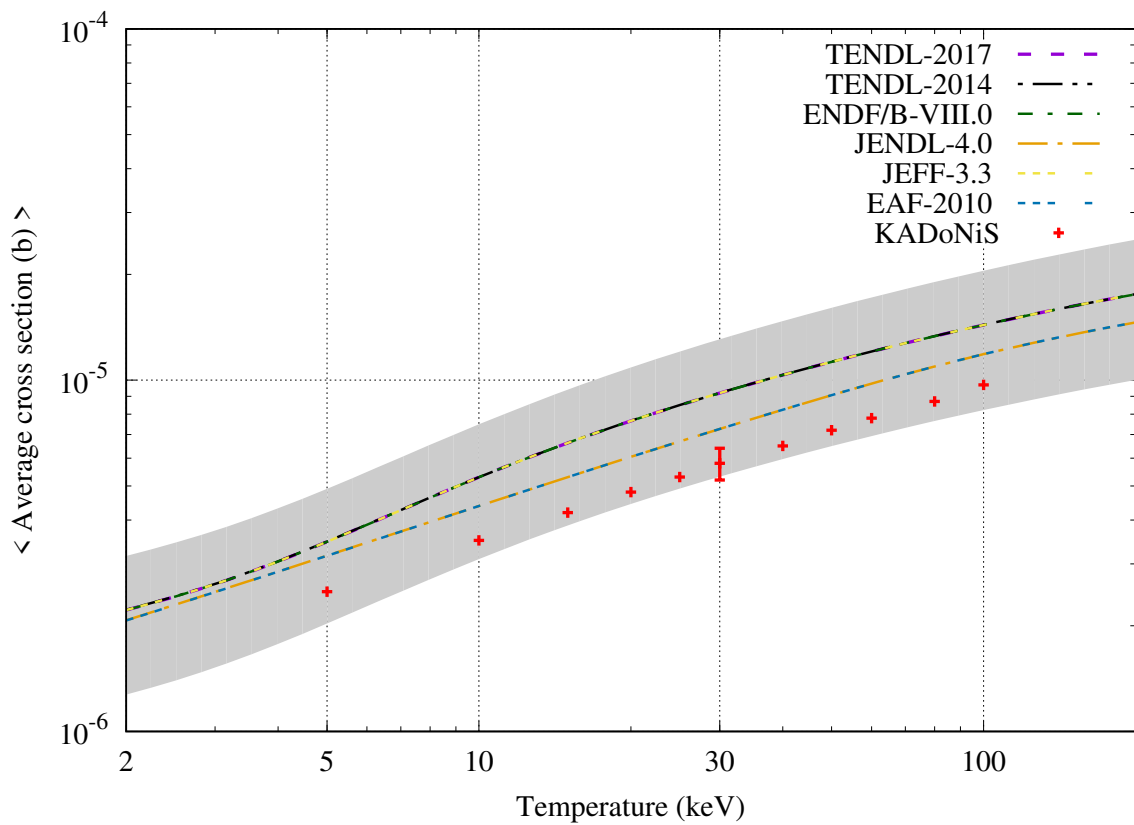
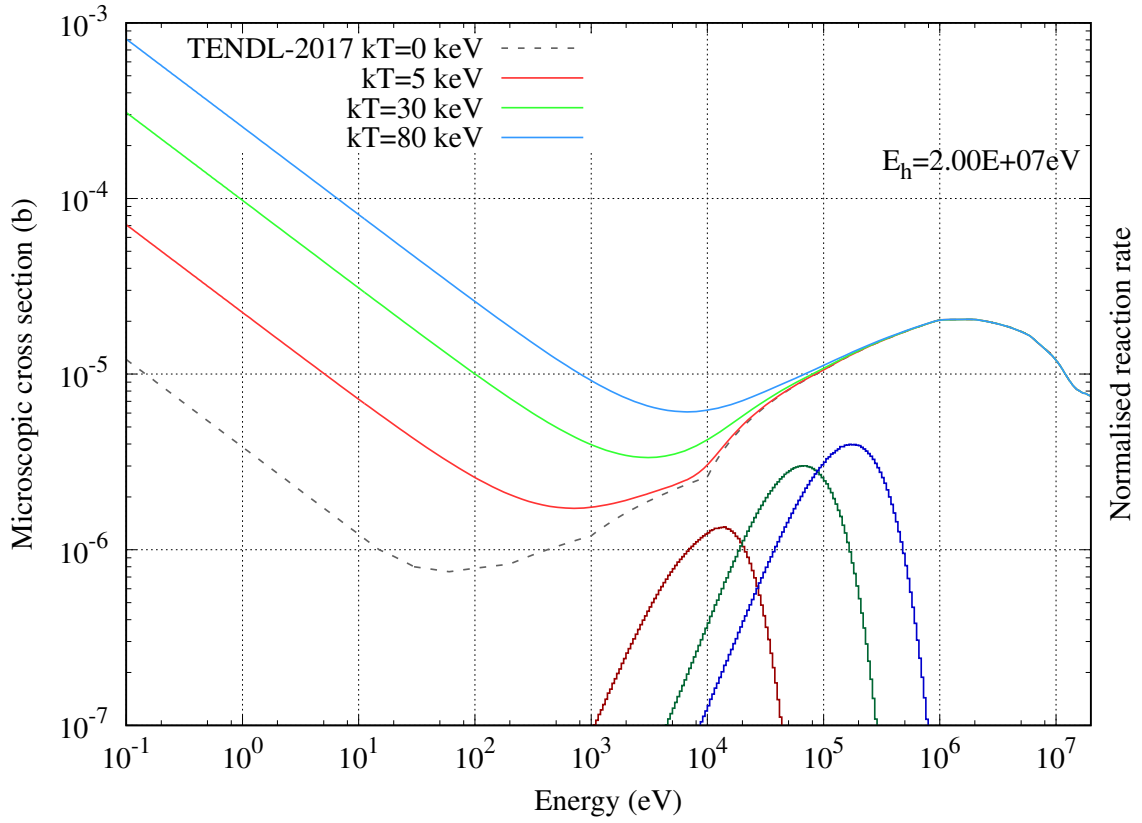




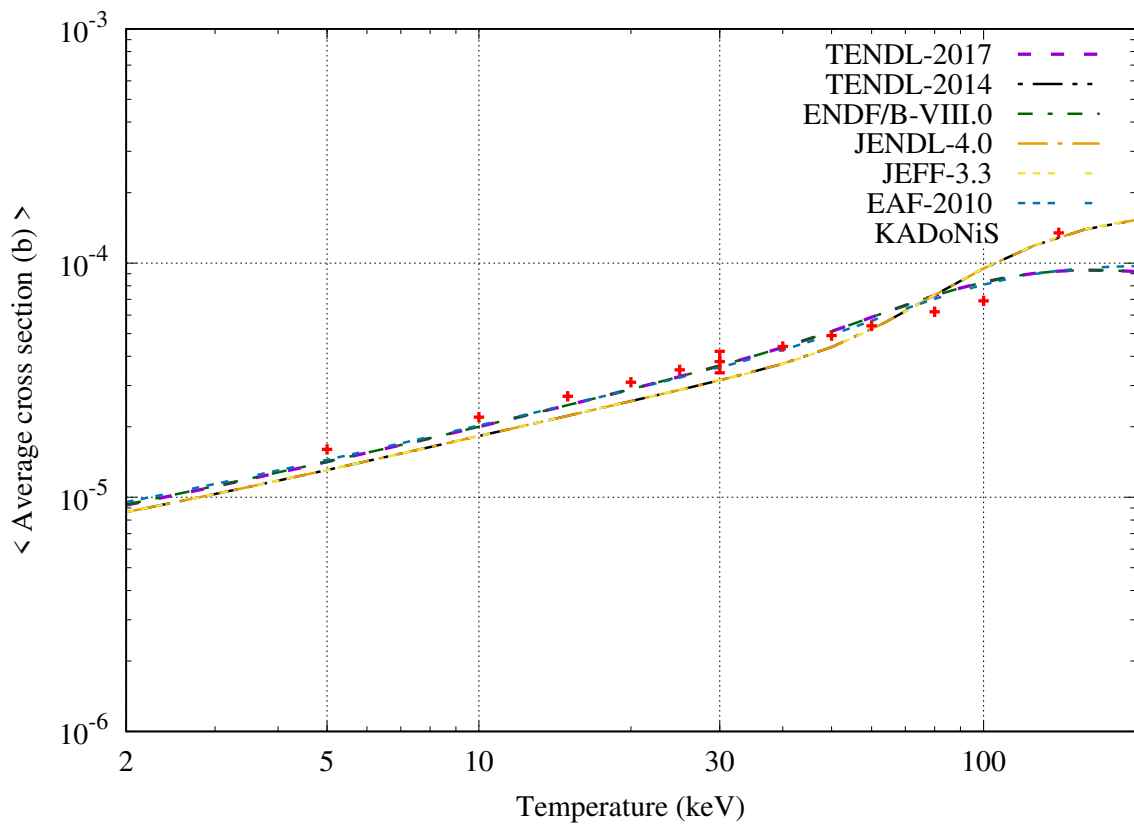
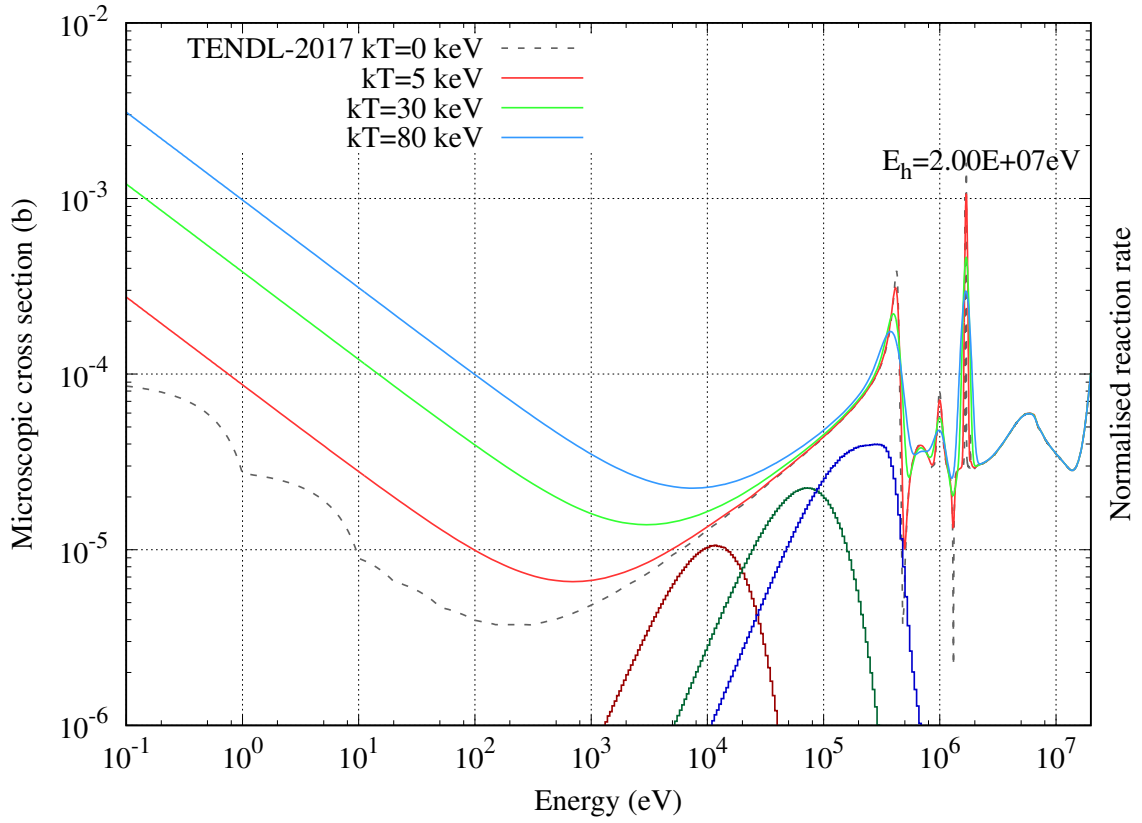
$^{14}\text{N}_7$ [Stable]



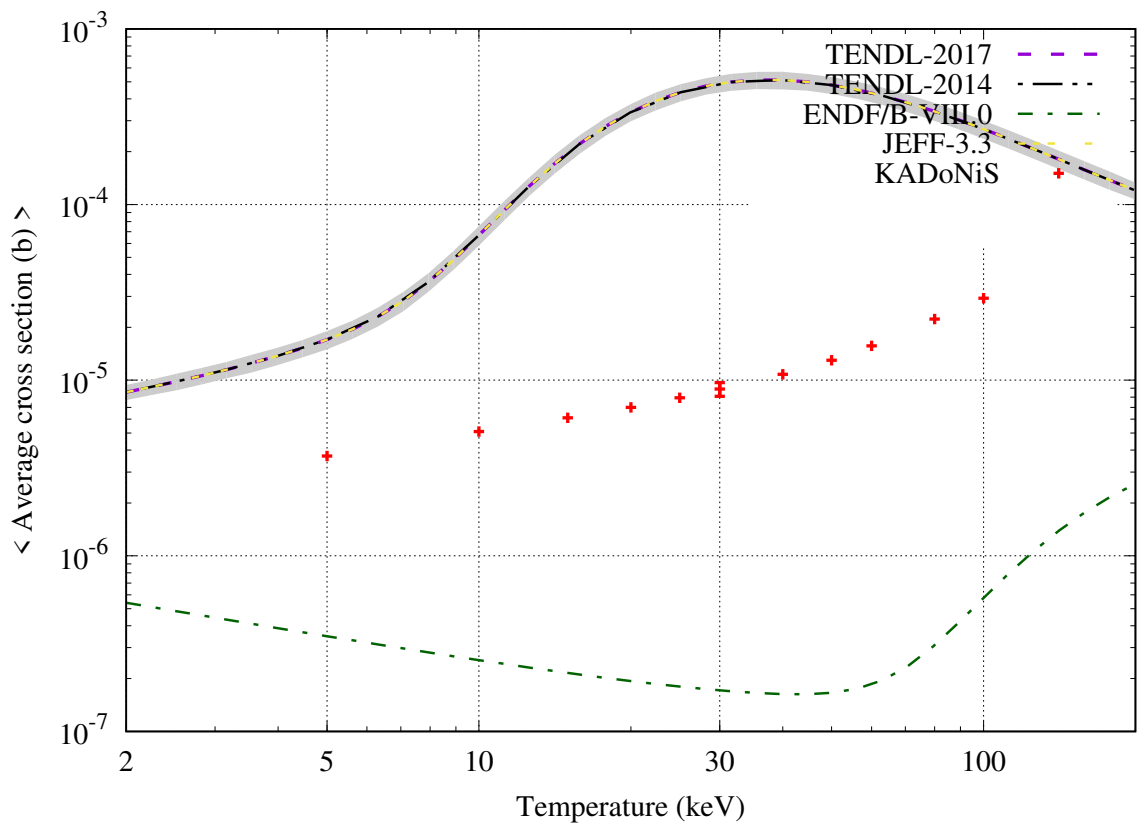
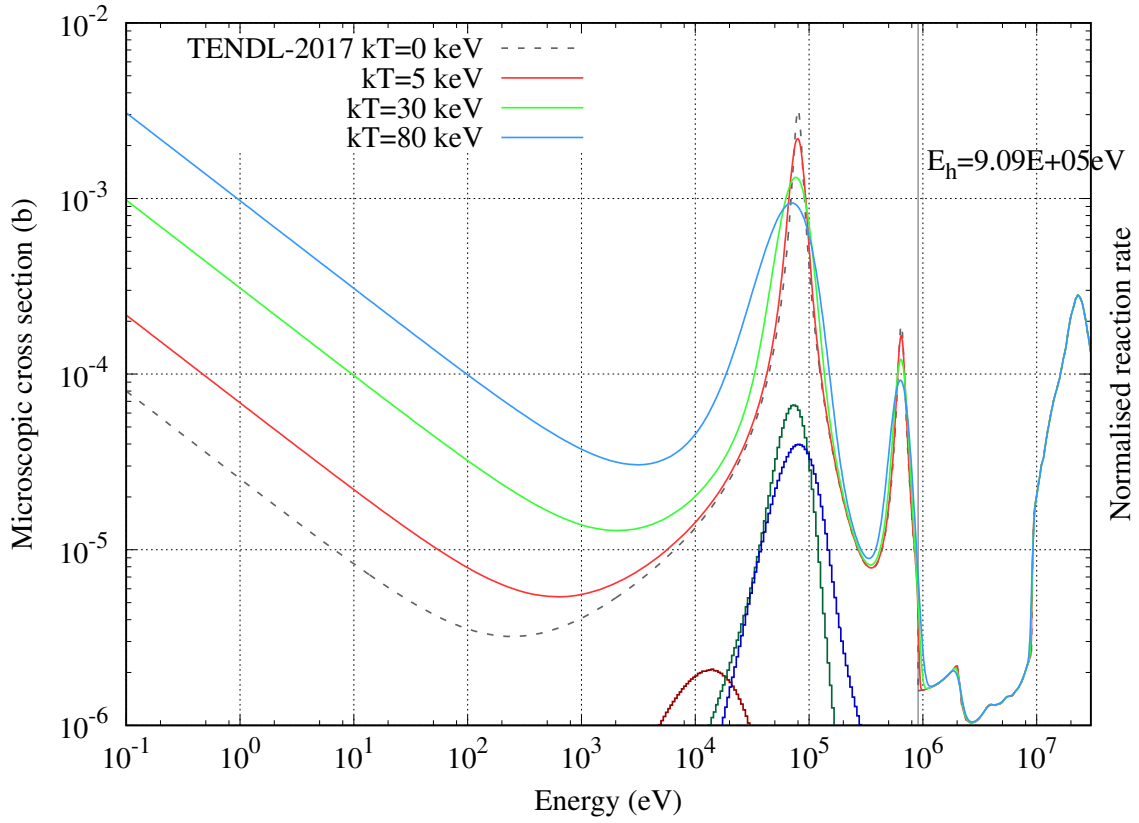
$^{15}\text{N}_7$ [Stable]



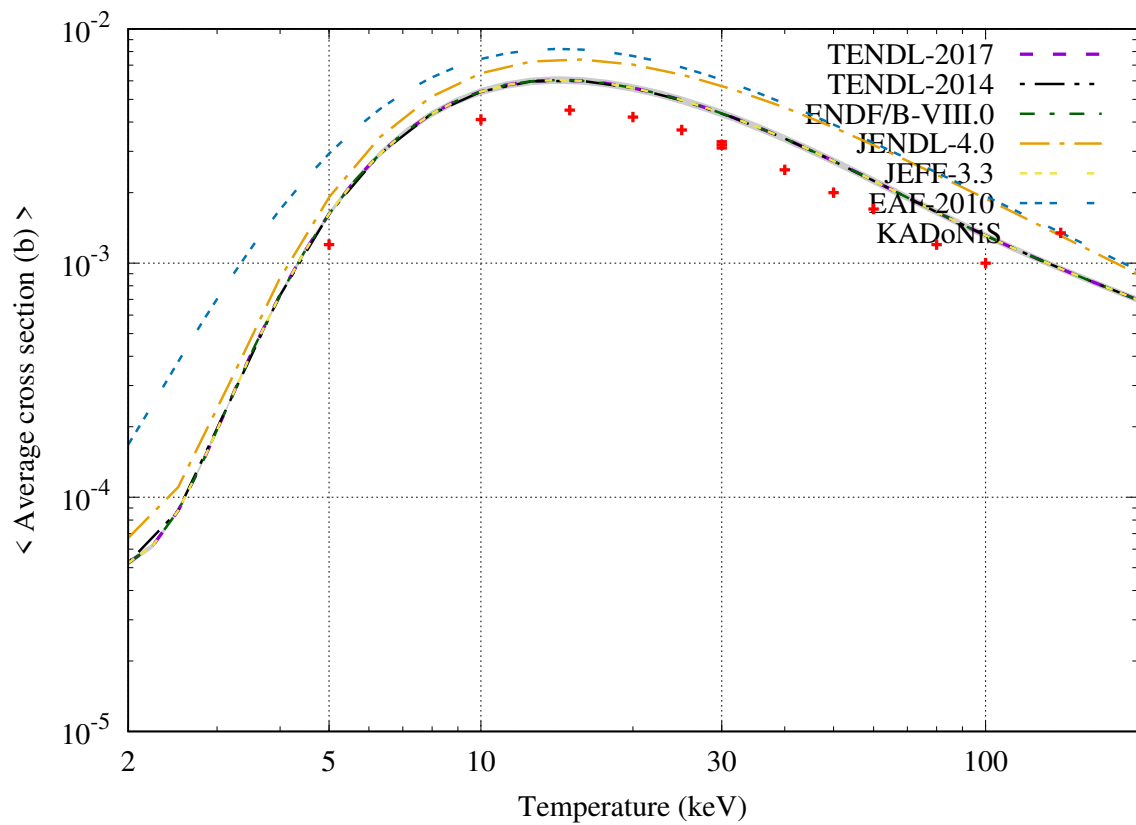
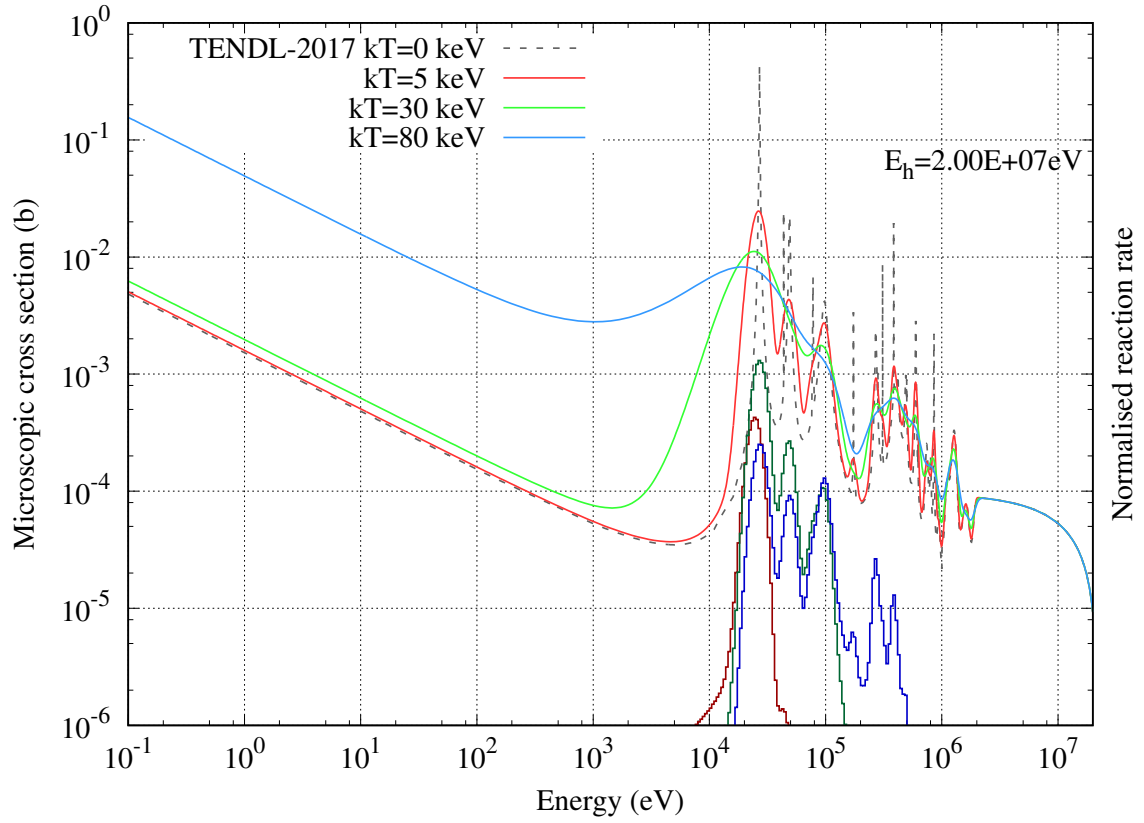
$^{16}\text{O}_8$ [Stable]



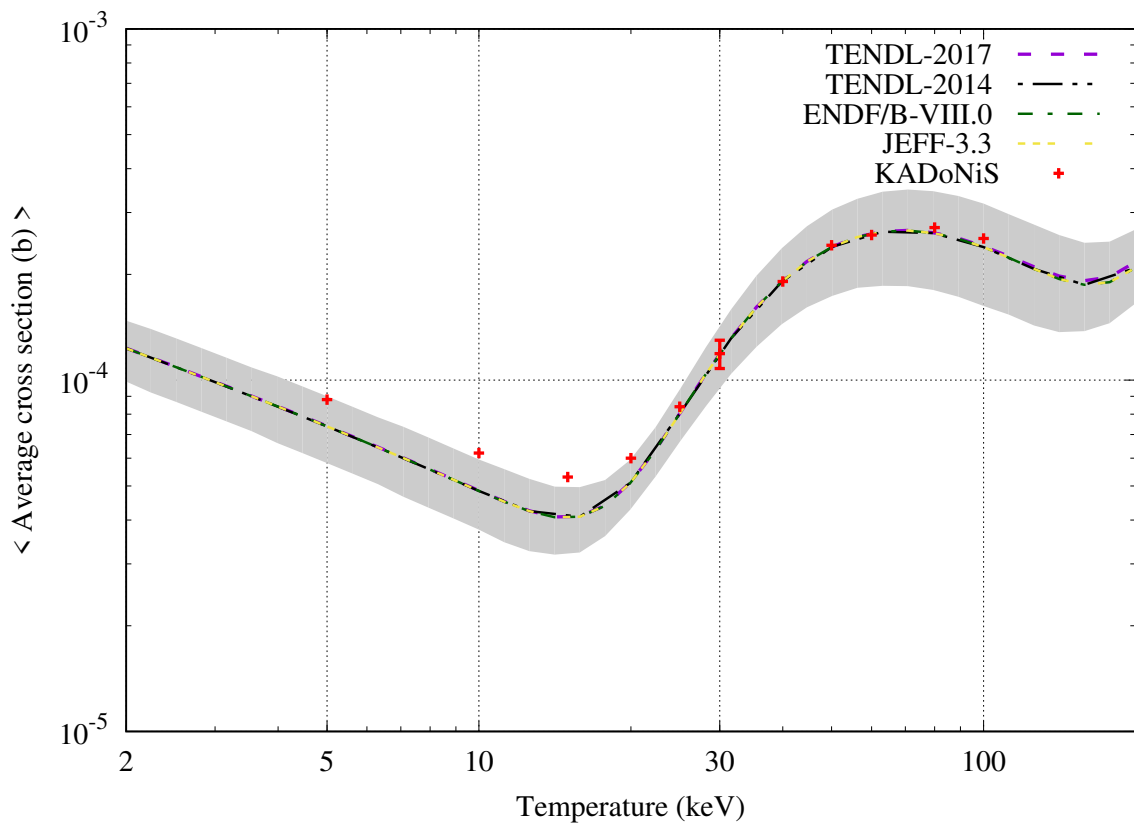
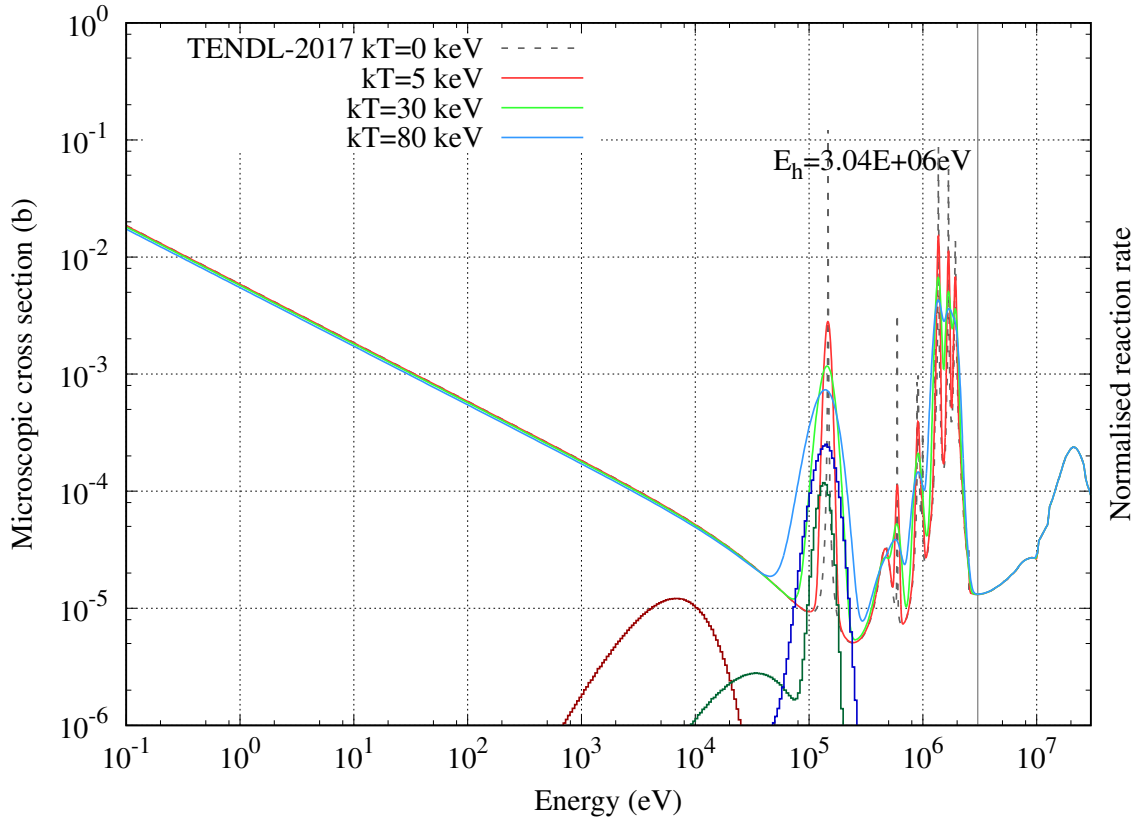
$^{18}\text{O}_8$ [Stable]



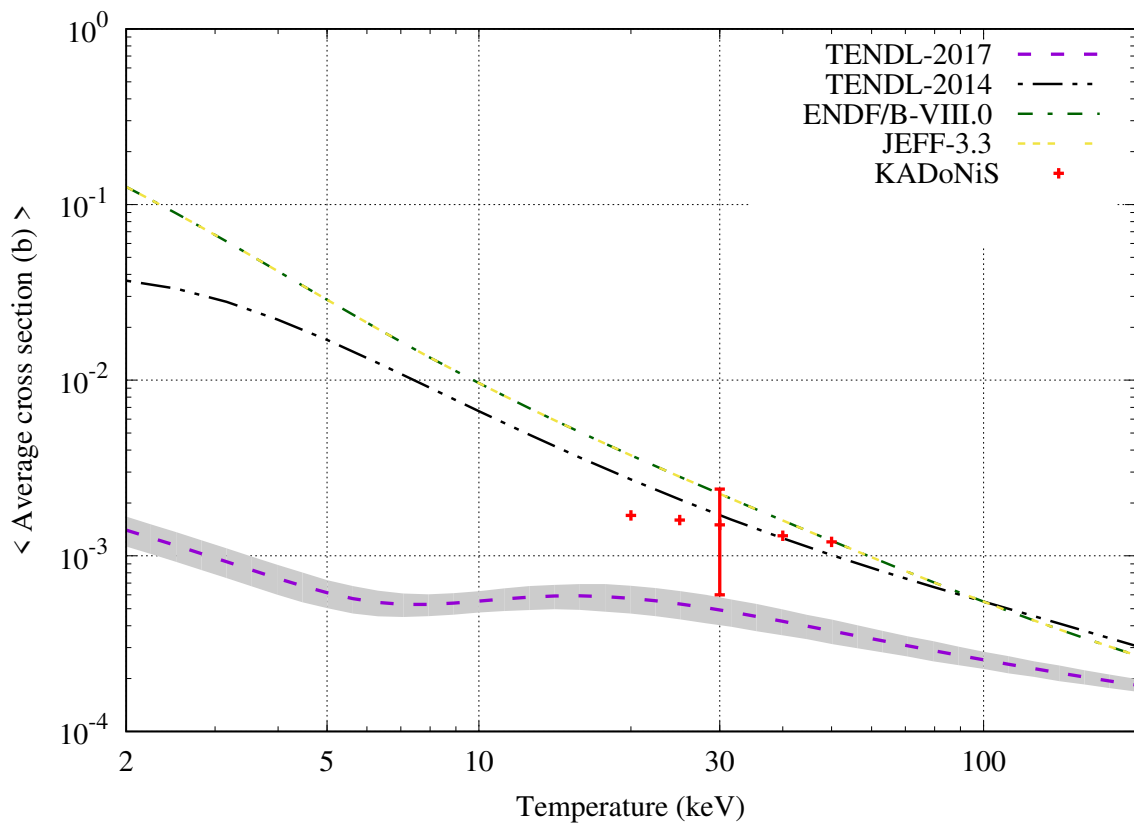
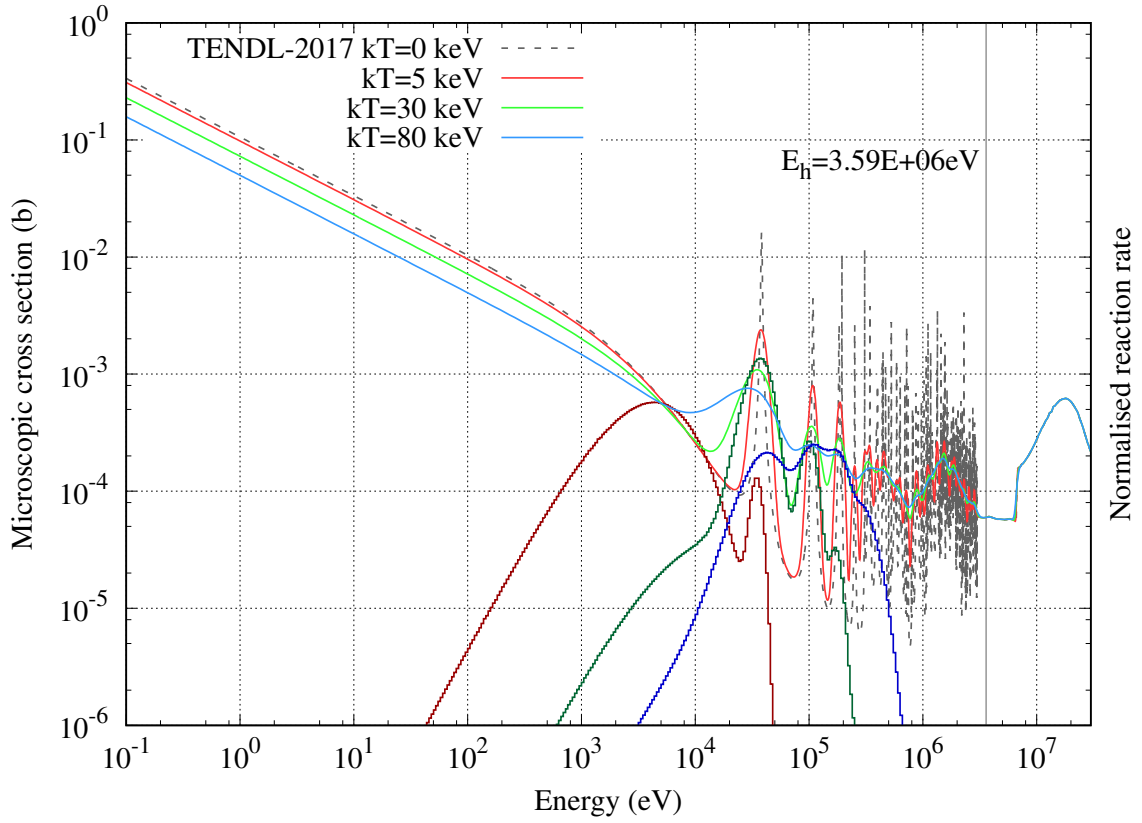
$^{19}\text{F}_9$ [Stable]



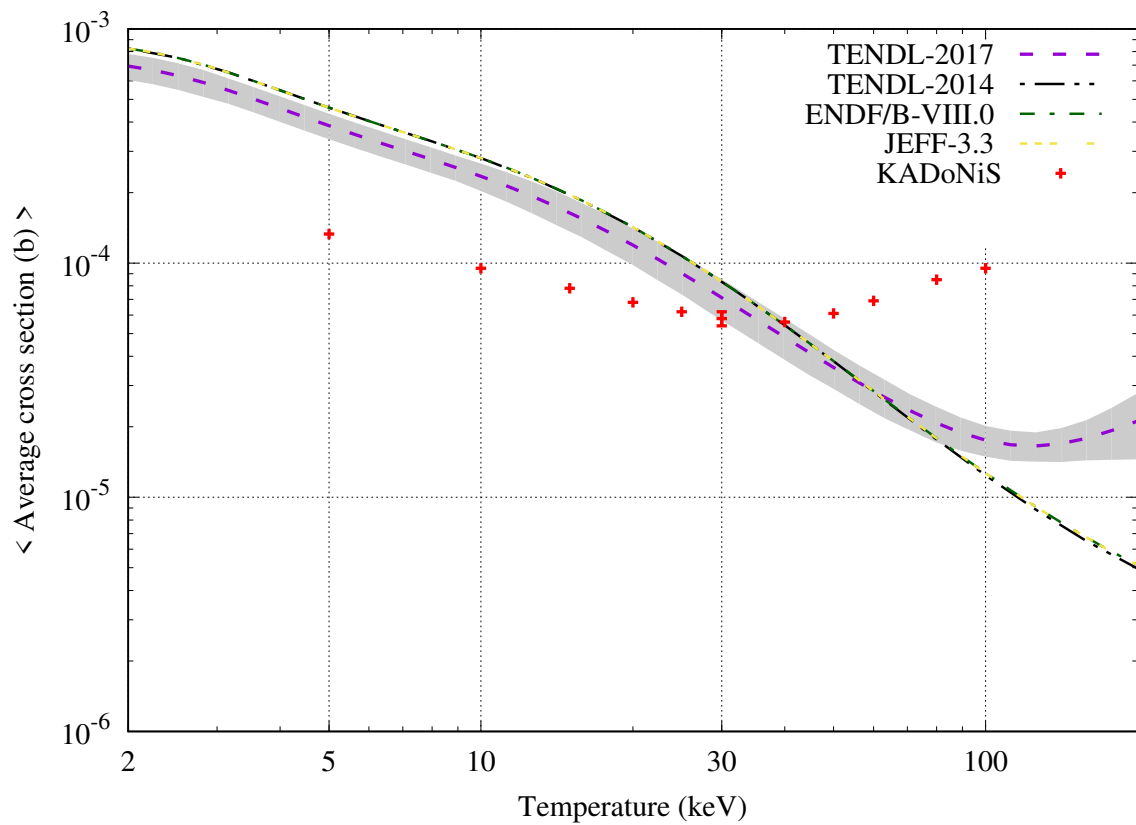
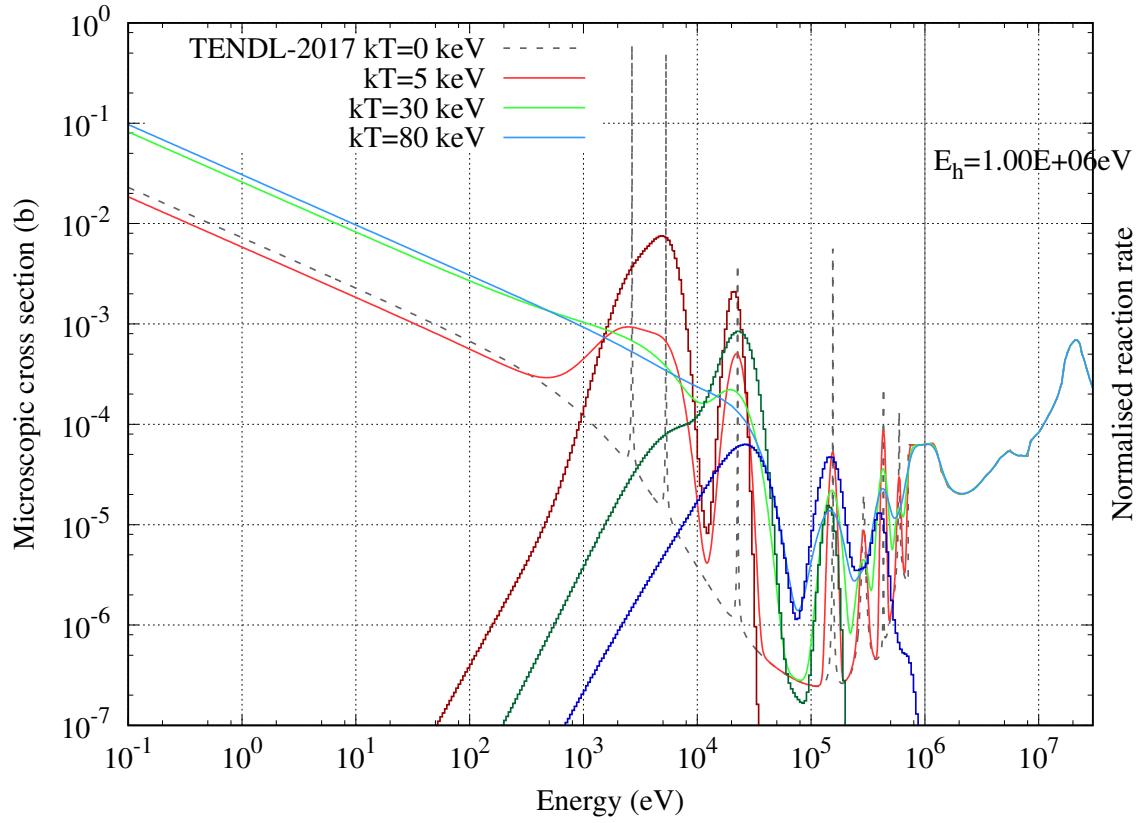
$^{20}\text{Ne}_{10}$ [Stable]



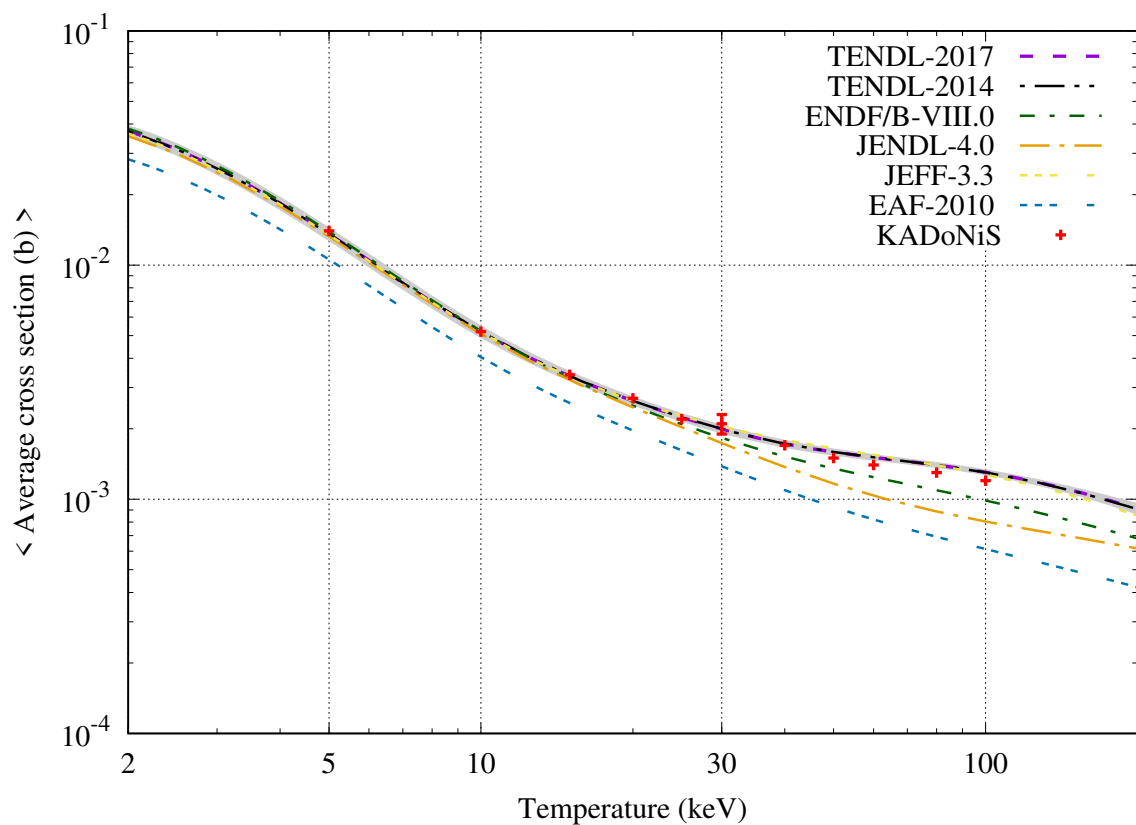
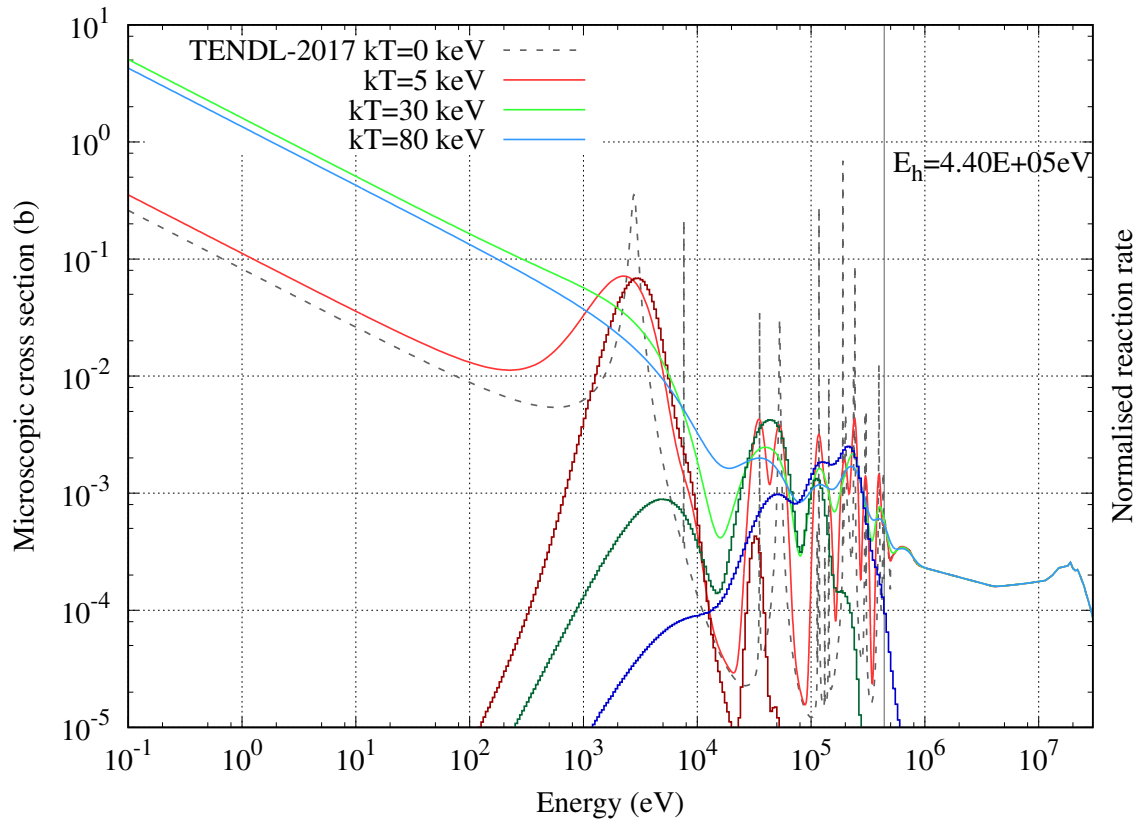
$^{21}\text{Ne}_{10}$ [Stable]



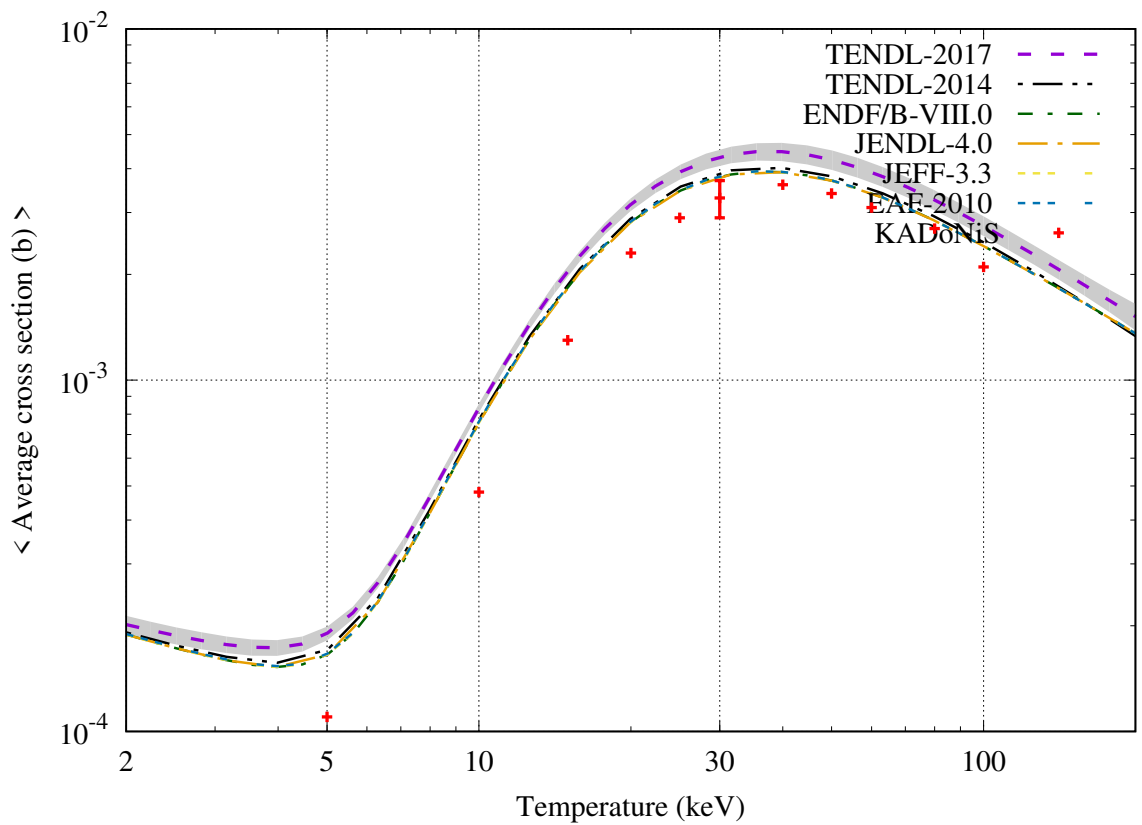
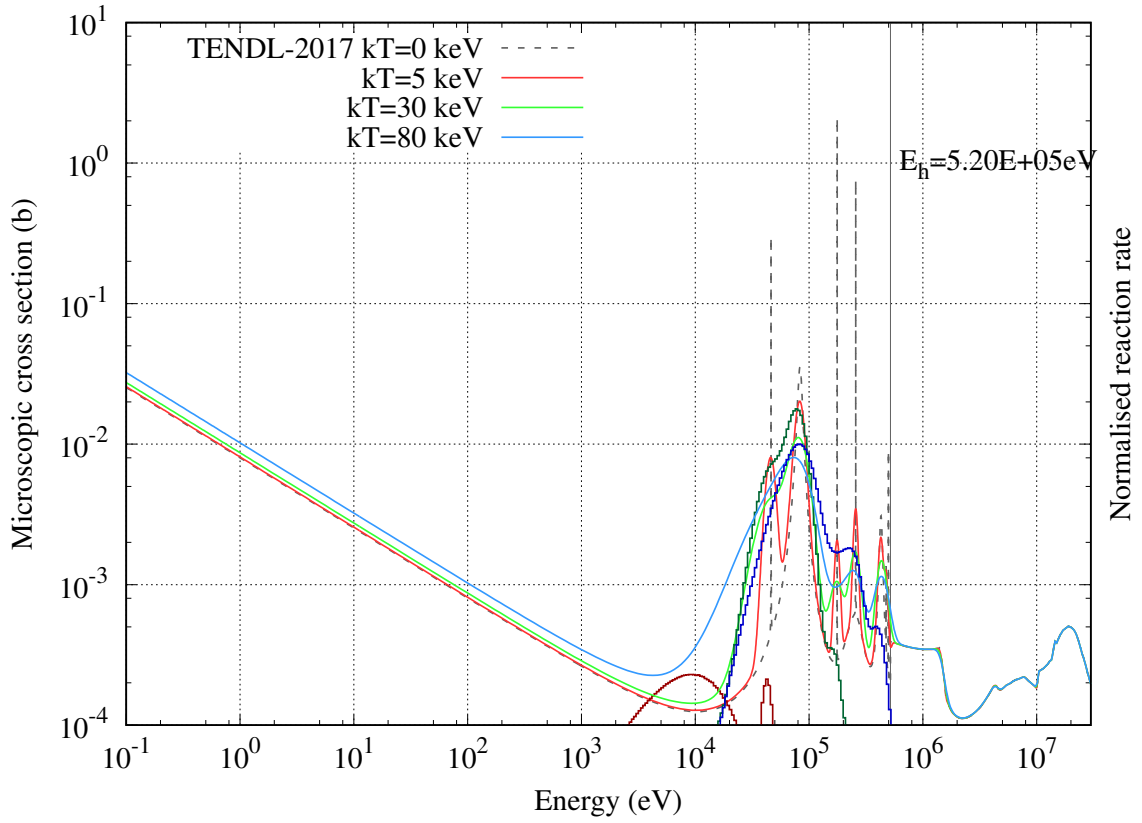
$^{22}\text{Ne}_{10}$ [Stable]



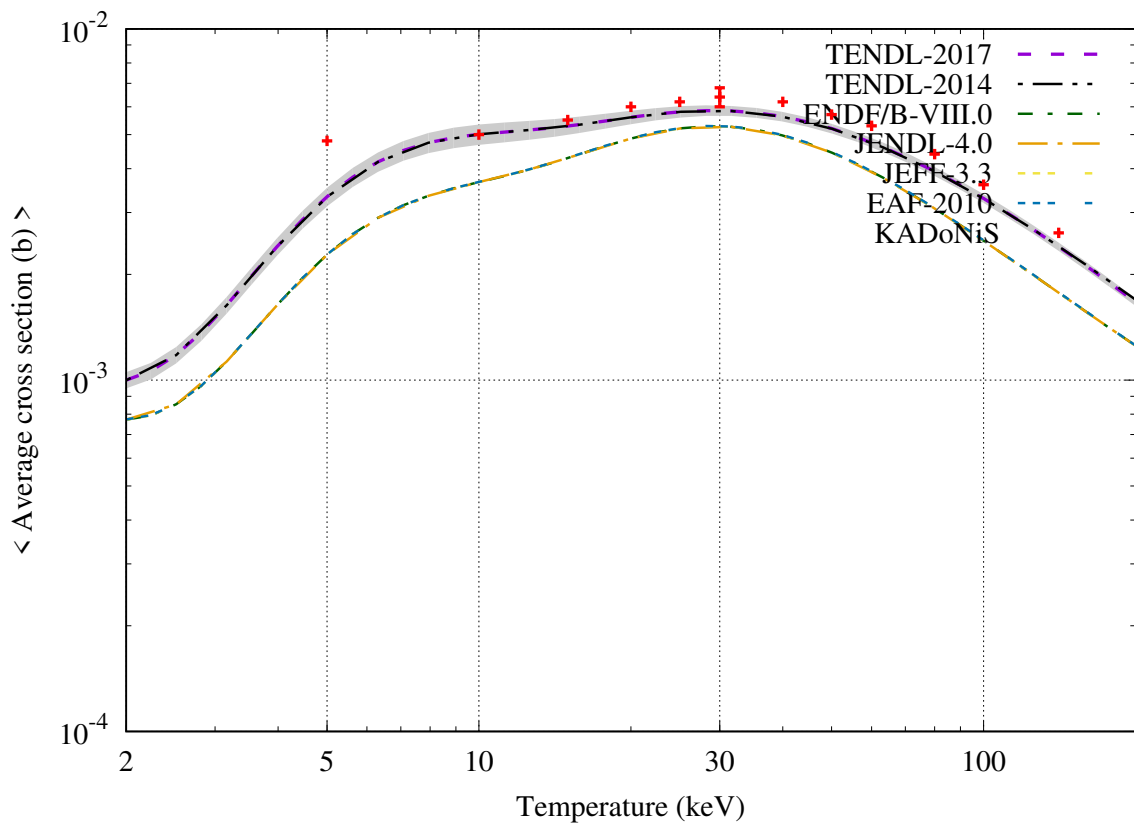
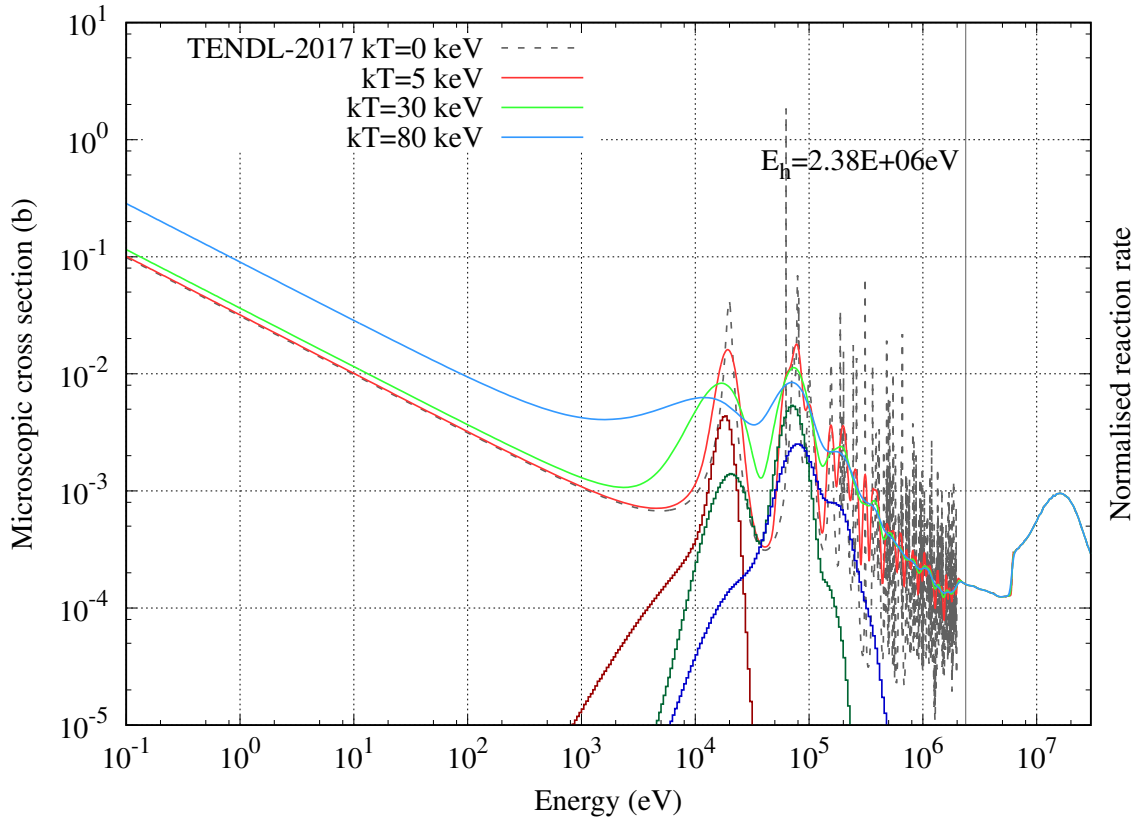
$^{23}\text{Na}_{11}$ [Stable]



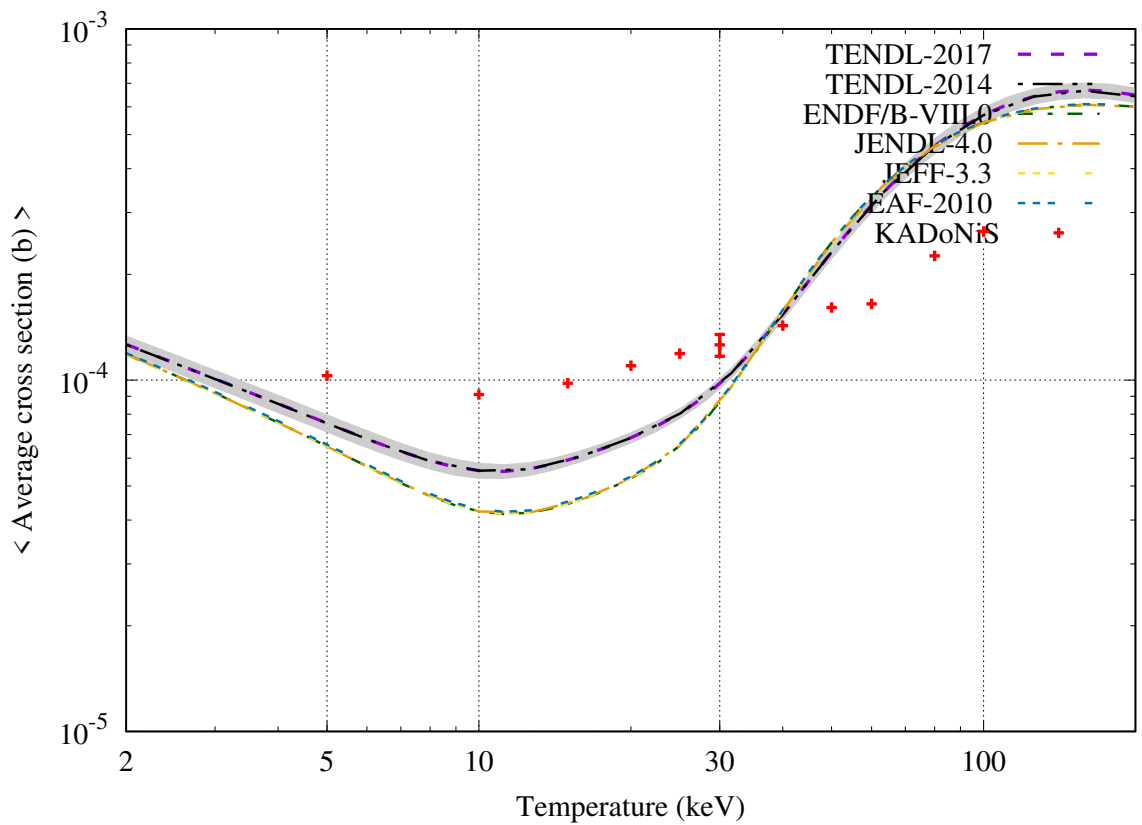
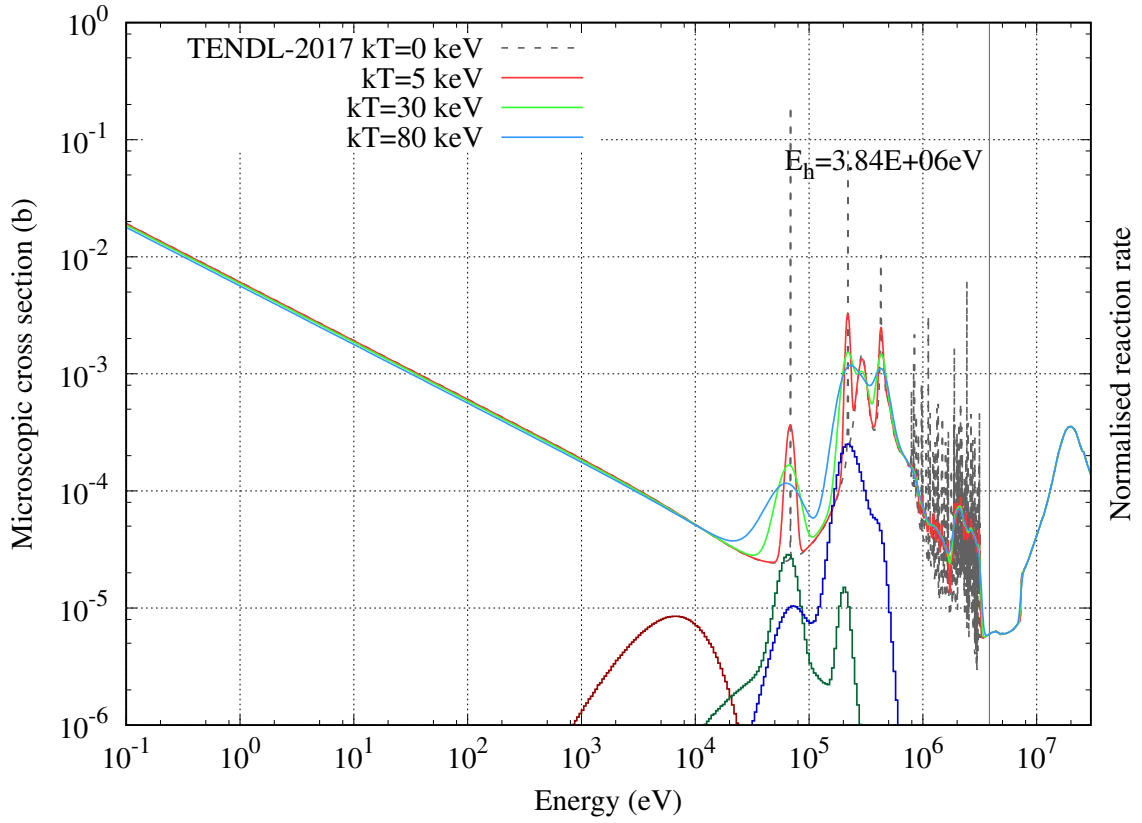
$^{24}\text{Mg}_{12}$ [Stable]



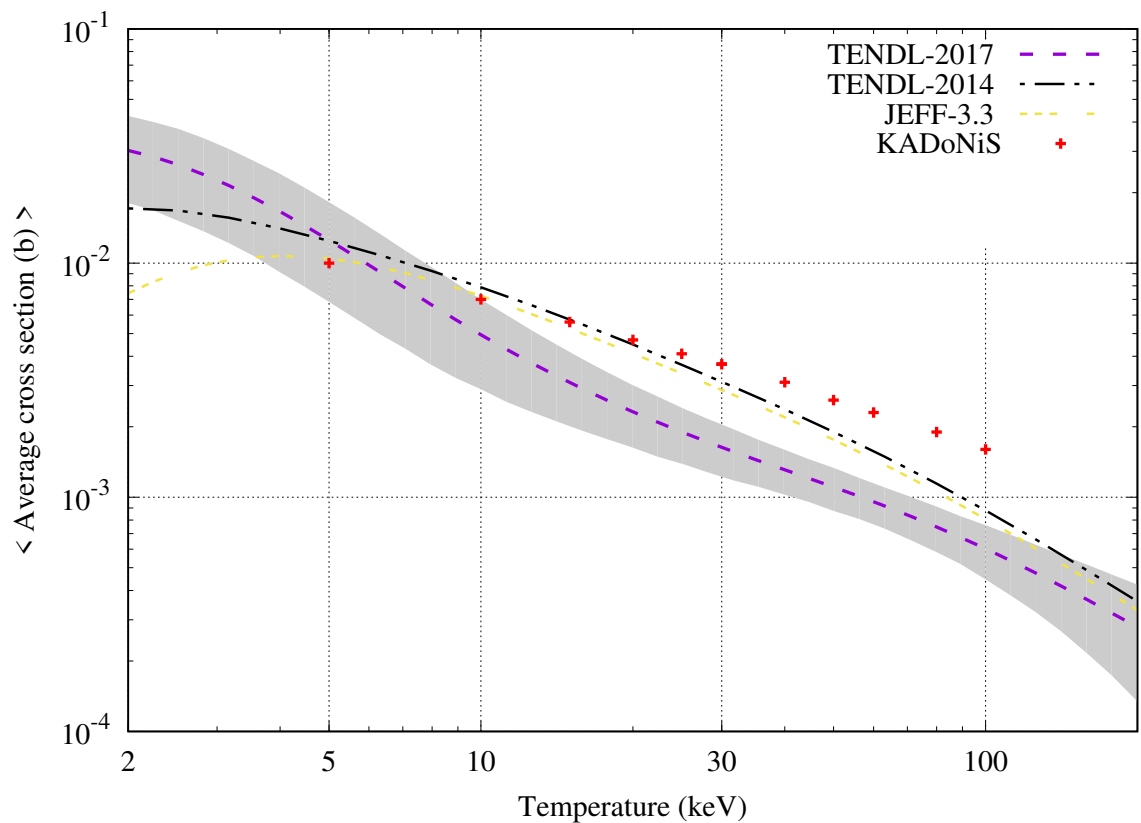
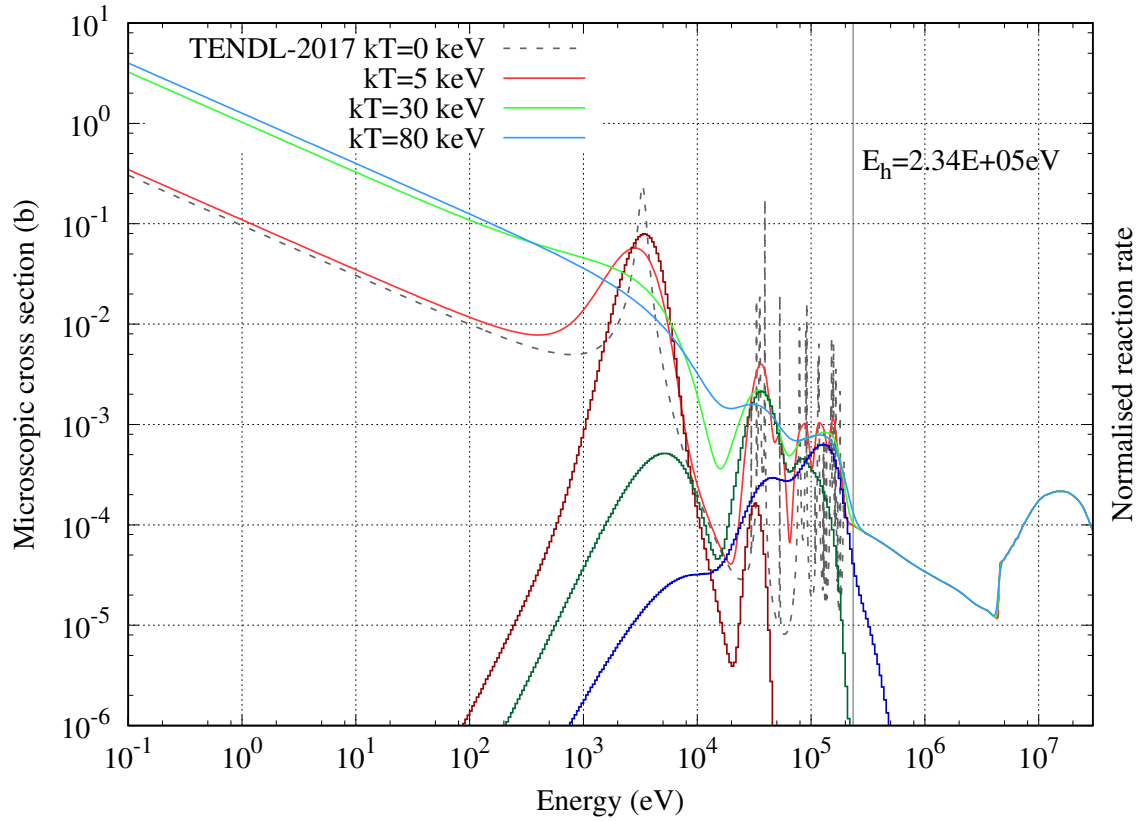
$^{25}\text{Mg}_{12}$ [Stable]



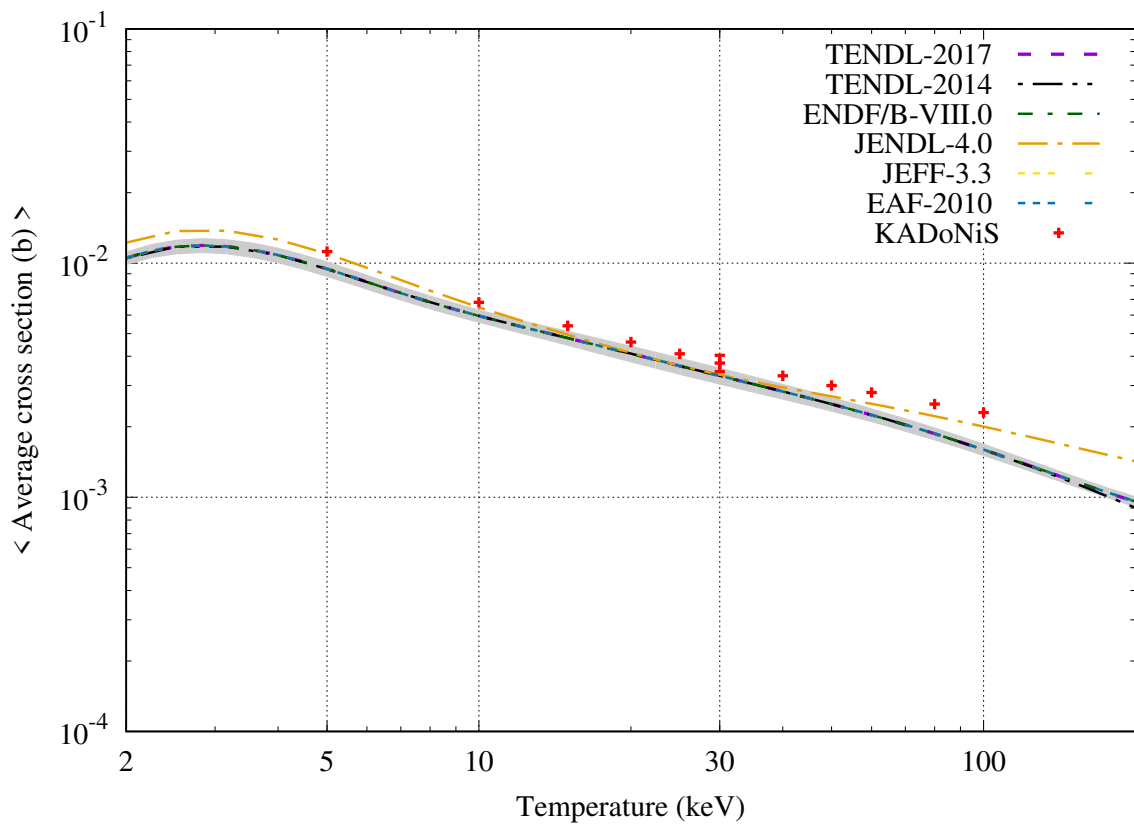
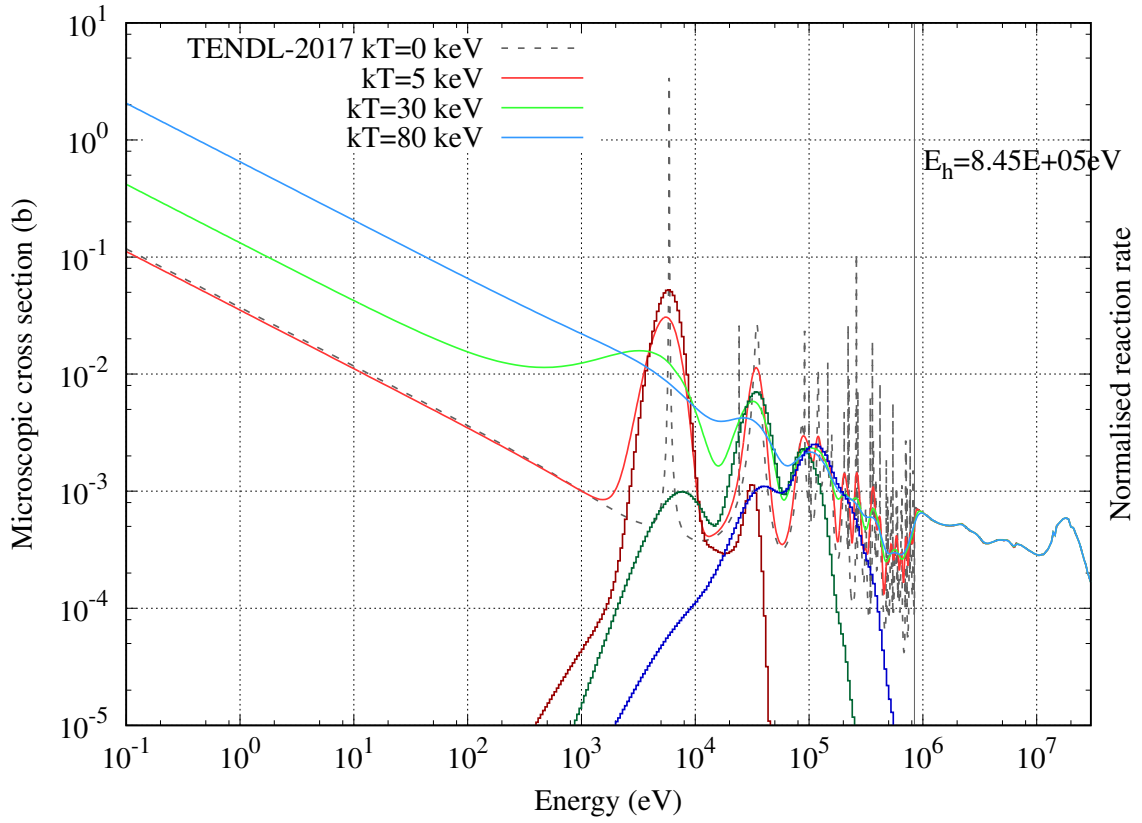
$^{26}\text{Mg}_{12}$ [Stable]



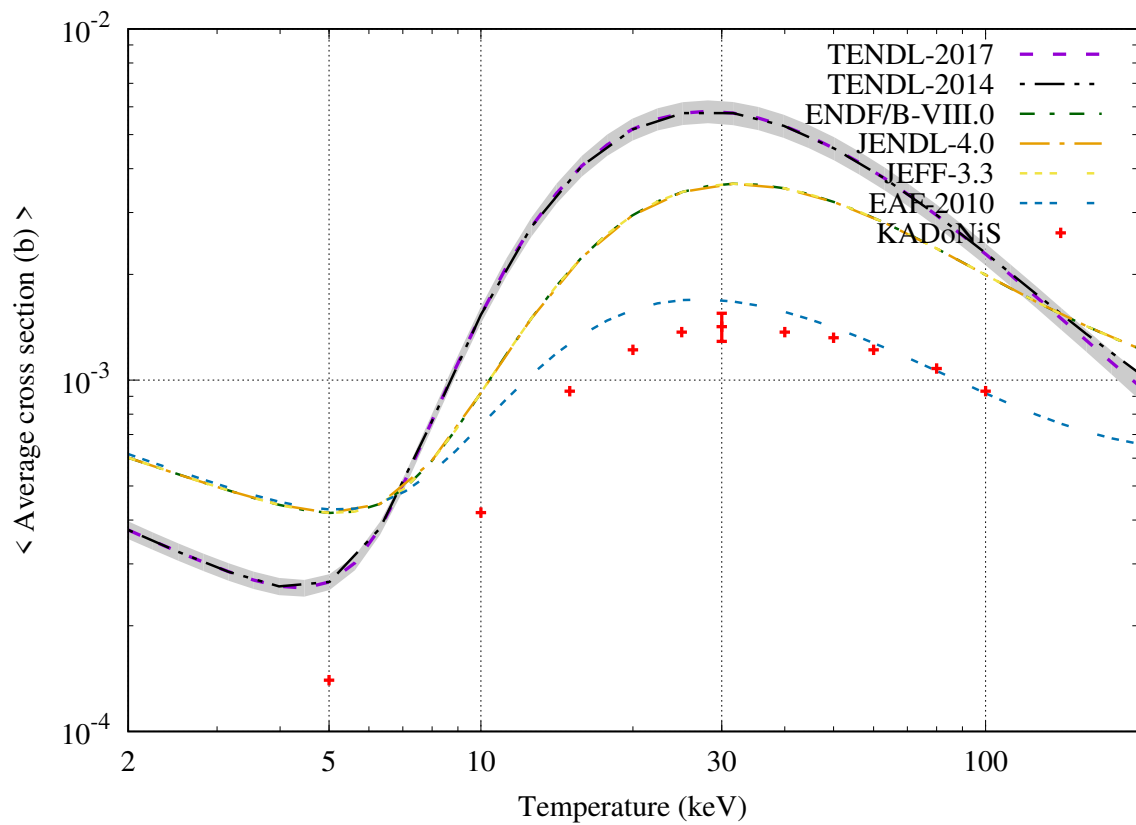
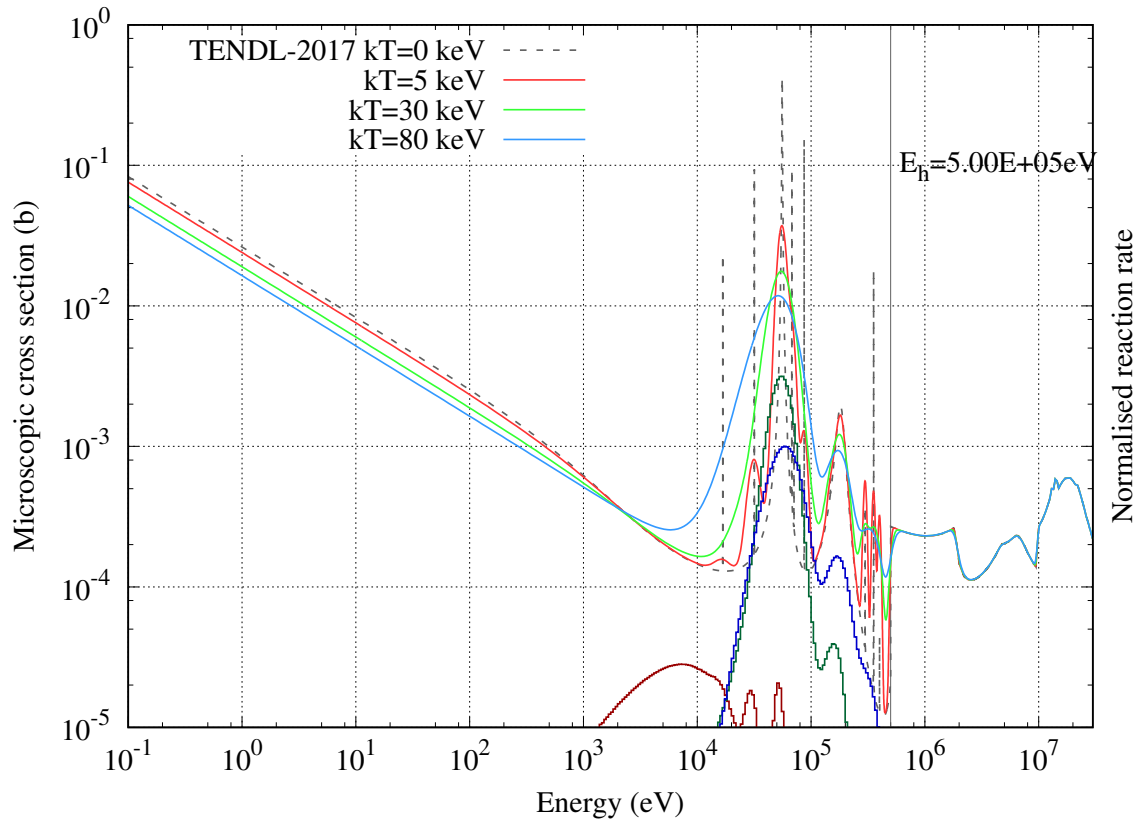
$^{26}\text{Al}_{13}$ [$T_{1/2} = 7.17 \times 10^5$ years] (KADoNiS=SMC)



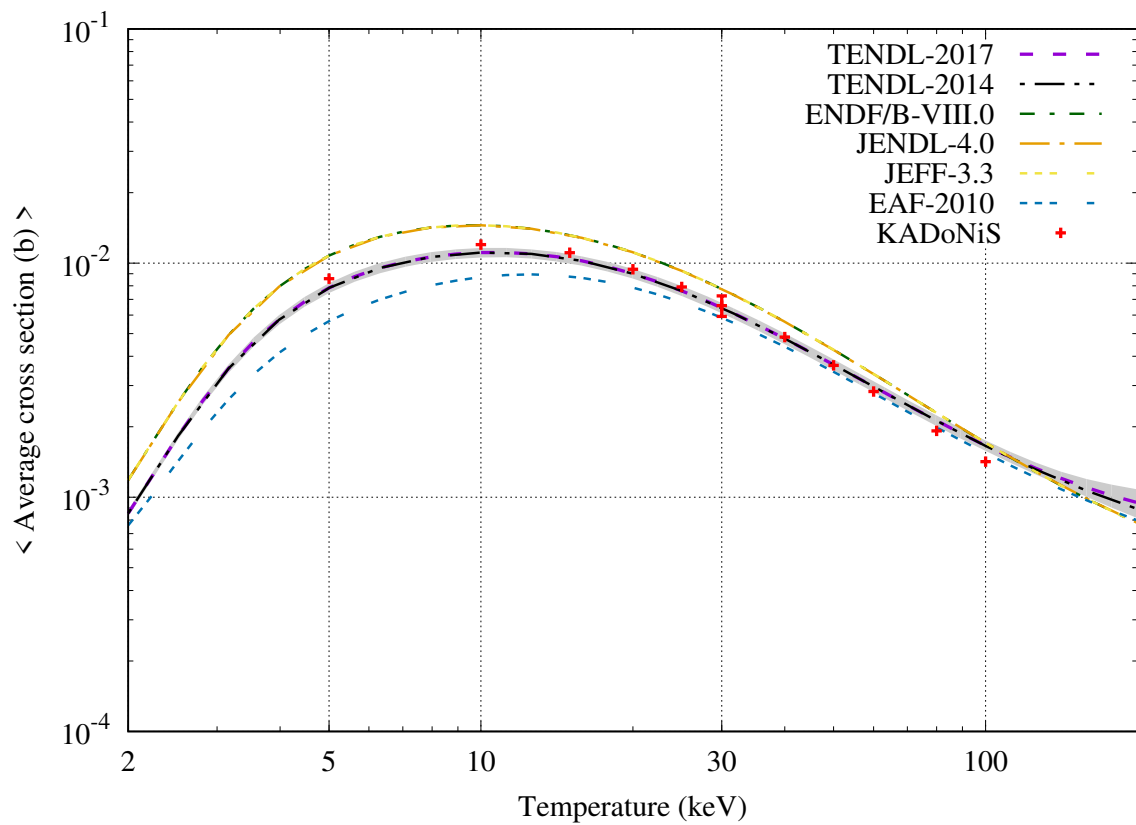
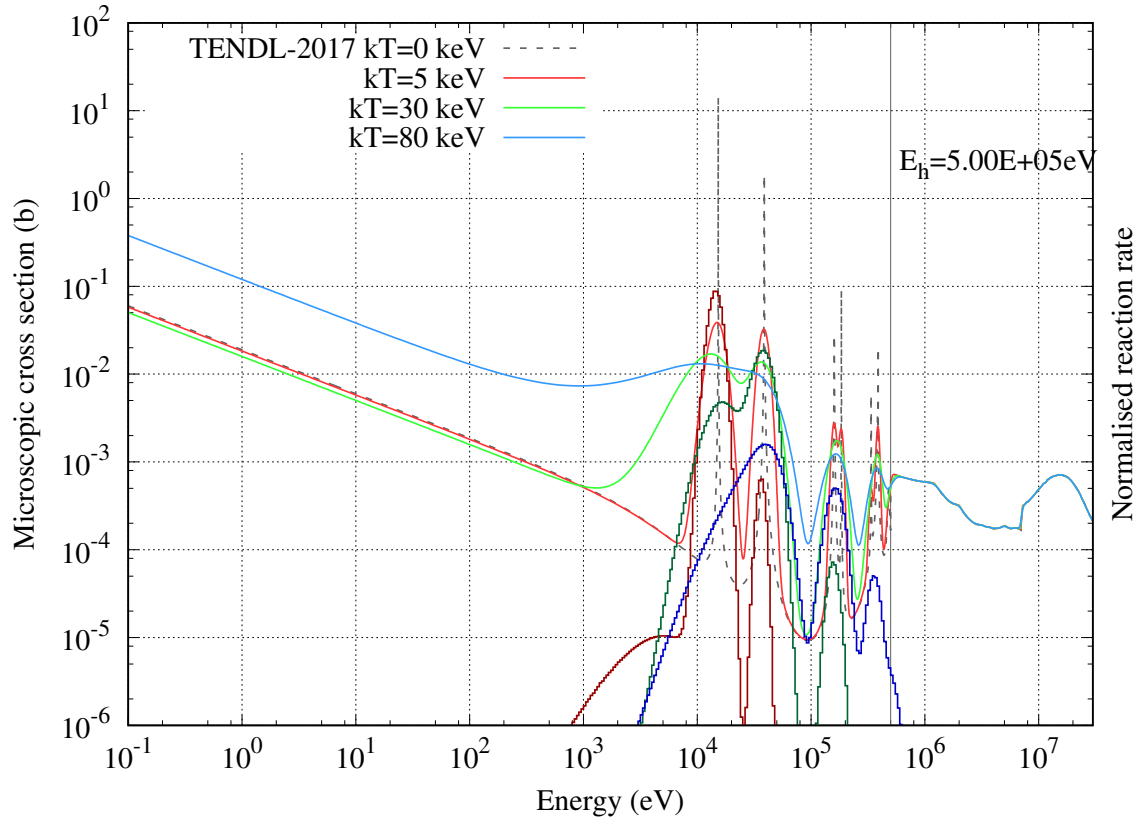
$^{27}\text{Al}_{13}$ [Stable]



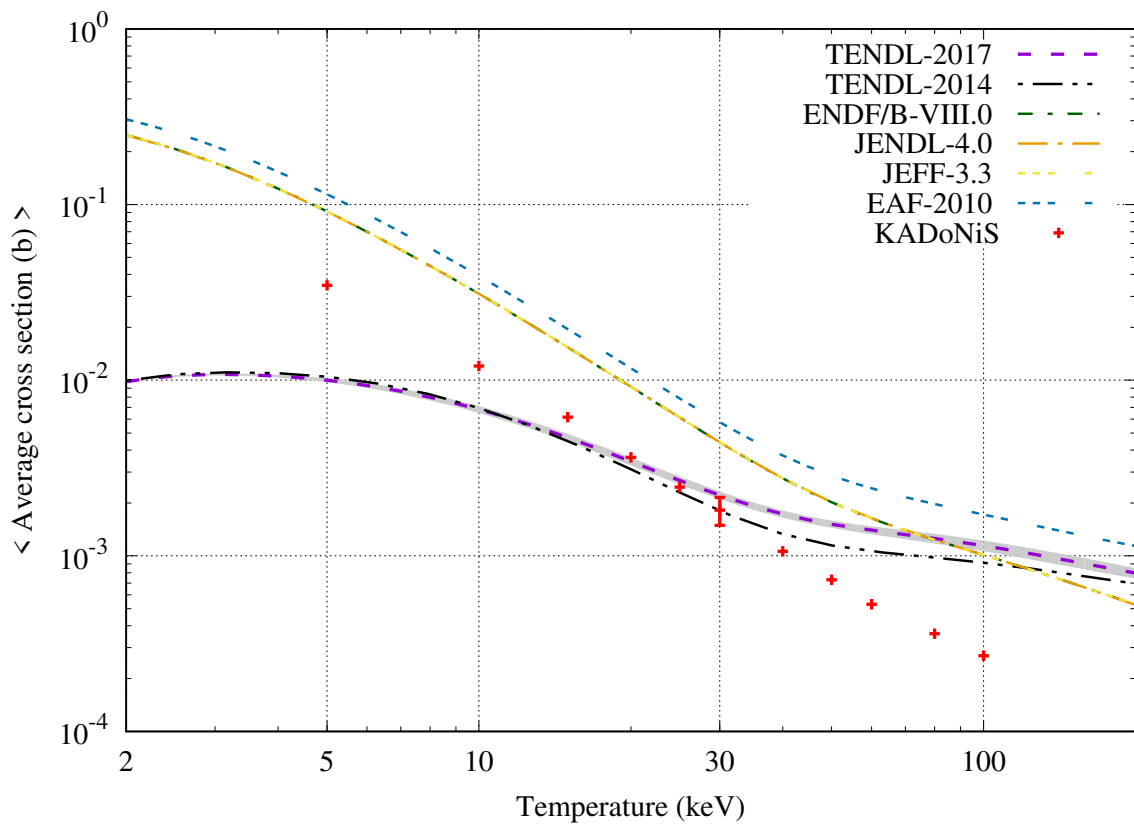
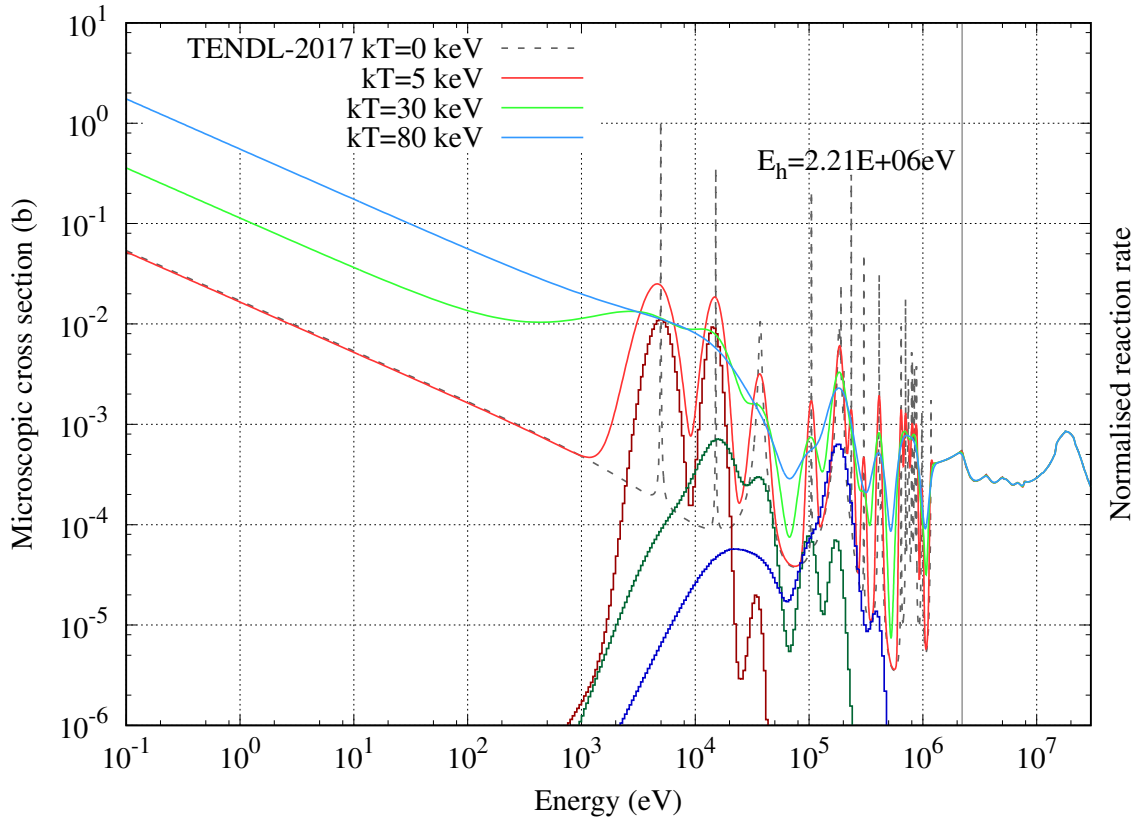
$^{28}\text{Si}_{14}$ [Stable]



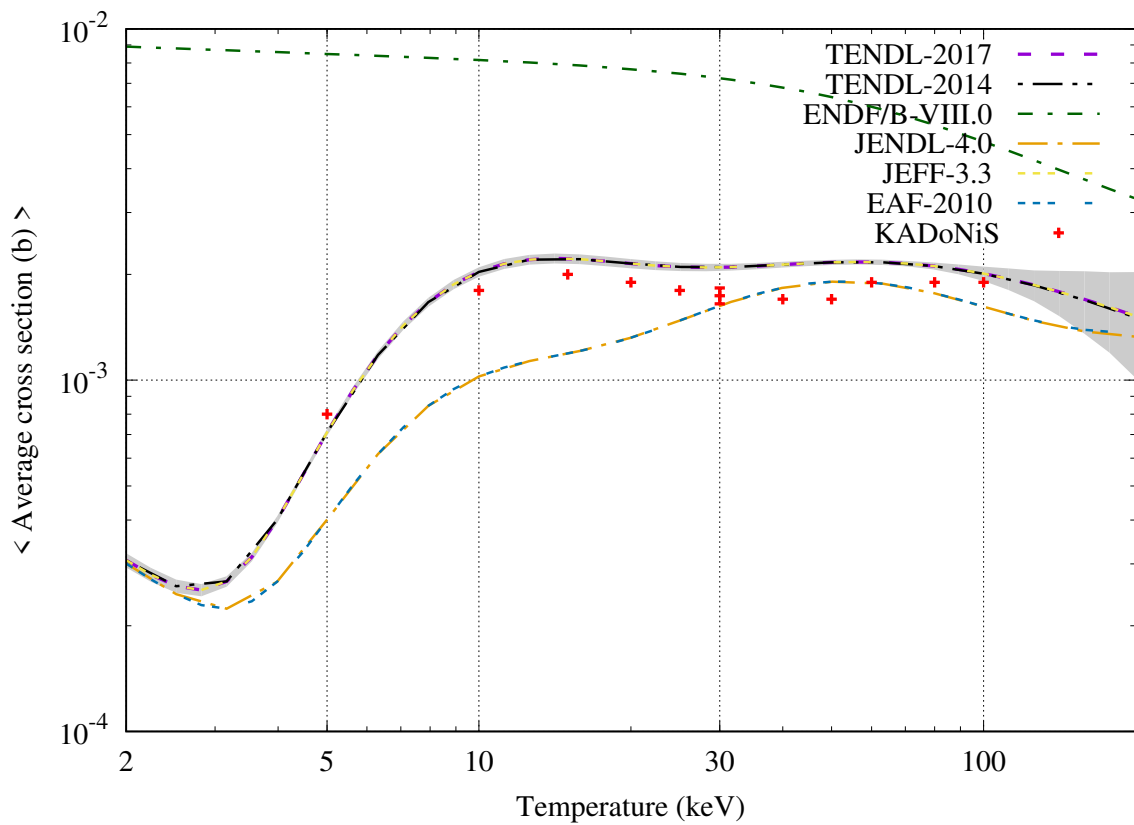
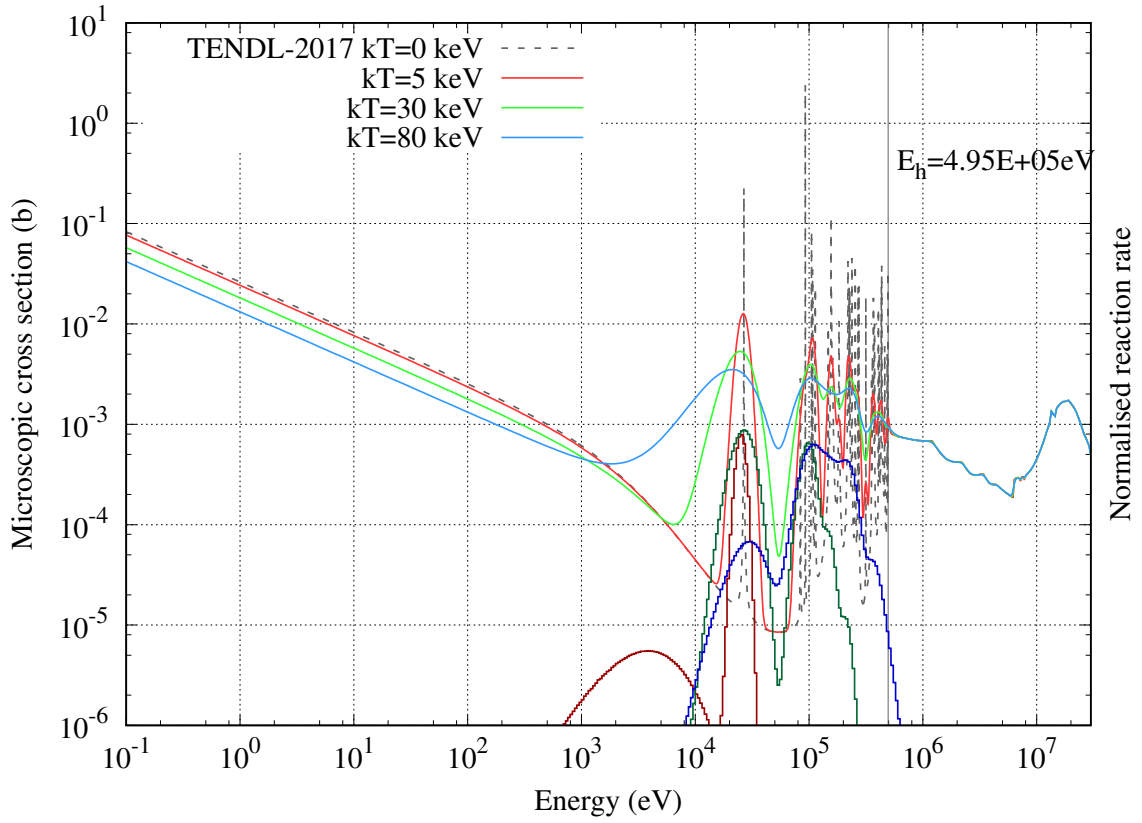
$^{29}\text{Si}_{14}$ [Stable]



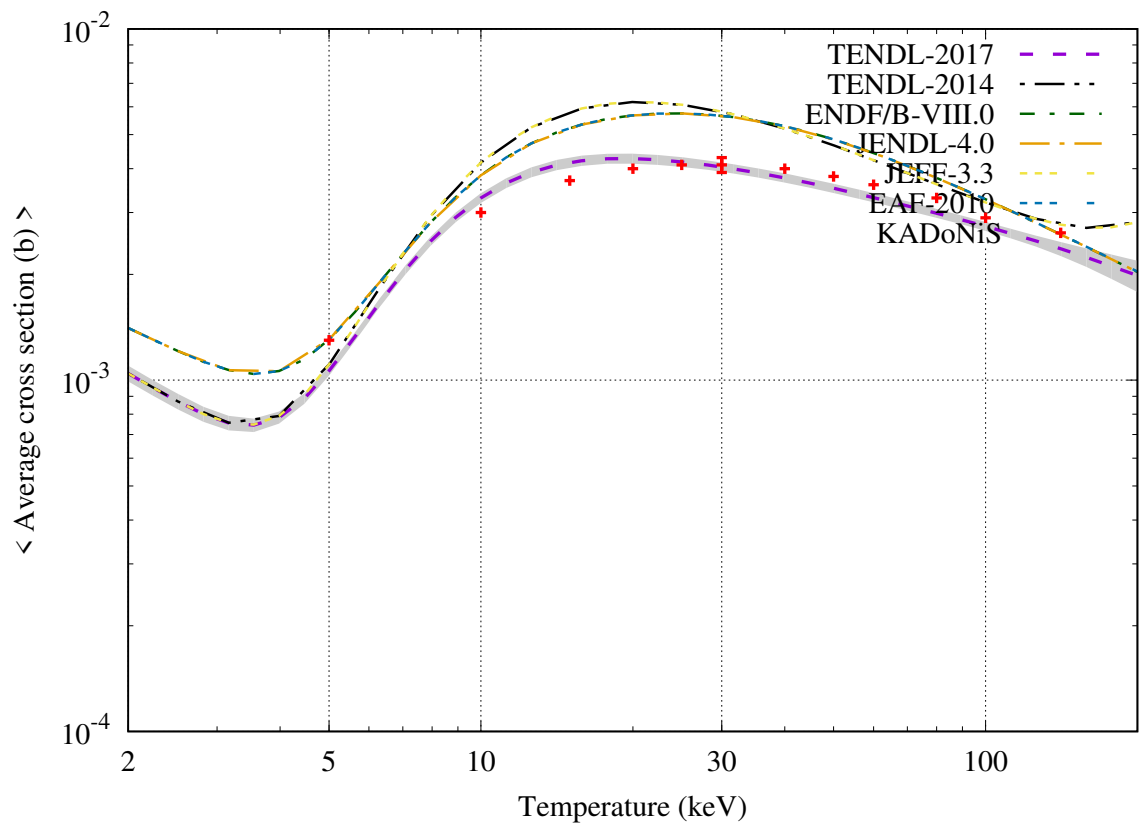
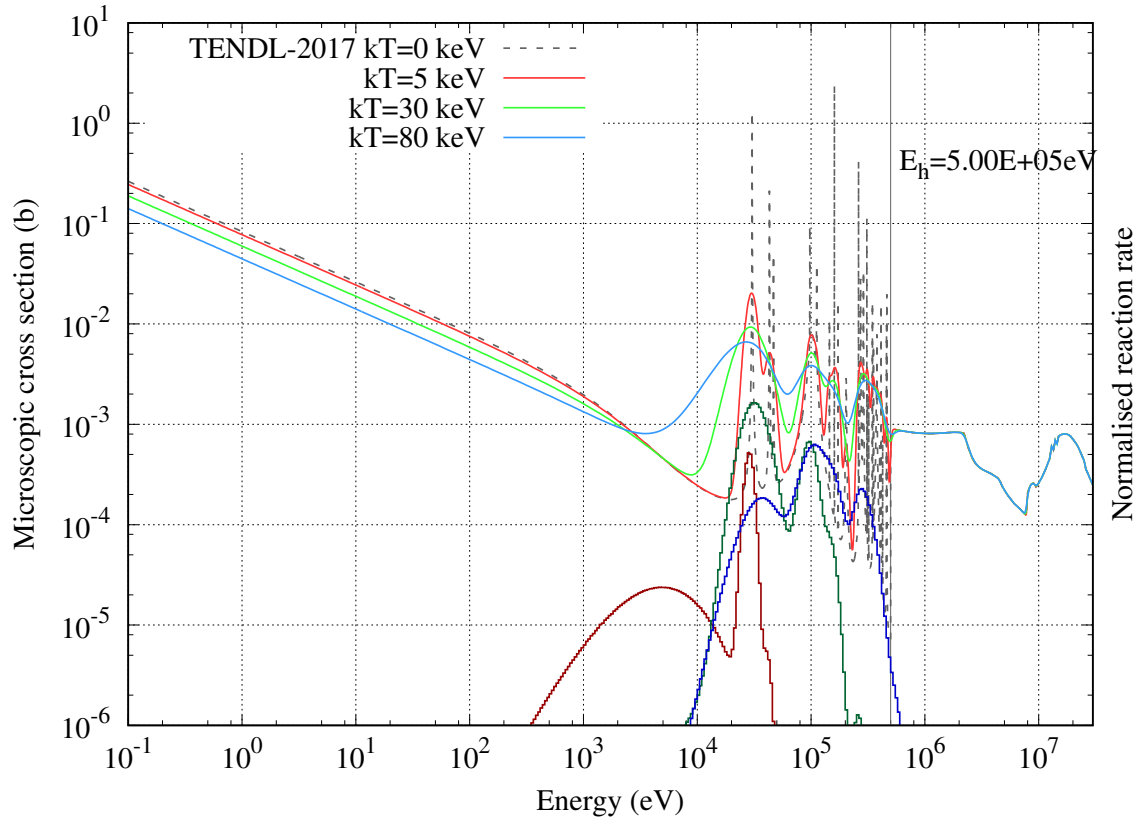
$^{30}\text{Si}_{14}$ [Stable]



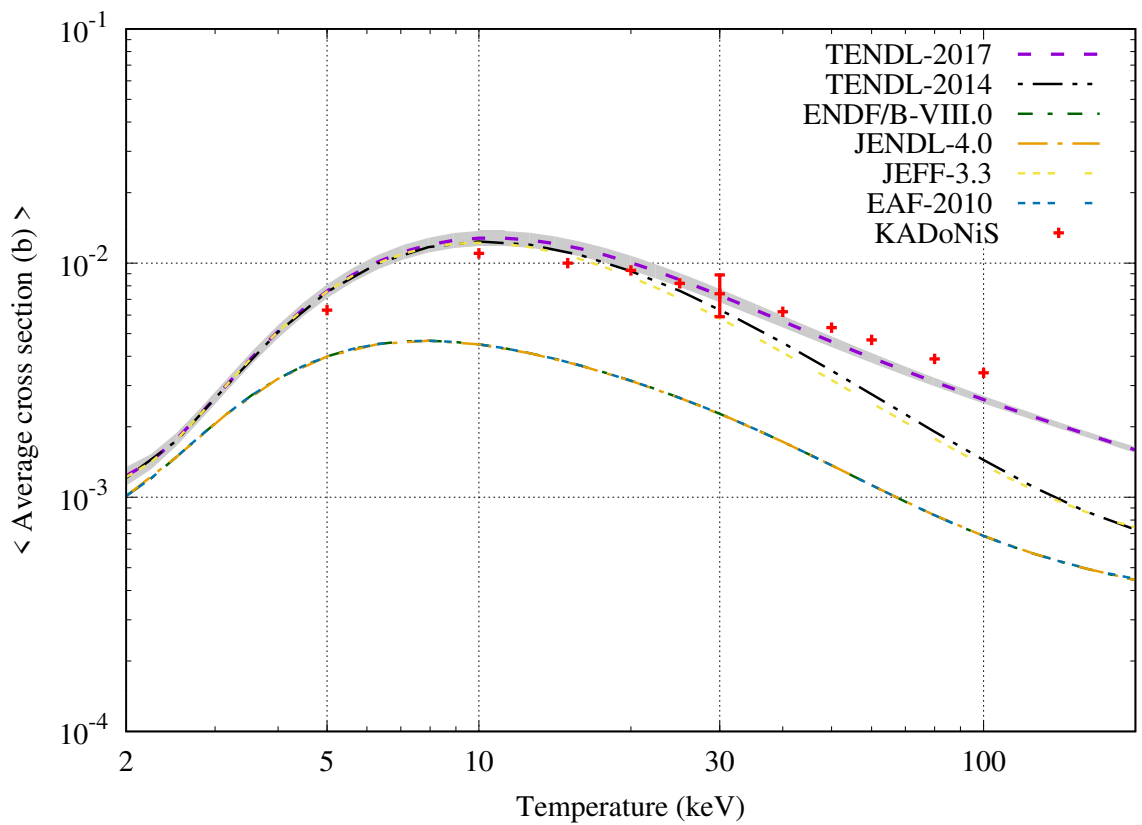
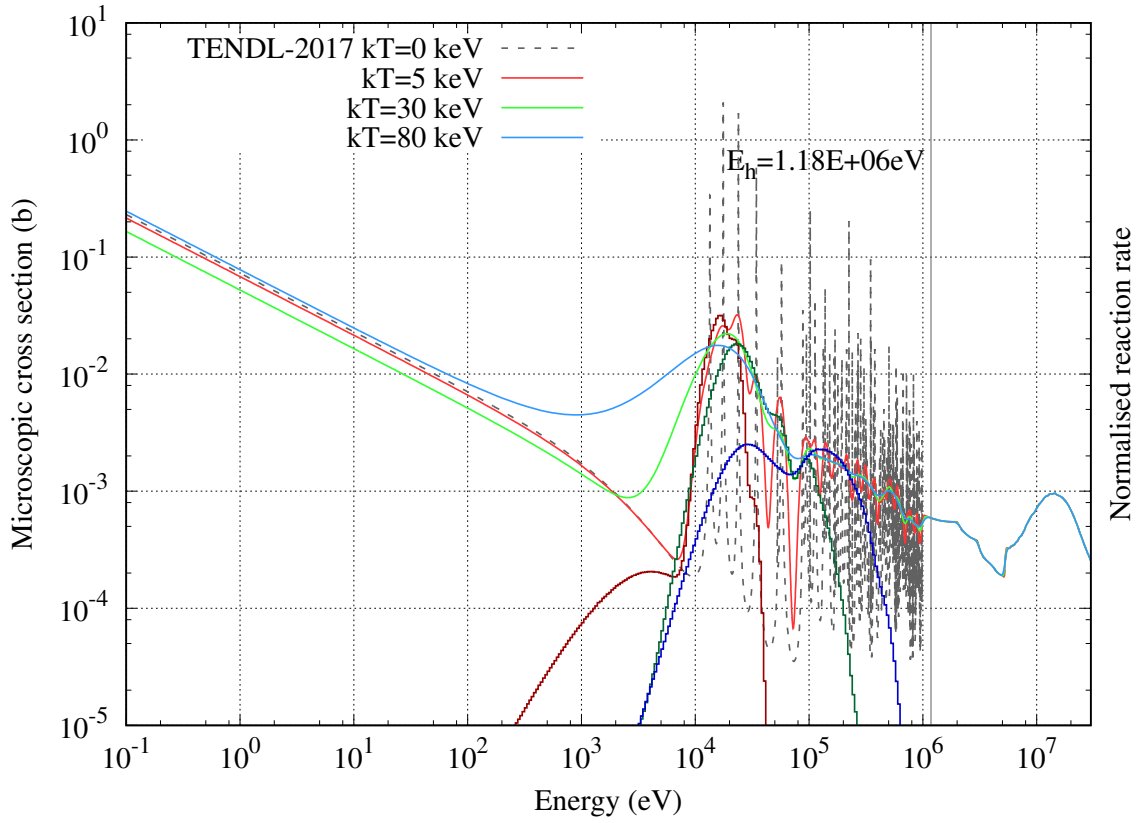
$^{31}\text{P}_{15}$ [Stable]



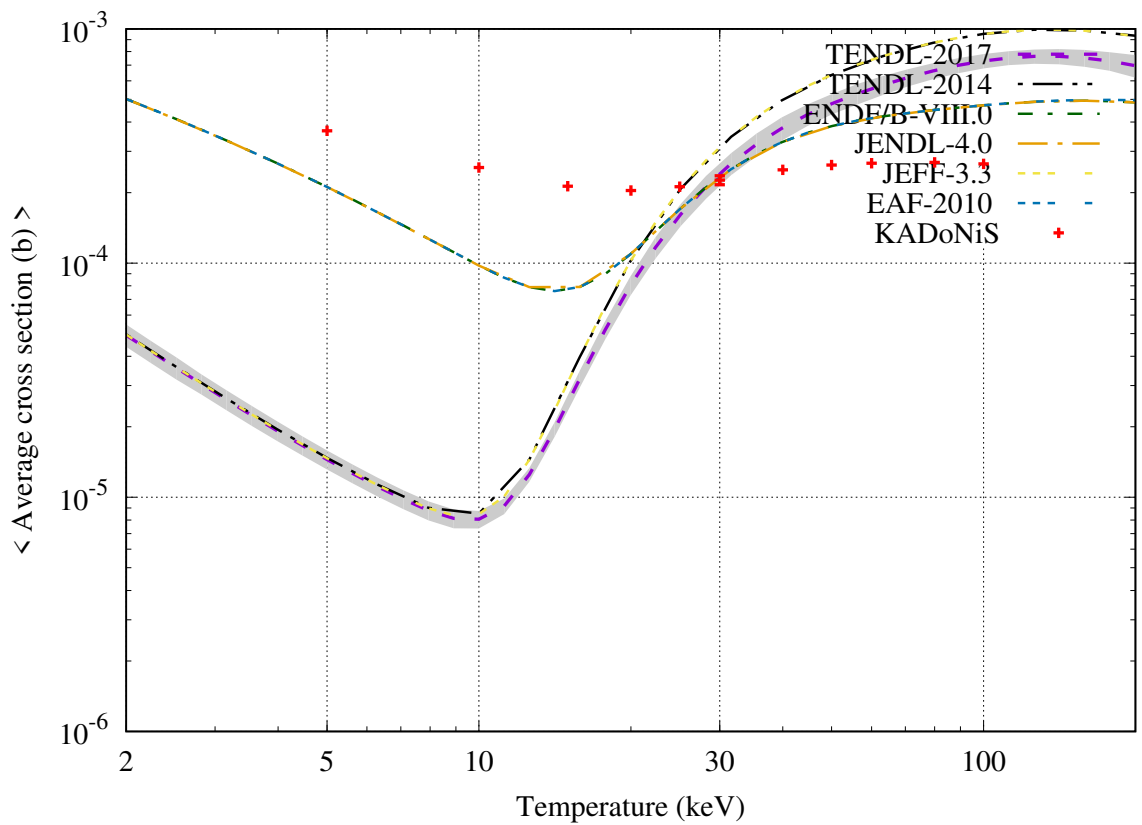
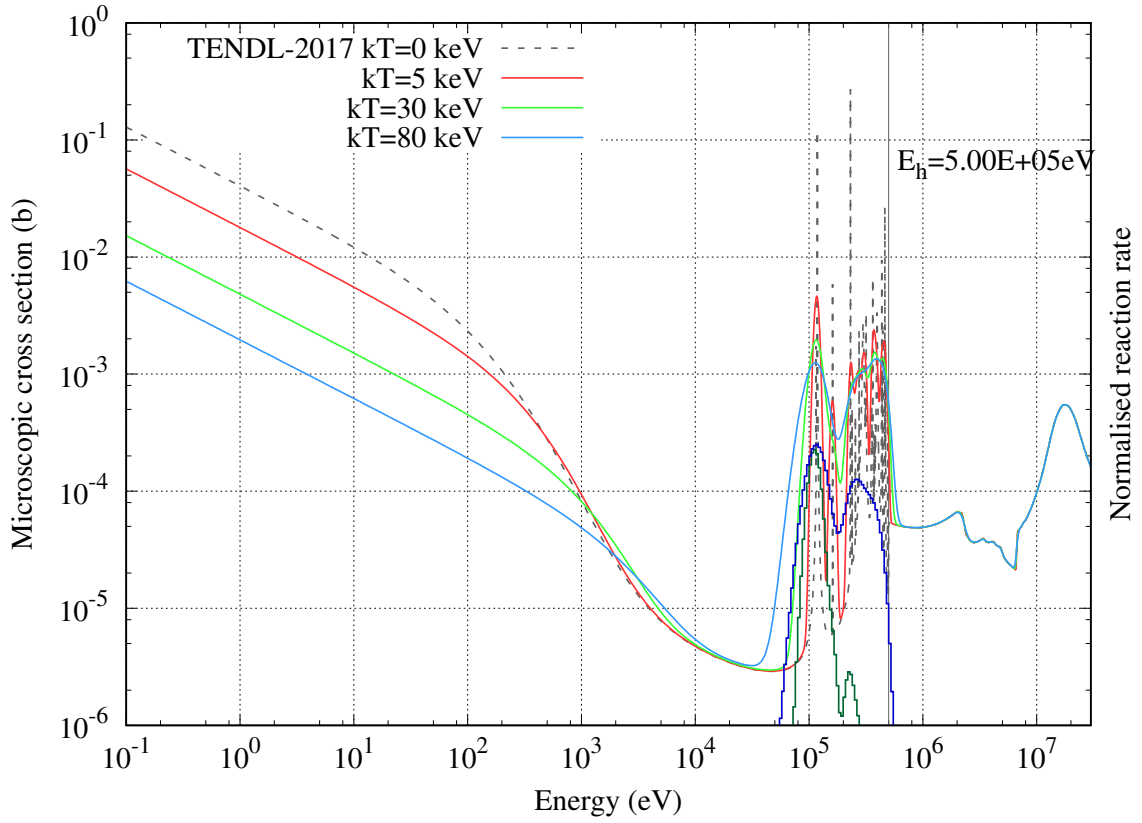
$^{32}\text{S}_{16}$ [Stable]



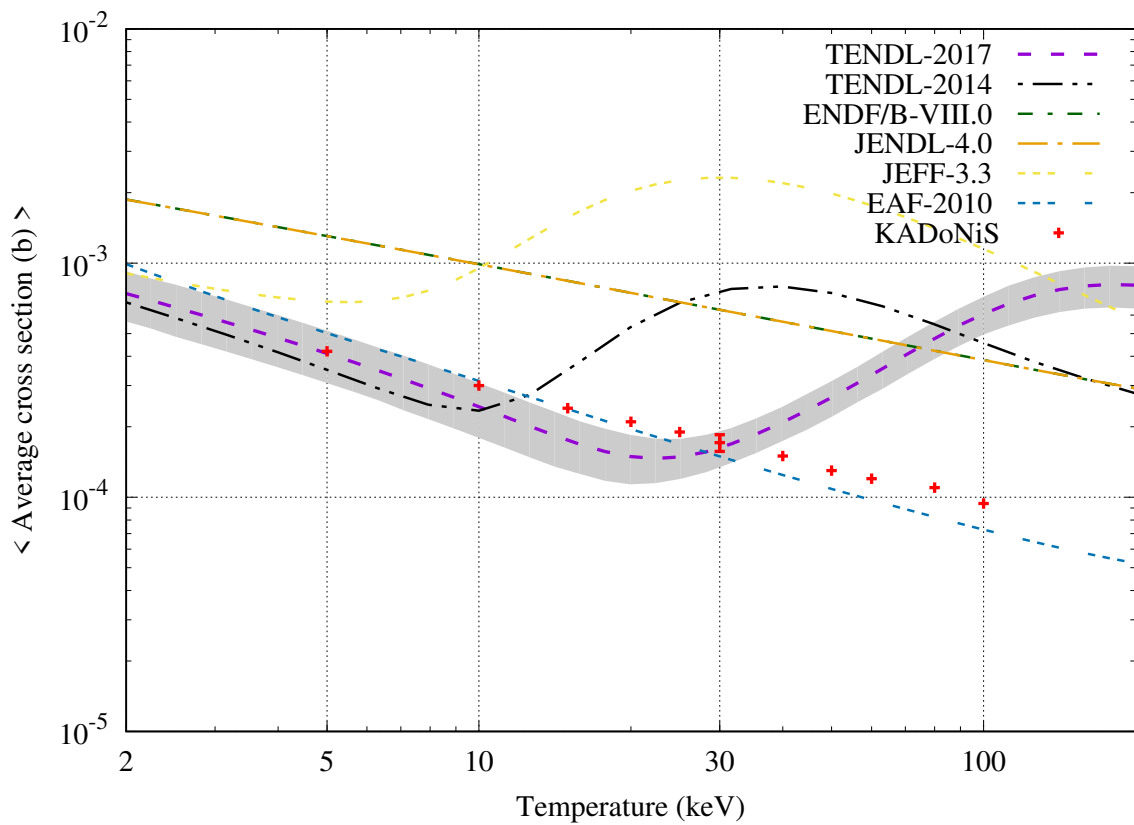
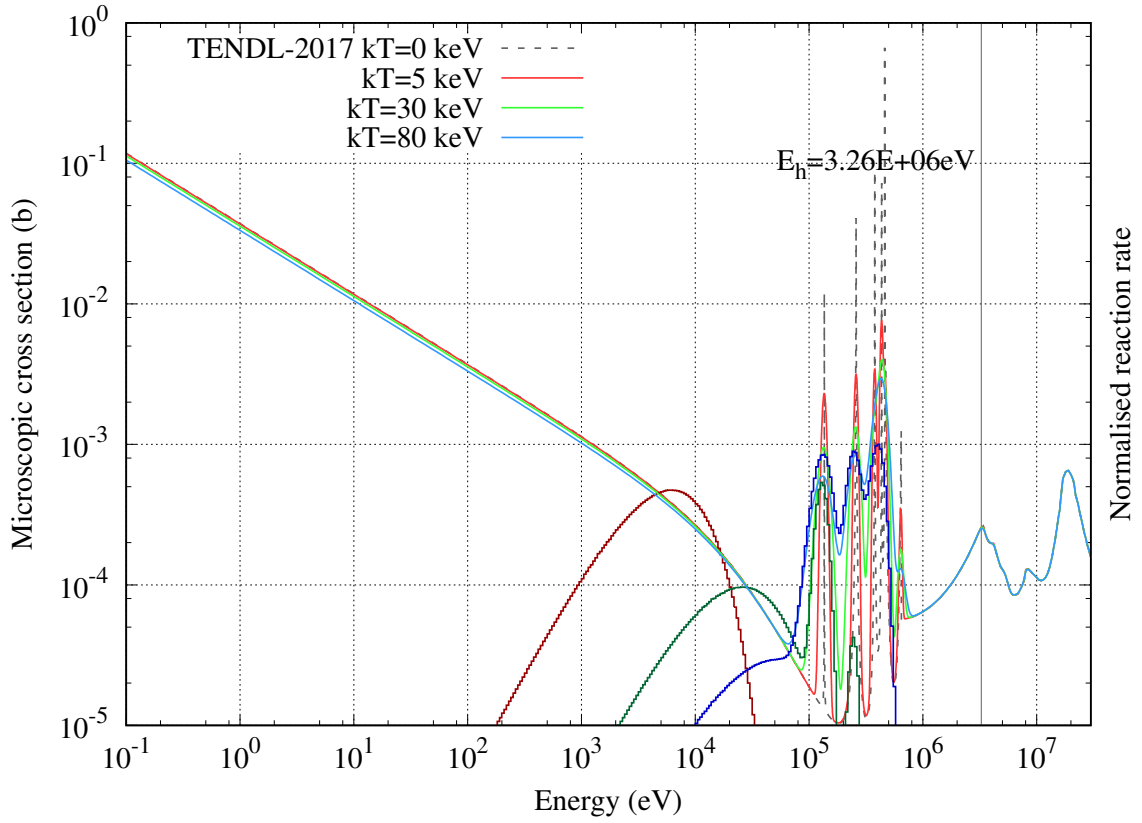
$^{33}\text{S}_{16}$ [Stable]



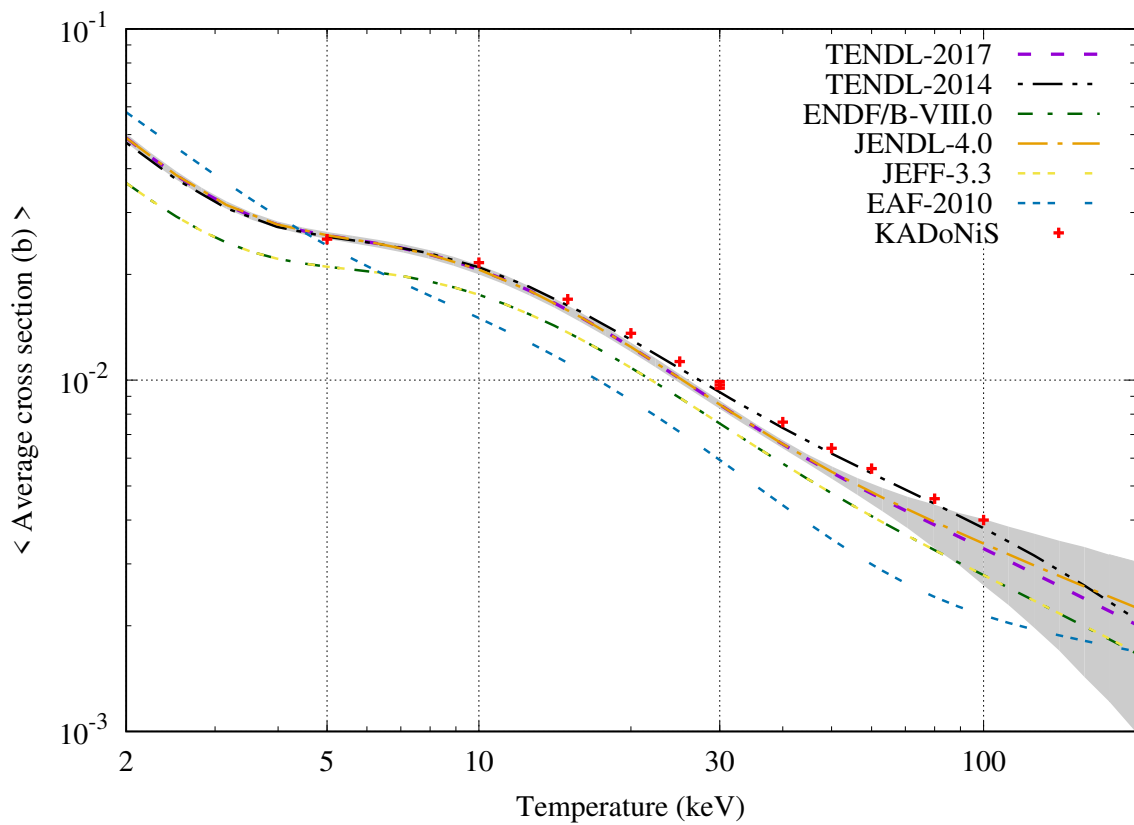
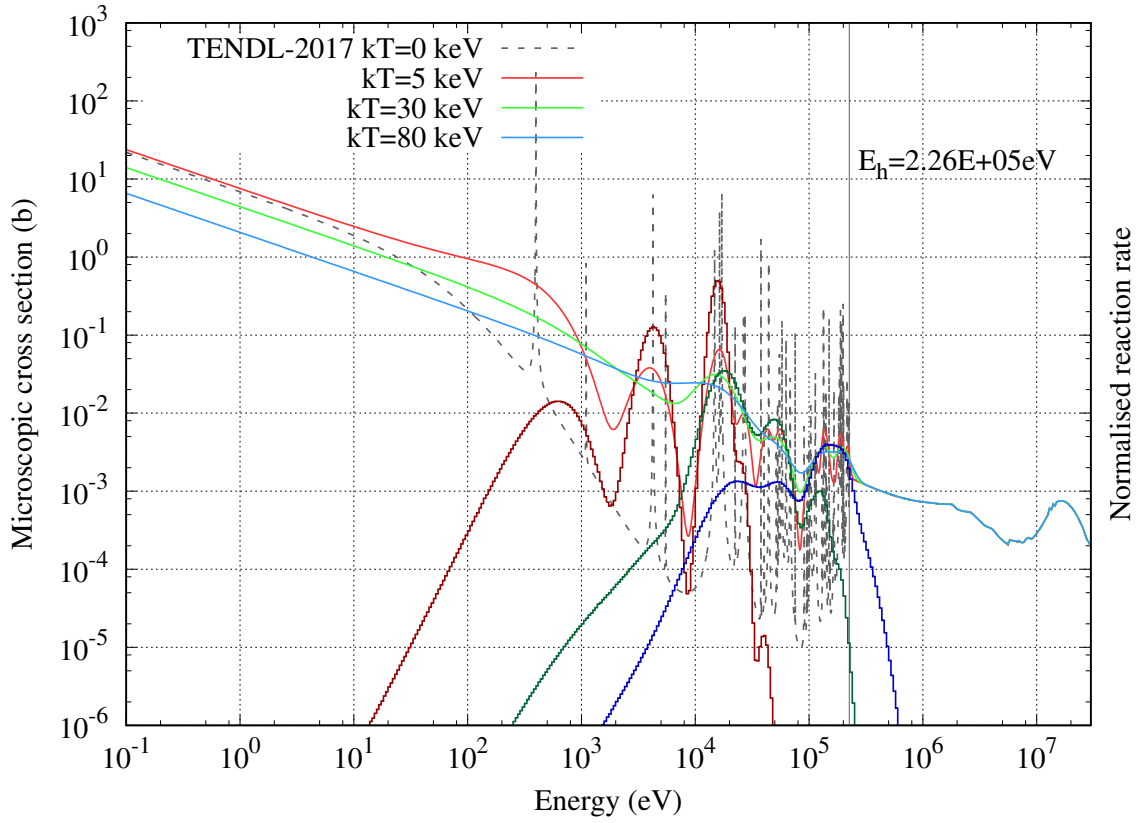
$^{34}\text{S}_{16}$ [Stable]



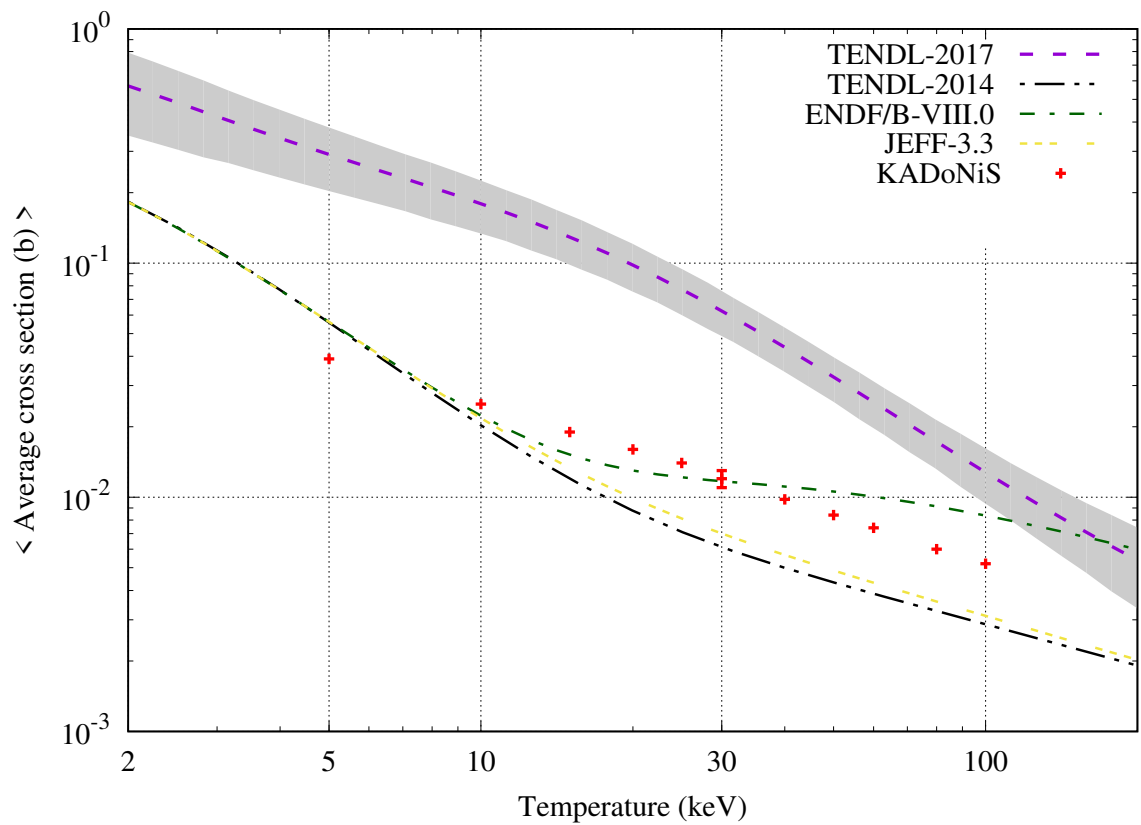
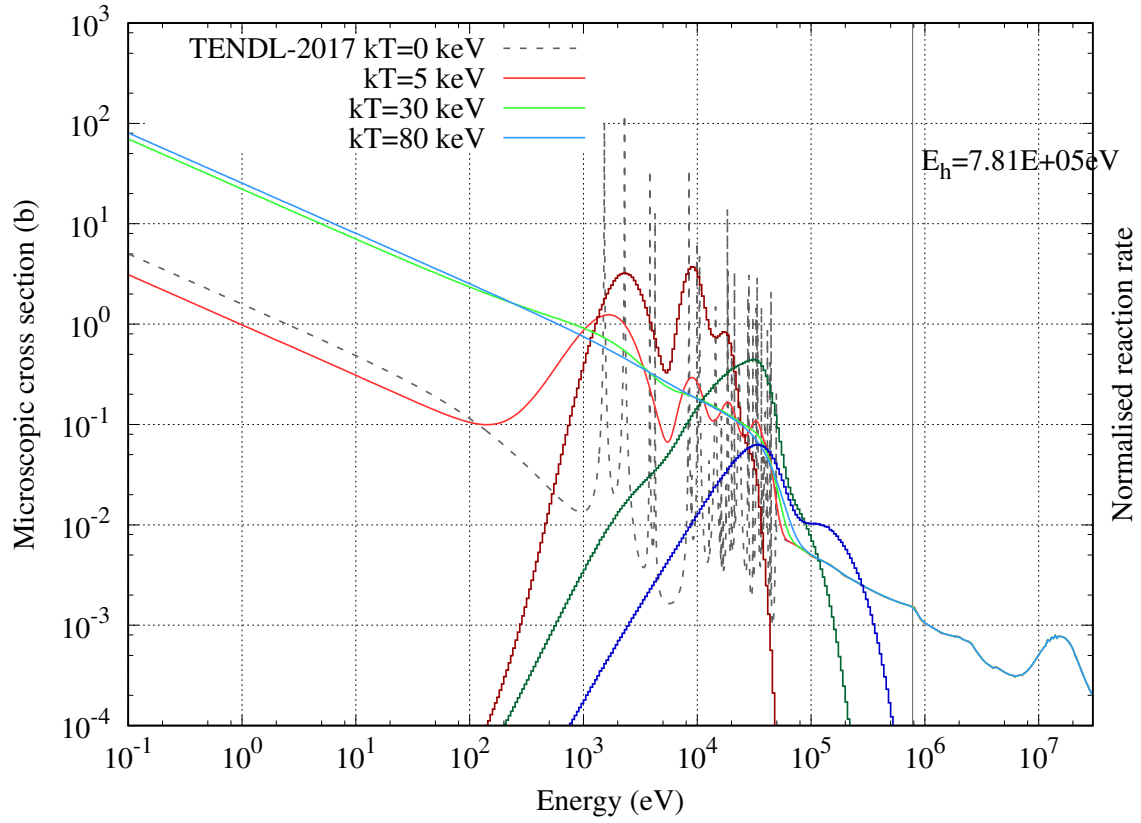
$^{36}\text{S}_{16}$ [Stable]



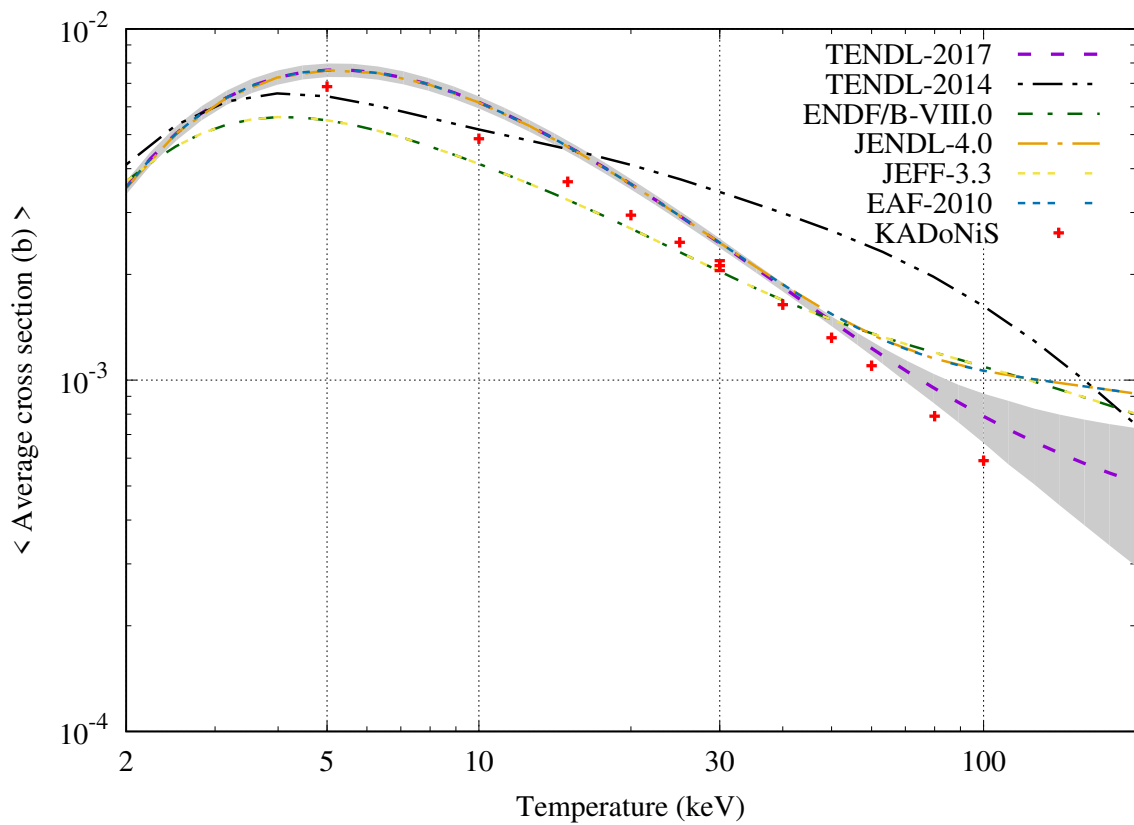
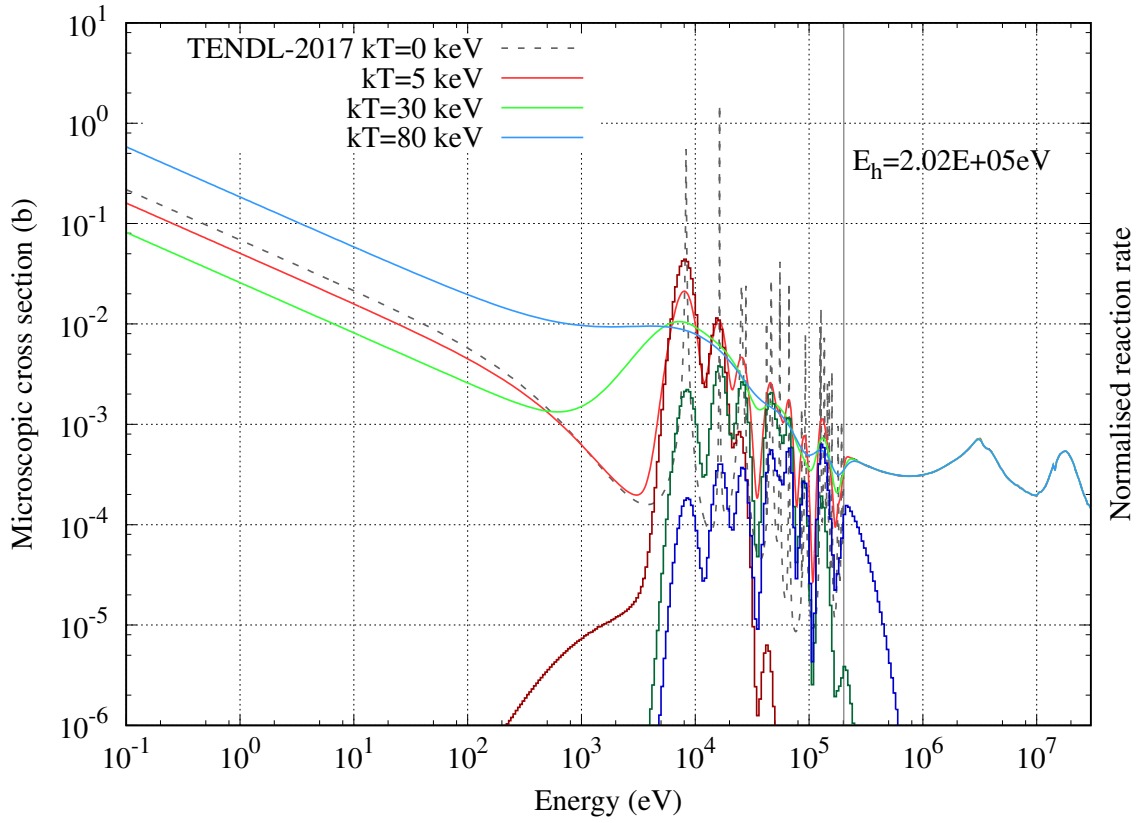
$^{35}\text{Cl}_{17}$ [Stable]



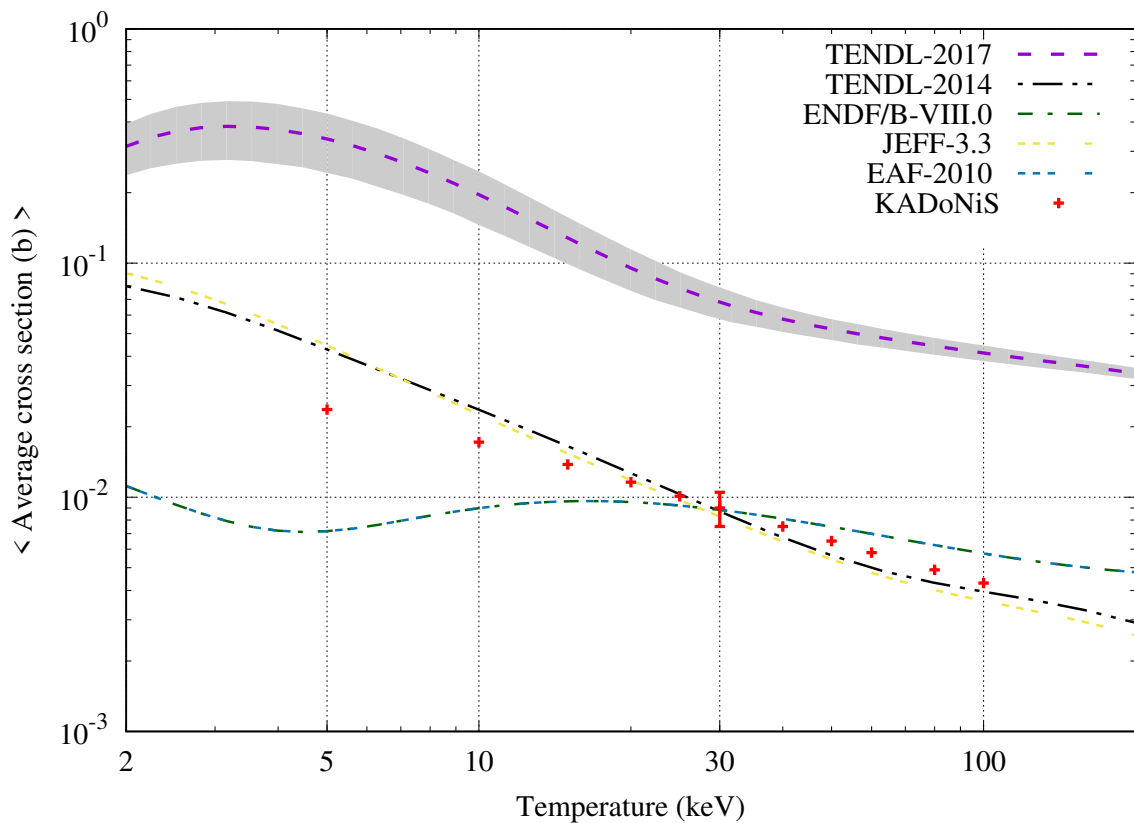
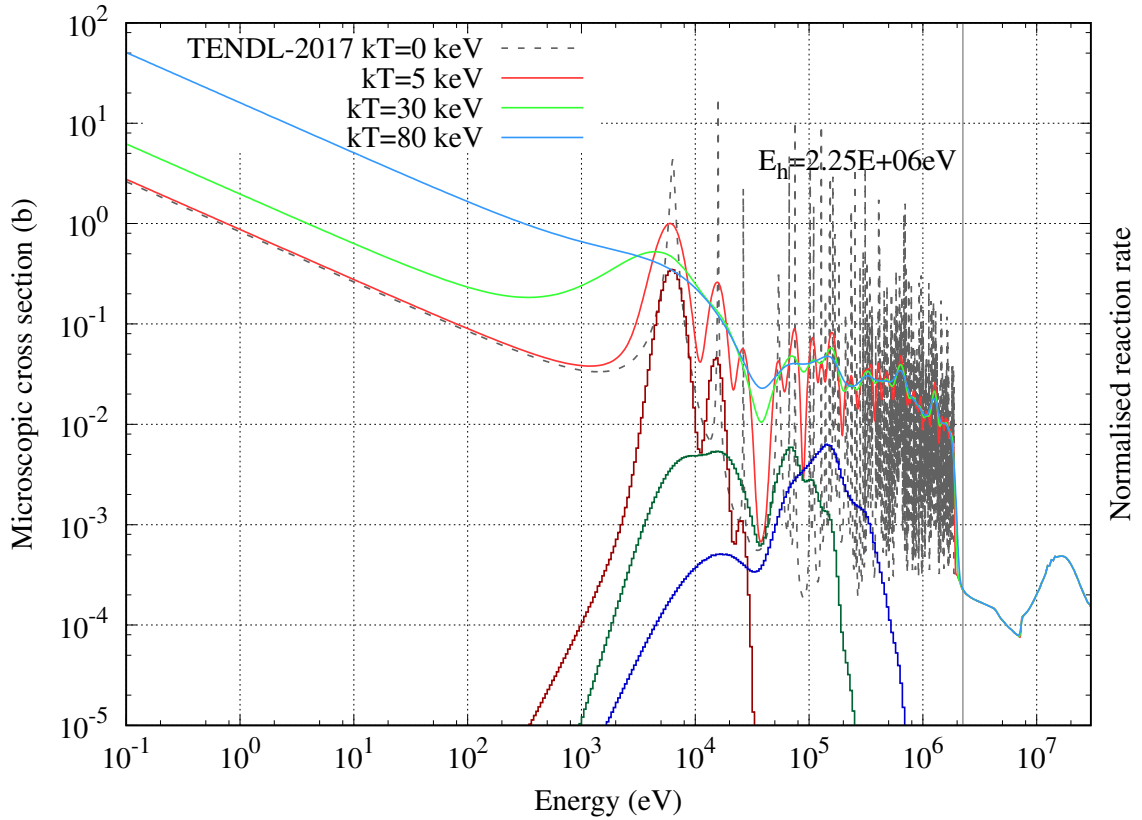
$^{36}\text{Cl}_{17}$ [$T_{1/2} = 3.01 \times 10^5$ years] (KADoNiS=SMC)



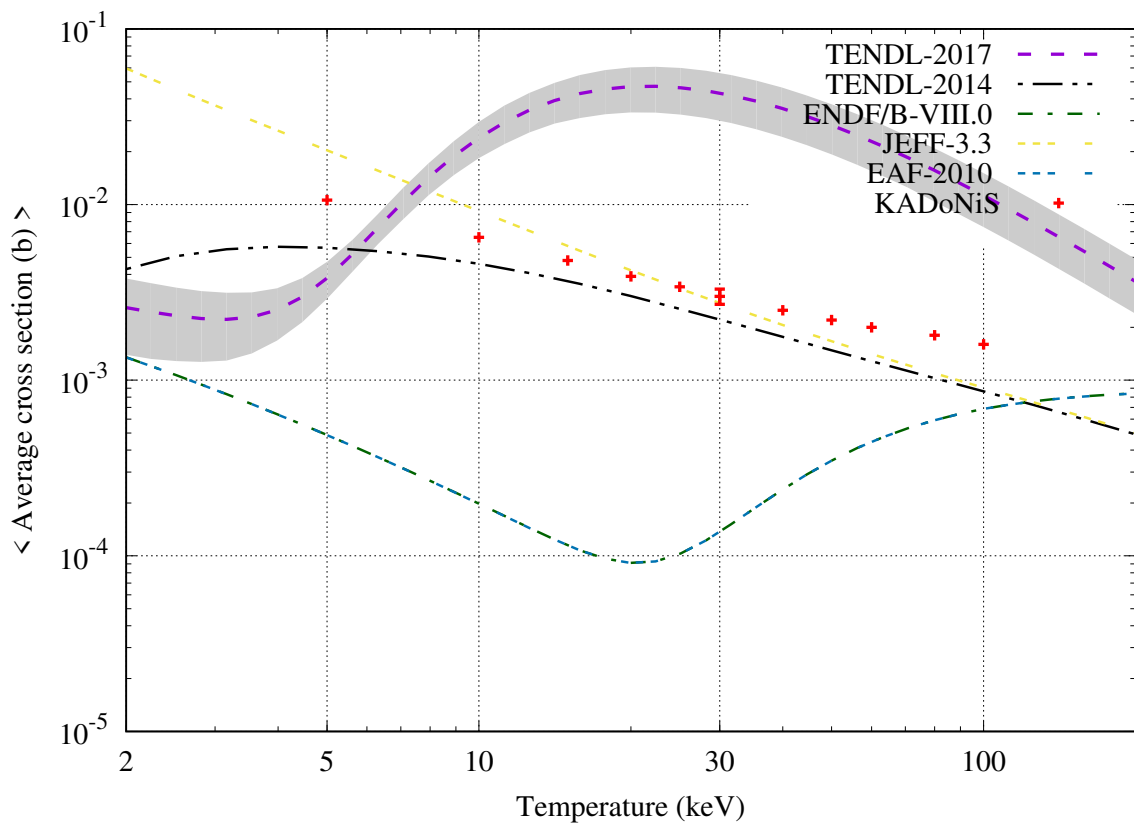
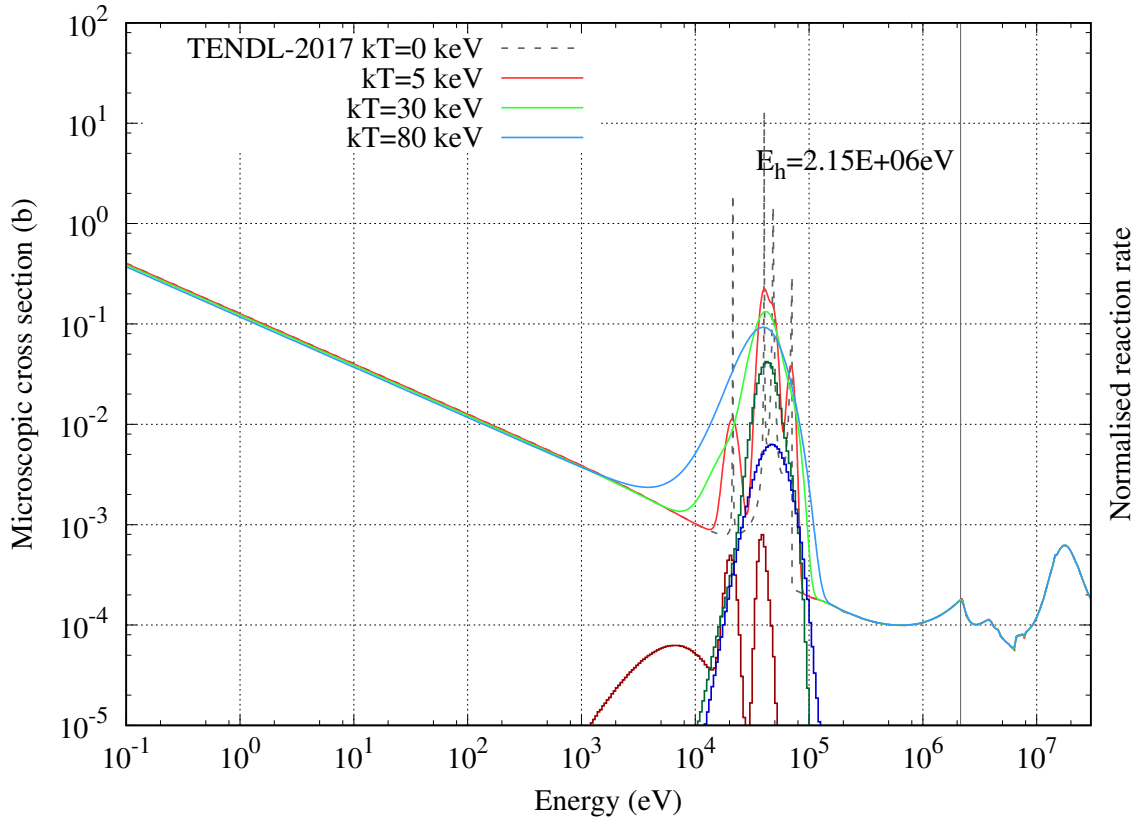
$^{37}\text{Cl}_{17}$ [Stable]



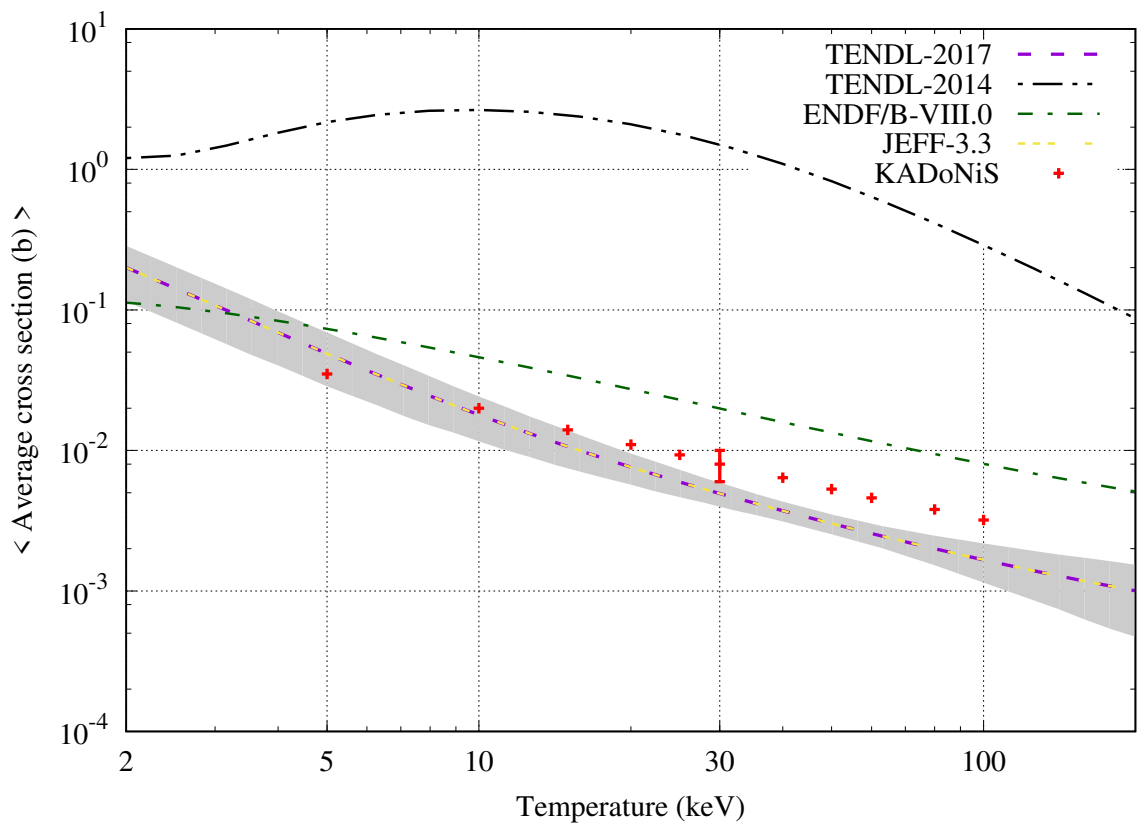
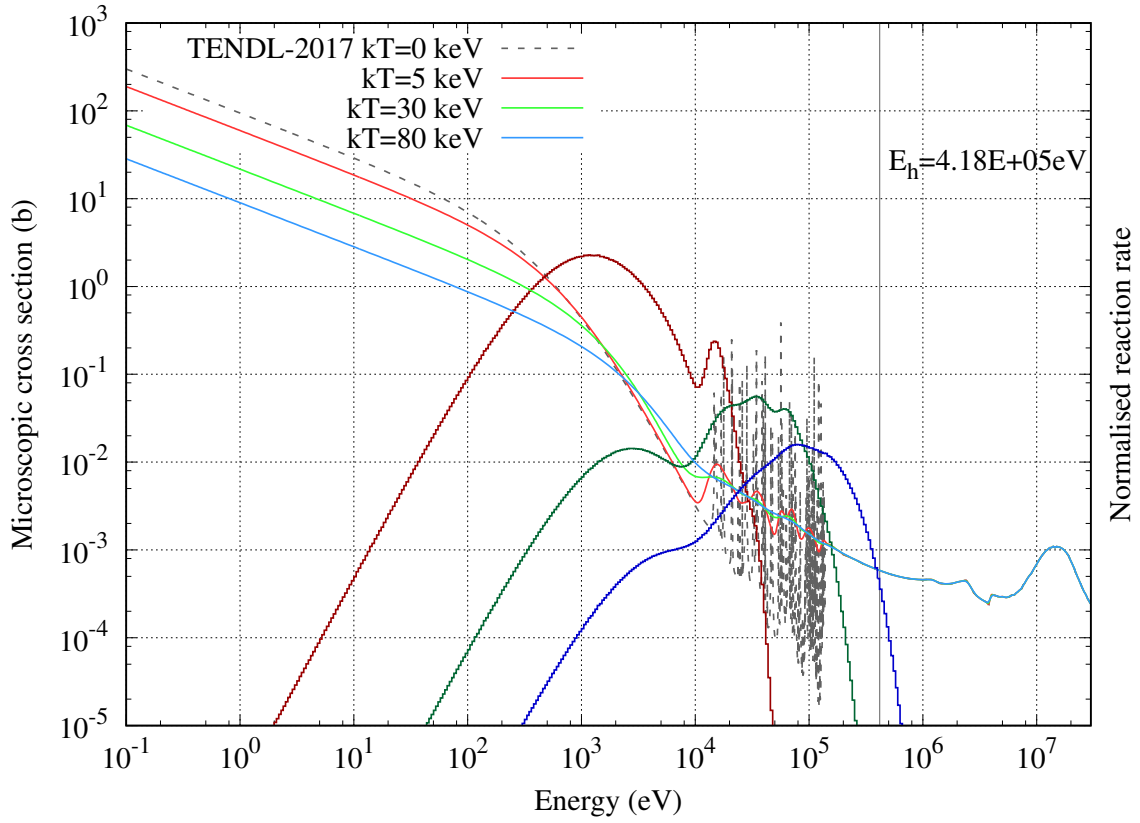
$^{36}\text{Ar}_{18}$ [Stable] (KADoNiS=SMC)



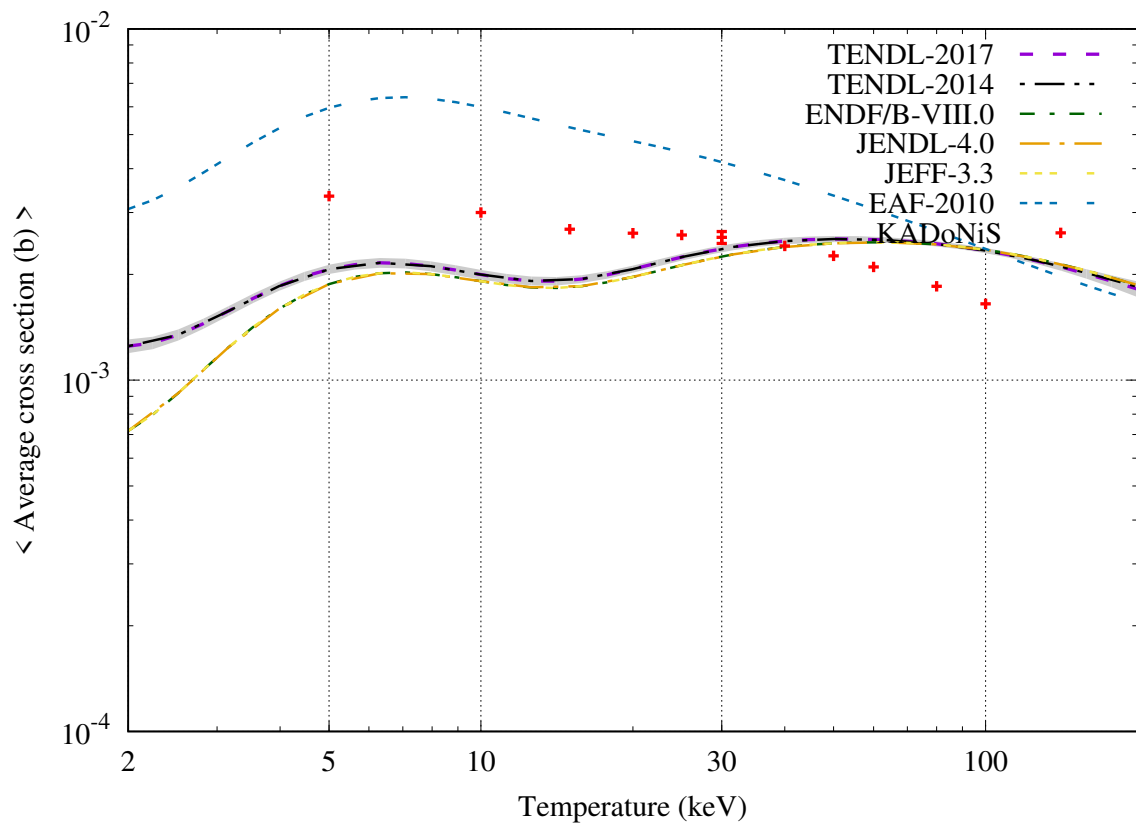
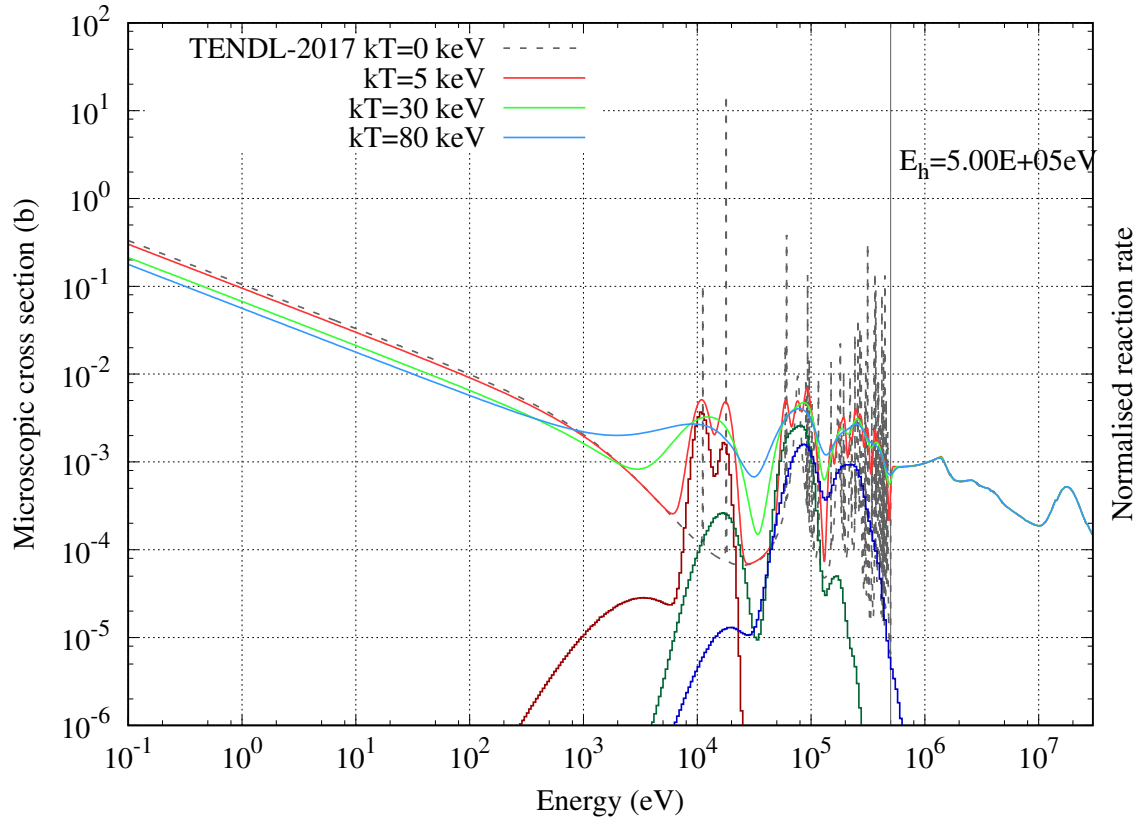
$^{38}\text{Ar}_{18}$ [Stable] (KADoNiS=SMC)



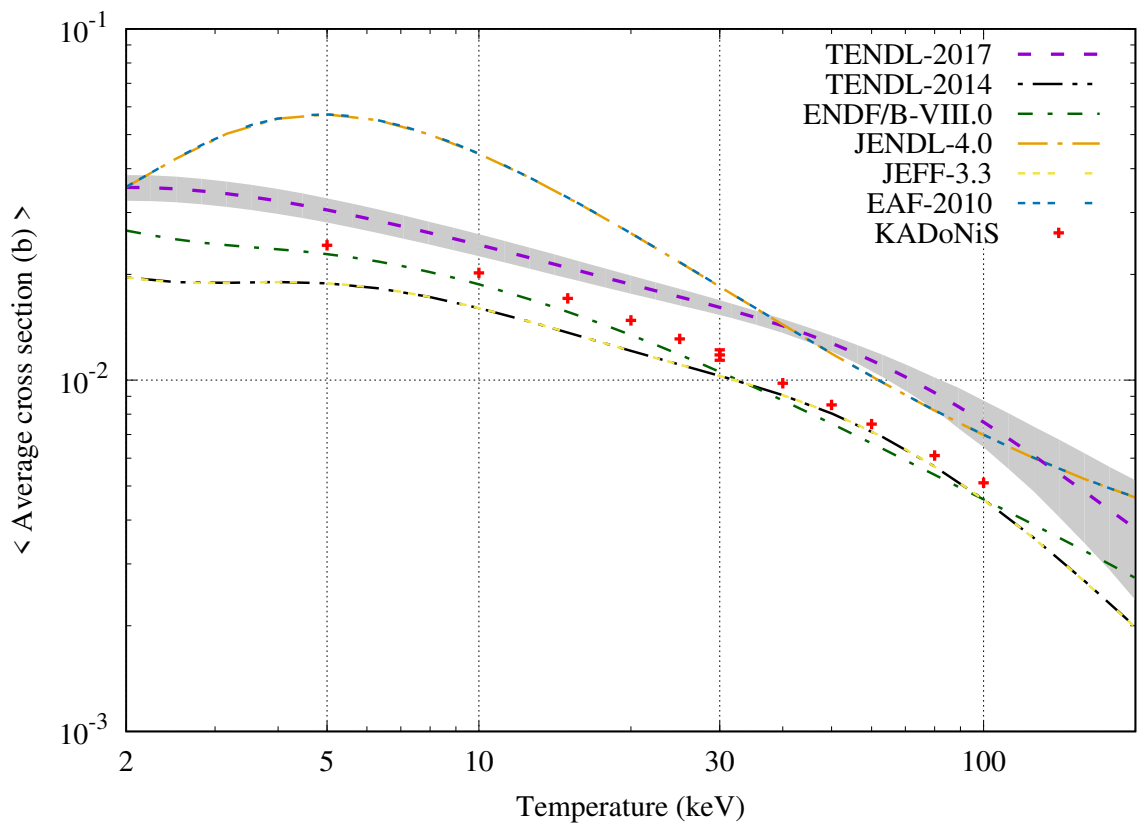
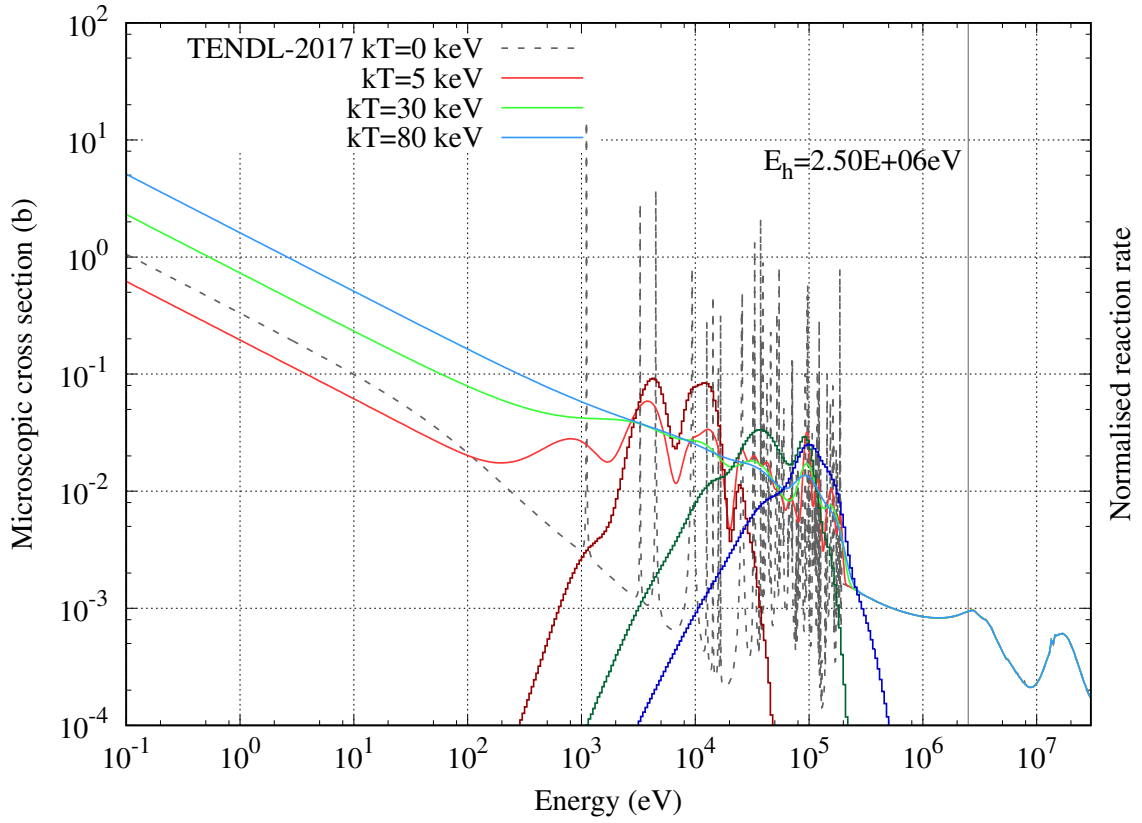
$^{39}\text{Ar}_{18}$ [$T_{1/2} = 269.00$ years] (KADoNiS=SMC)



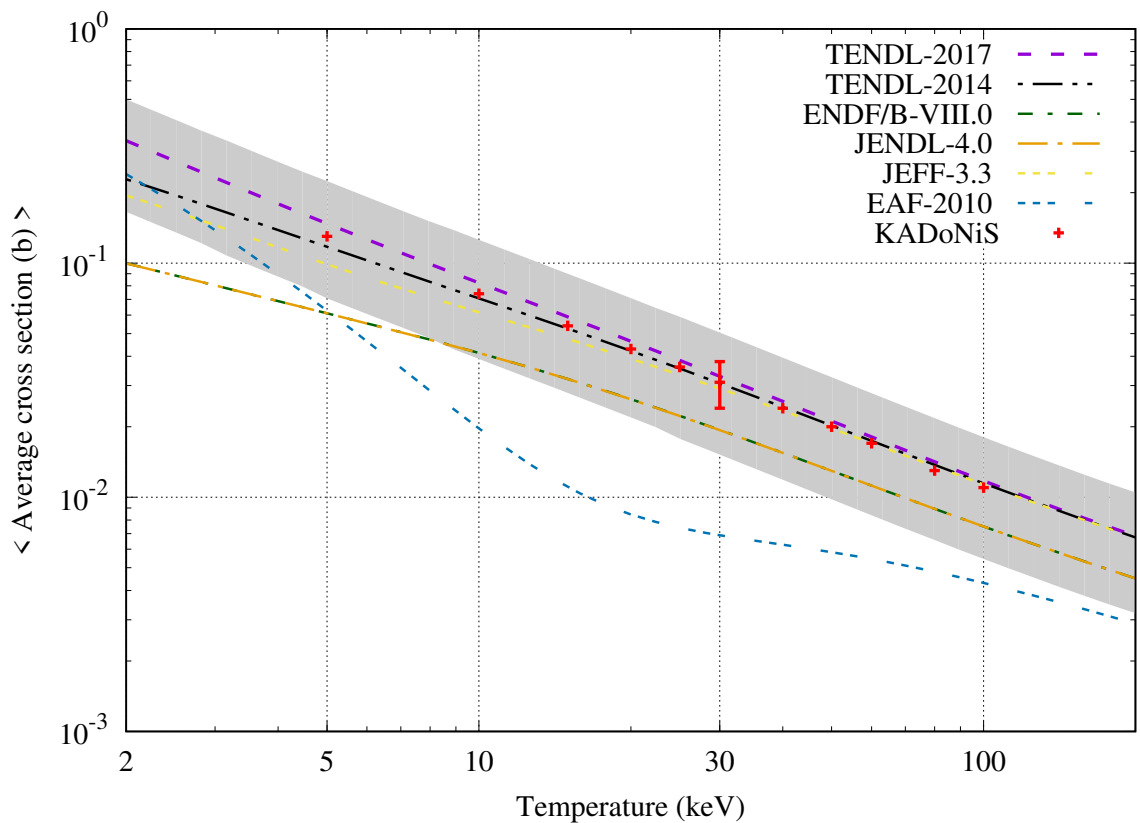
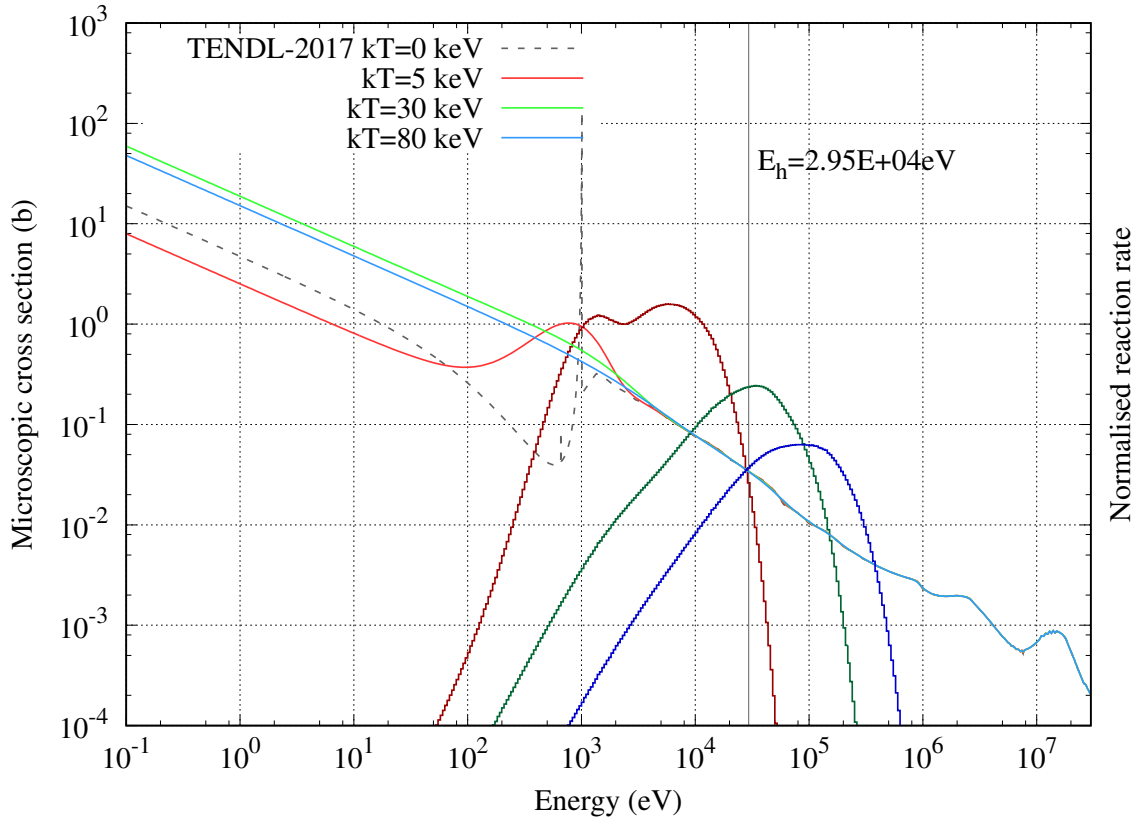
$^{40}\text{Ar}_{18}$ [Stable]



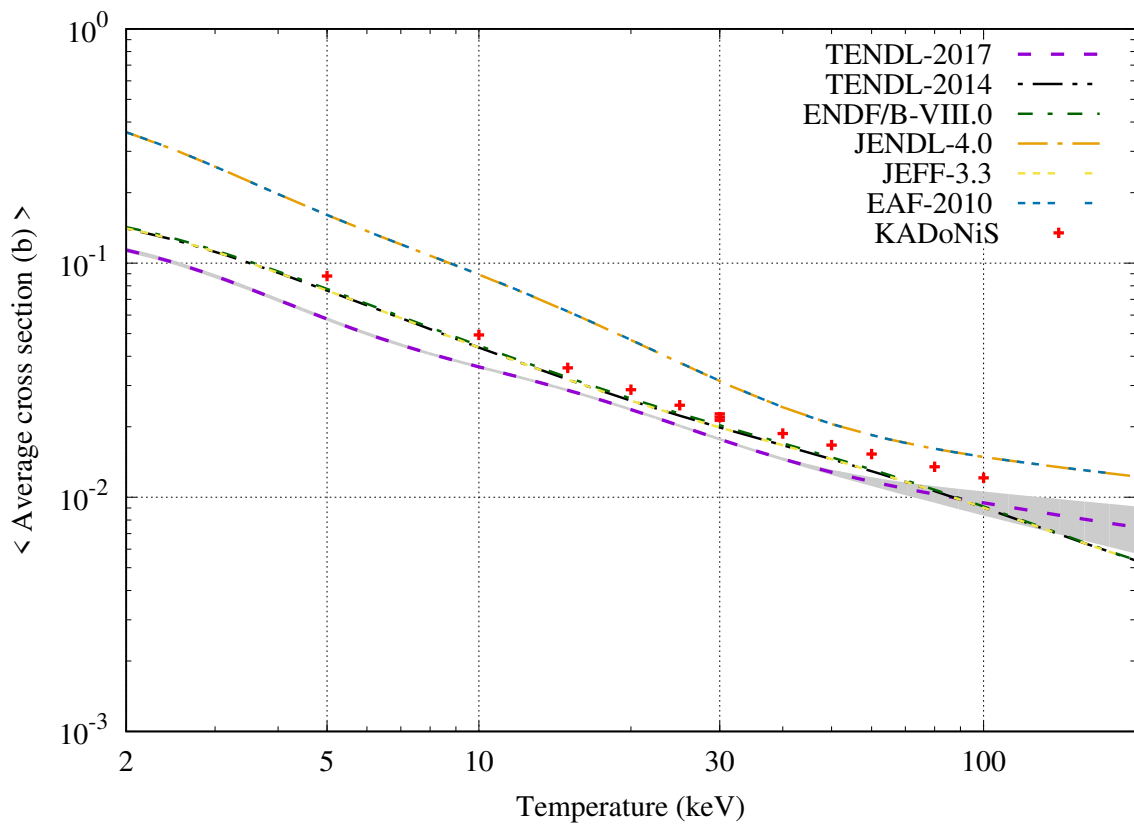
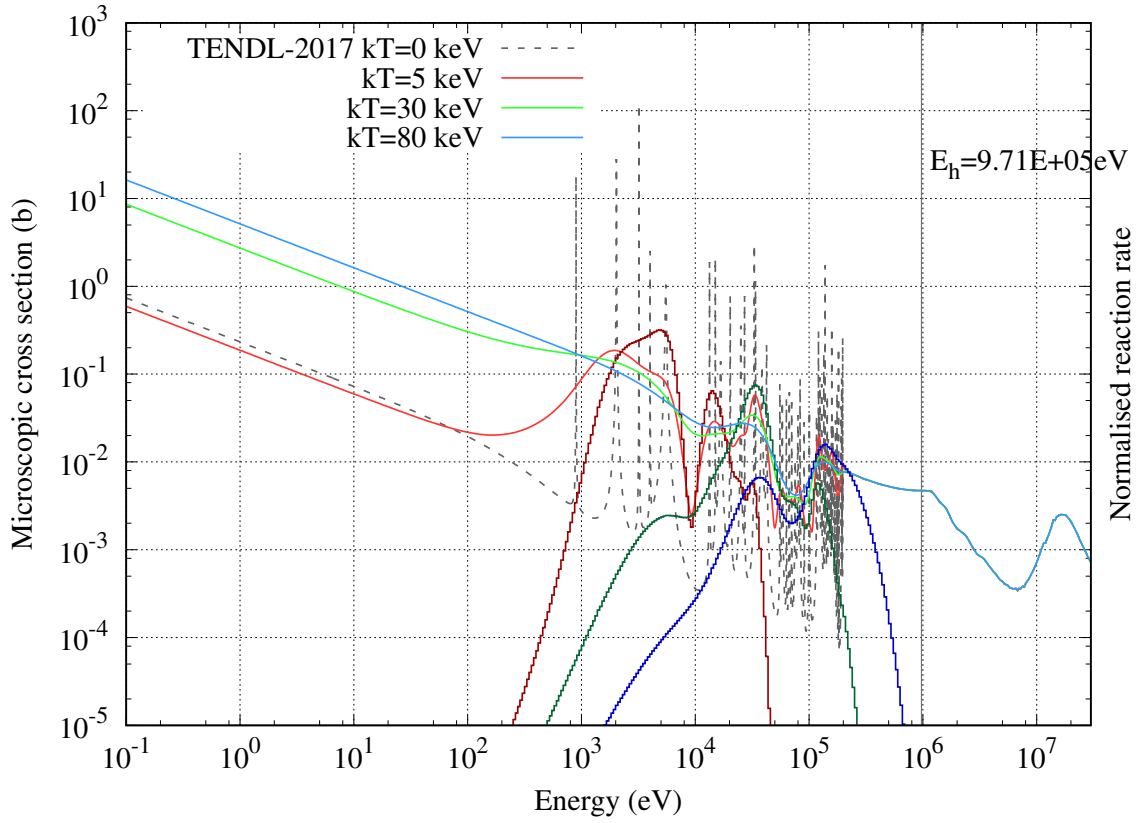
$^{39}\text{K}_{19}$ [Stable]



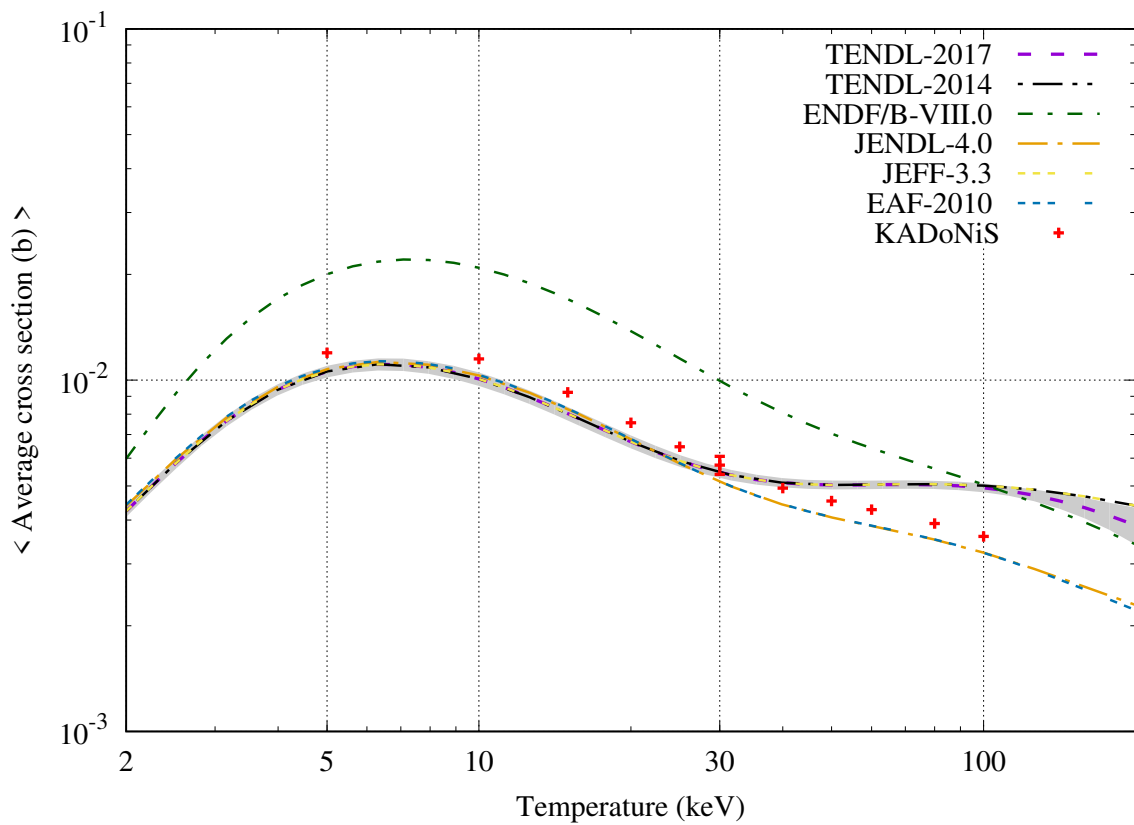
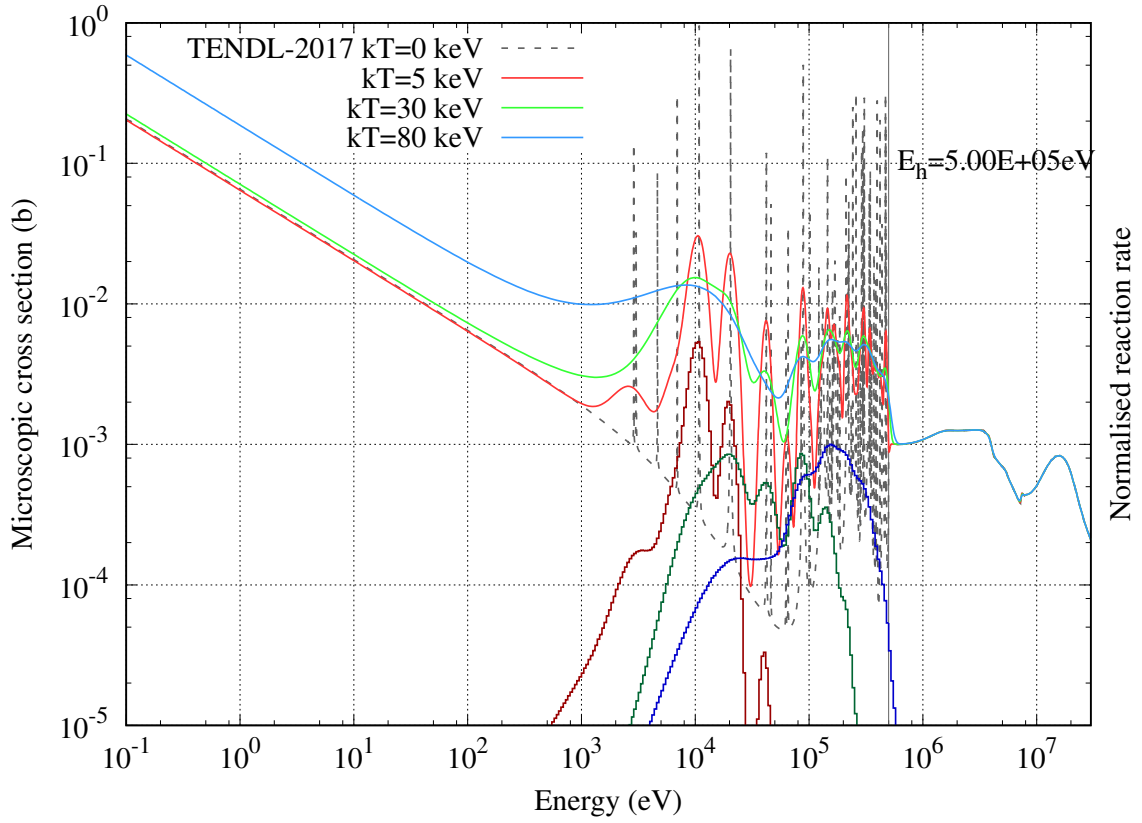
$^{40}\text{K}_{19}$ [$T_{1/2} = 1.26 \times 10^9$ years] (KADoNiS=SMC)



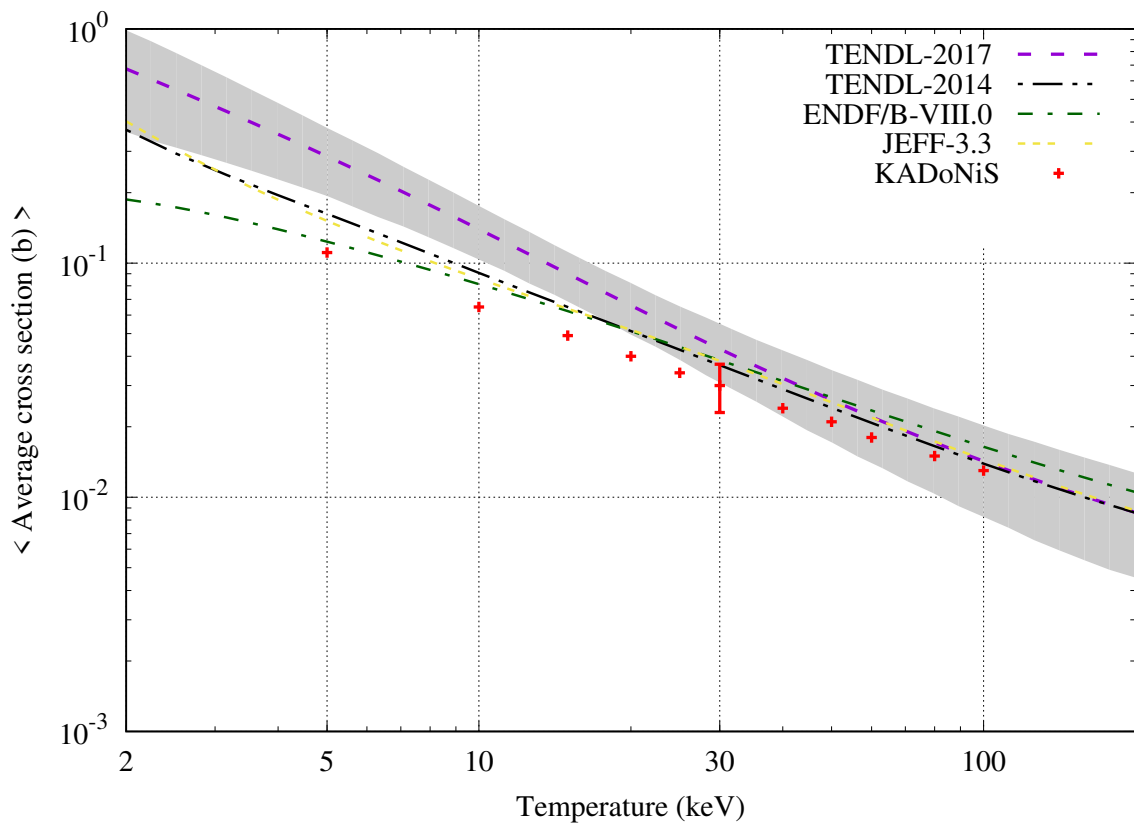
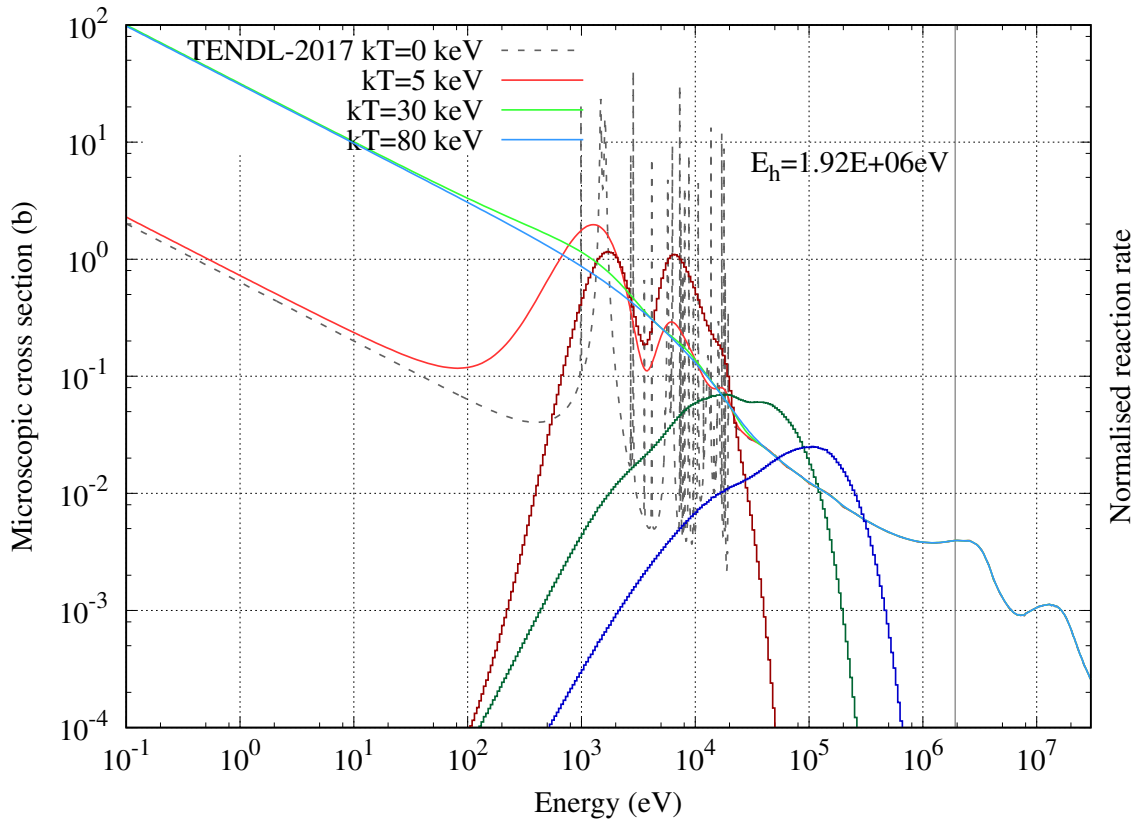
$^{41}\text{K}_{19}$ [Stable]



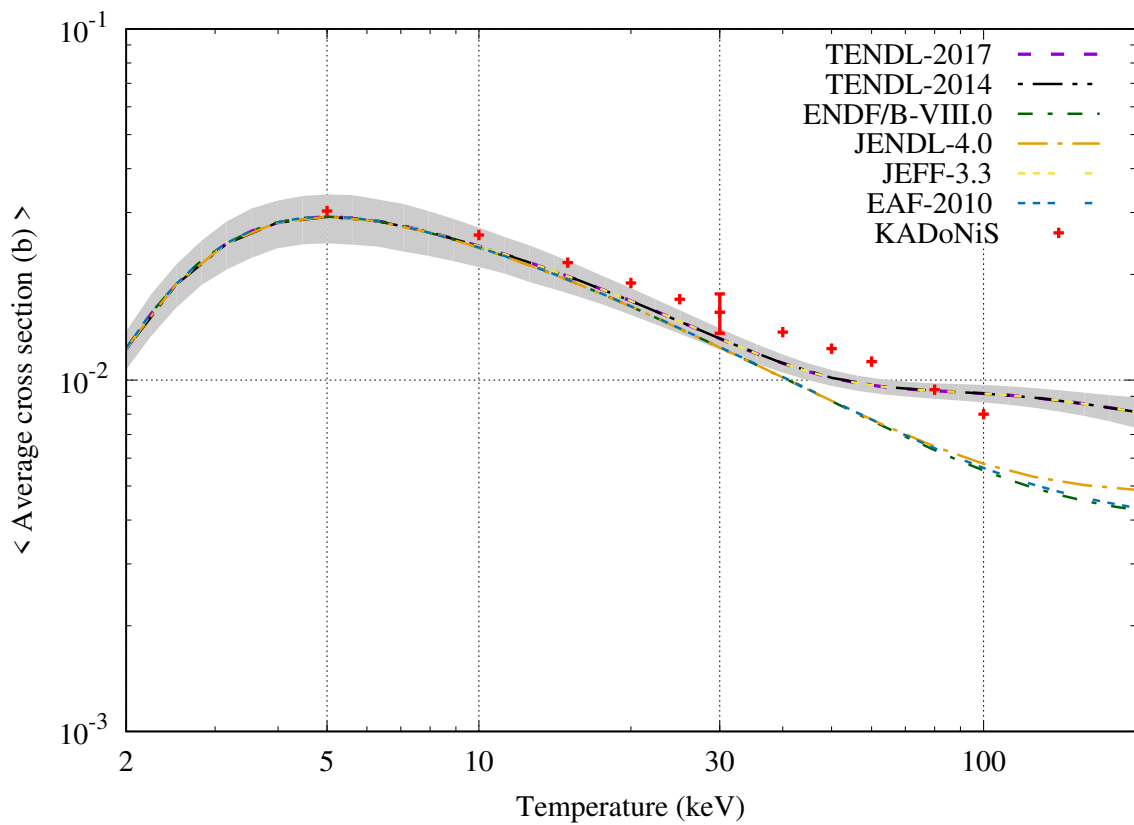
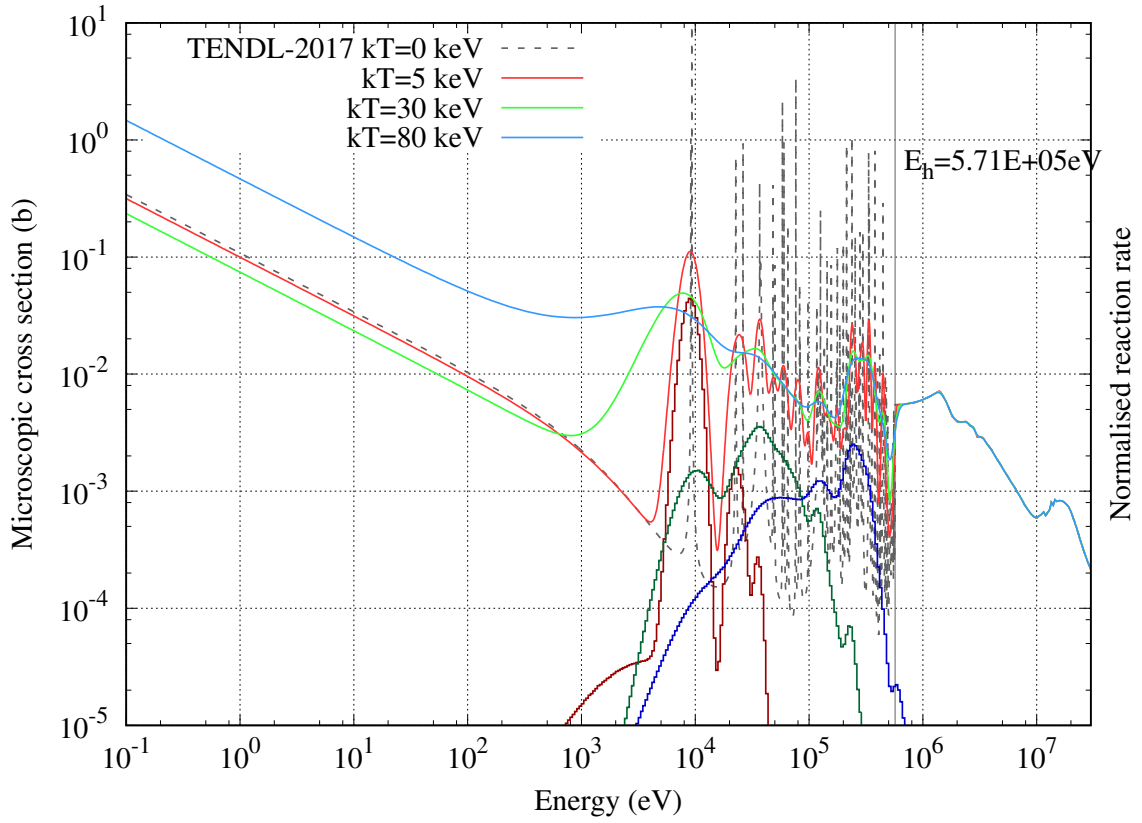
$^{40}\text{Ca}_{20}$ [Stable]



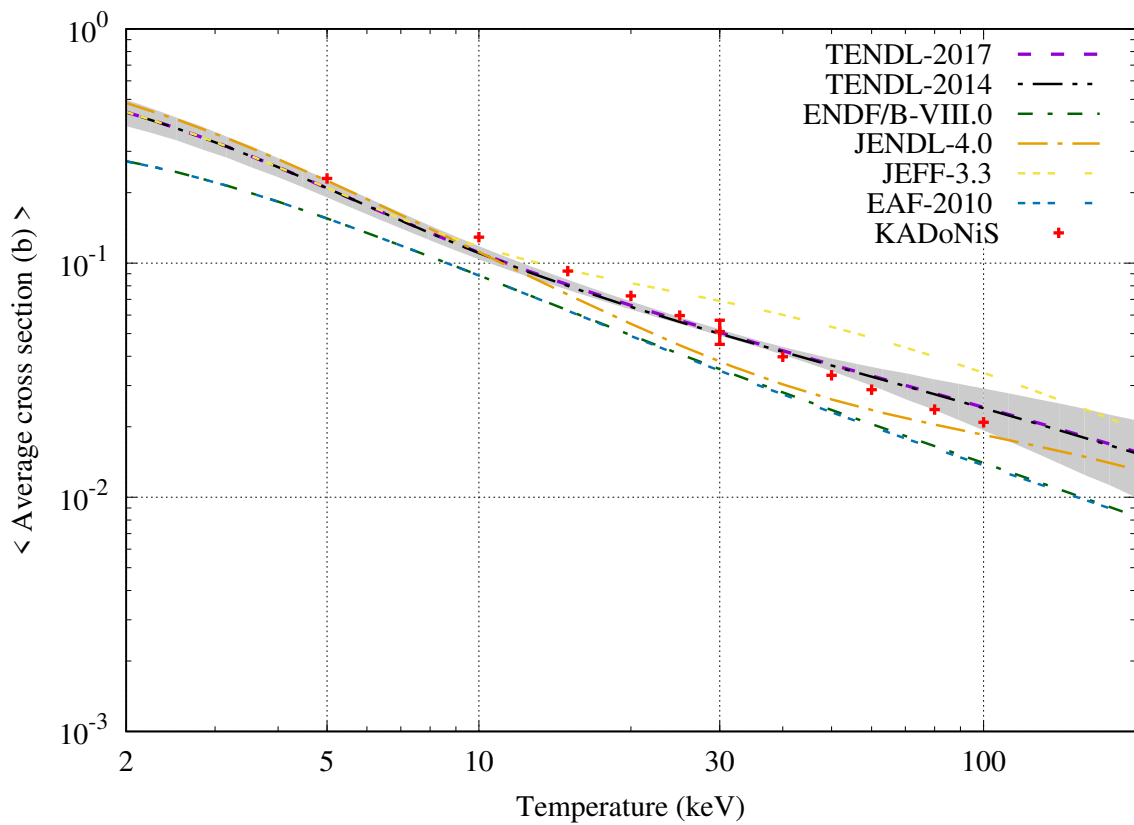
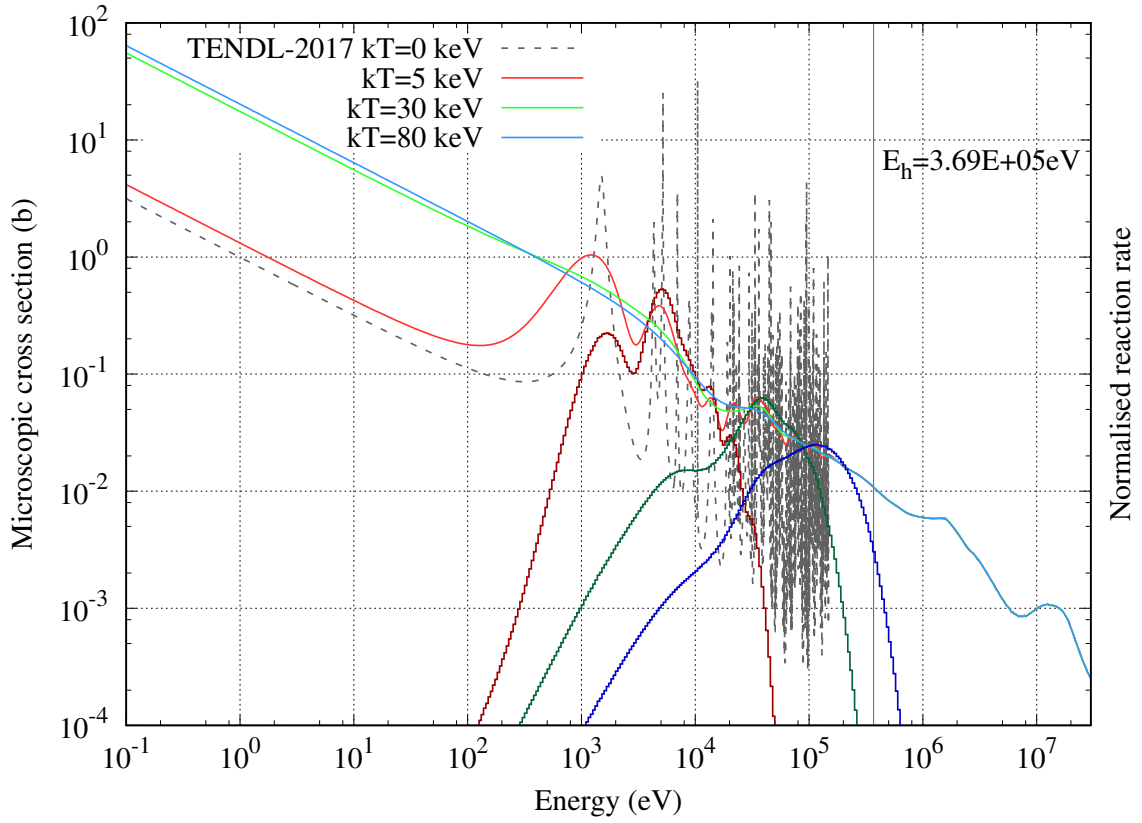
$^{41}\text{Ca}_{20}$ [$T_{1/2} = 1.03 \times 10^5$ years] (KADoNiS=SMC)



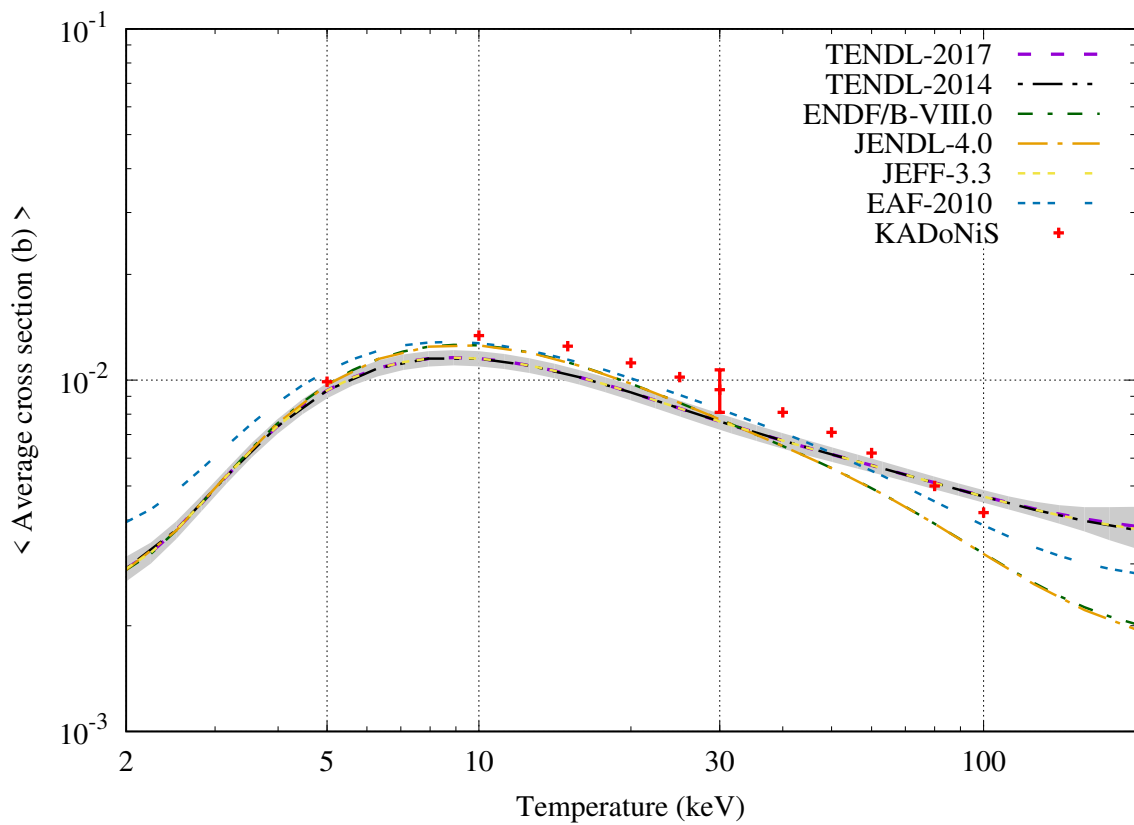
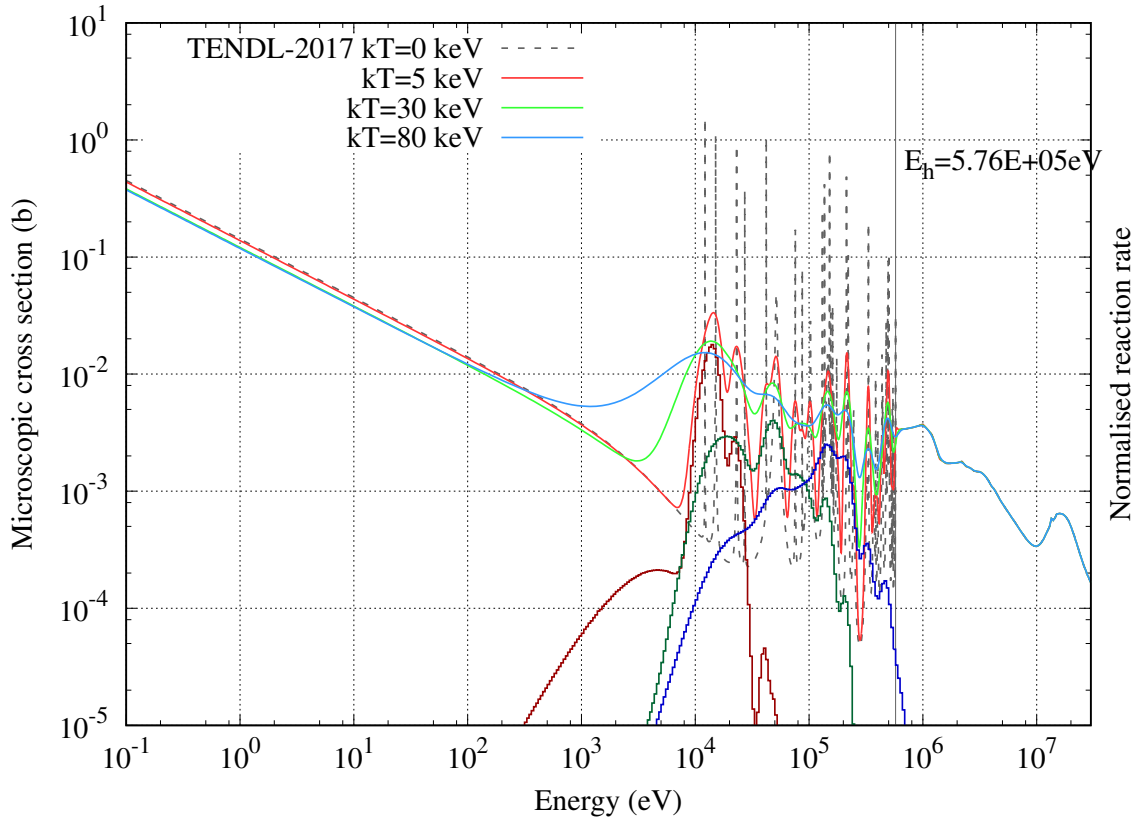
$^{42}\text{Ca}_{20}$ [Stable]



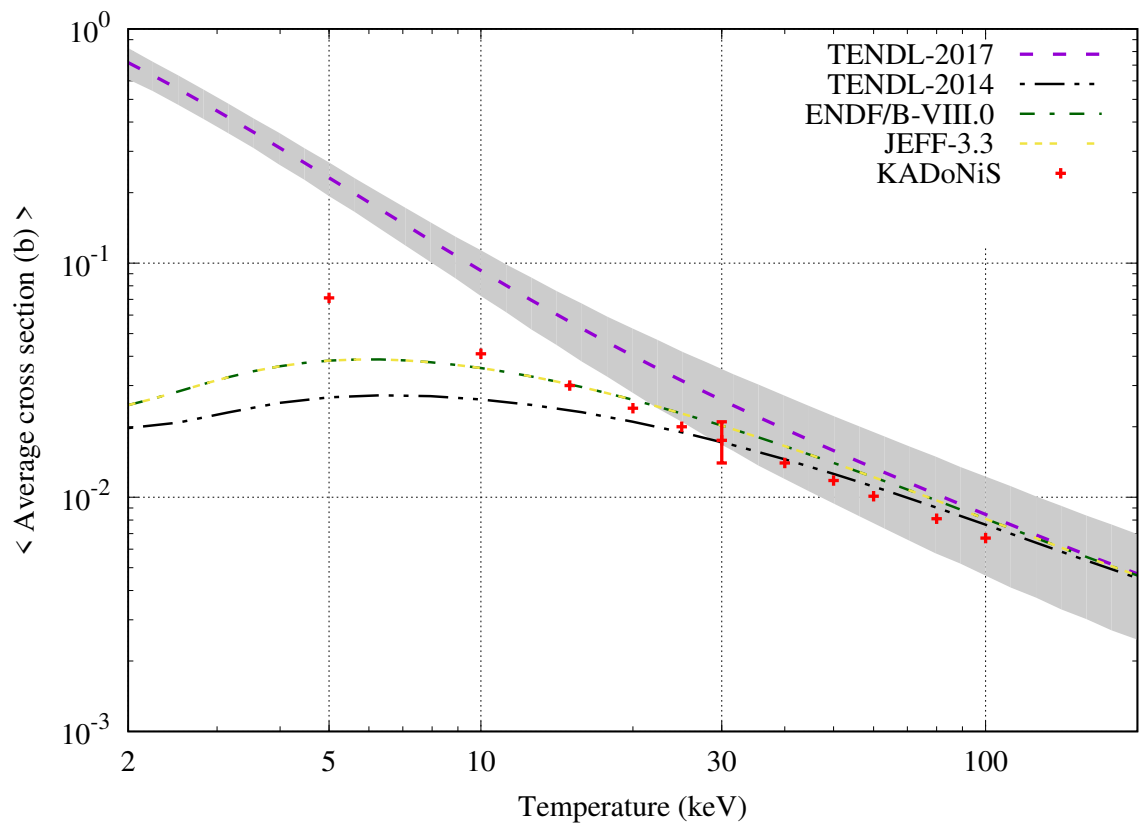
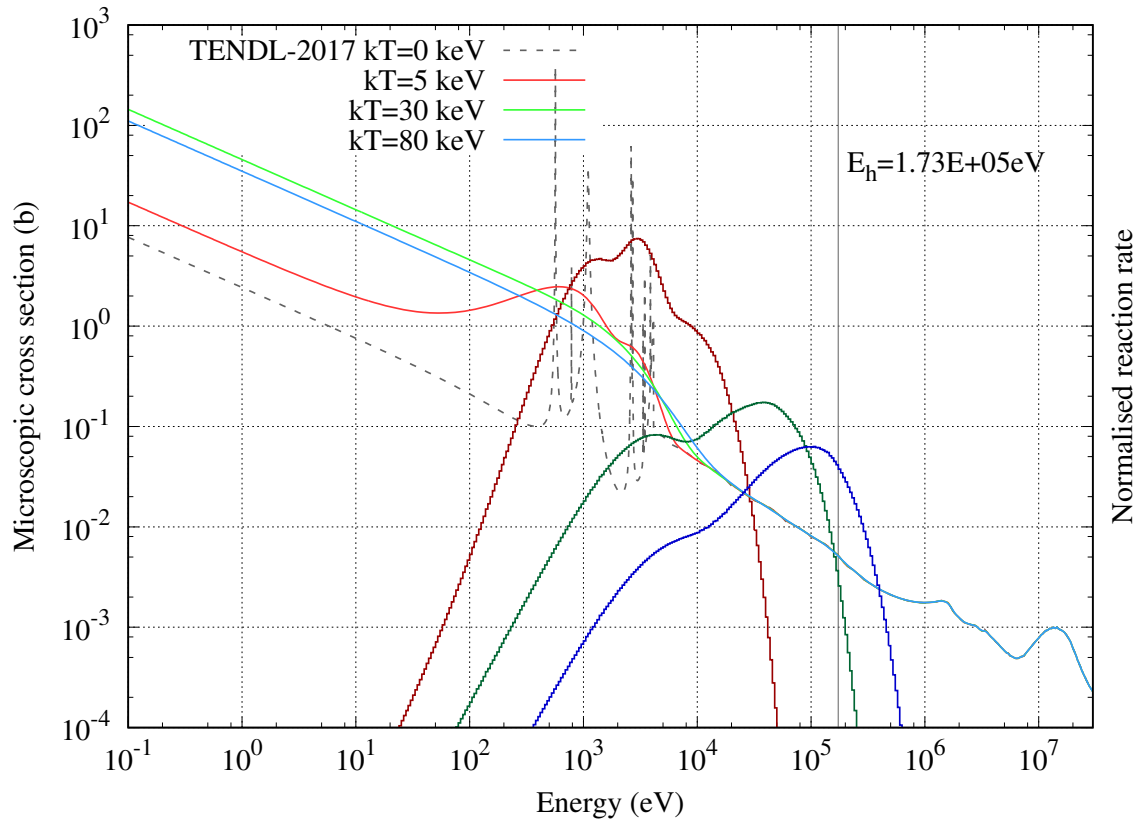
$^{43}\text{Ca}_{20}$ [Stable]



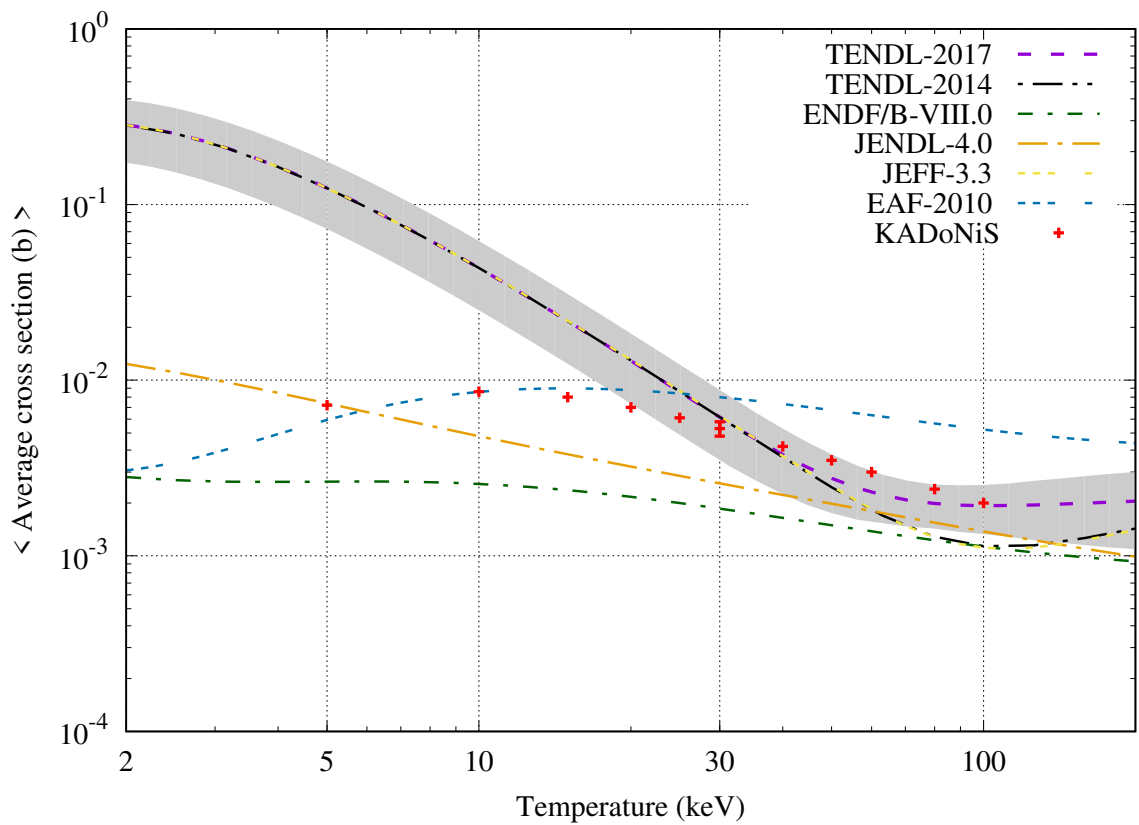
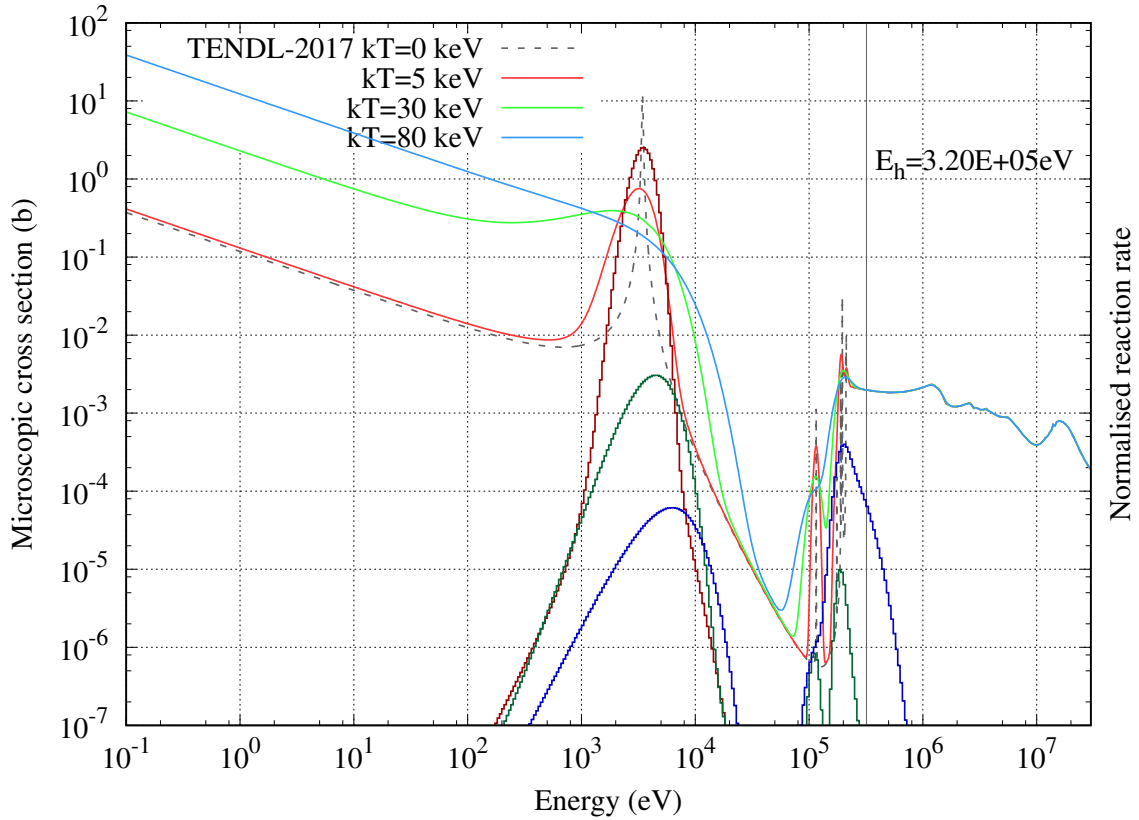
$^{44}\text{Ca}_{20}$ [Stable]



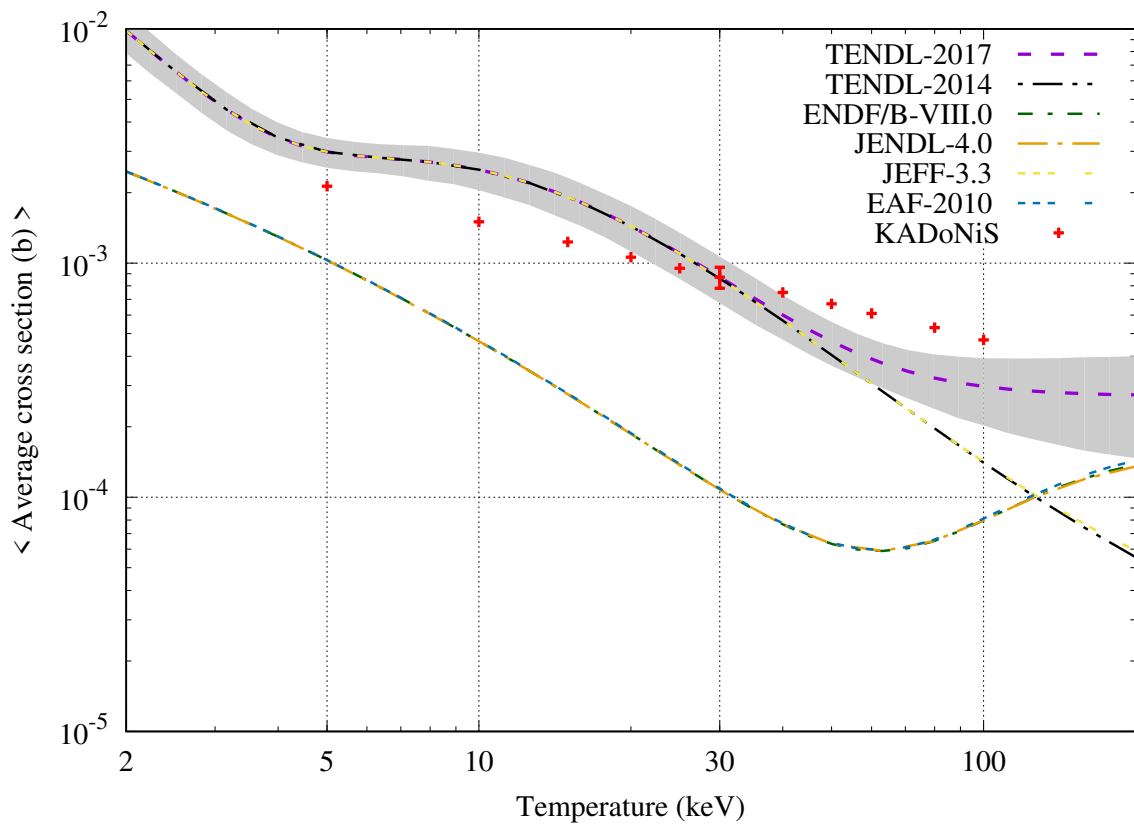
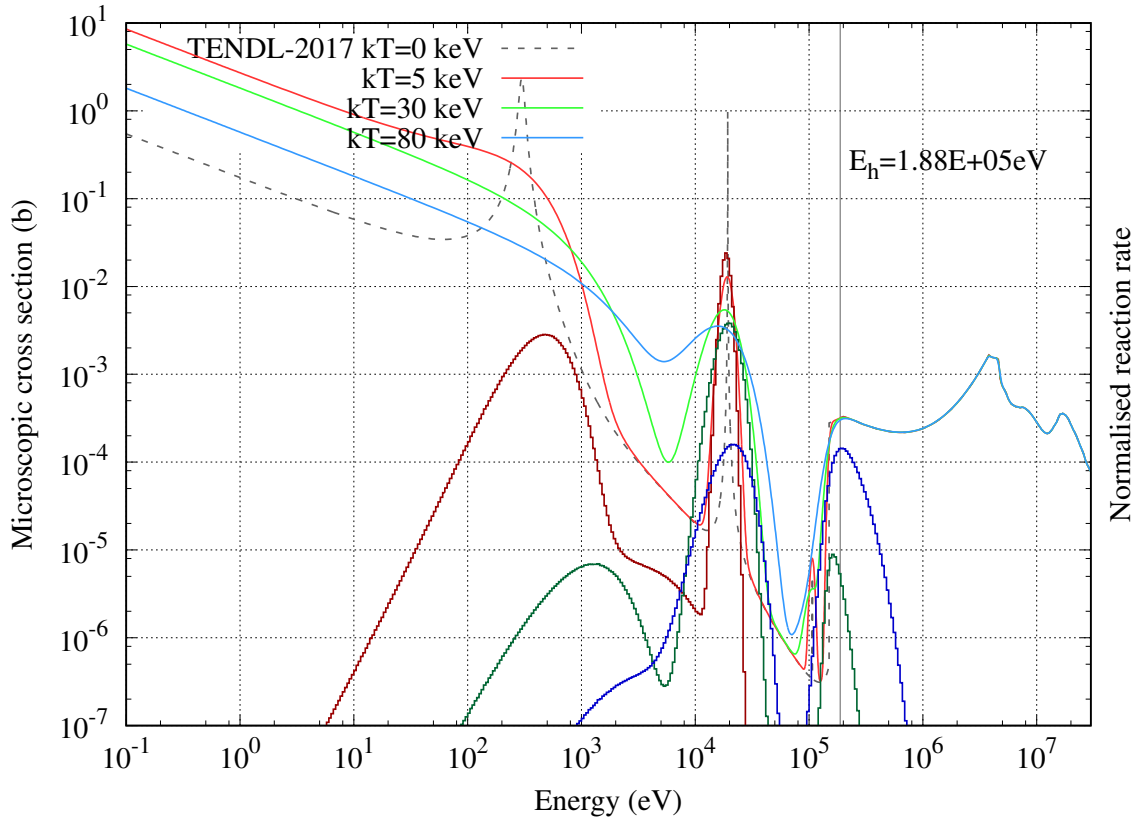
$^{45}\text{Ca}_{20}$ [$T_{1/2} = 163.00$ days] (KADoNiS=SMC)



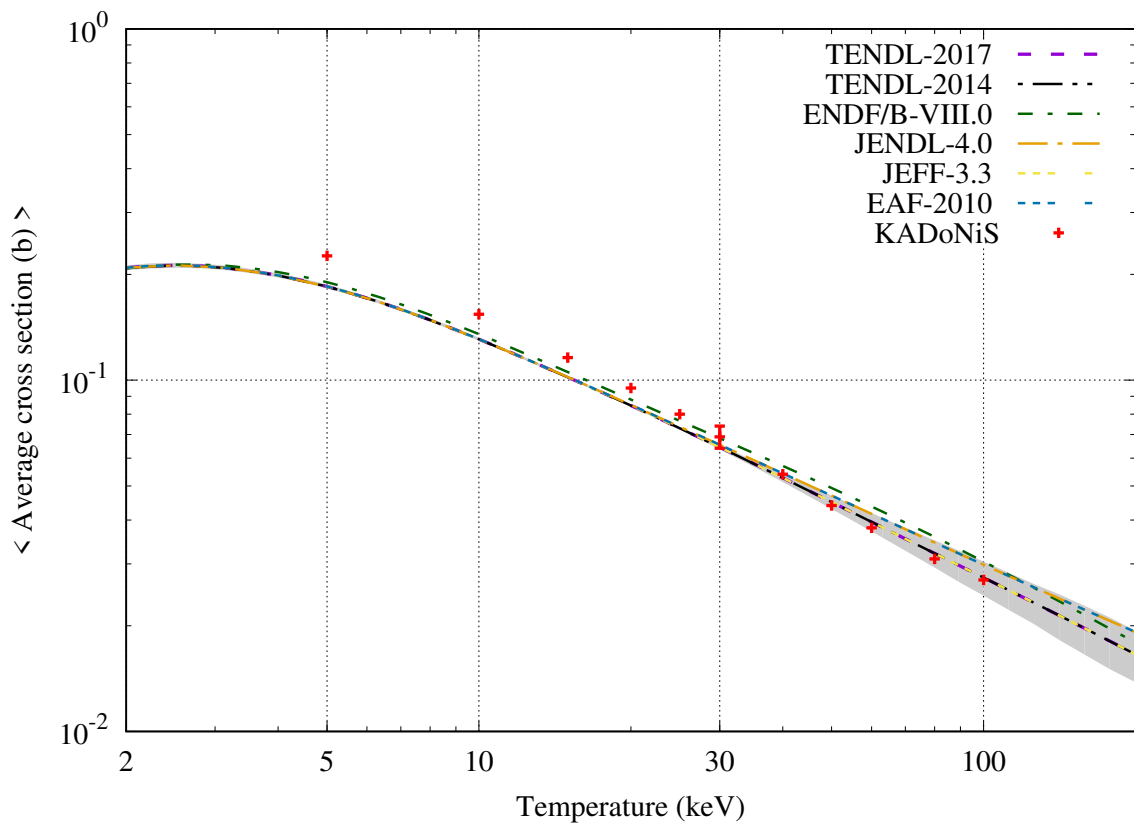
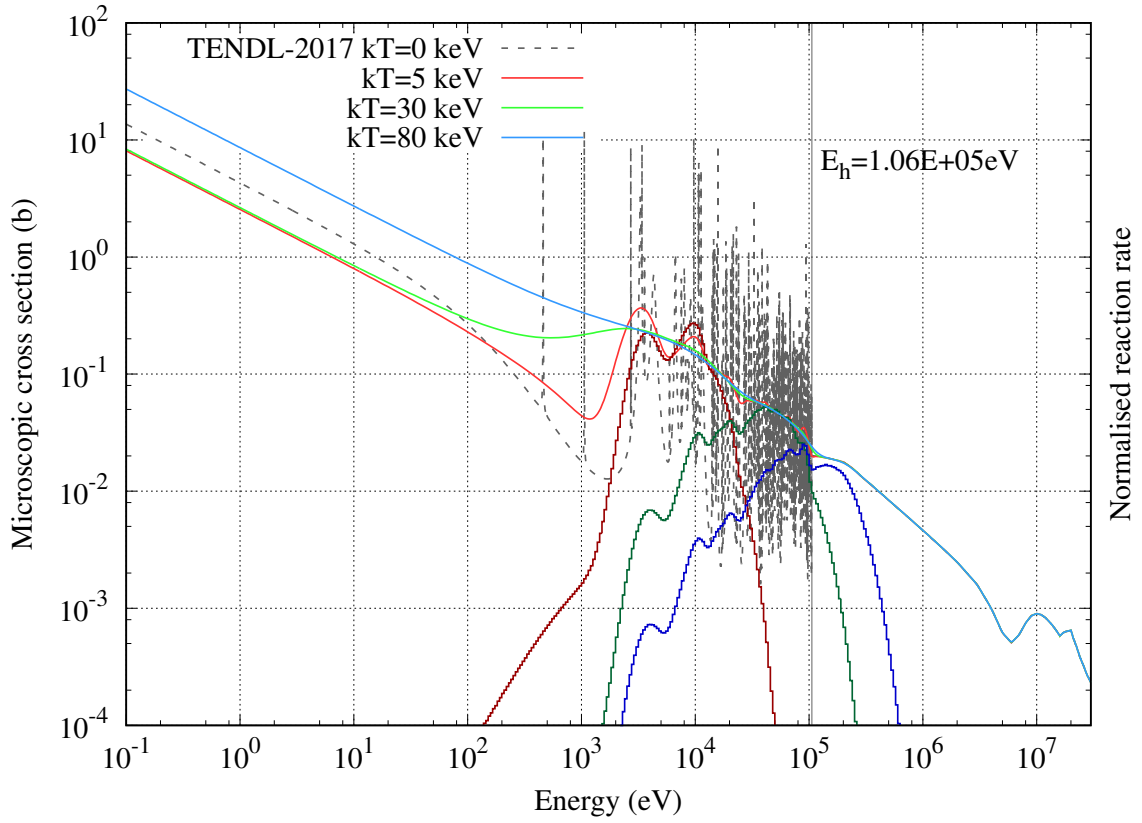
$^{46}\text{Ca}_{20}$ [Stable]



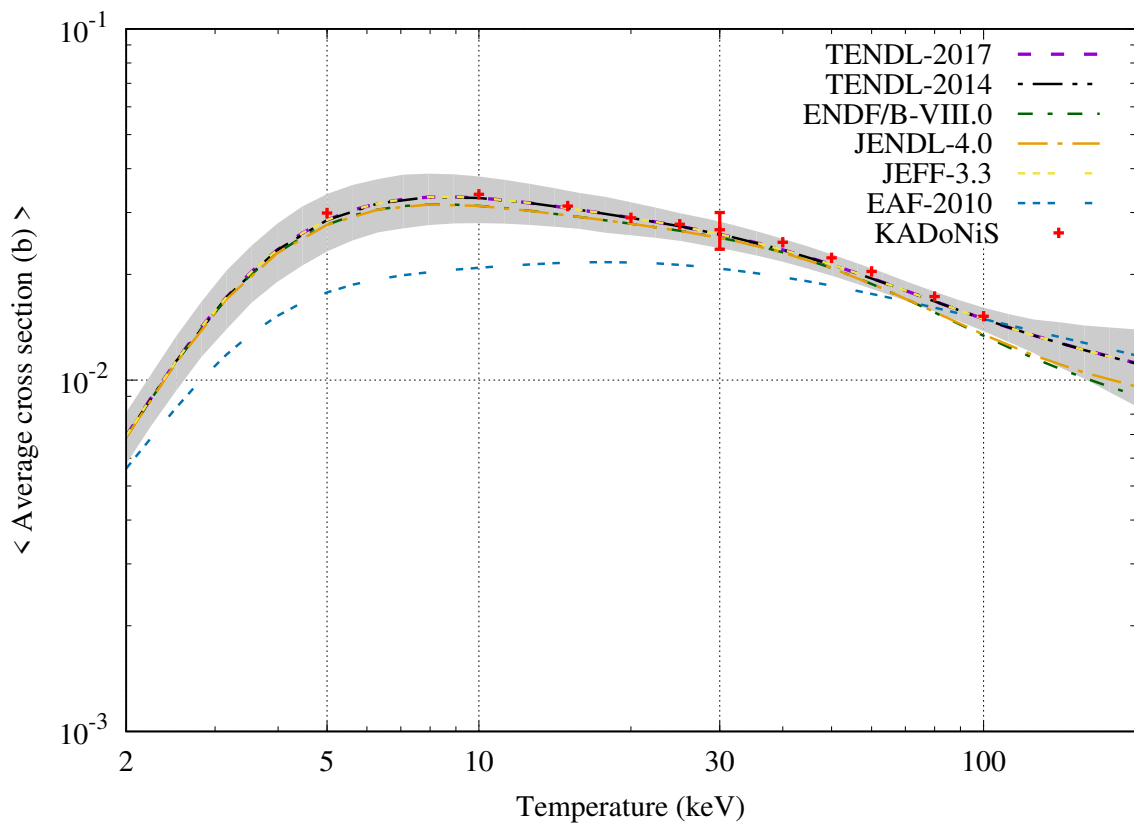
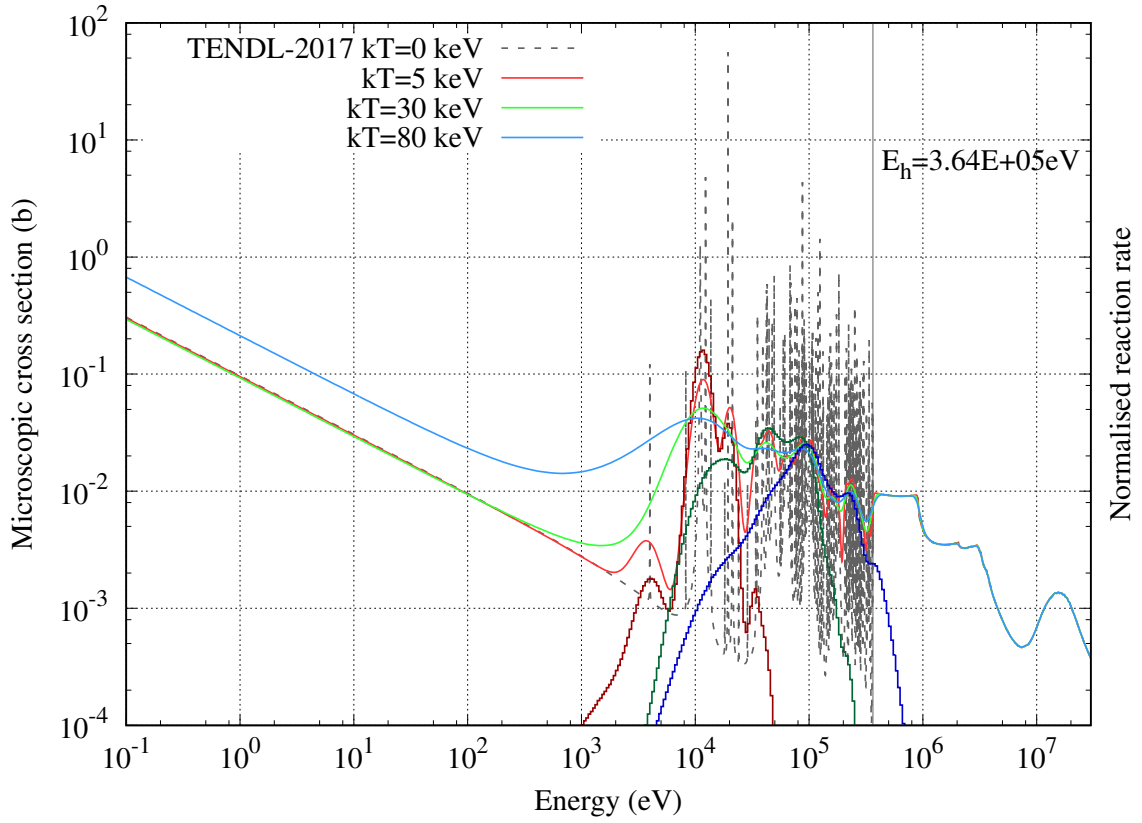
$^{48}\text{Ca}_{20}$ [$T_{1/2} = 5.30 \times 10^{19}$ years]



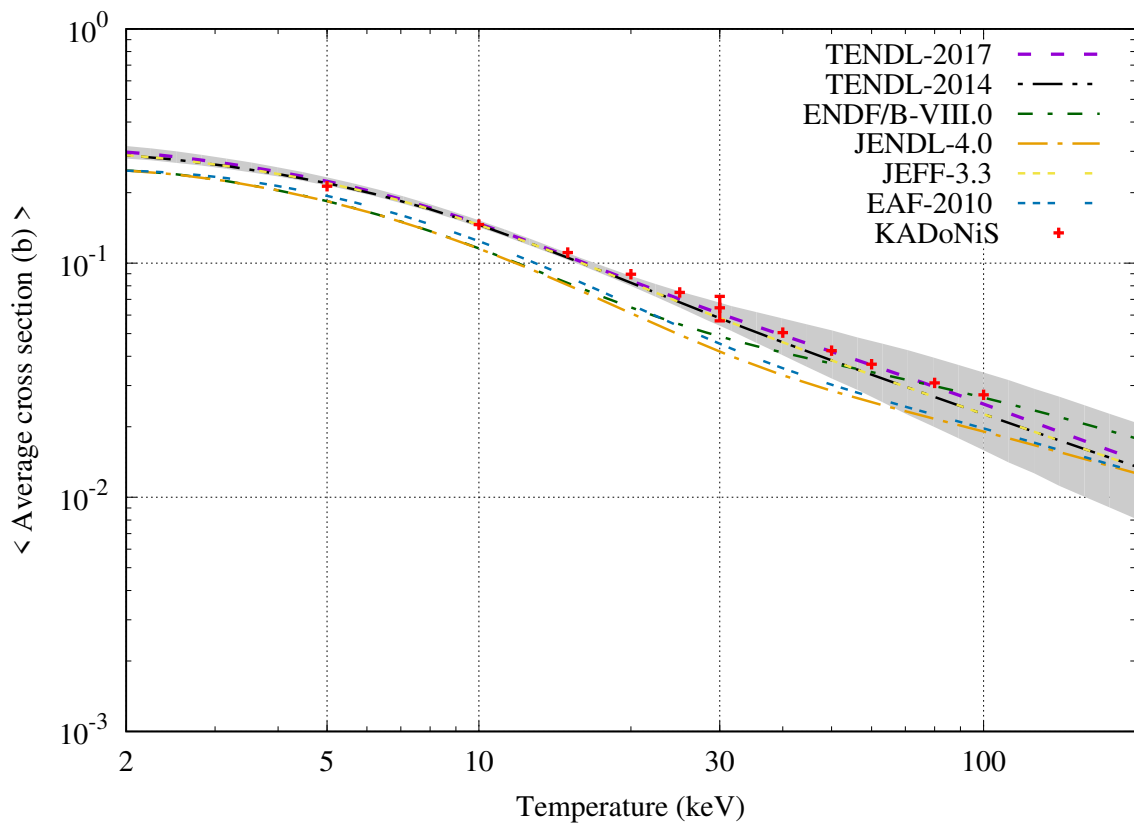
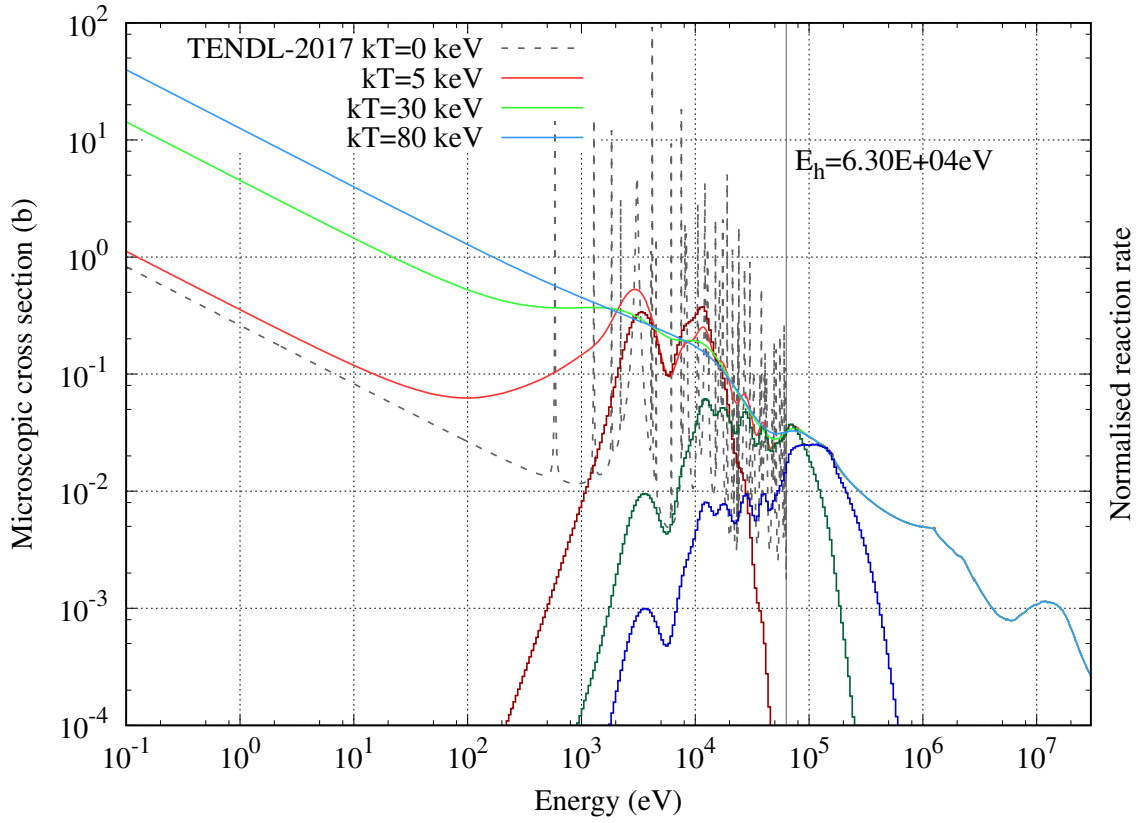
$^{45}\text{Sc}_{21}$ [Stable]



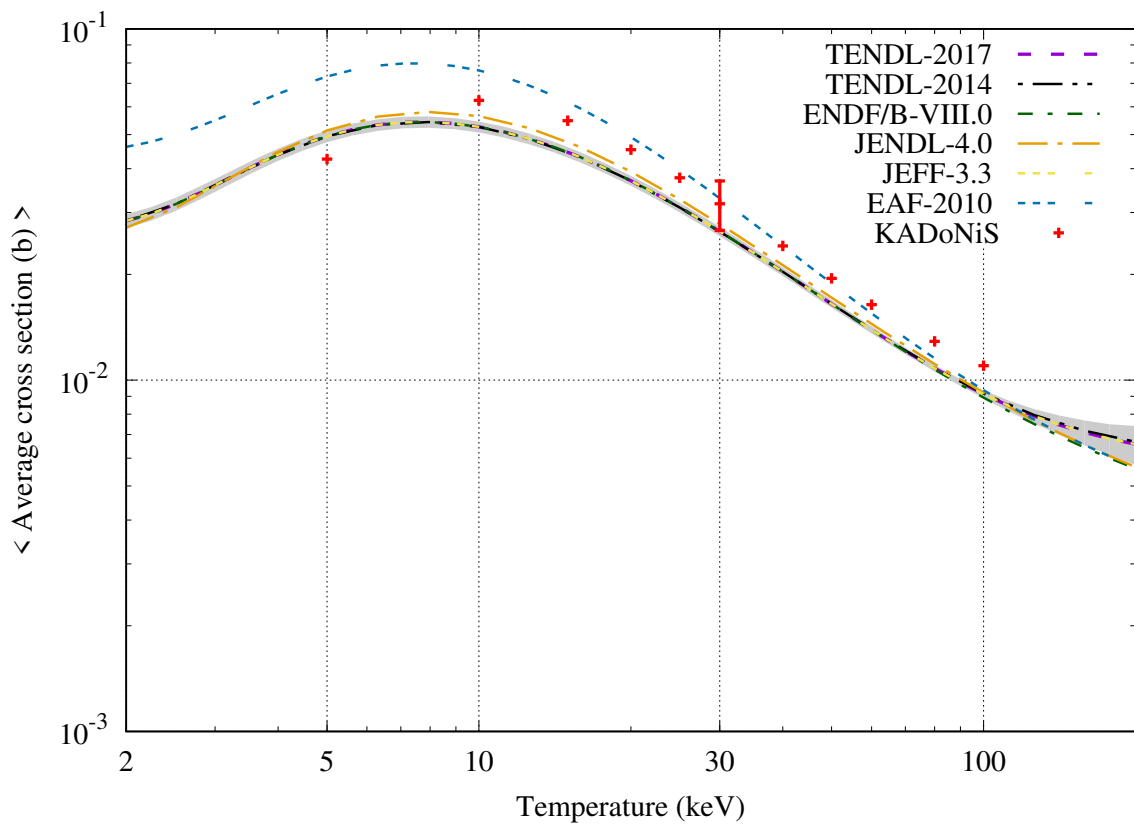
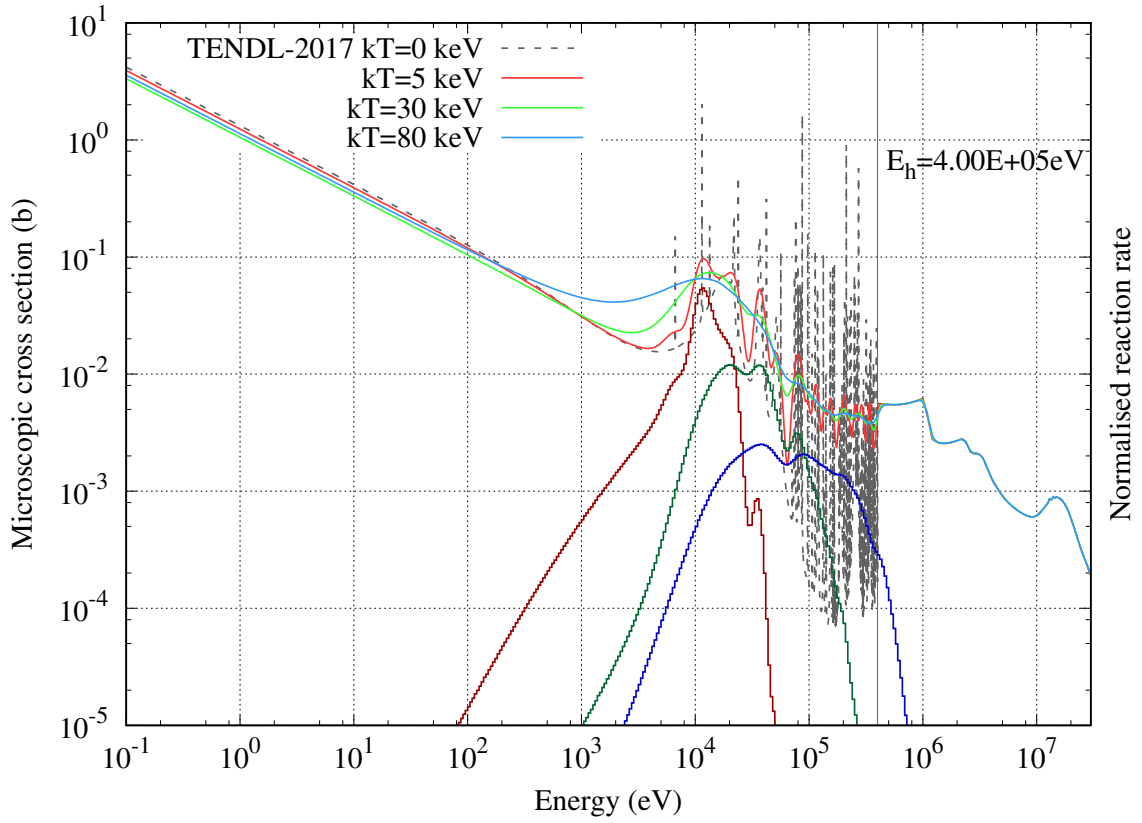
$^{46}\text{Ti}_{22}$ [Stable]



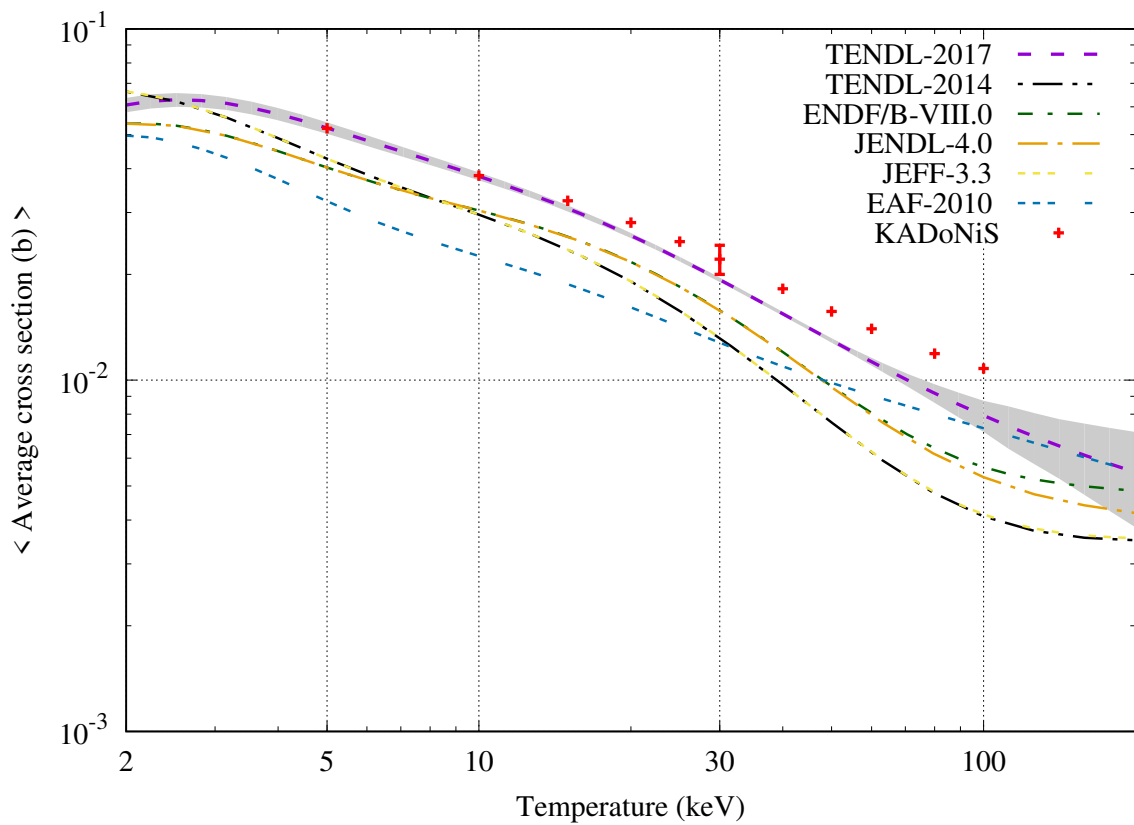
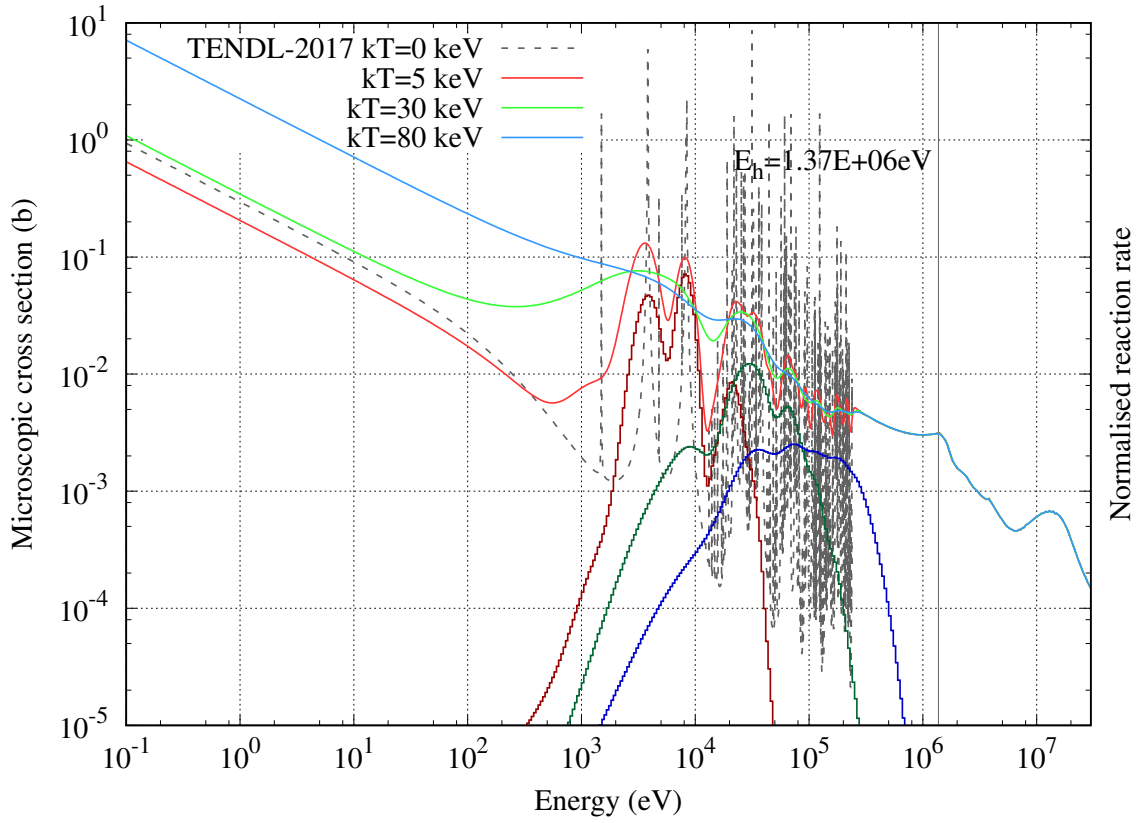
$^{47}\text{Ti}_{22}$ [Stable]



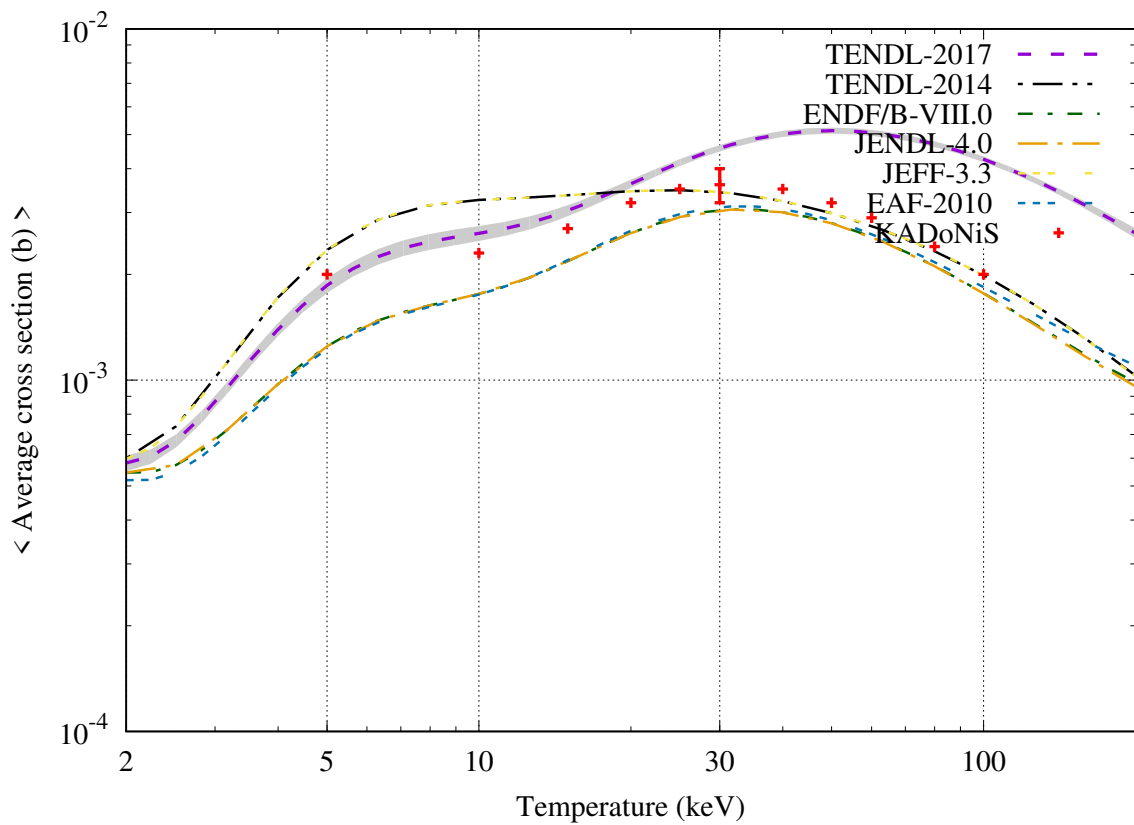
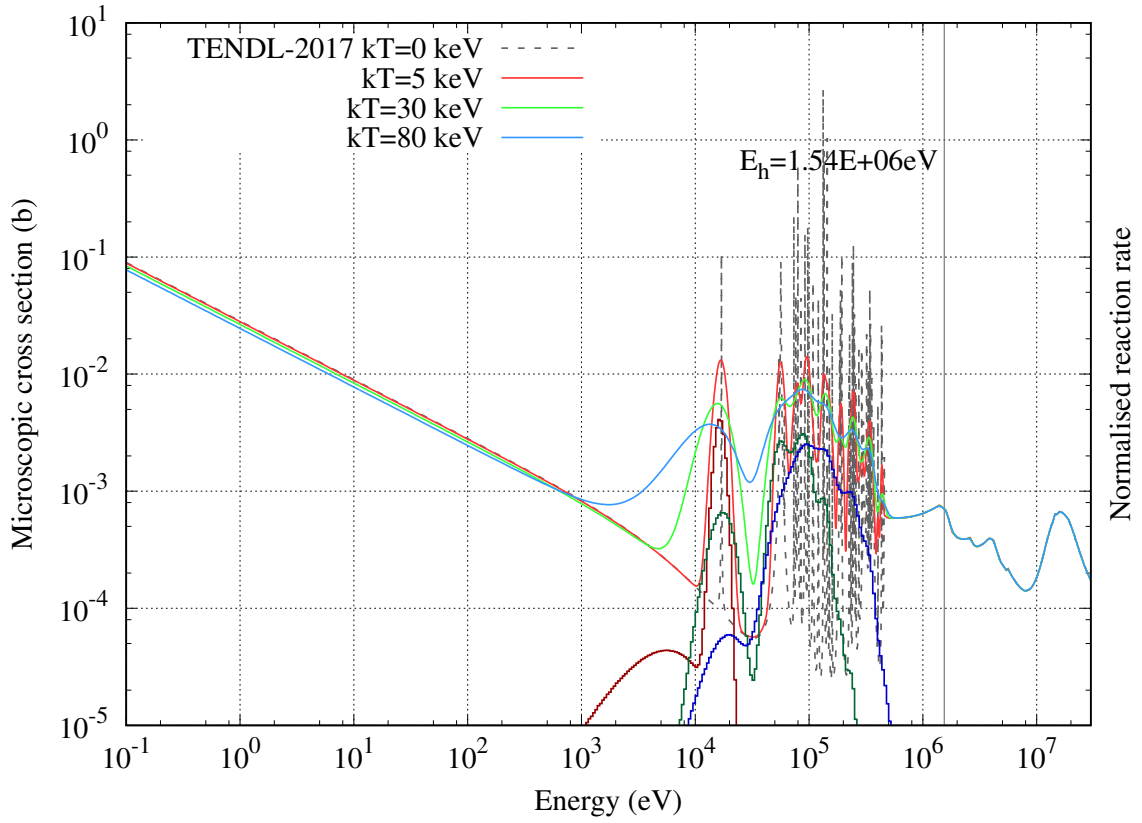
$^{48}\text{Ti}_{22}$ [Stable]



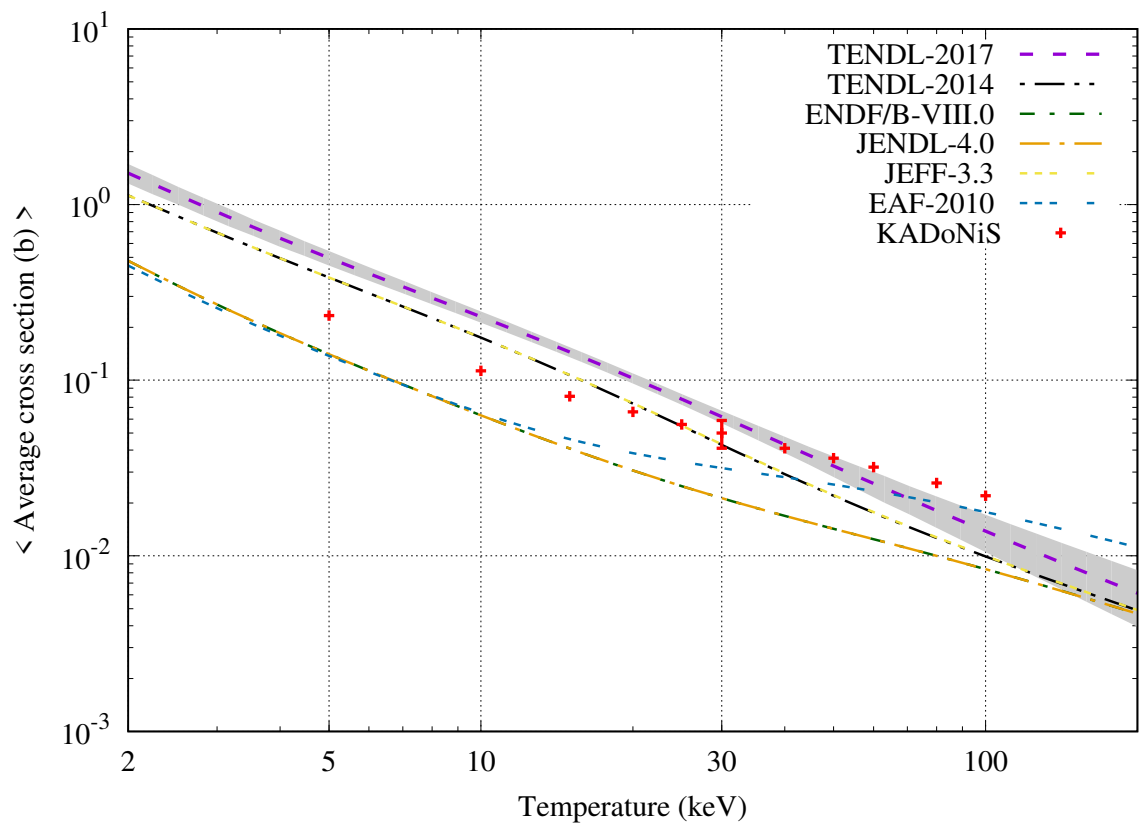
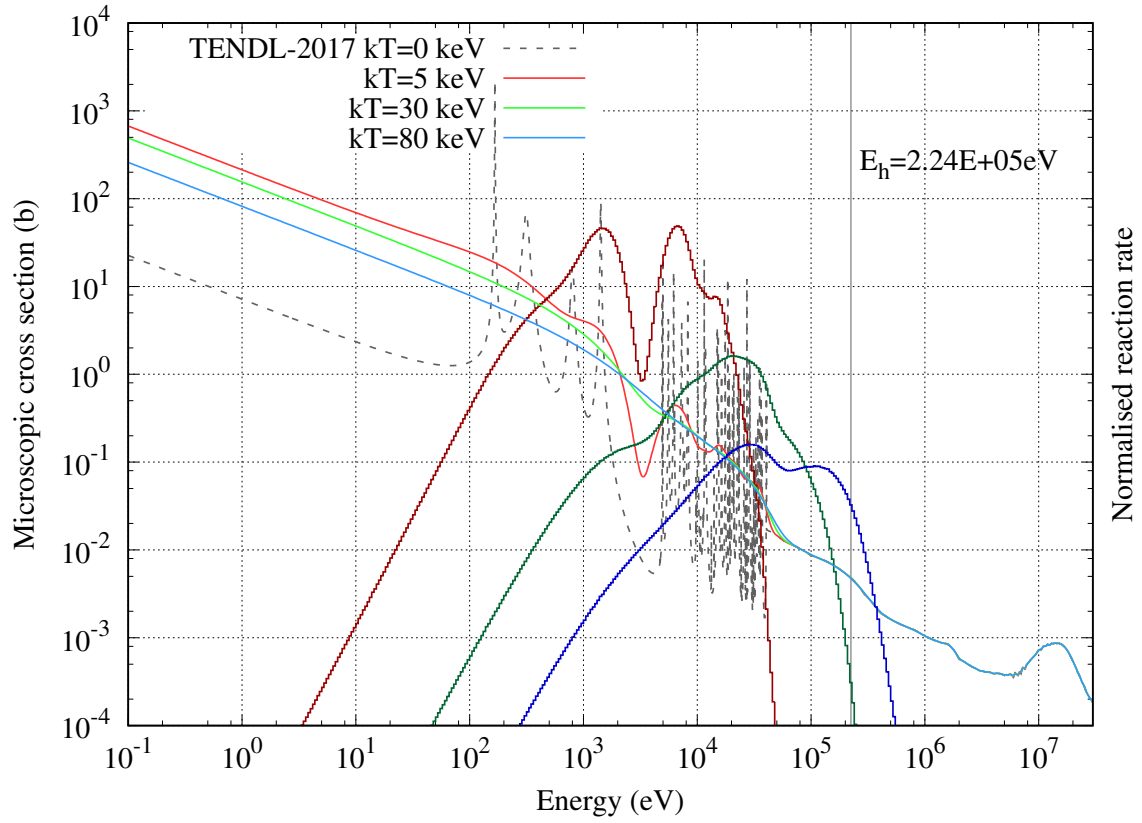
$^{49}\text{Ti}_{22}$ [Stable]



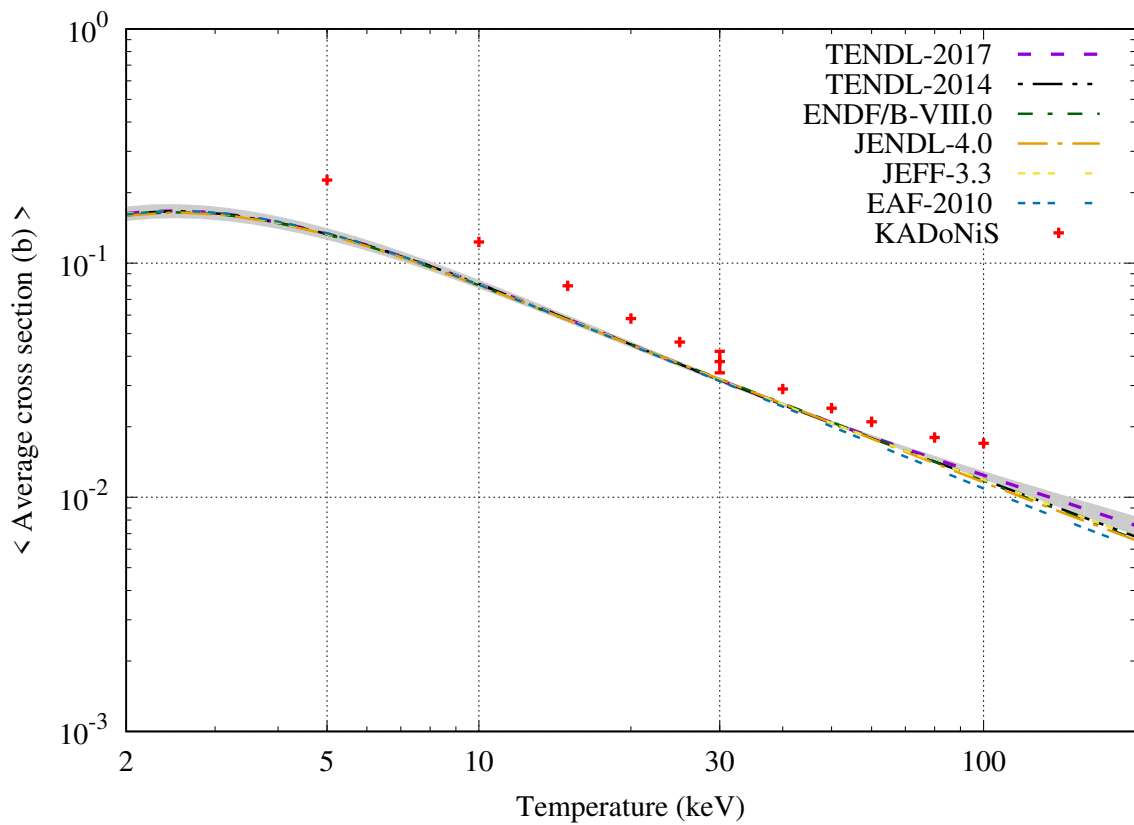
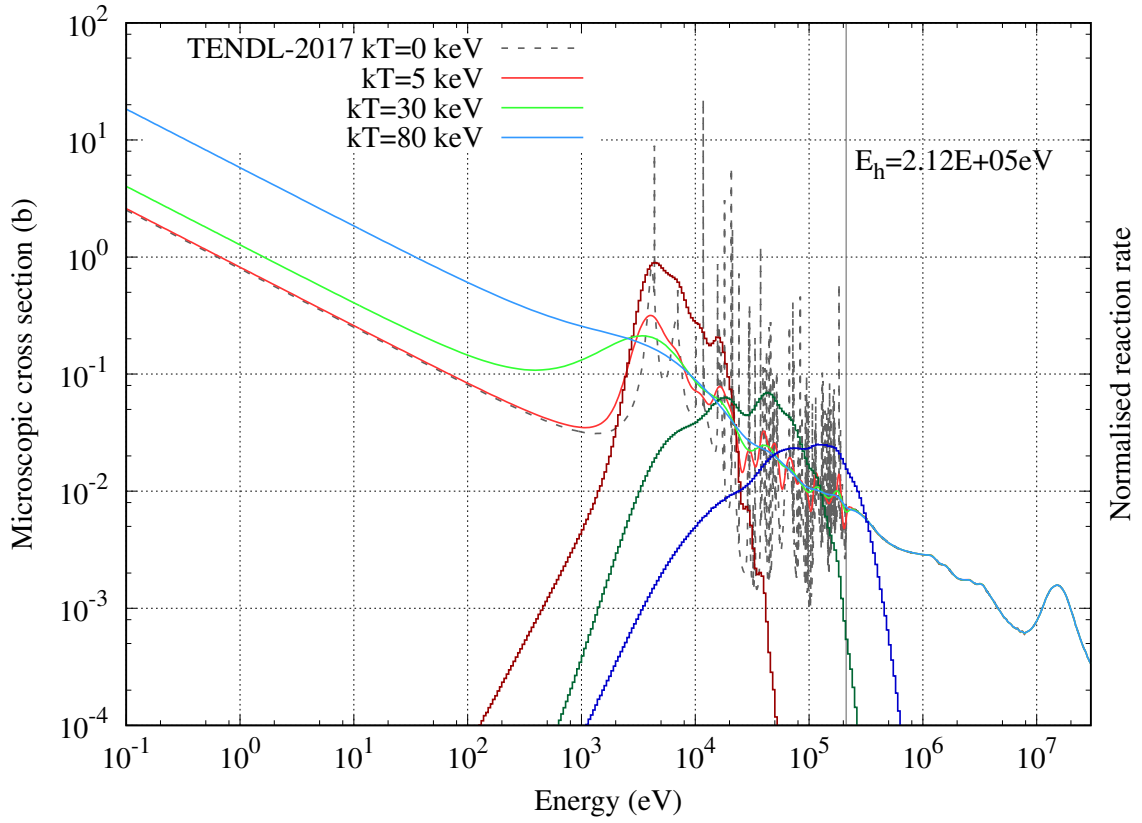
$^{50}\text{Ti}_{22}$ [Stable]



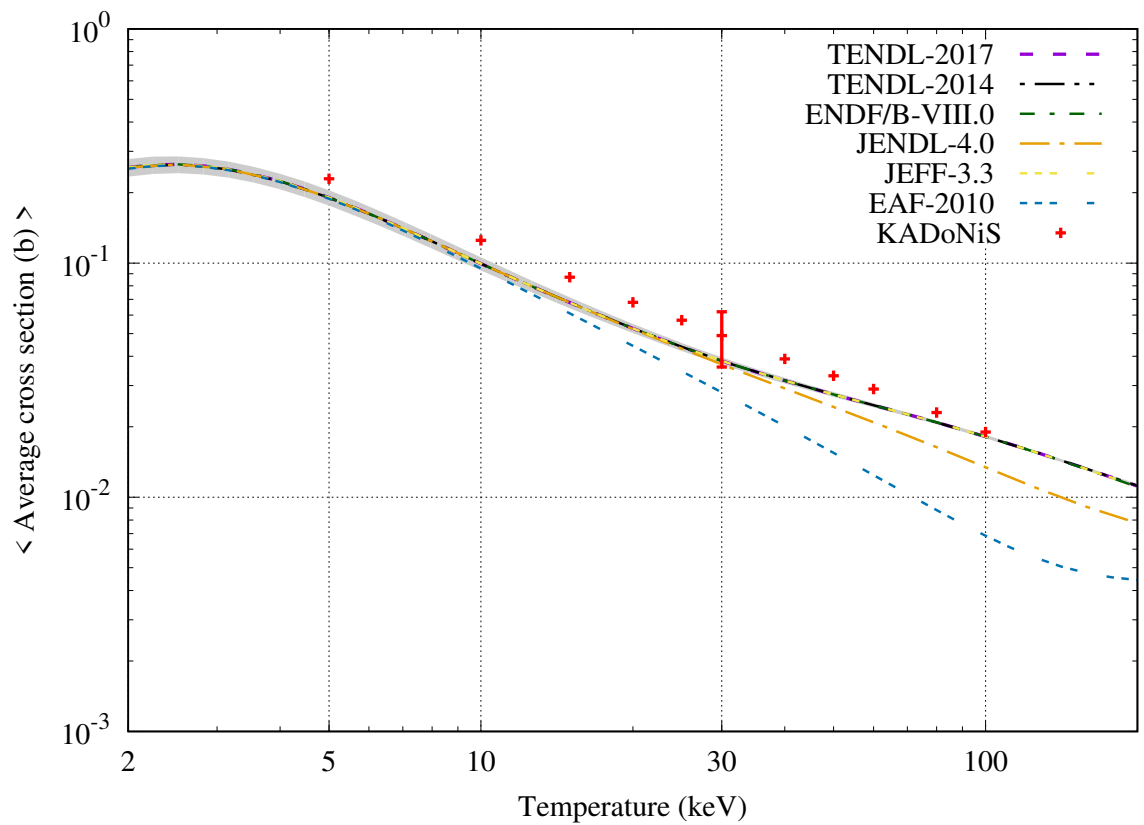
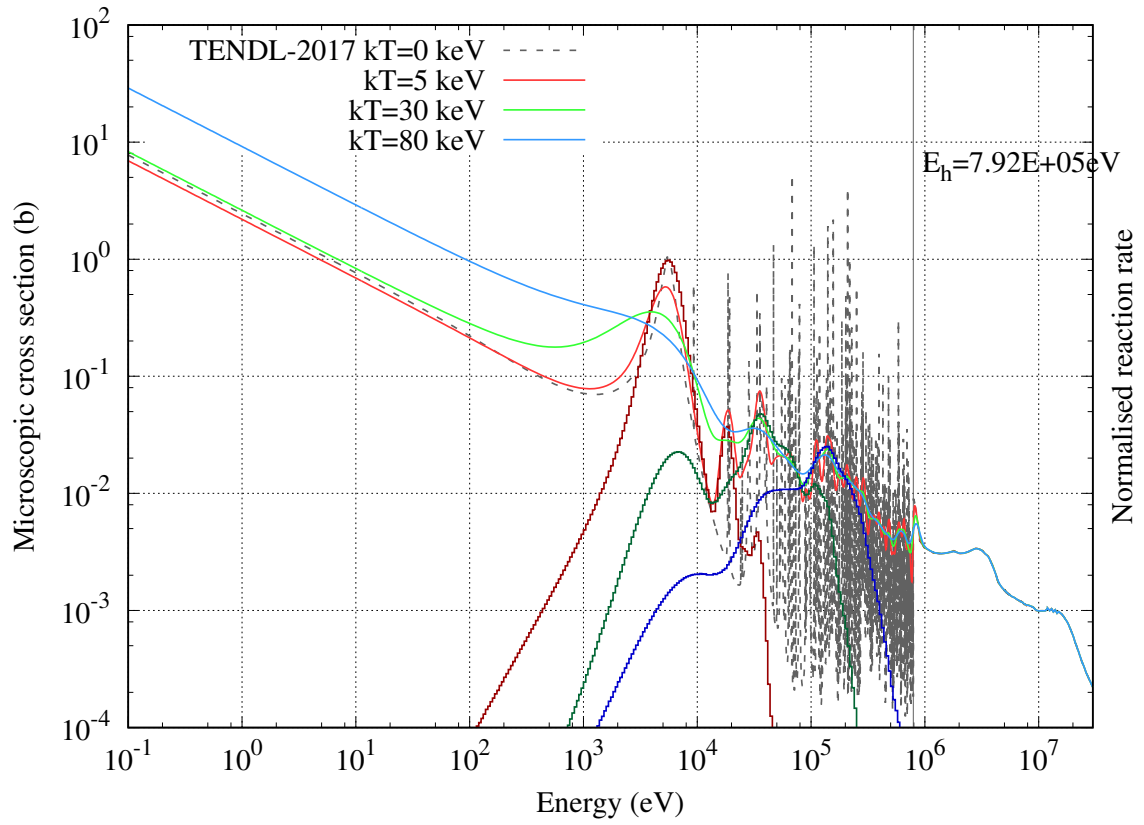
$^{50}\text{V}_{23}$ [$T_{1/2} = 1.40 \times 10^{17}$ years] (KADoNiS=SMC)



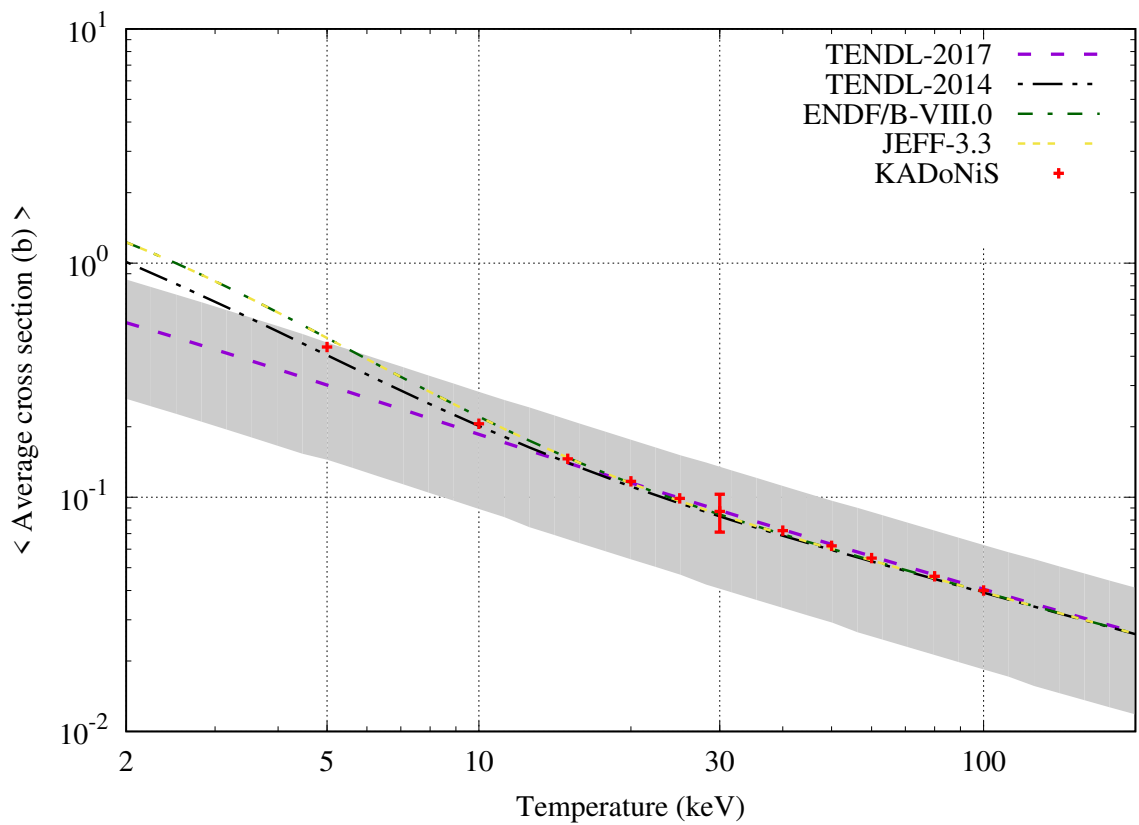
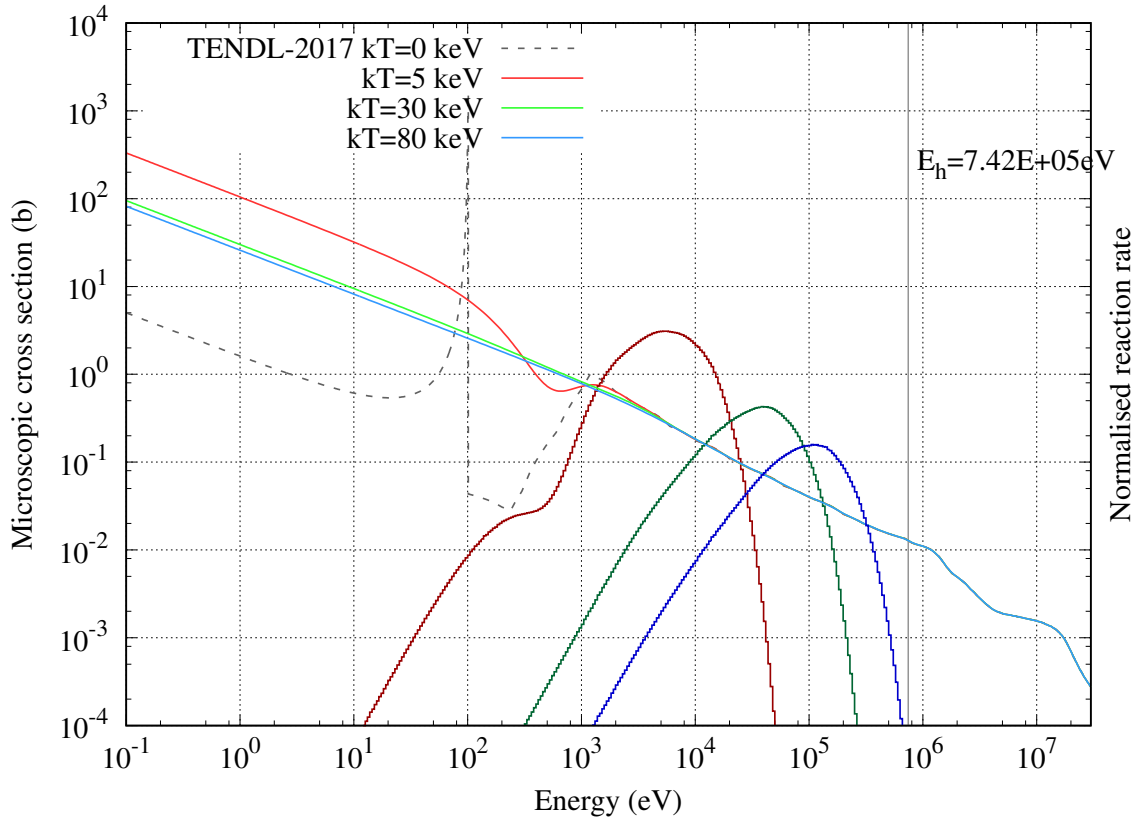
$^{51}\text{V}_{23}$ [Stable]



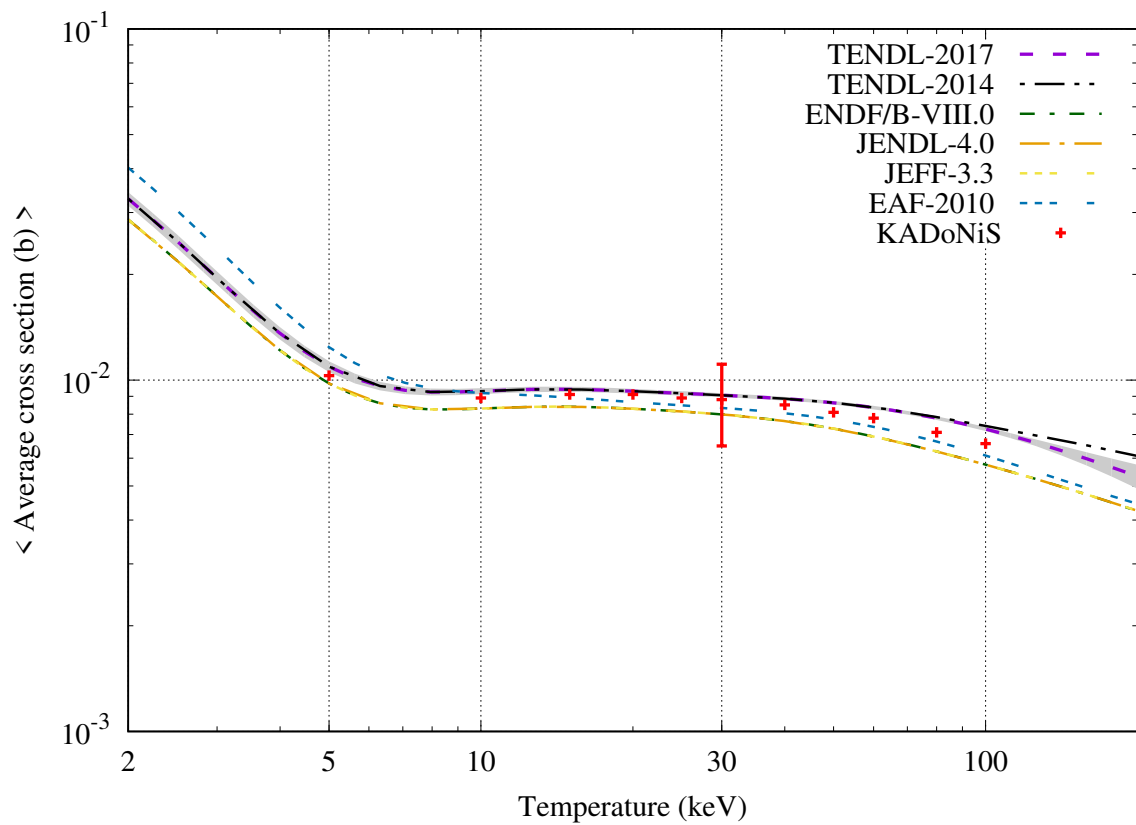
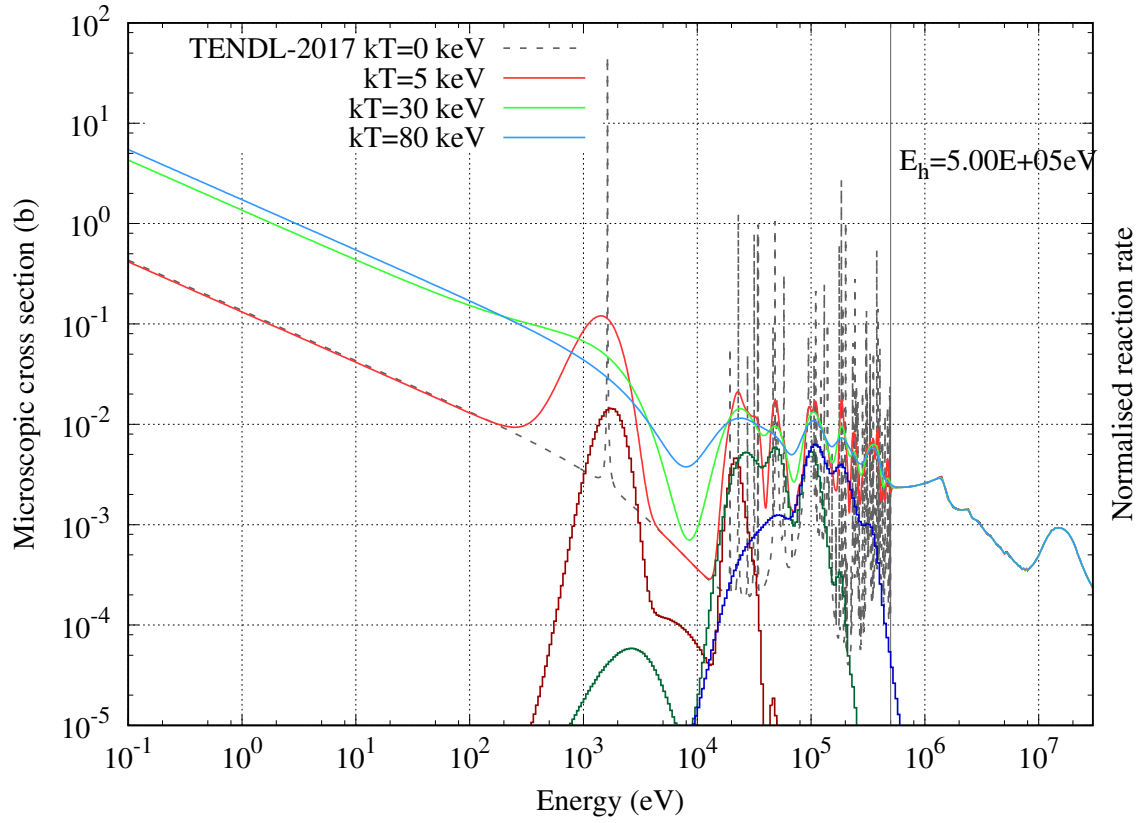
$^{50}\text{Cr}_{24}$ [$T_{1/2} = 1.80 \times 10^{17}$ years]



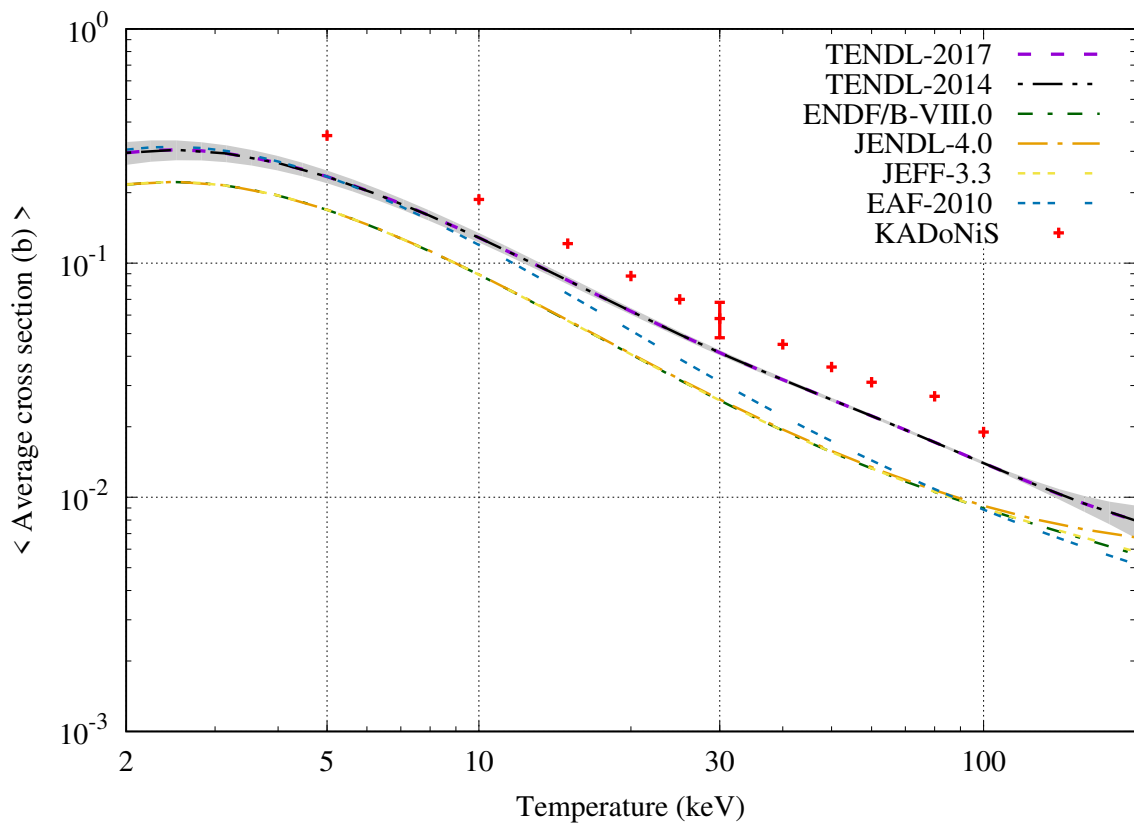
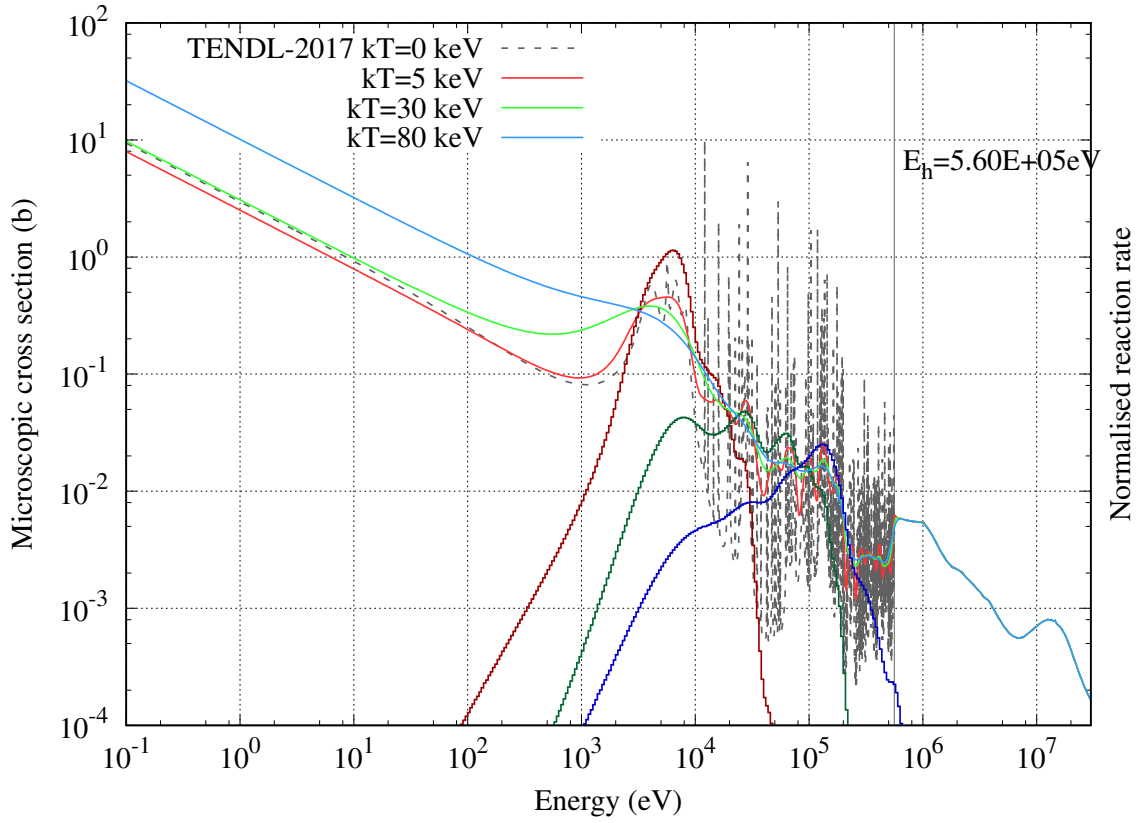
$^{51}\text{Cr}_{24}$ [$T_{1/2} = 27.70$ days] (KADoNiS=SMC)



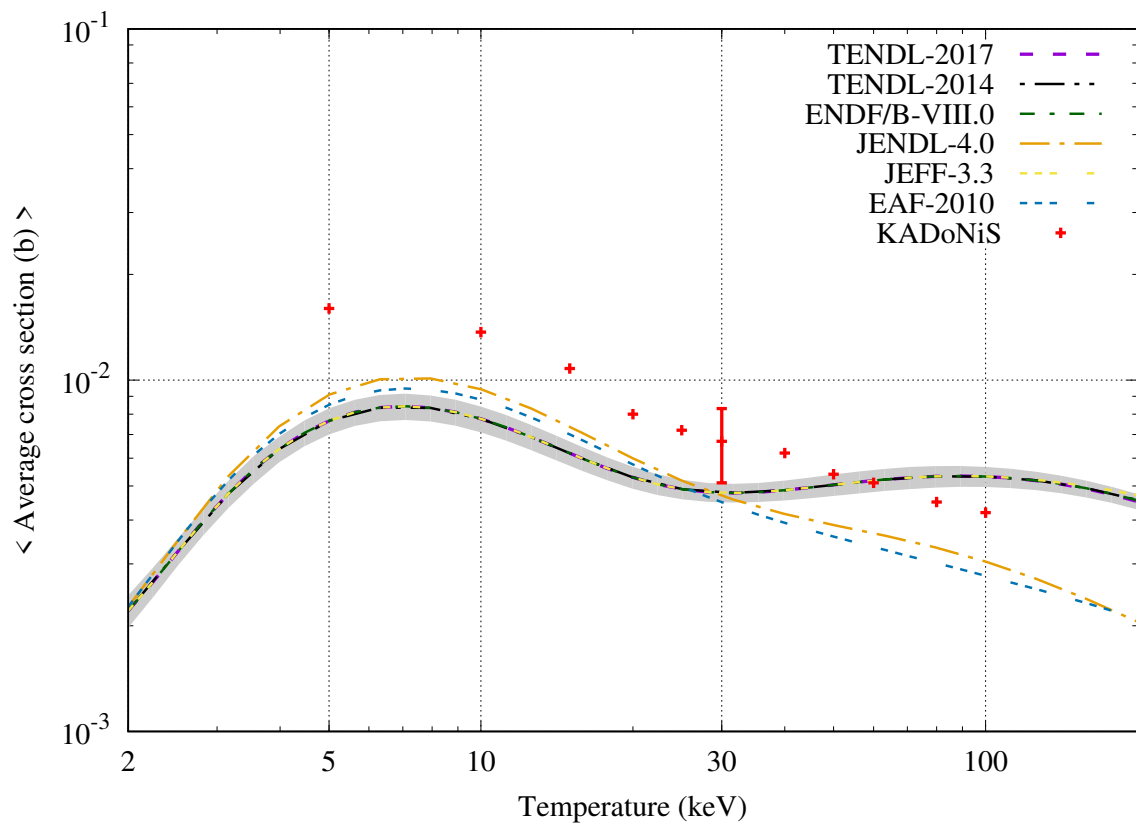
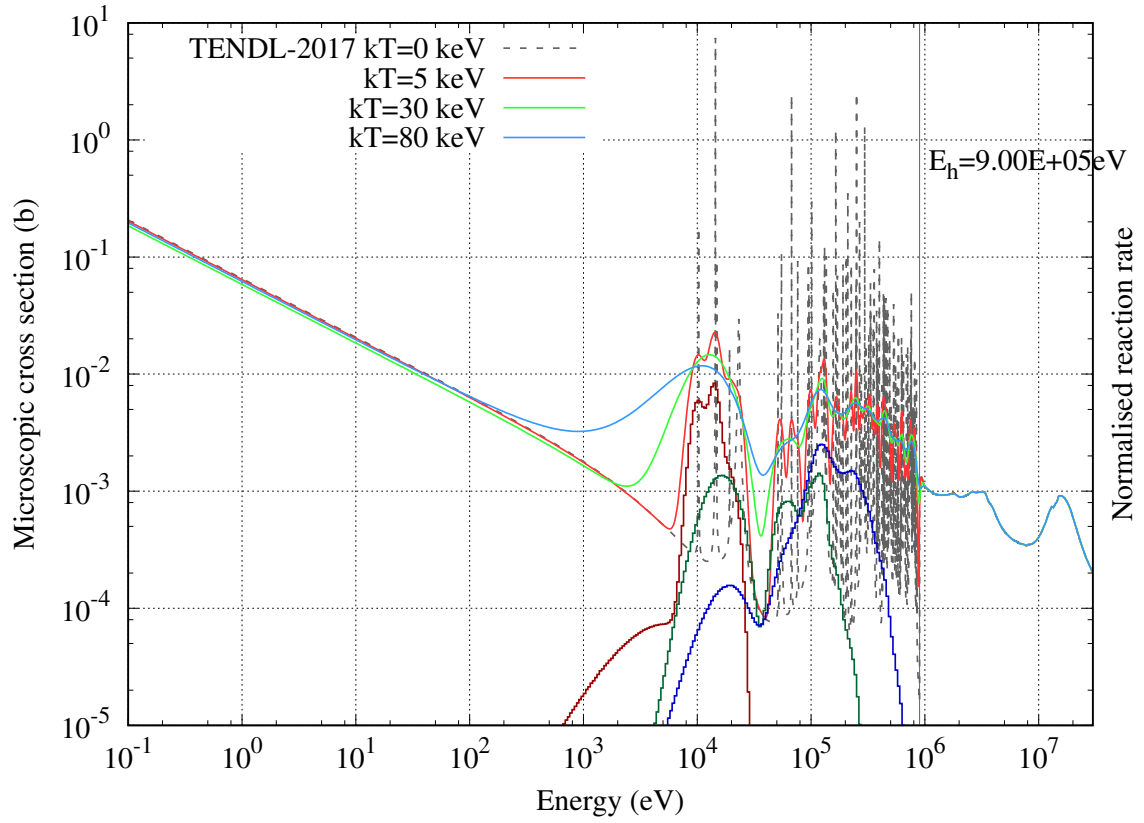
$^{52}\text{Cr}_{24}$ [Stable]



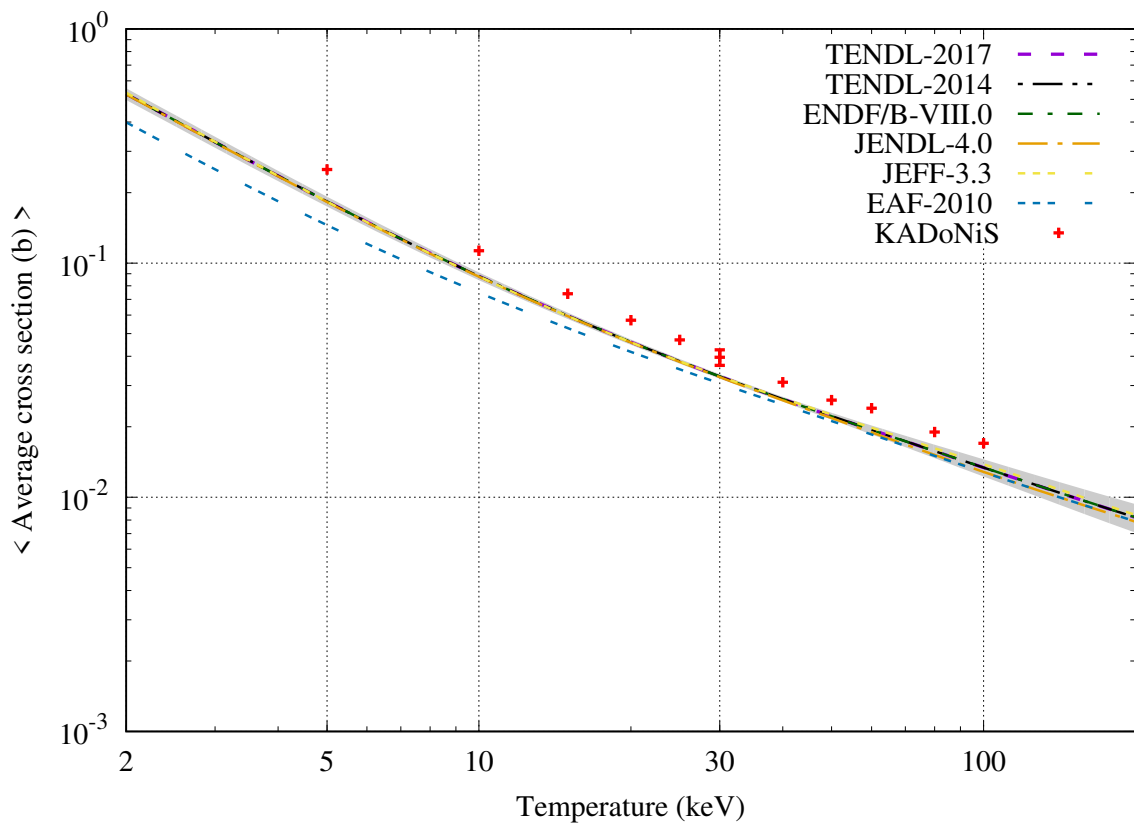
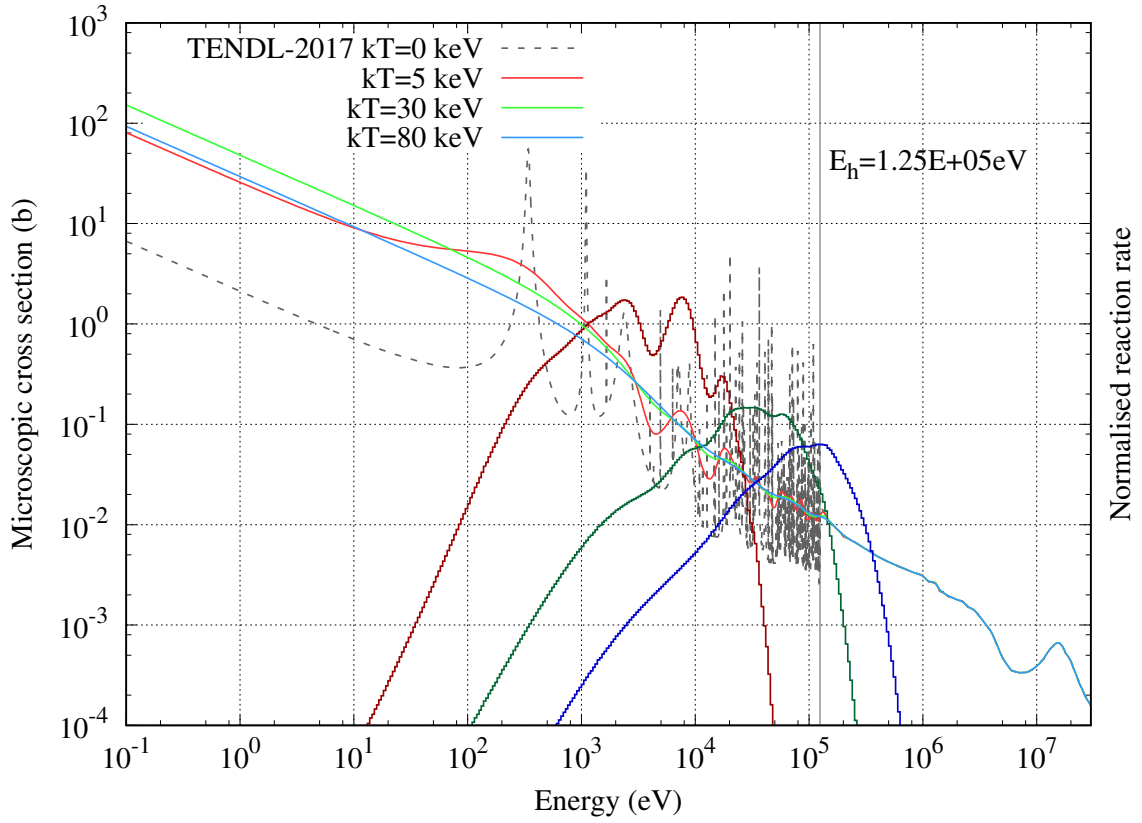
$^{53}\text{Cr}_{24}$ [Stable]



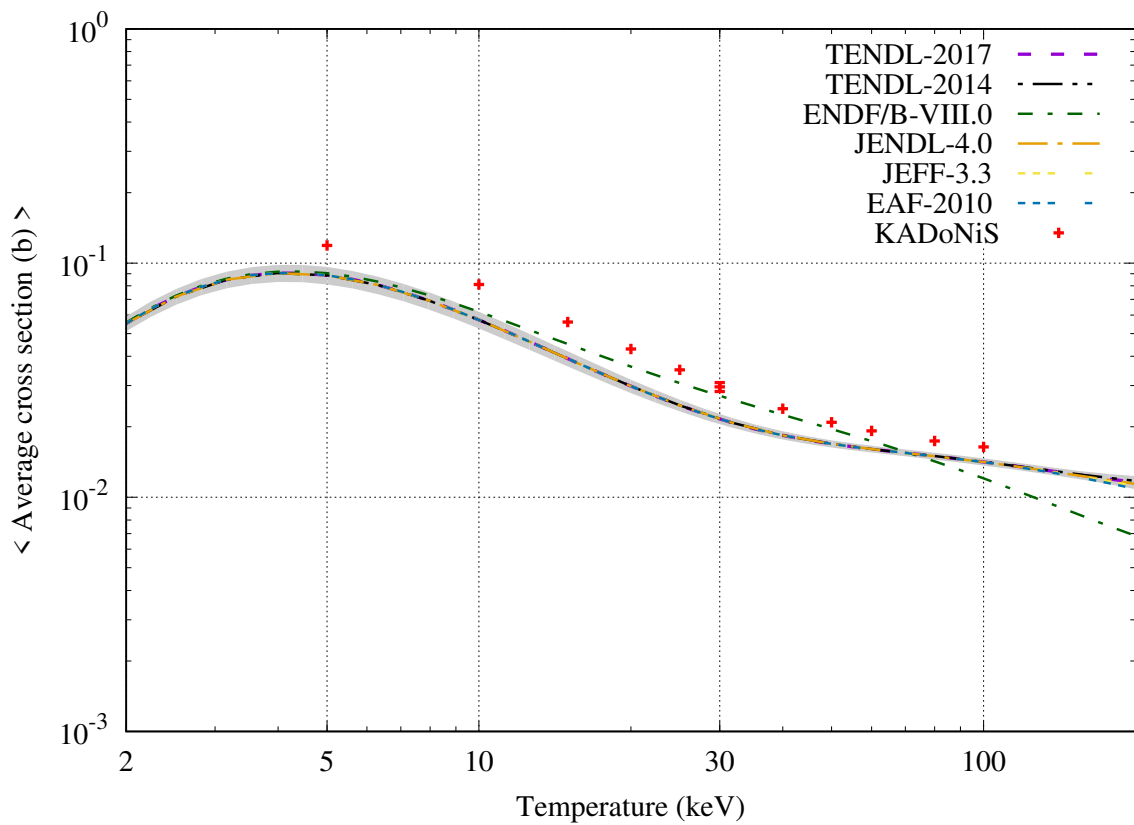
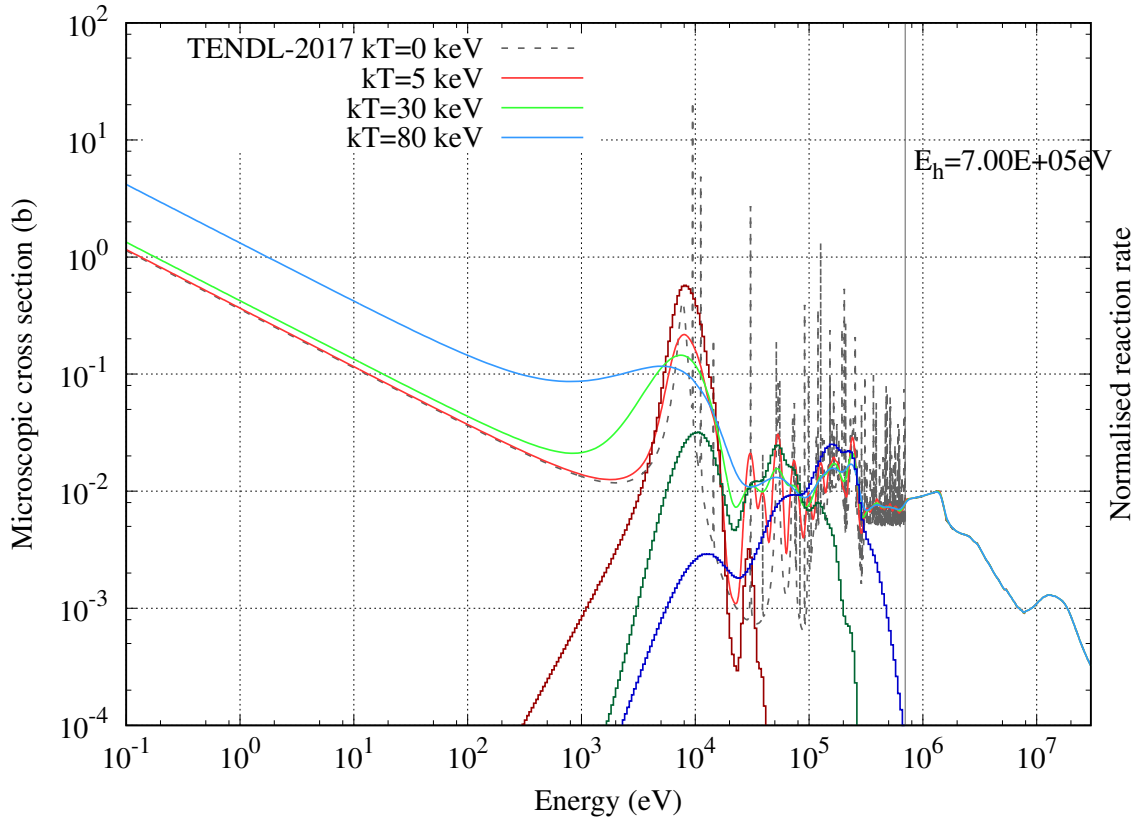
$^{54}\text{Cr}_{24}$ [Stable]



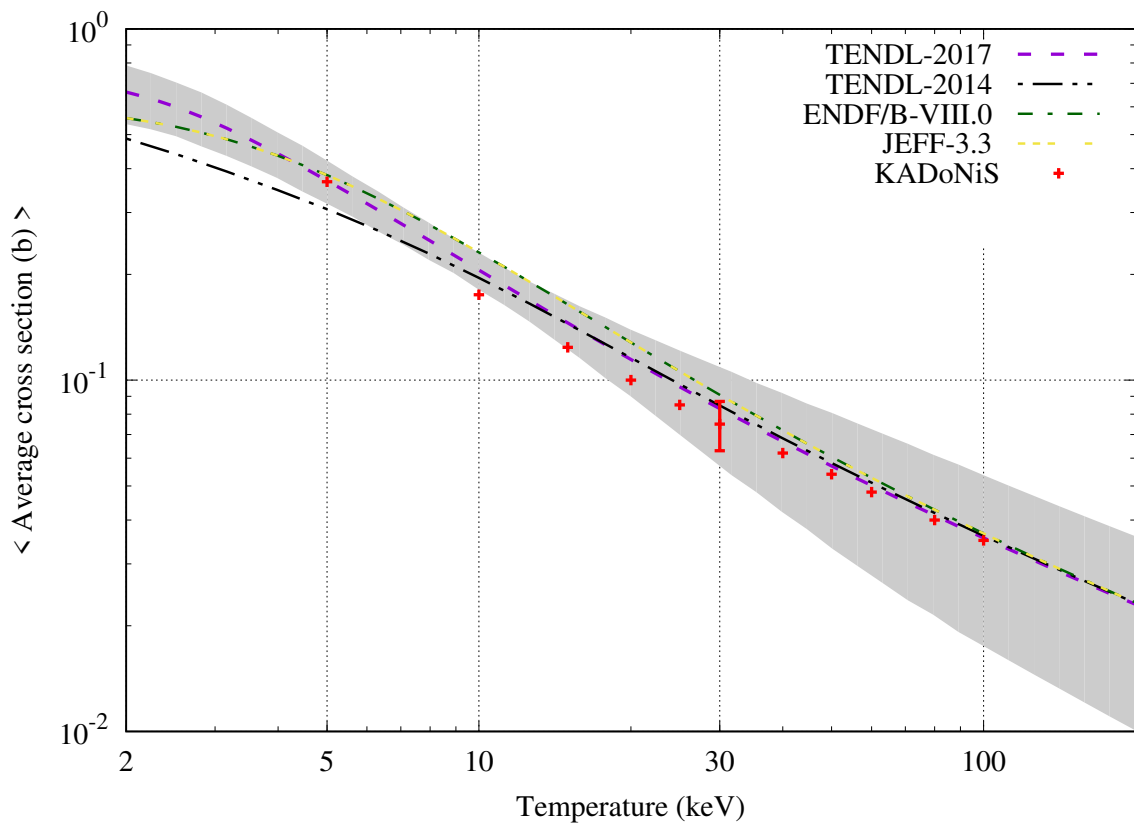
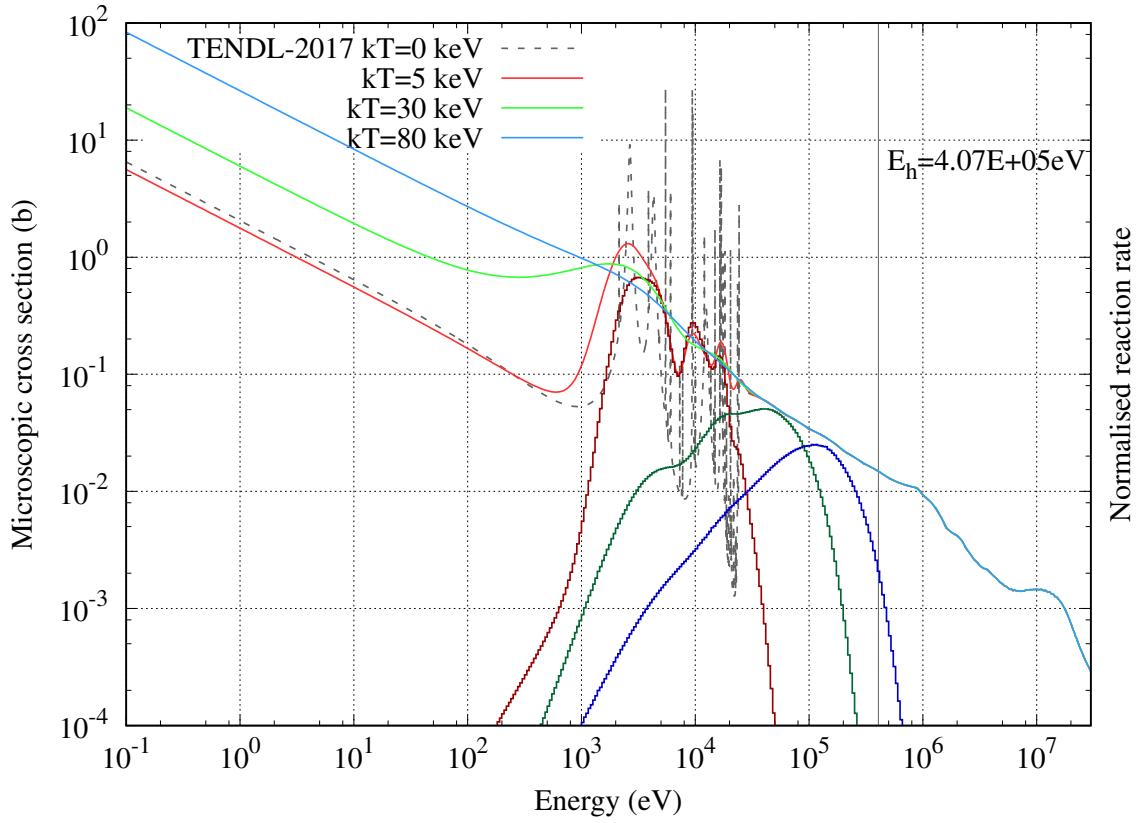
$^{55}\text{Mn}_{25}$ [Stable]



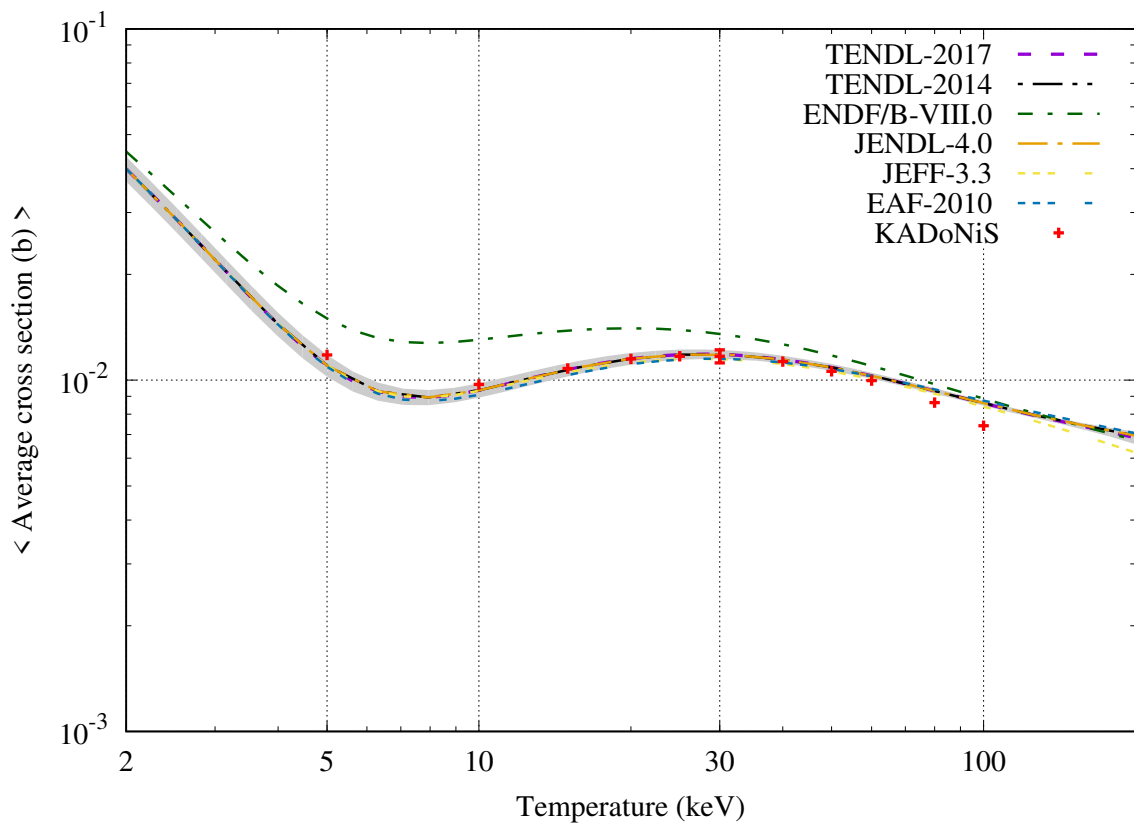
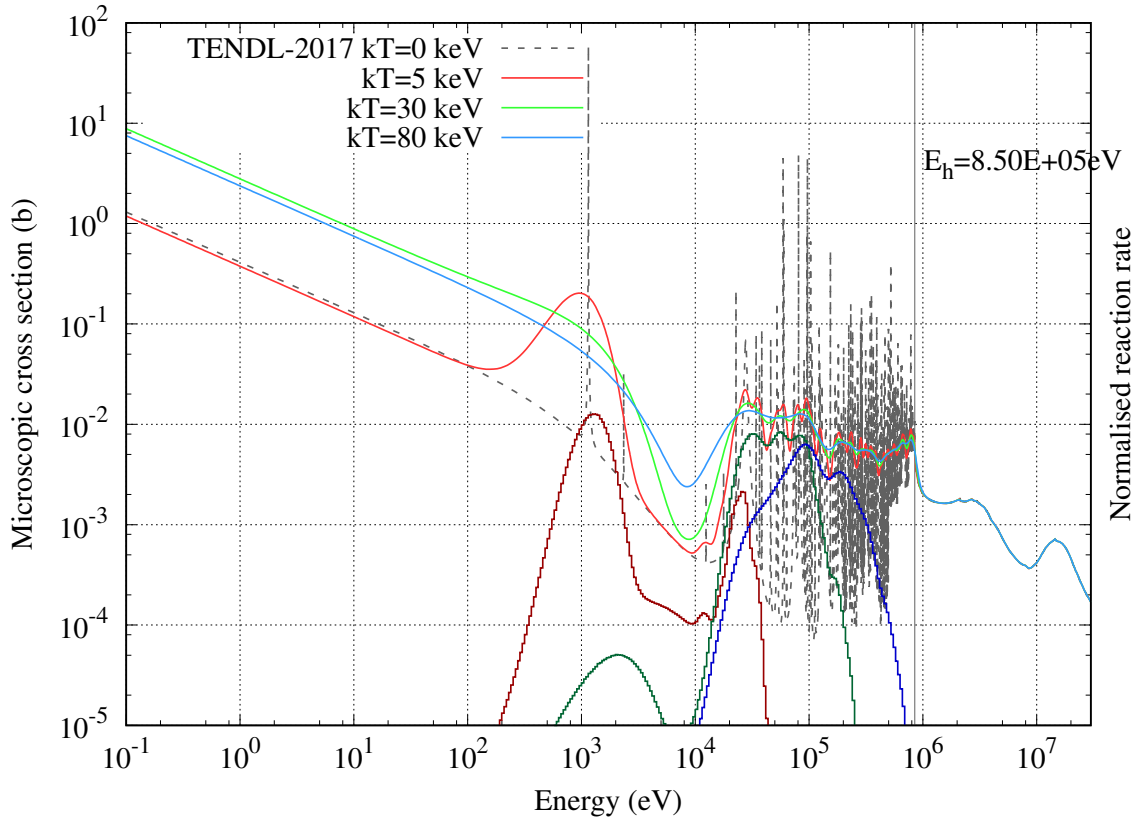
$^{54}\text{Fe}_{26}$ [Stable]



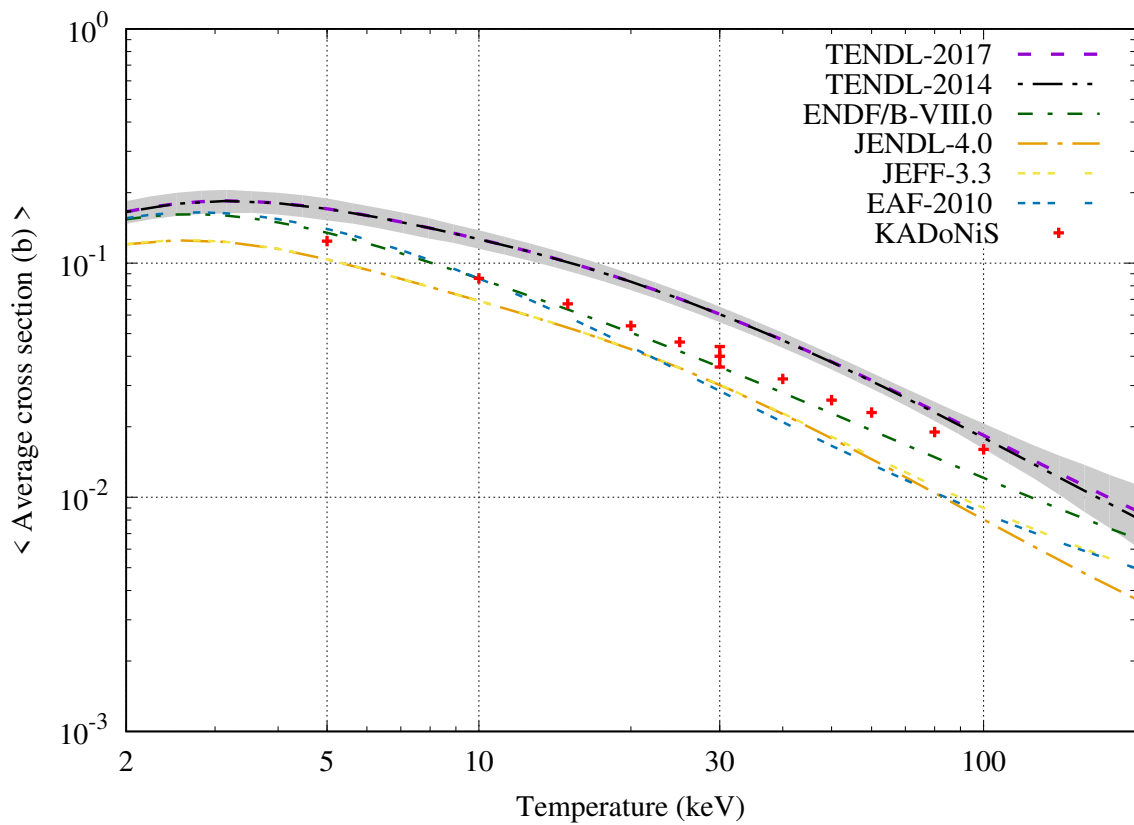
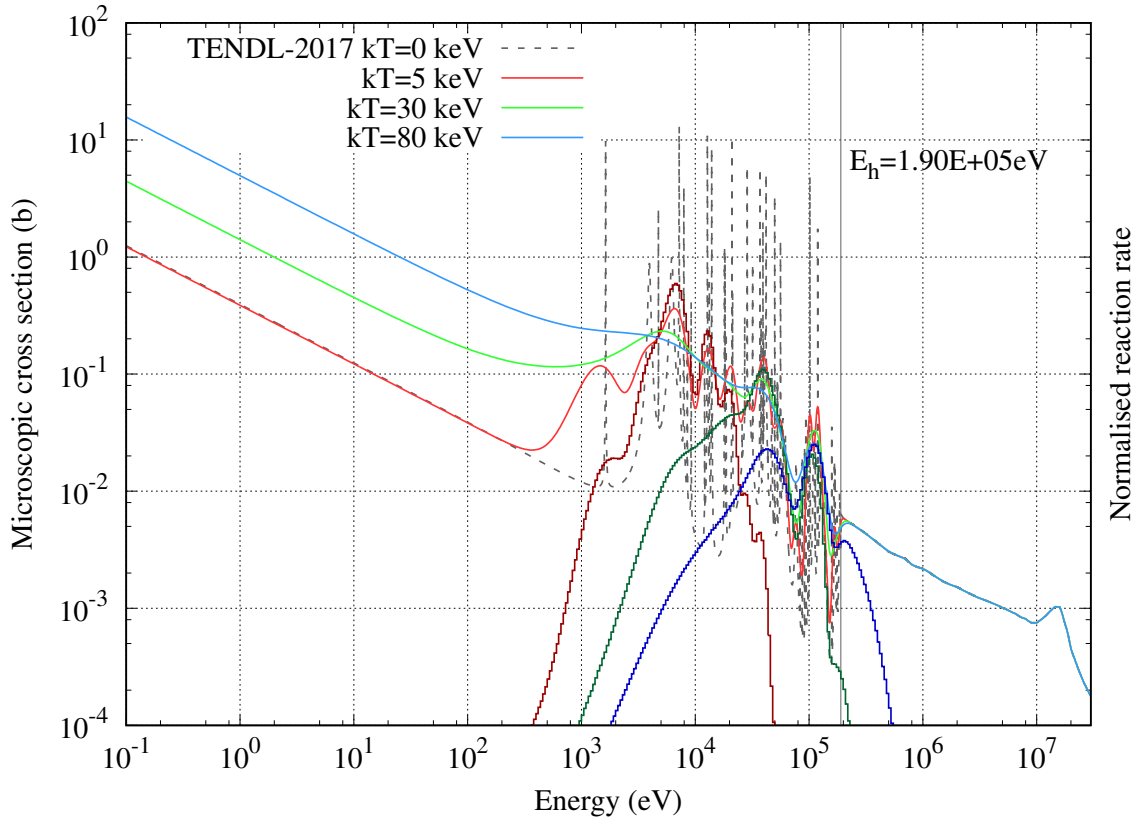
$^{55}\text{Fe}_{26}$ [$T_{1/2} = 2.73$ years] (KADoNiS=SMC)



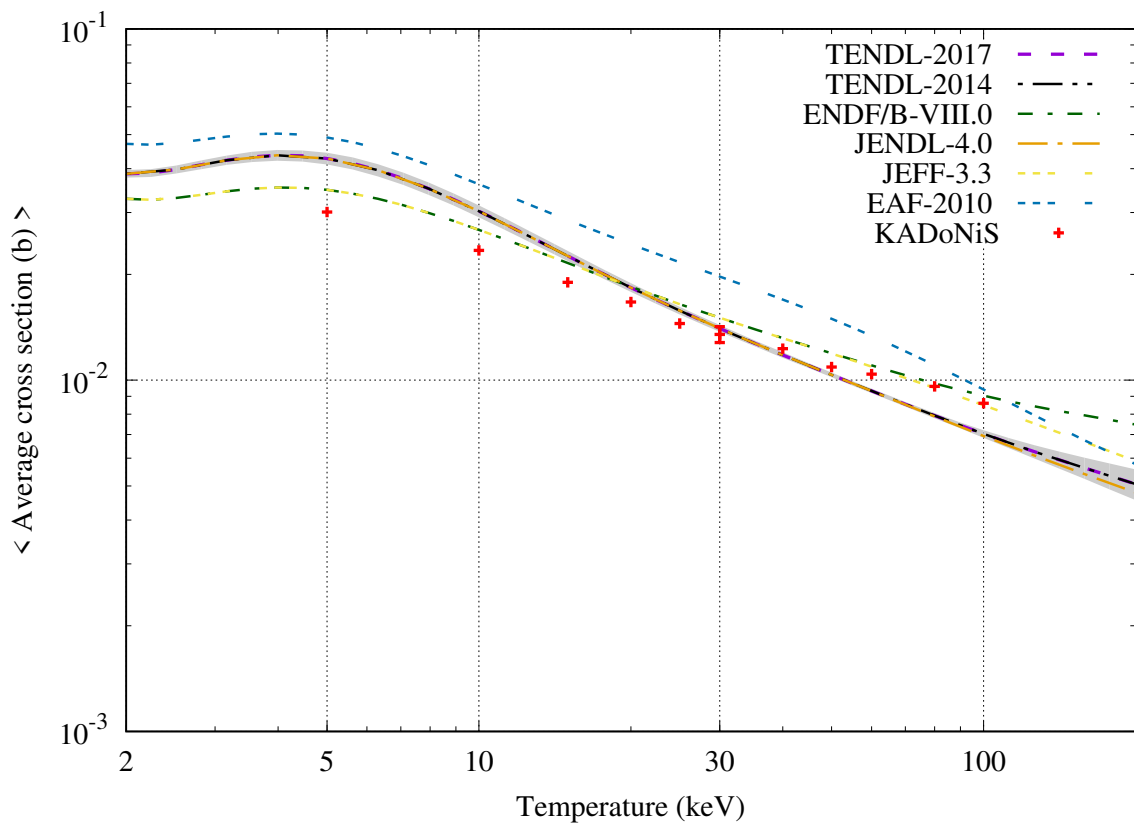
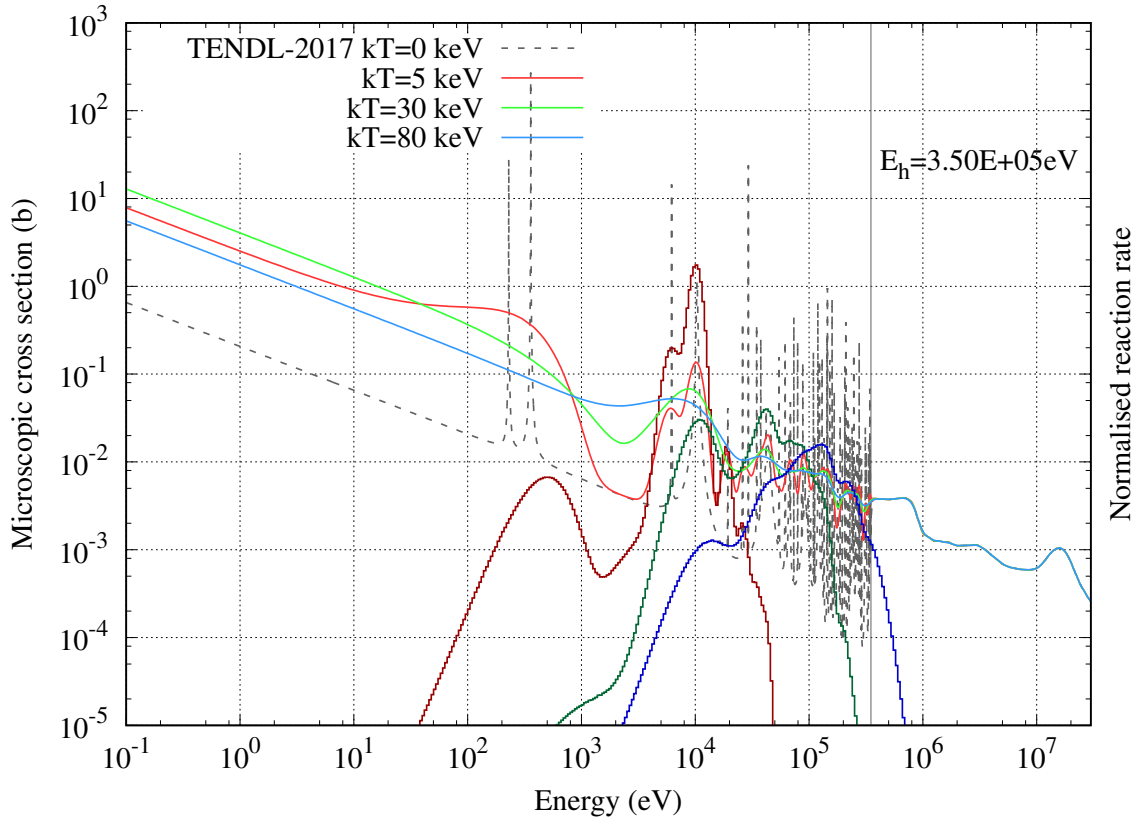
$^{56}\text{Fe}_{26}$ [Stable]



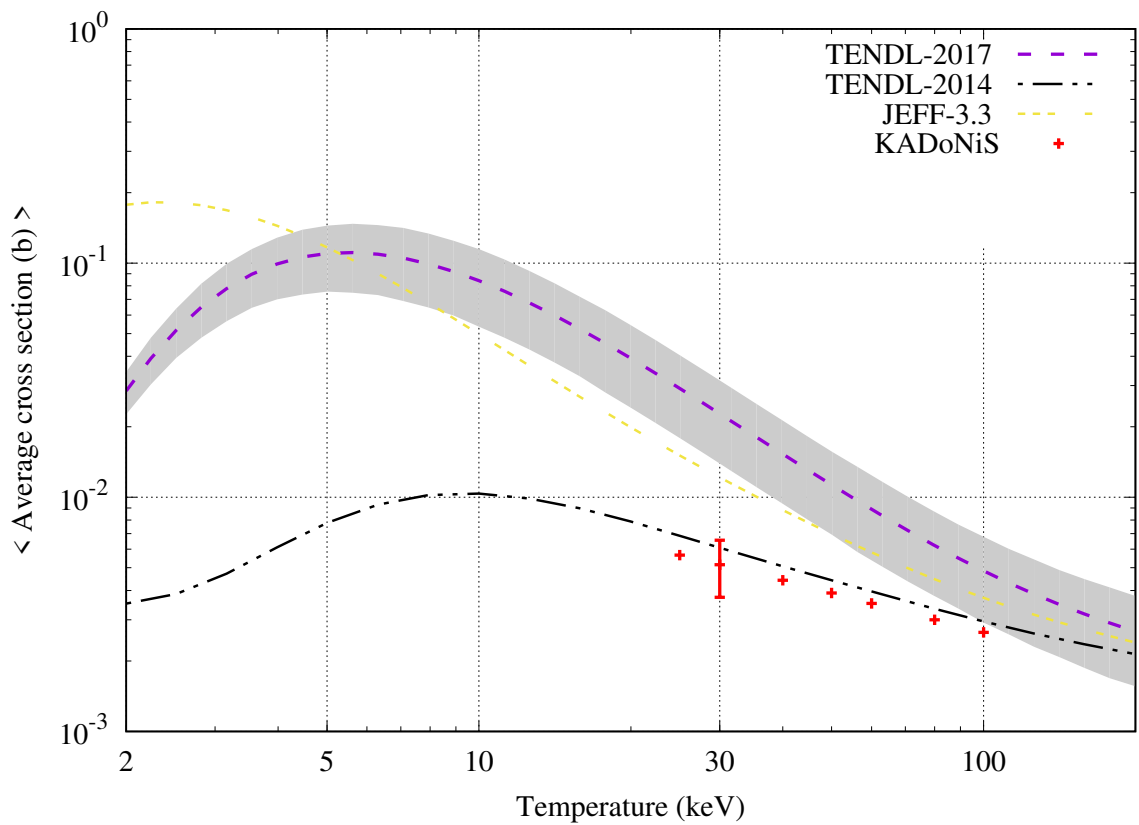
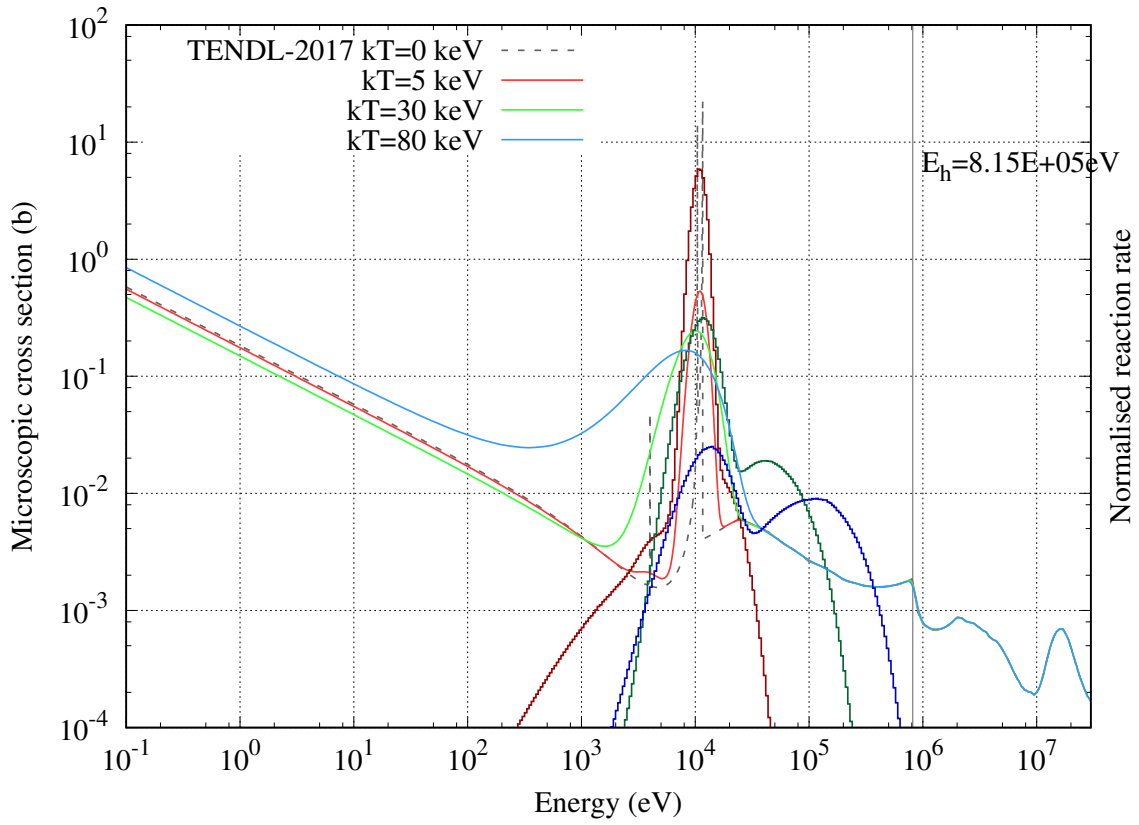
$^{57}\text{Fe}_{26}$ [Stable]



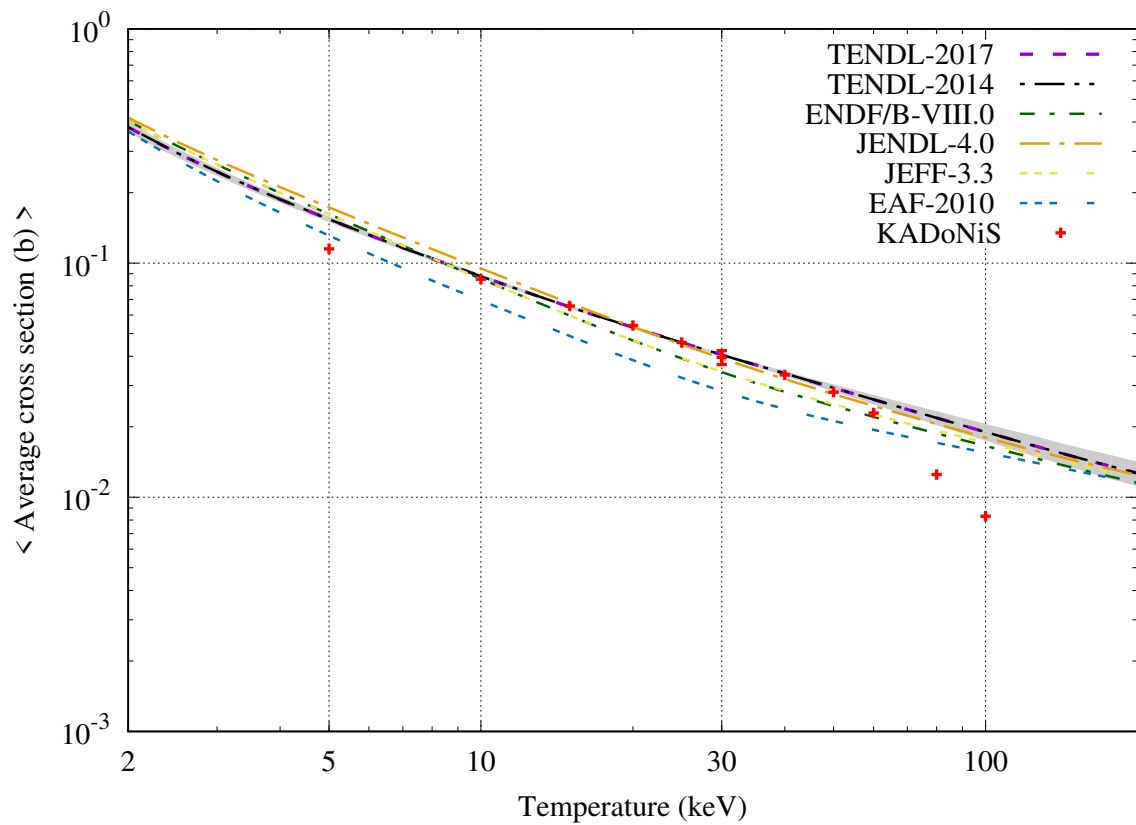
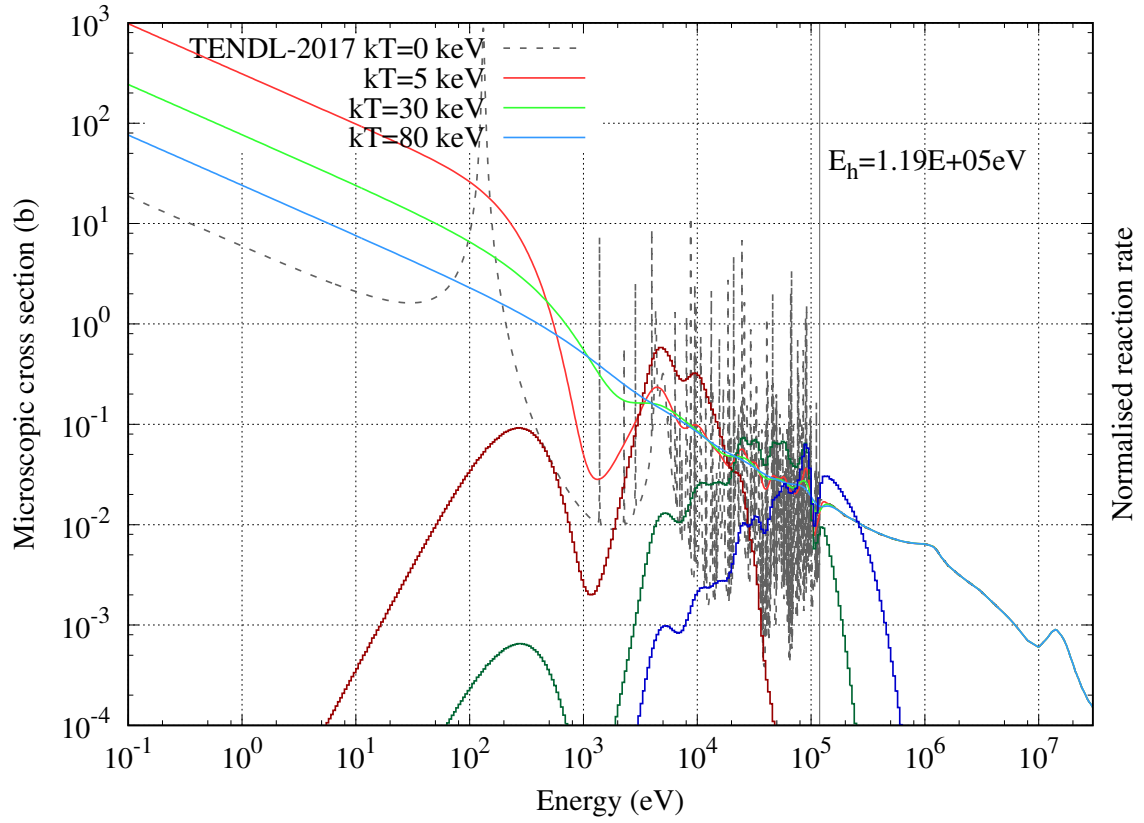
$^{58}\text{Fe}_{26}$ [Stable]



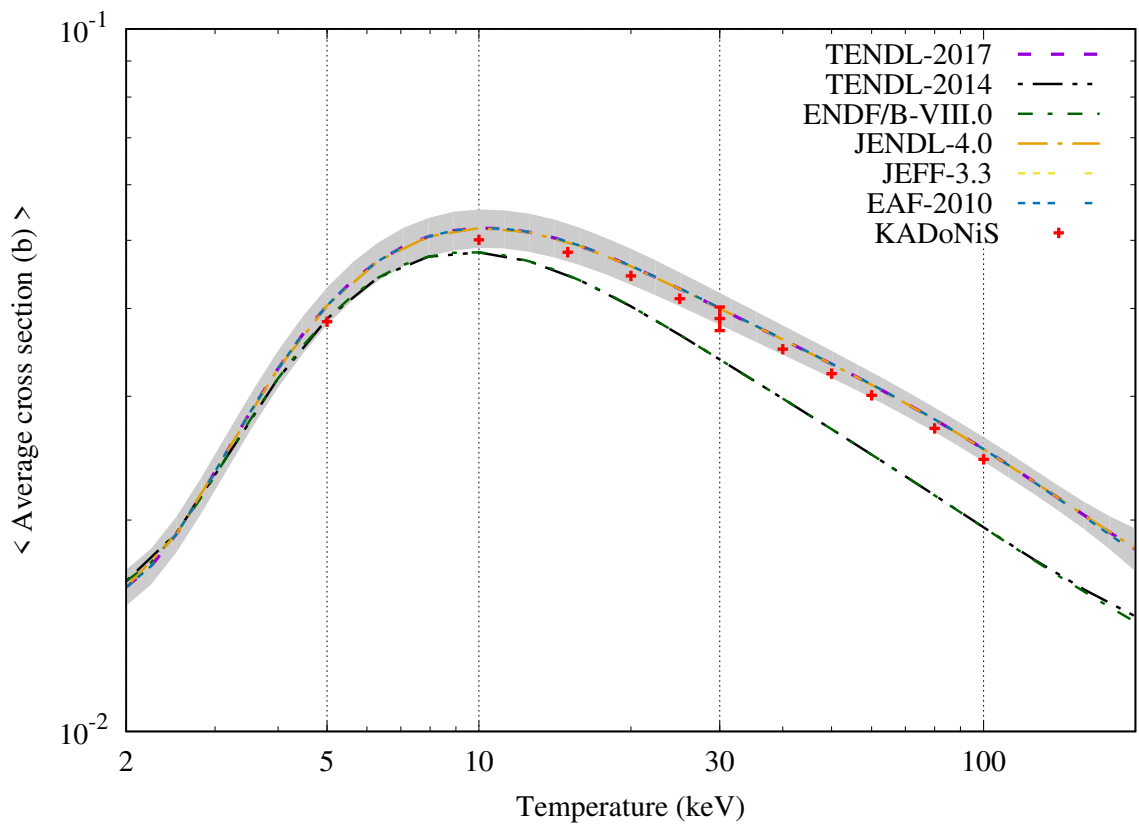
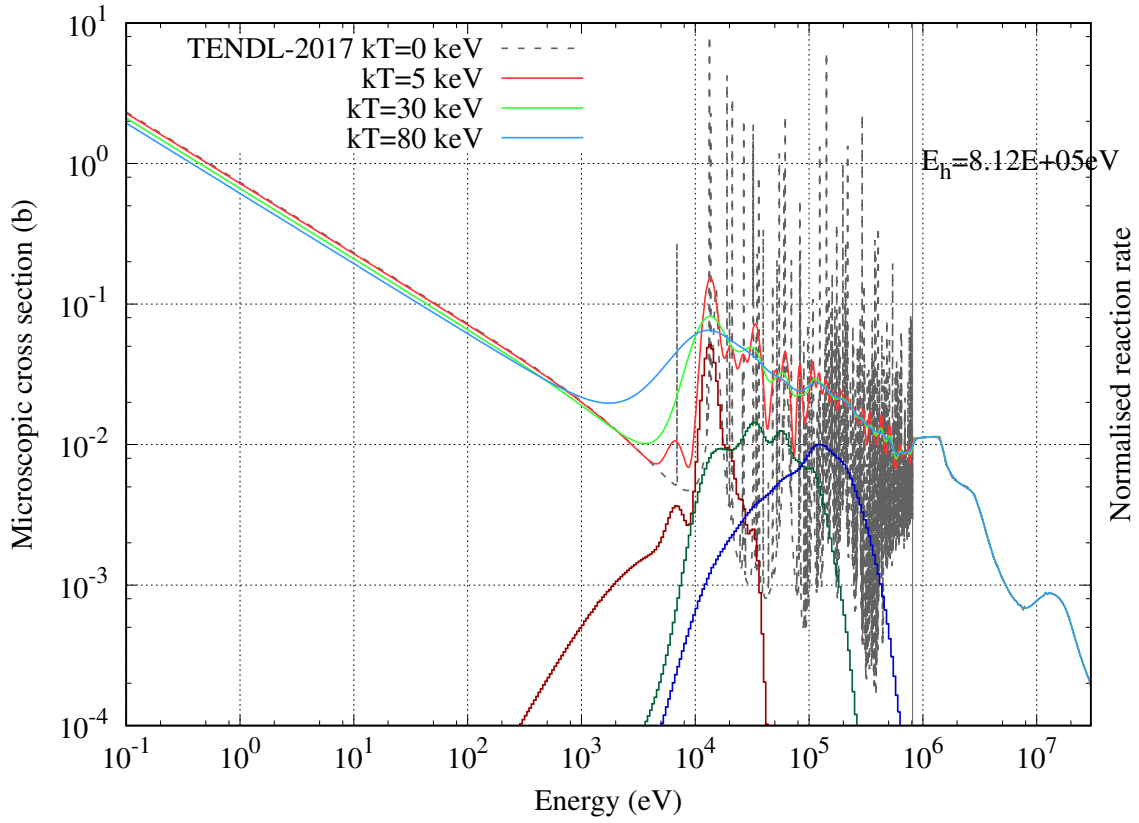
$^{60}\text{Fe}_{26}$ [$T_{1/2} = 1.50 \times 10^6$ years] (KADoNiS=SMC)



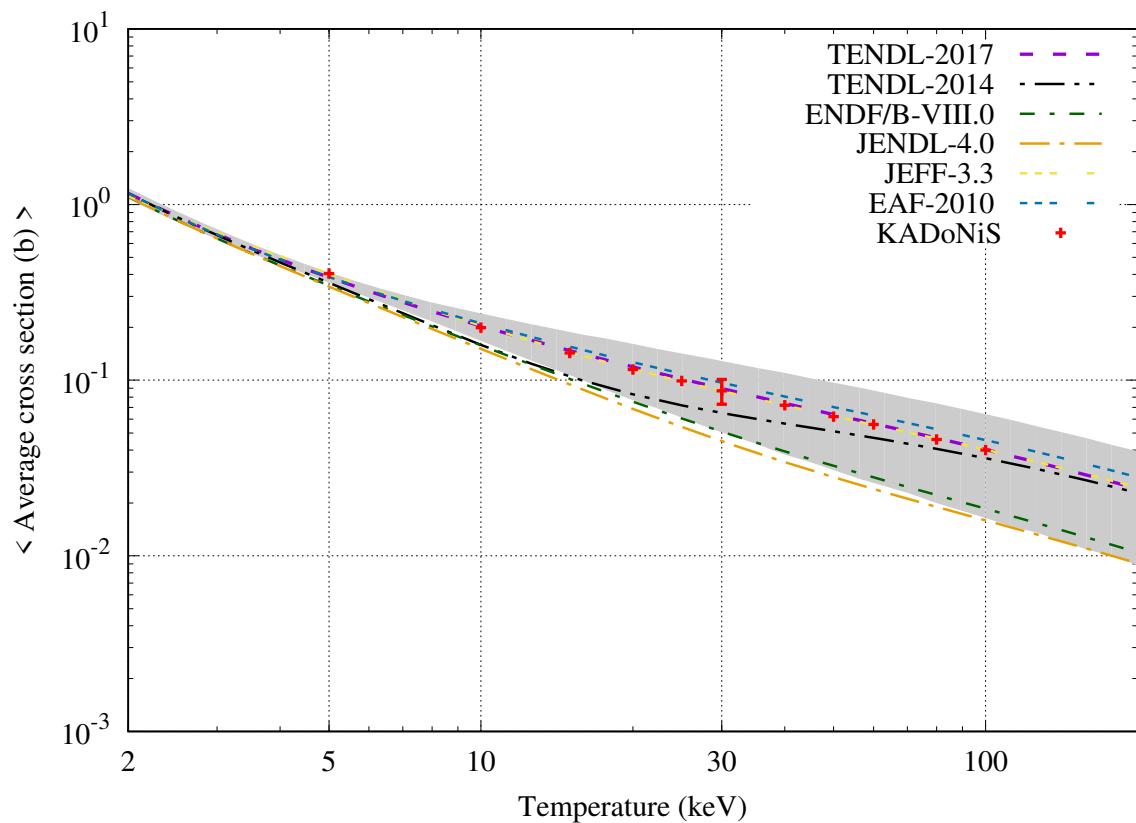
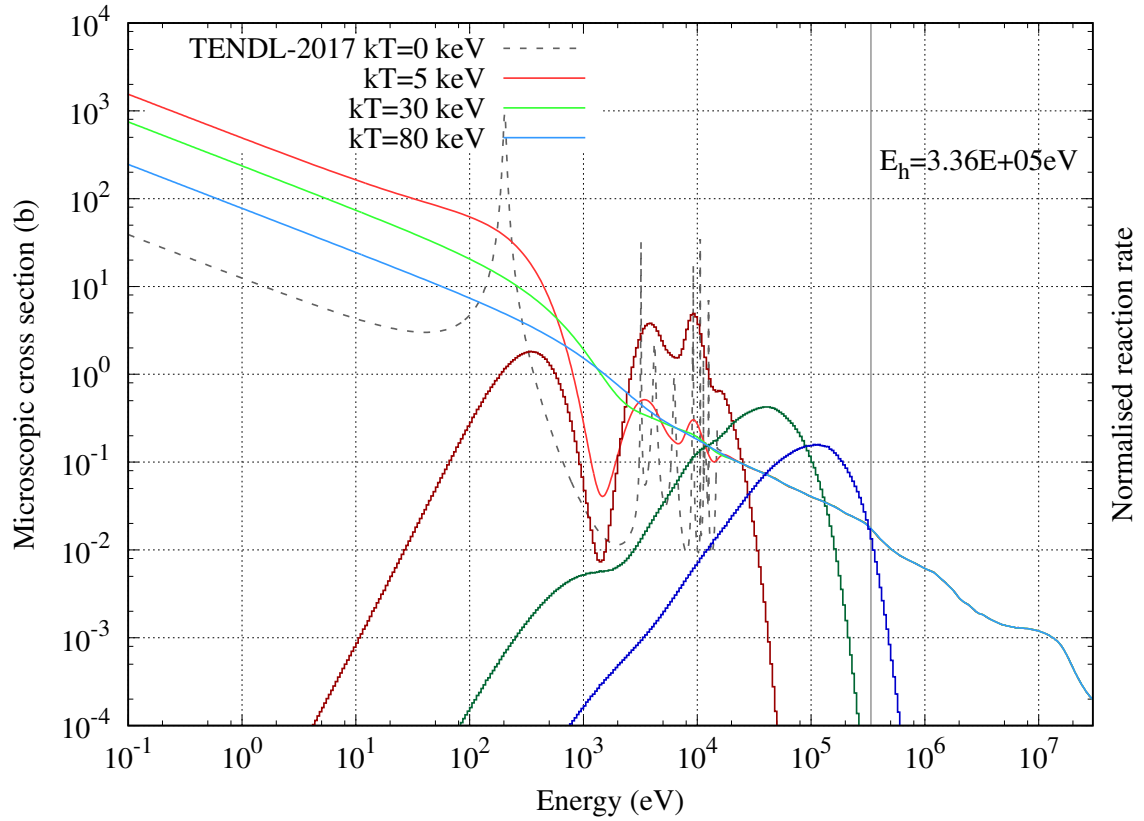
$^{59}\text{Co}_{27}$ [Stable]



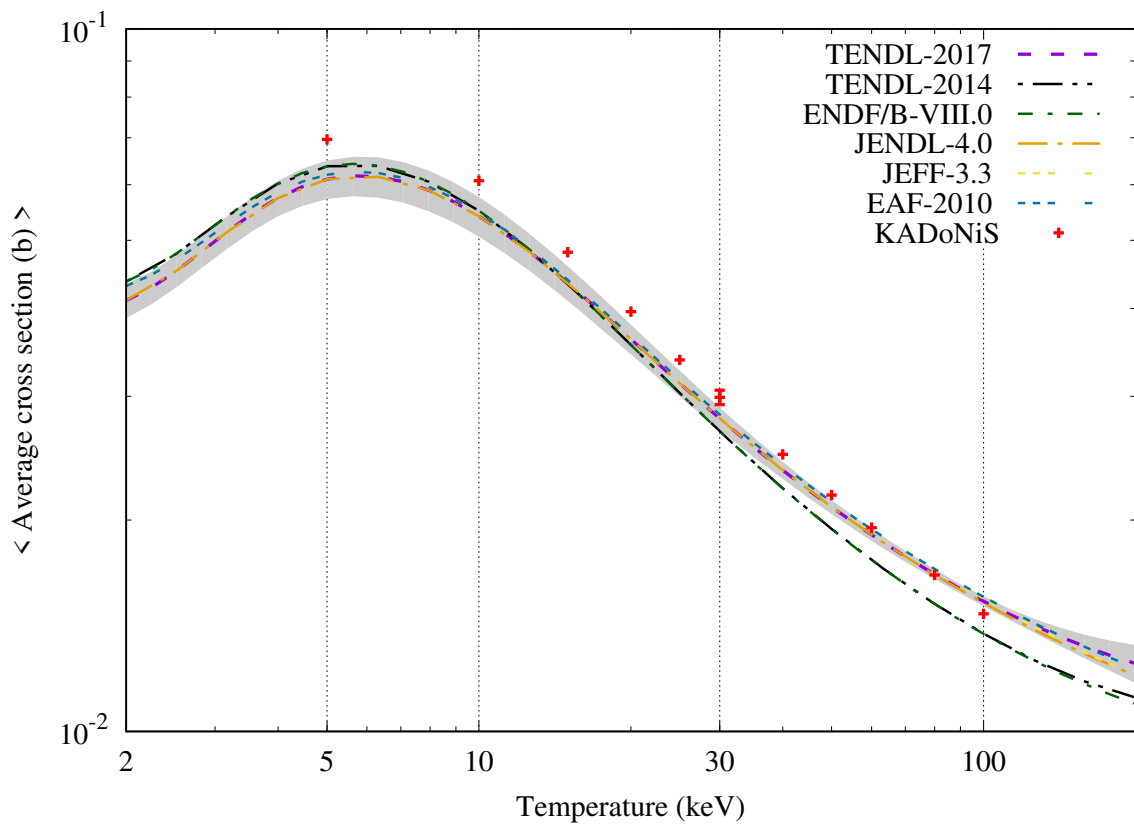
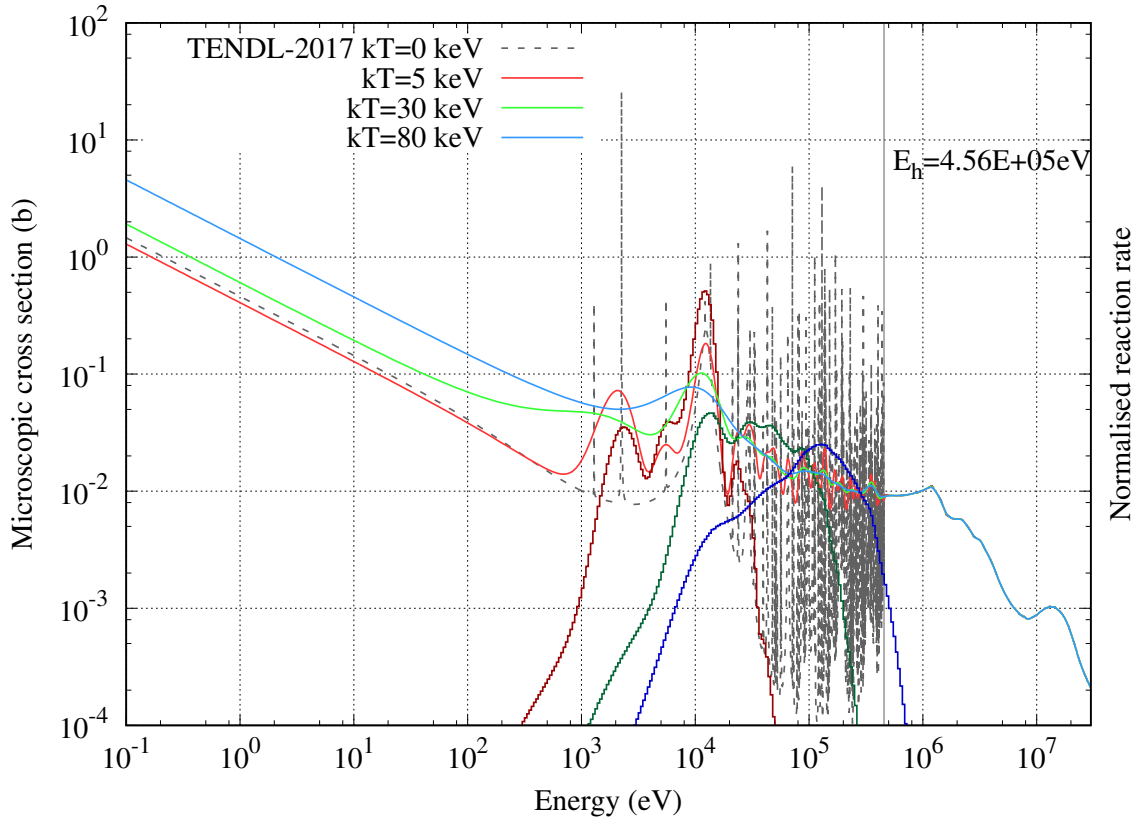
$^{58}\text{Ni}_{28}$ [$T_{1/2} = 7.00 \times 10^{20}$ years]



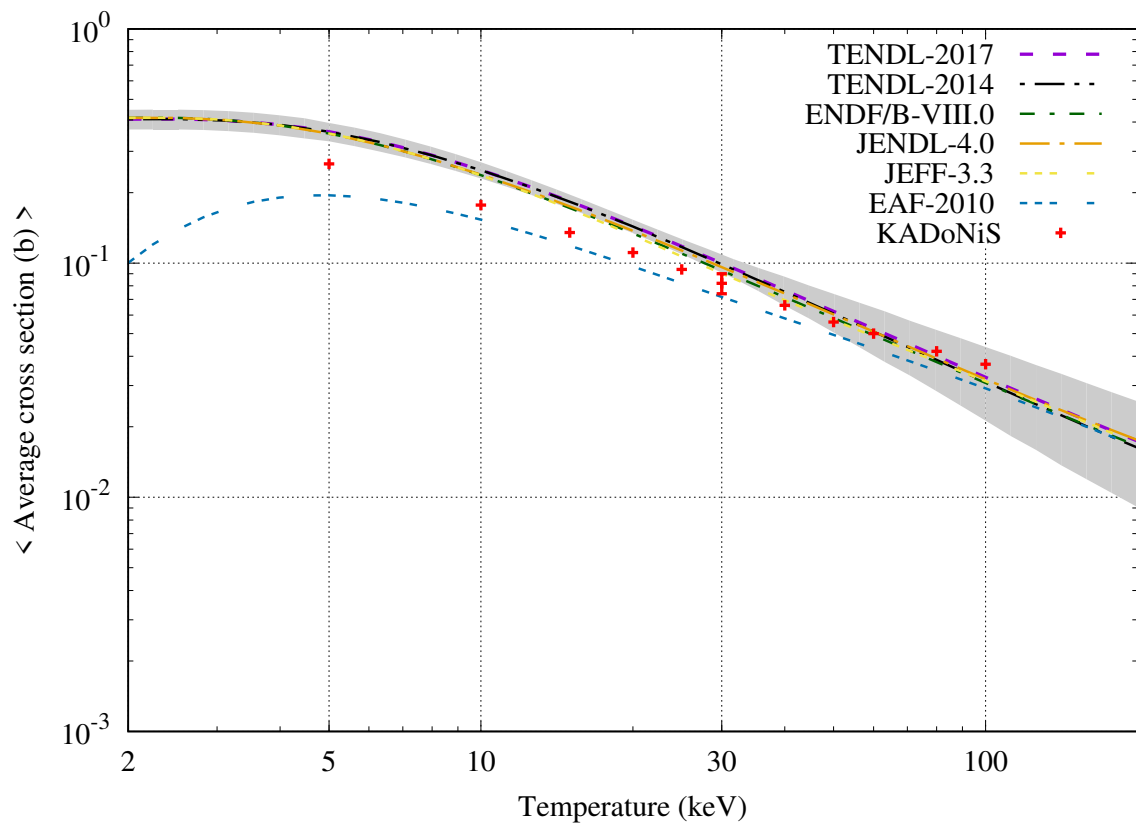
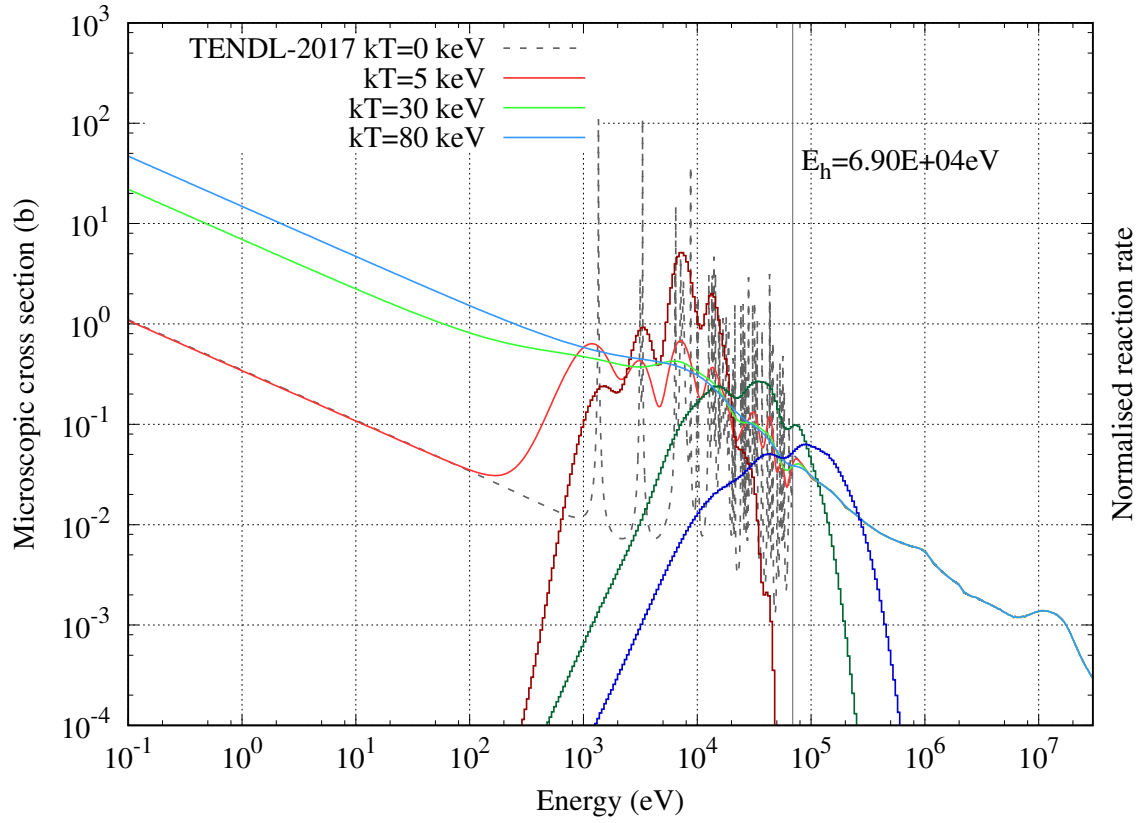
$^{59}\text{Ni}_{28}$ [$T_{1/2} = 7.60 \times 10^4$ years] (KADoNiS=SMC)



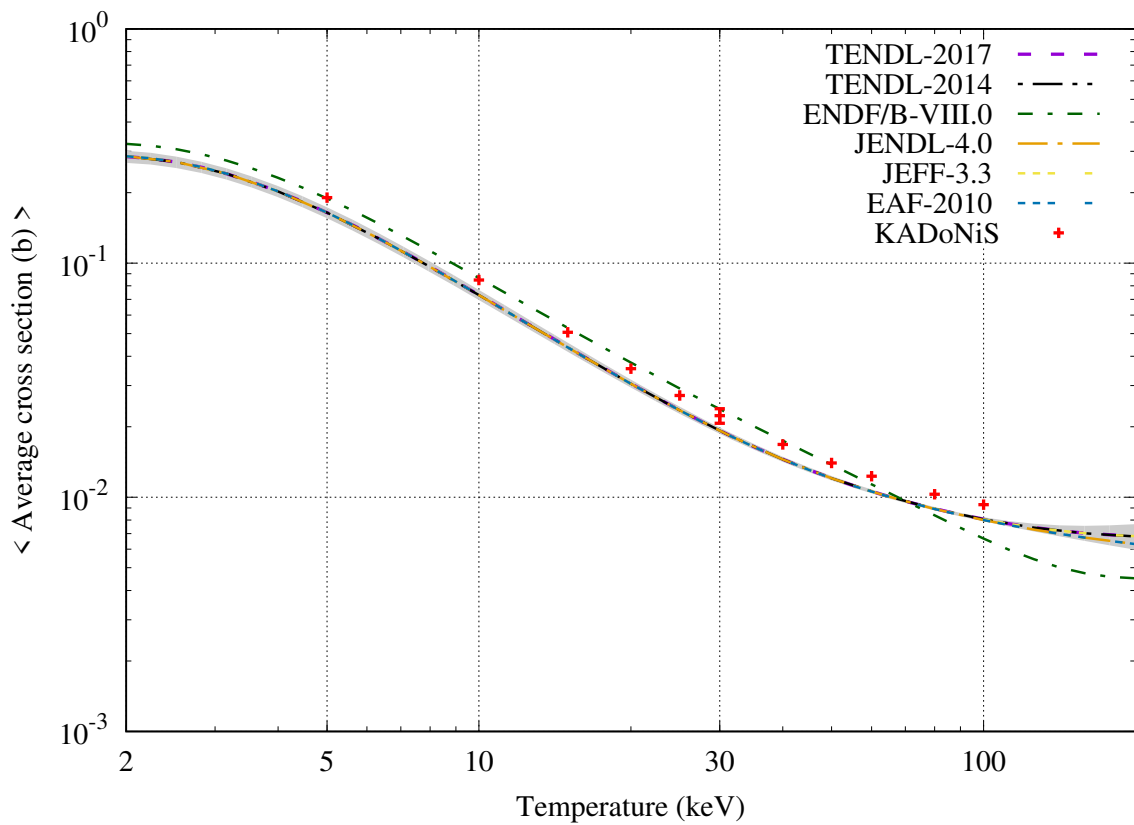
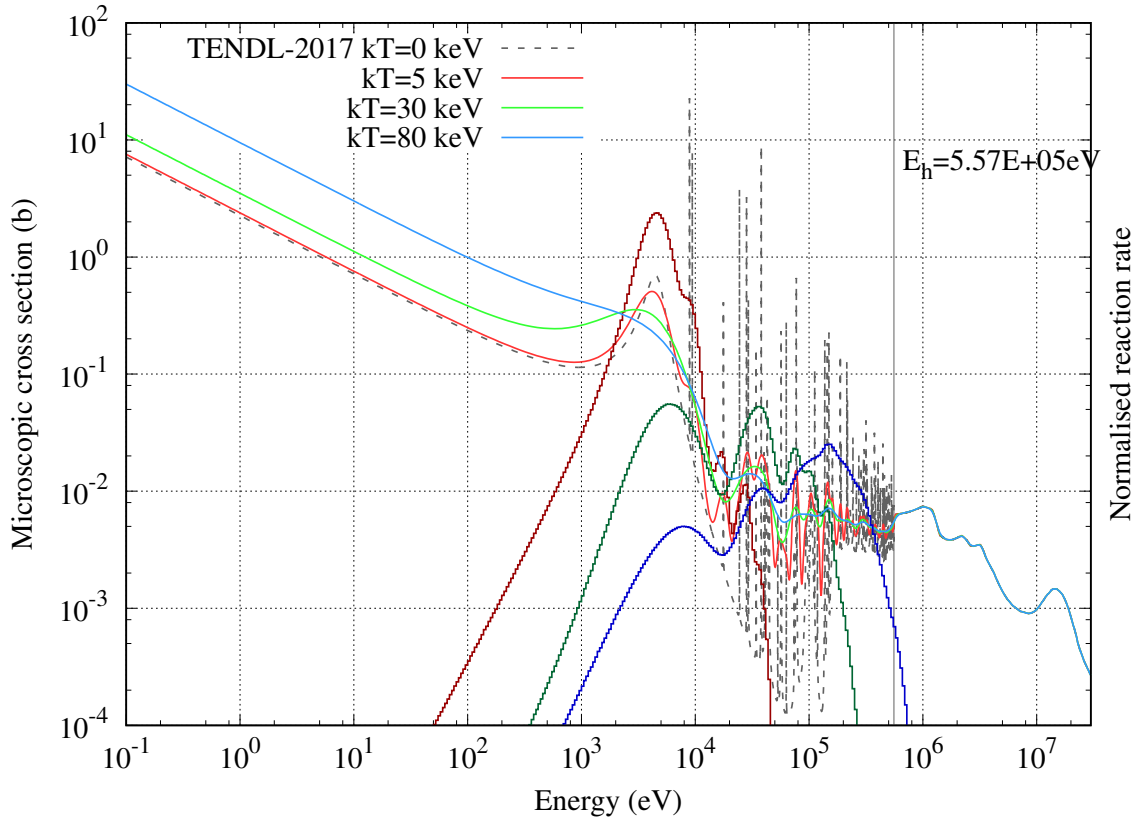
$^{60}\text{Ni}_{28}$ [Stable]



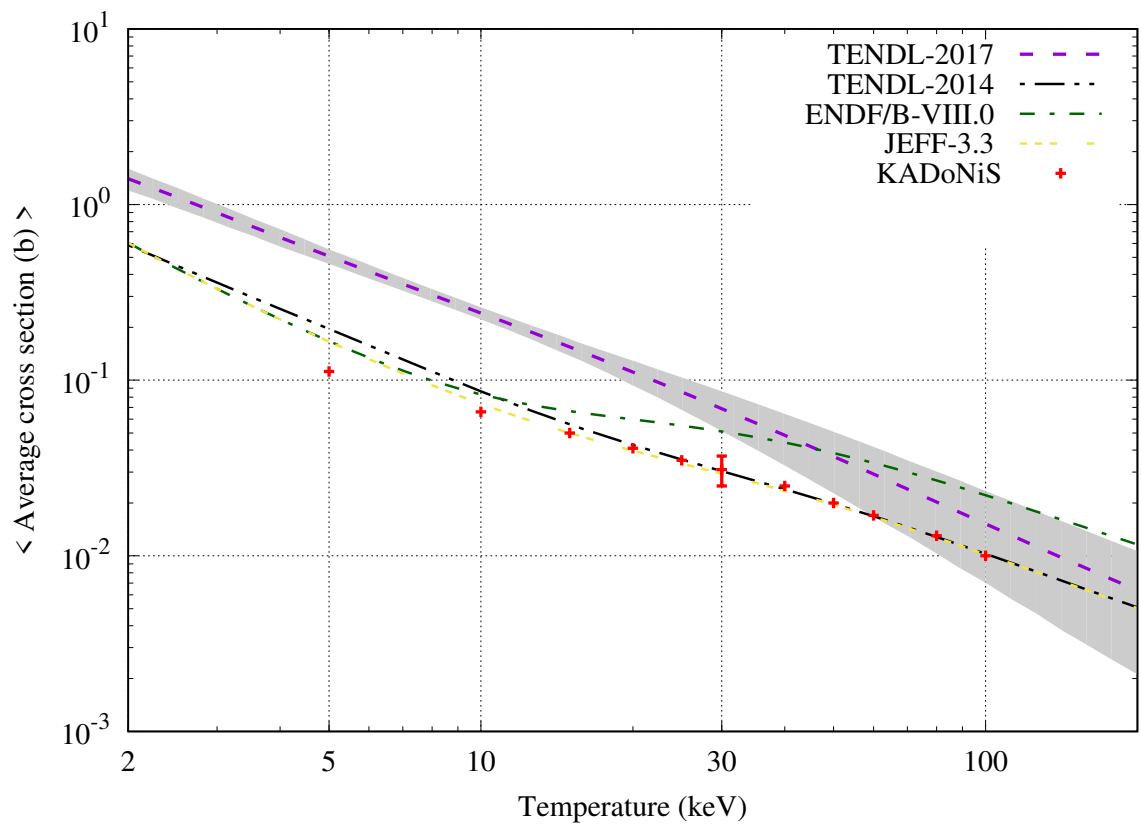
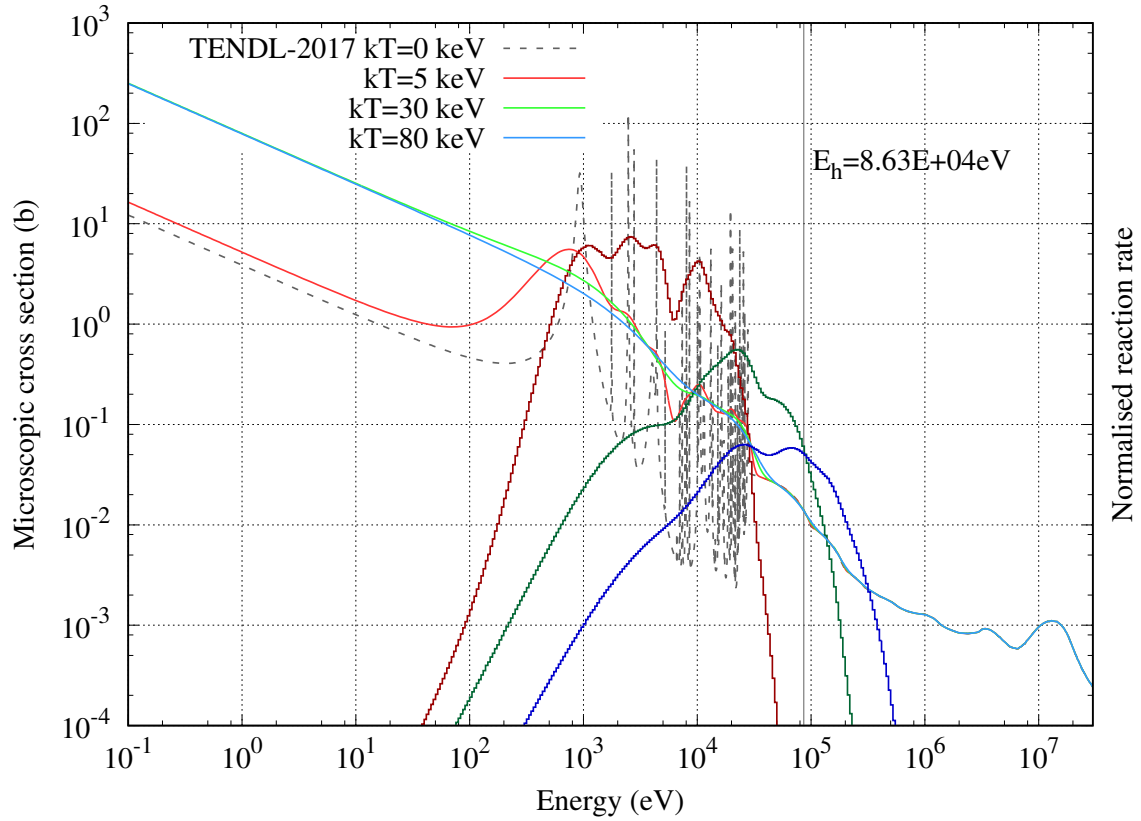
$^{61}\text{Ni}_{28}$ [Stable]



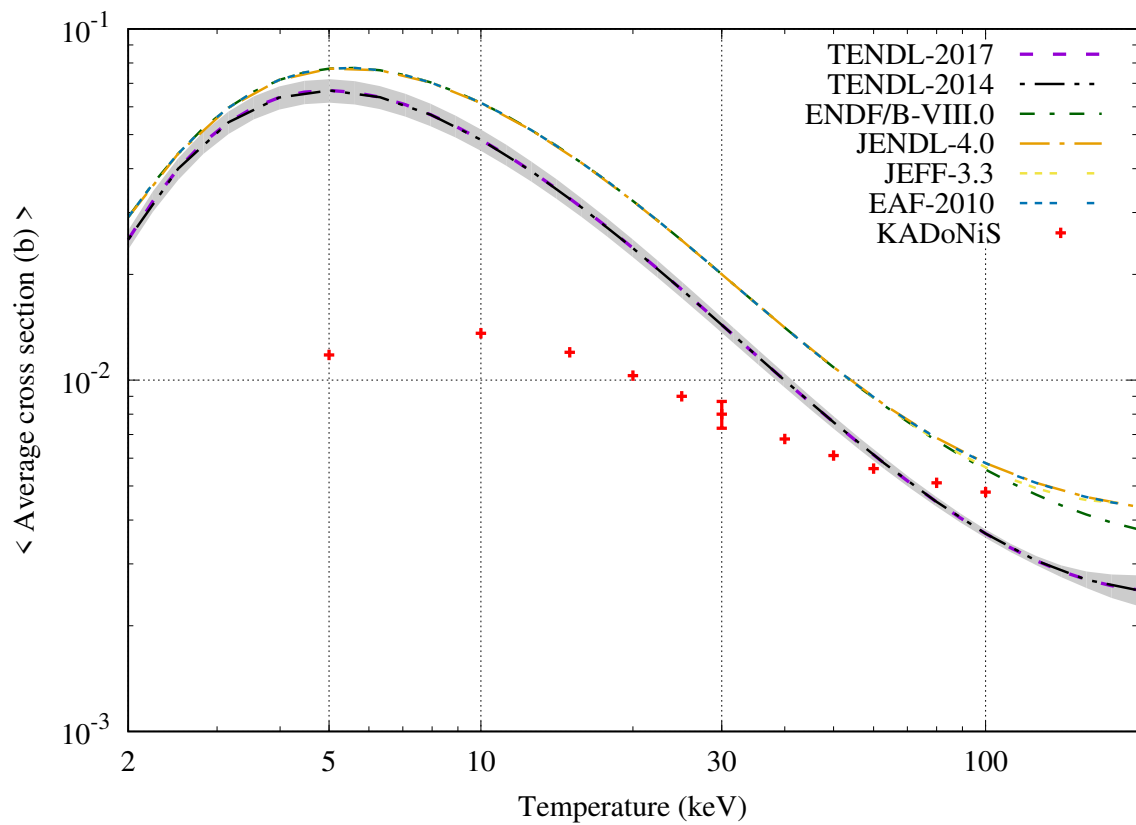
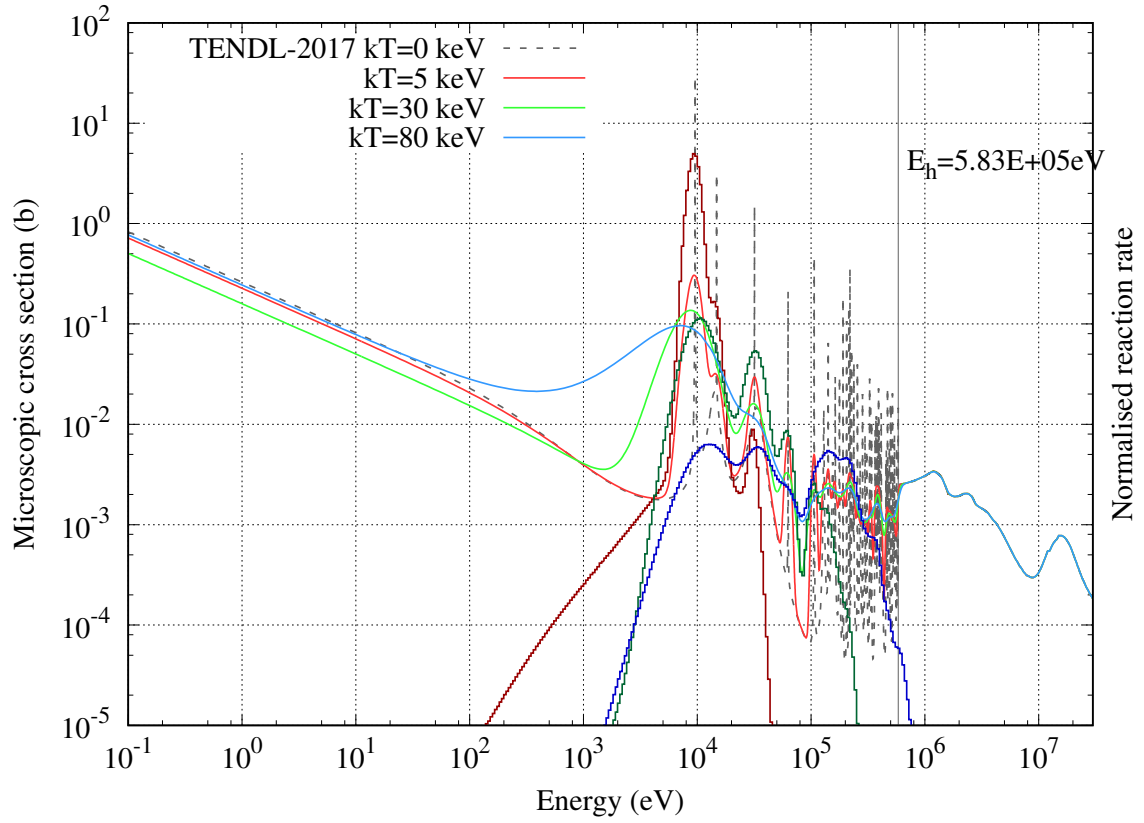
$^{62}\text{Ni}_{28}$ [Stable]



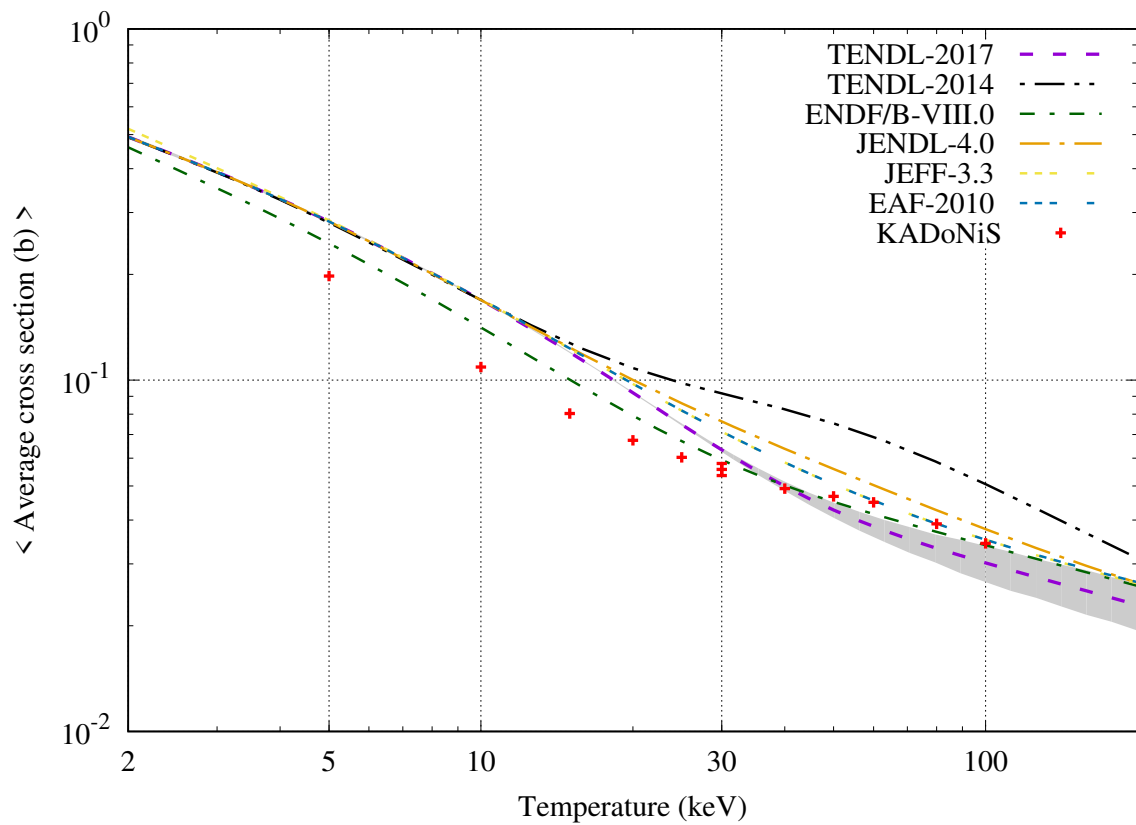
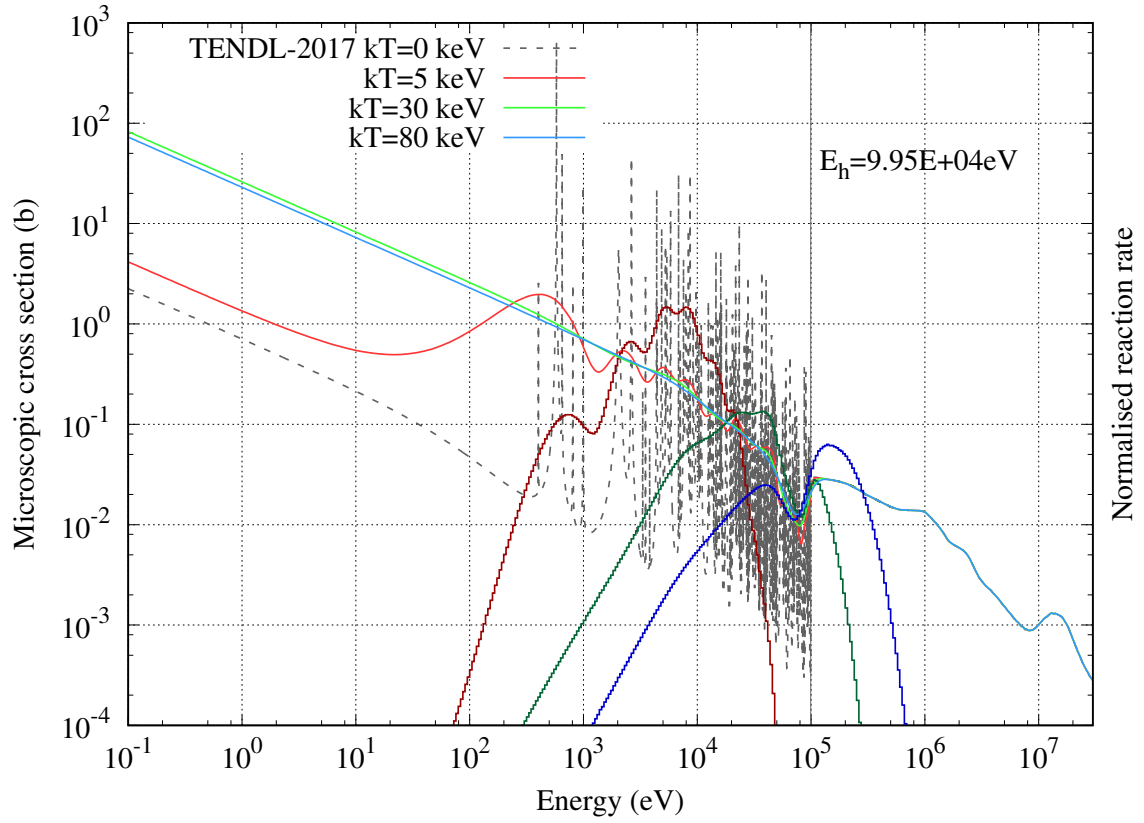
$^{63}\text{Ni}_{28}$ [$T_{1/2} = 100.60$ years] (KADoNiS=SMC)



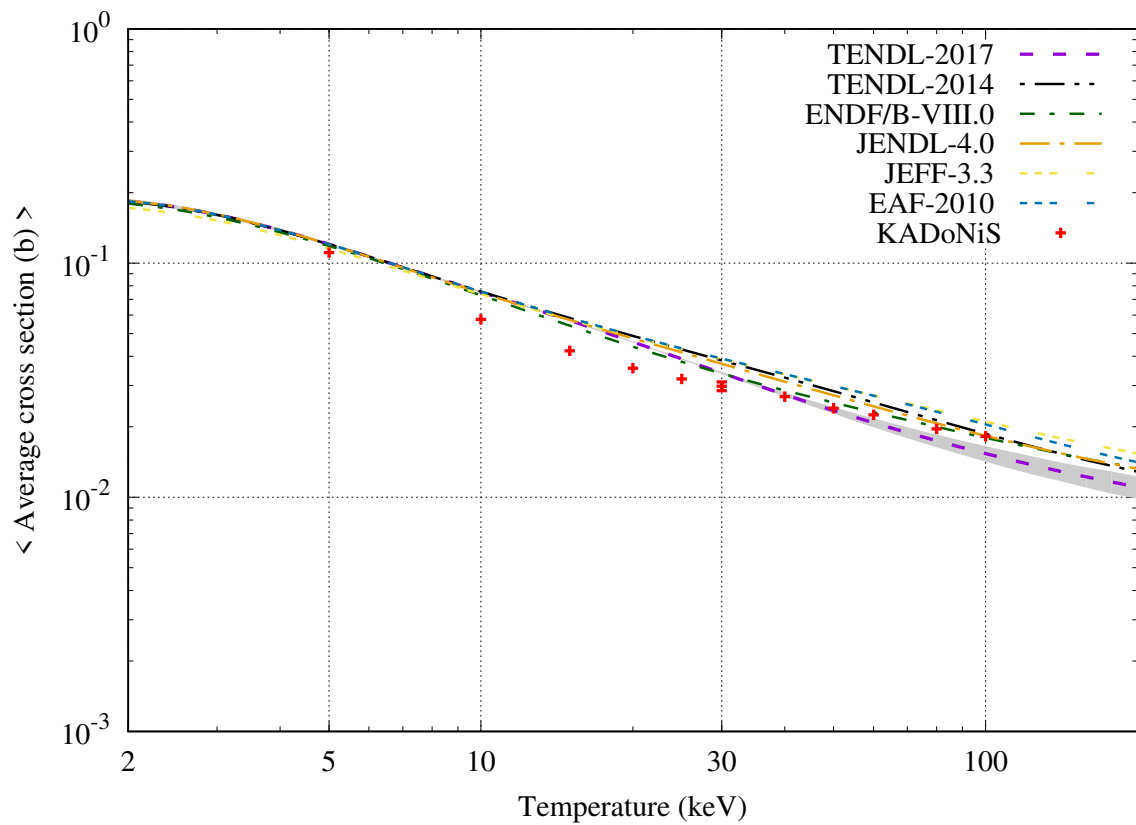
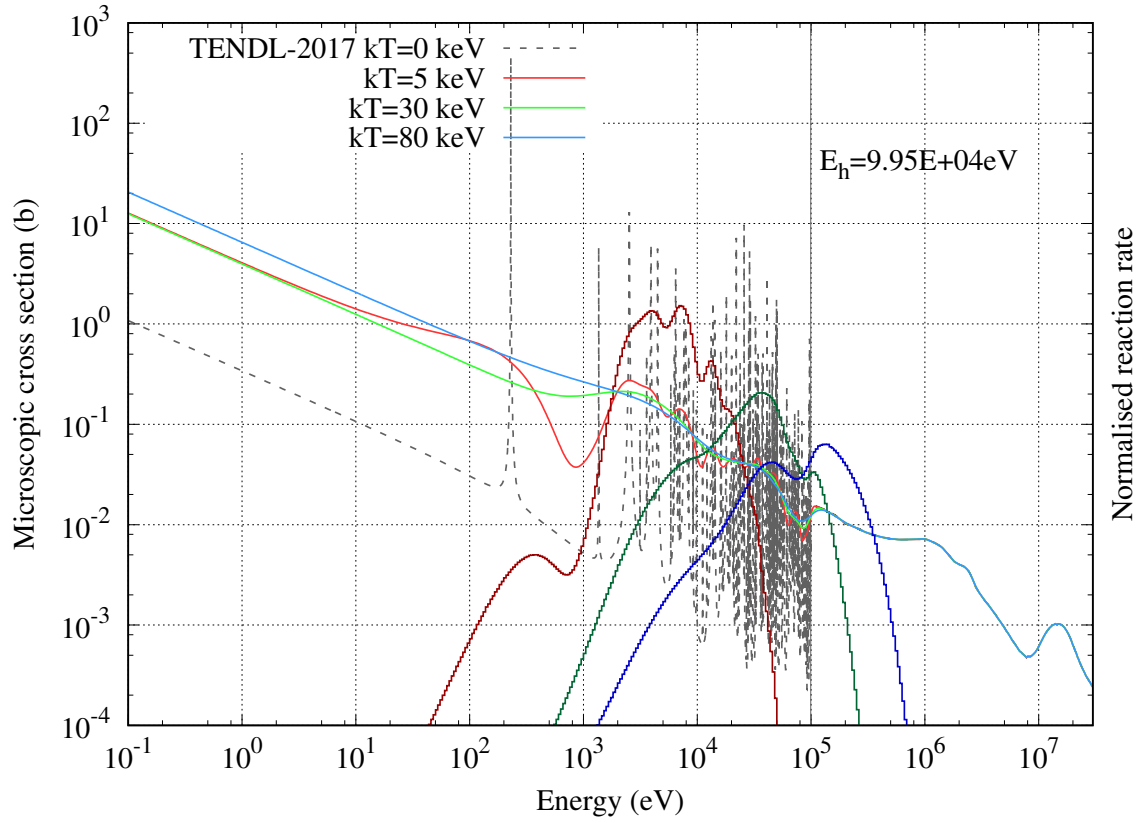
$^{64}\text{Ni}_{28}$ [Stable]



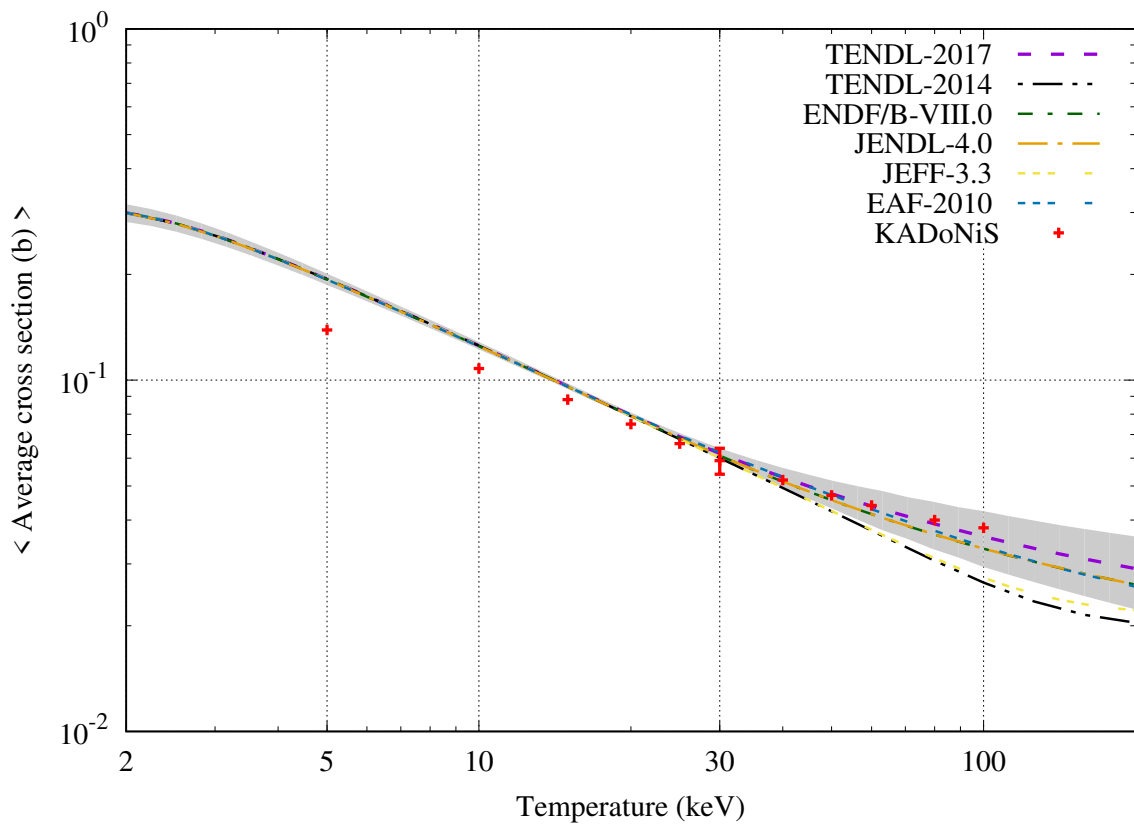
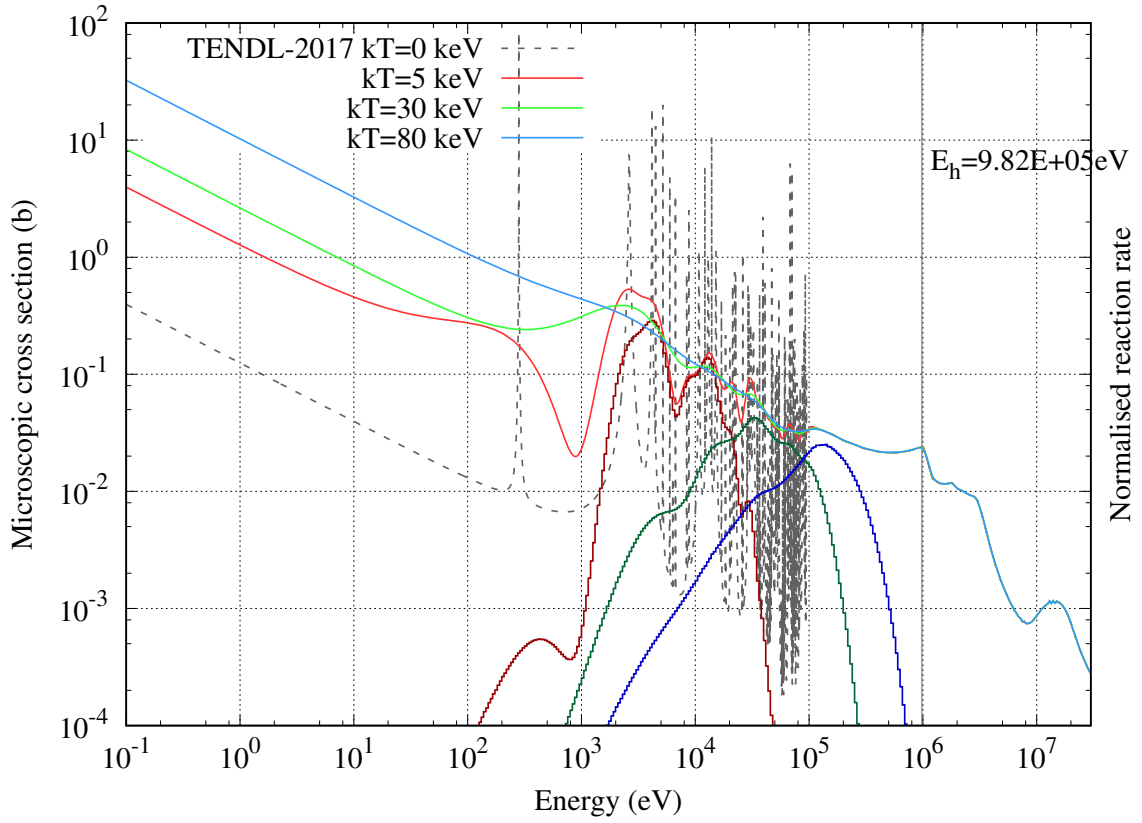
$^{63}\text{Cu}_{29}$ [Stable]



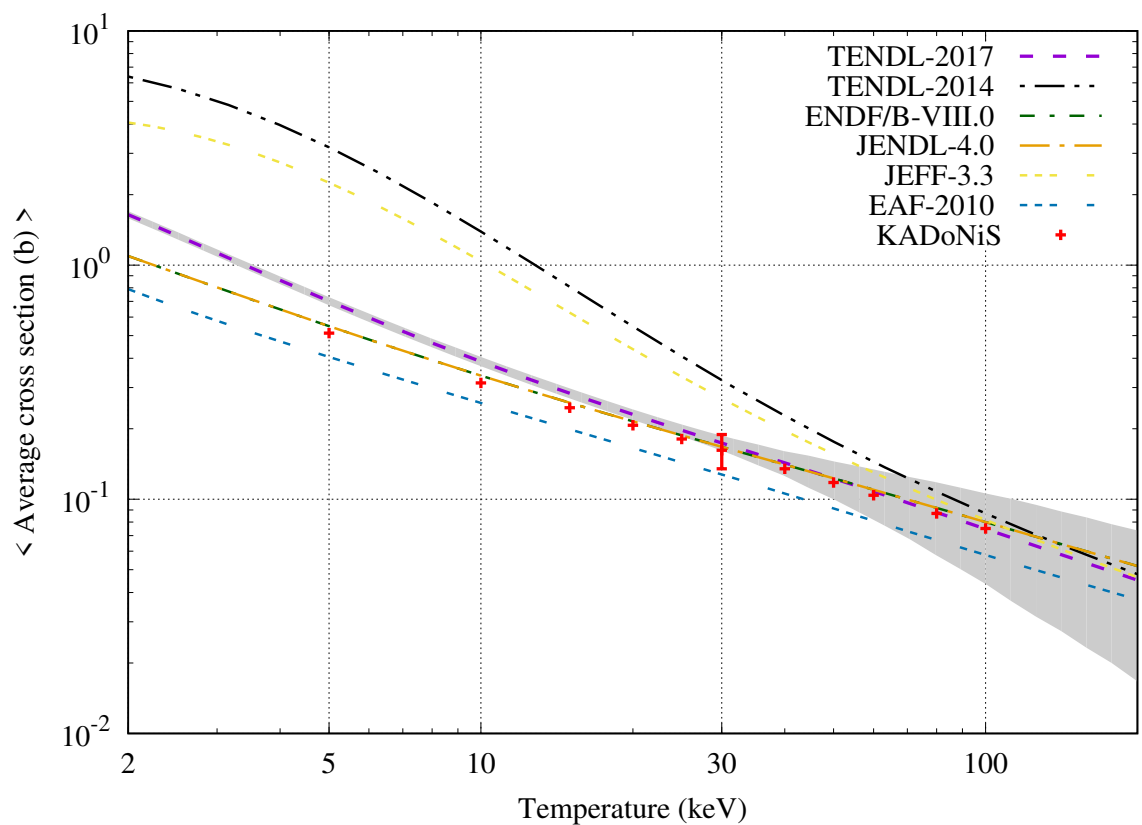
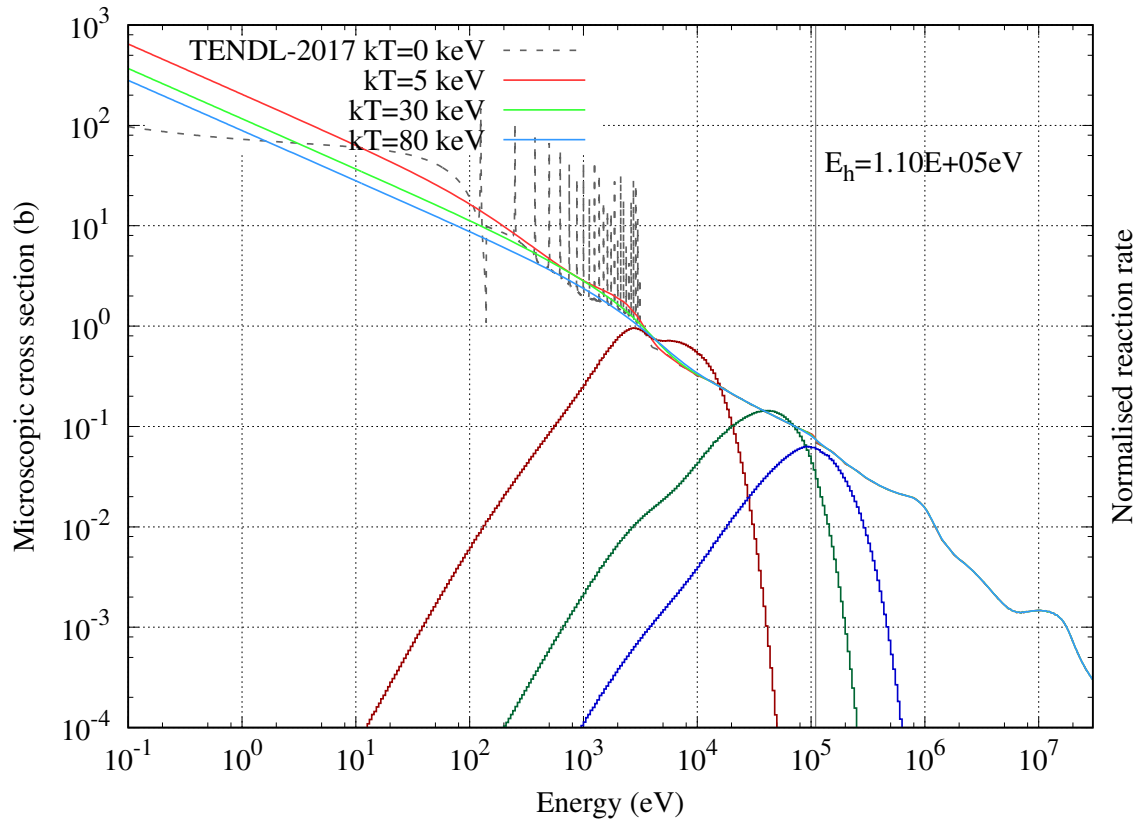
$^{65}\text{Cu}_{29}$ [Stable]



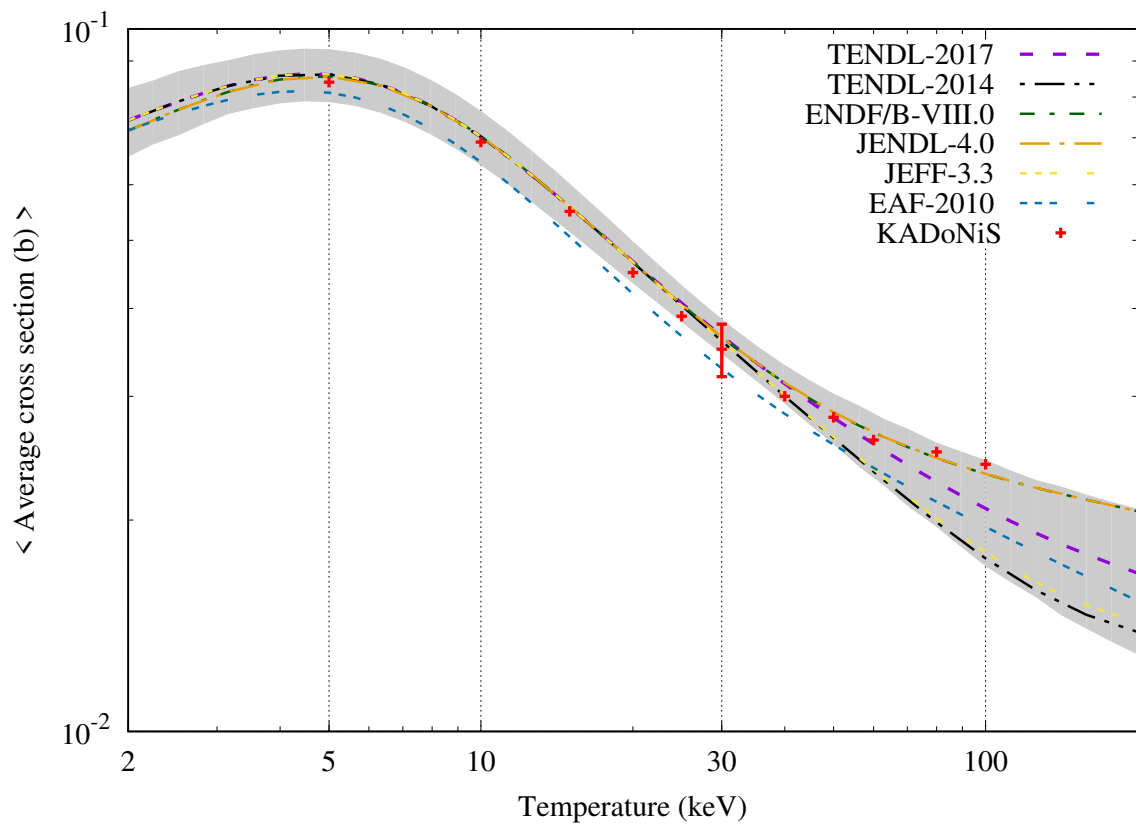
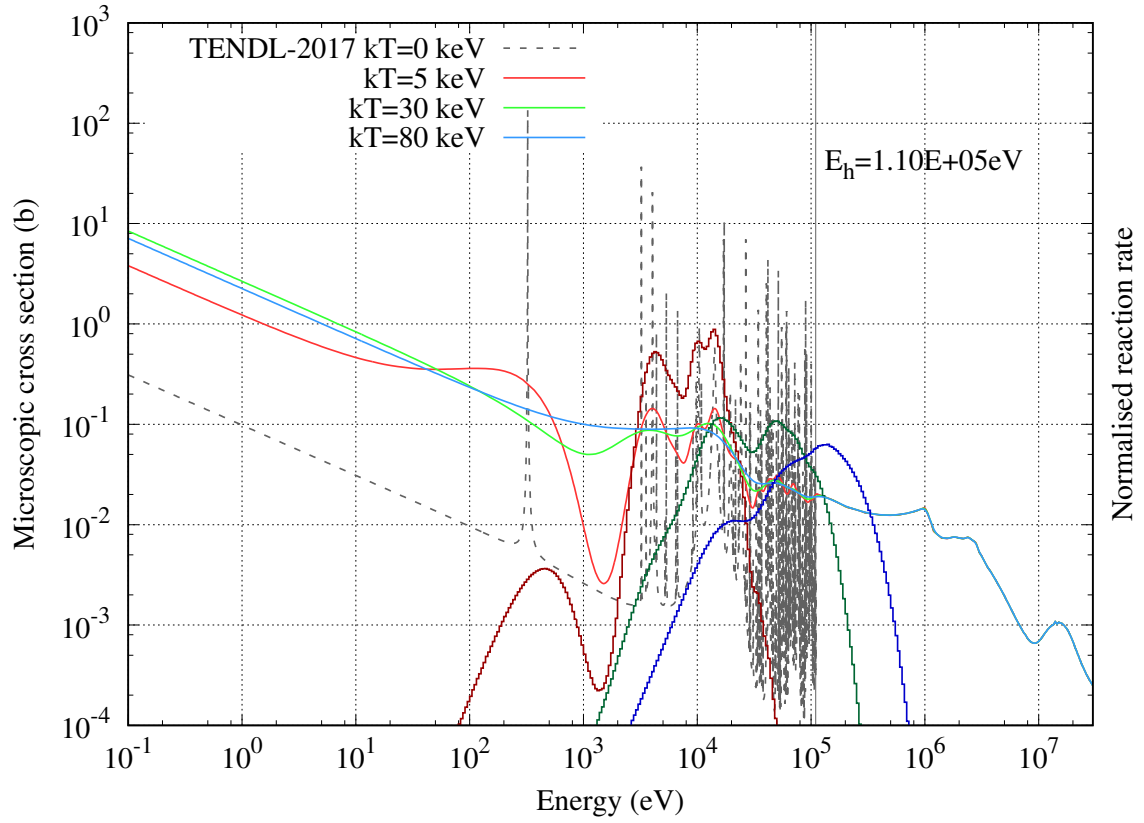
$^{64}\text{Zn}_{30}$ [$T_{1/2} = 2.30 \times 10^{18}$ years]



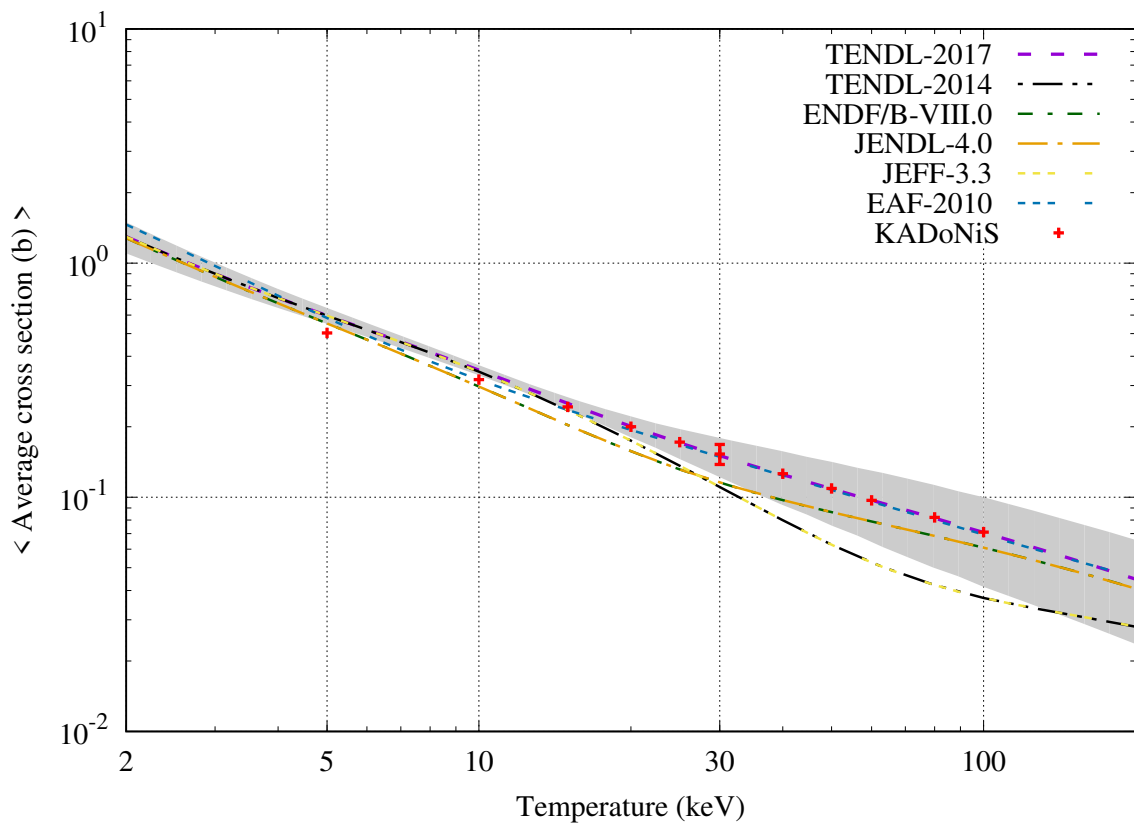
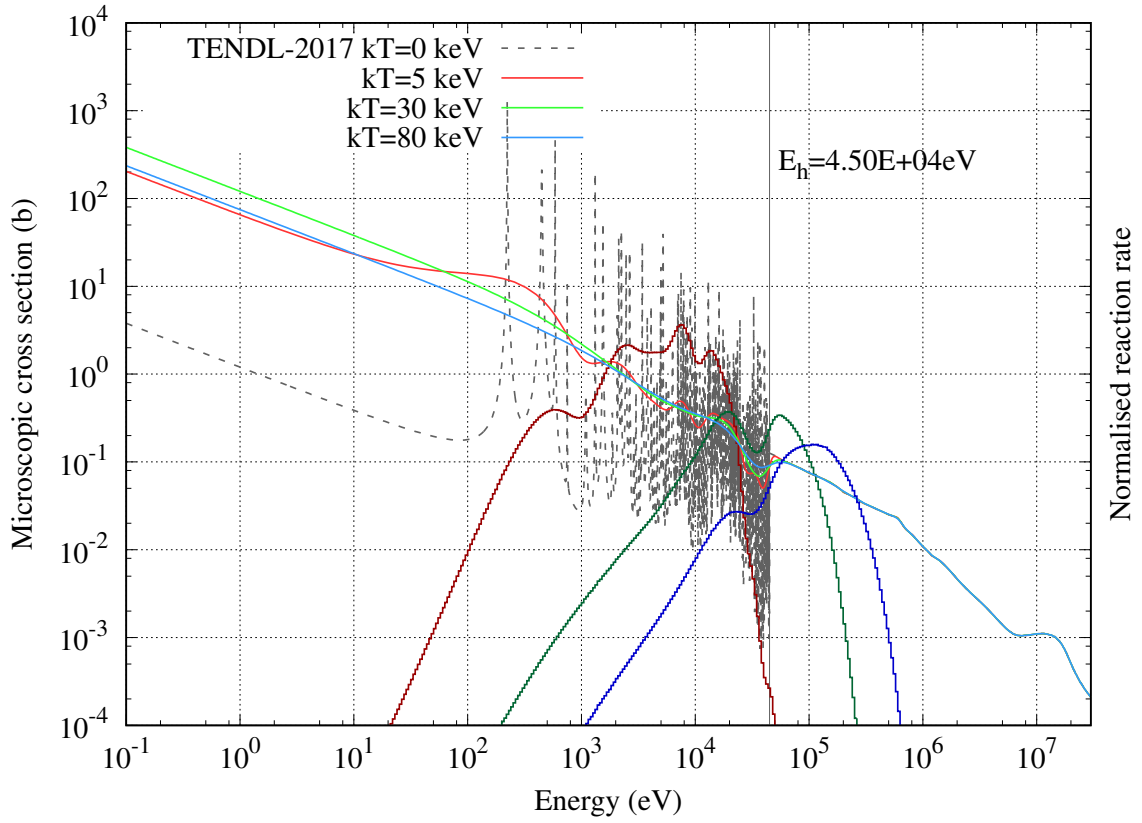
$^{65}\text{Zn}_{30}$ [$T_{1/2} = 244.15$ days] (KADoNiS=SMC)



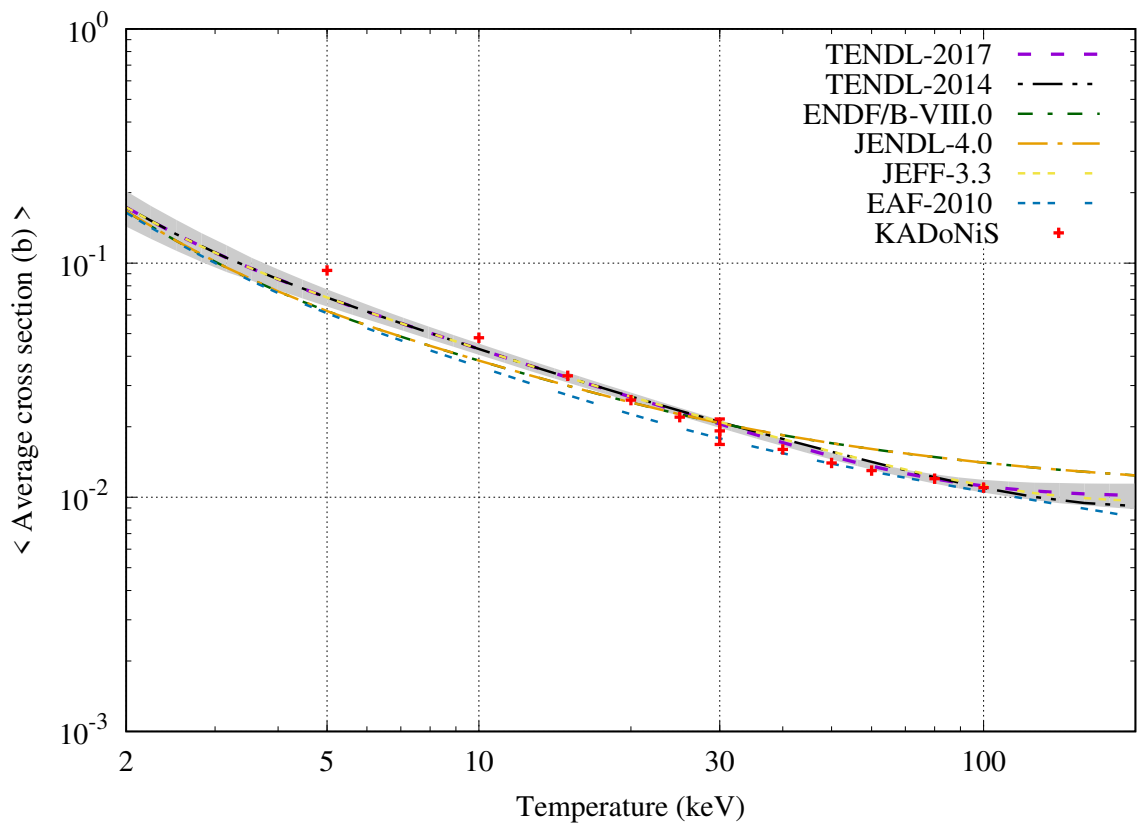
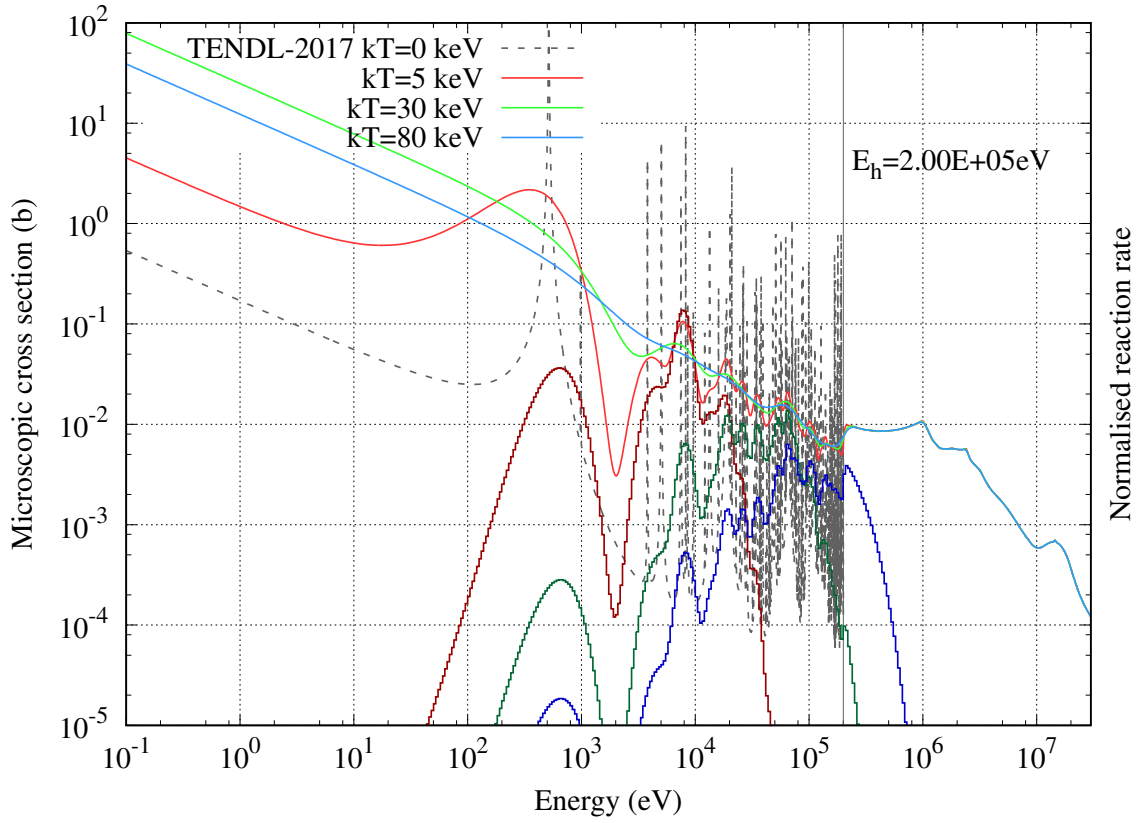
$^{66}\text{Zn}_{30}$ [Stable]



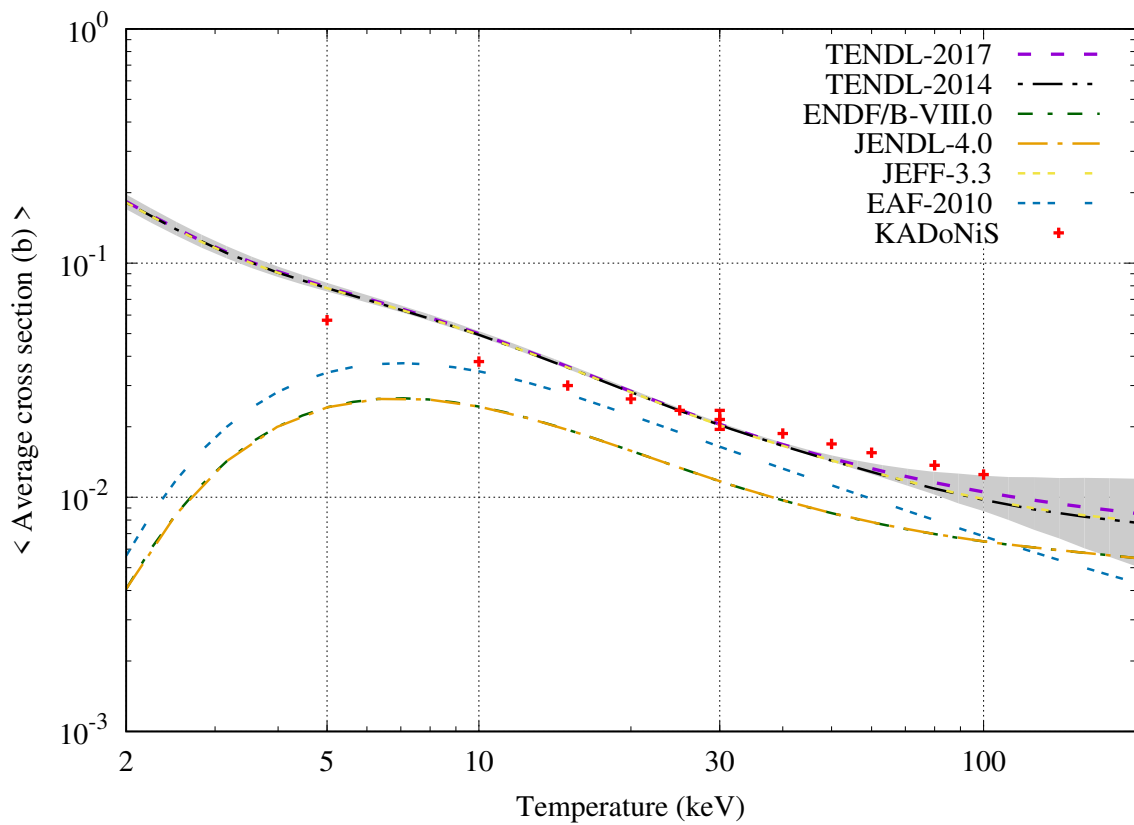
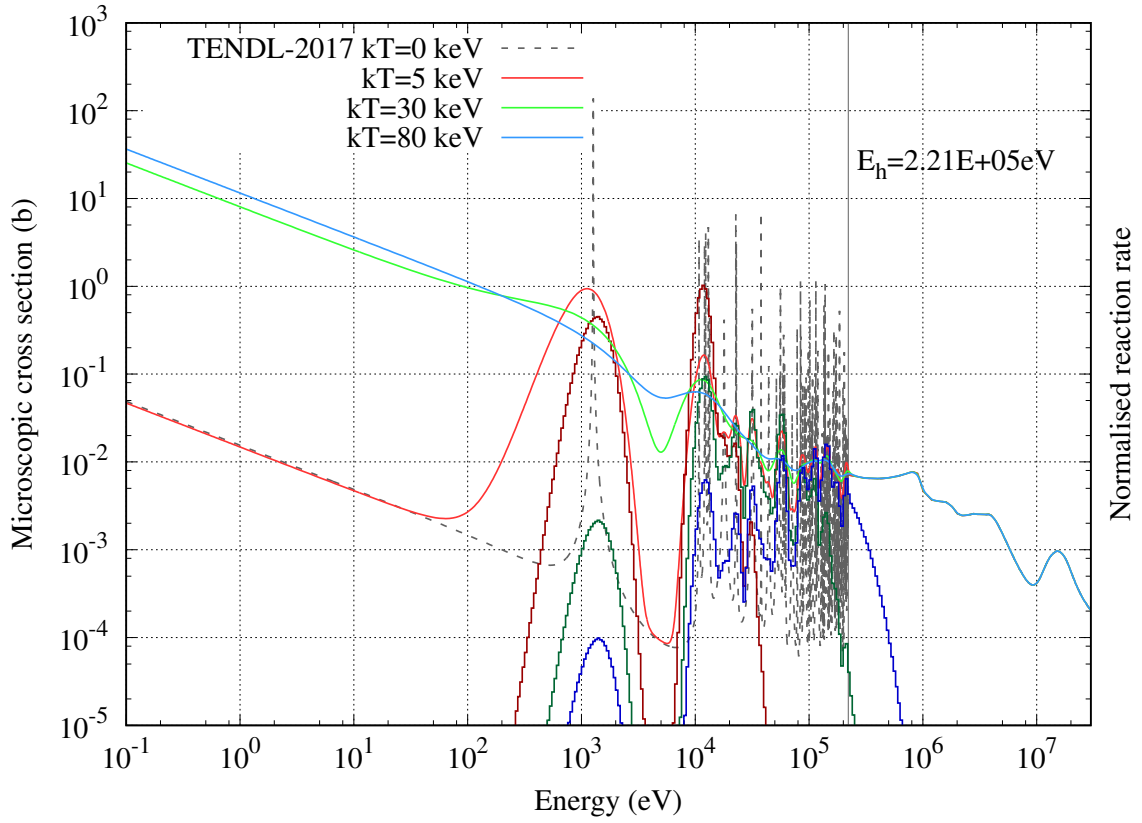
$^{67}\text{Zn}_{30}$ [Stable]



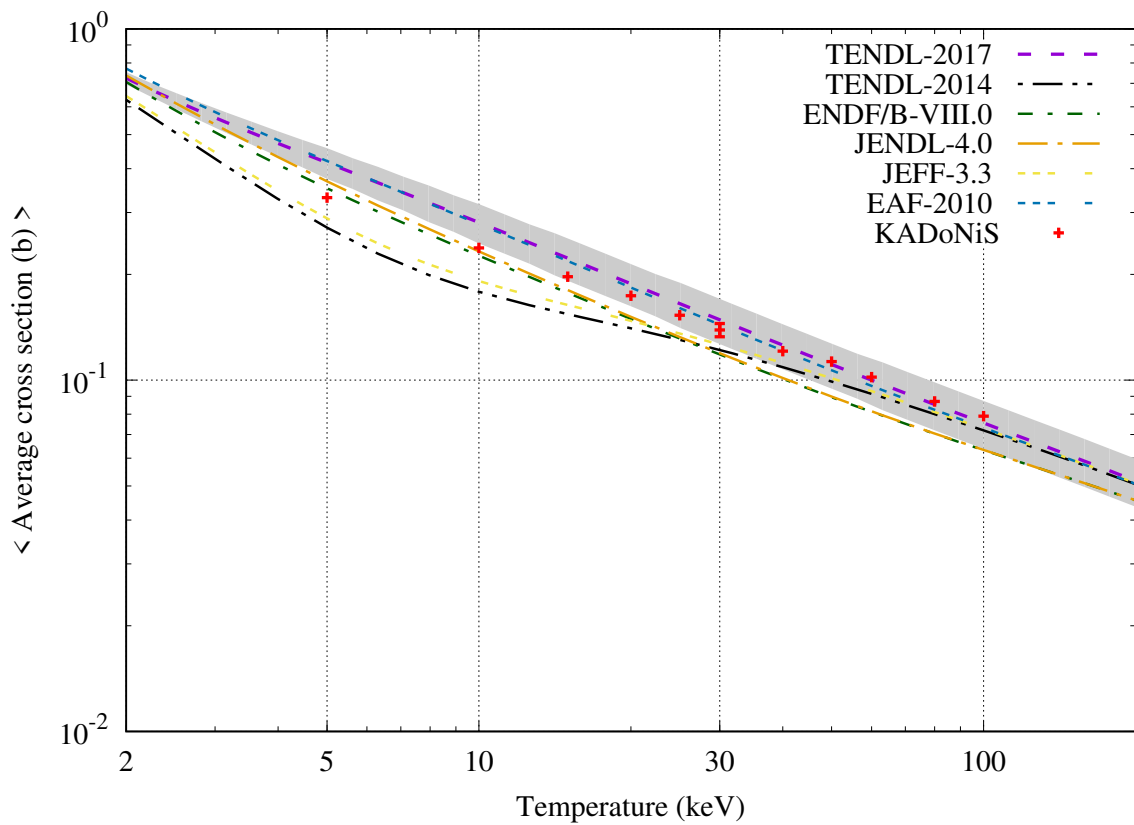
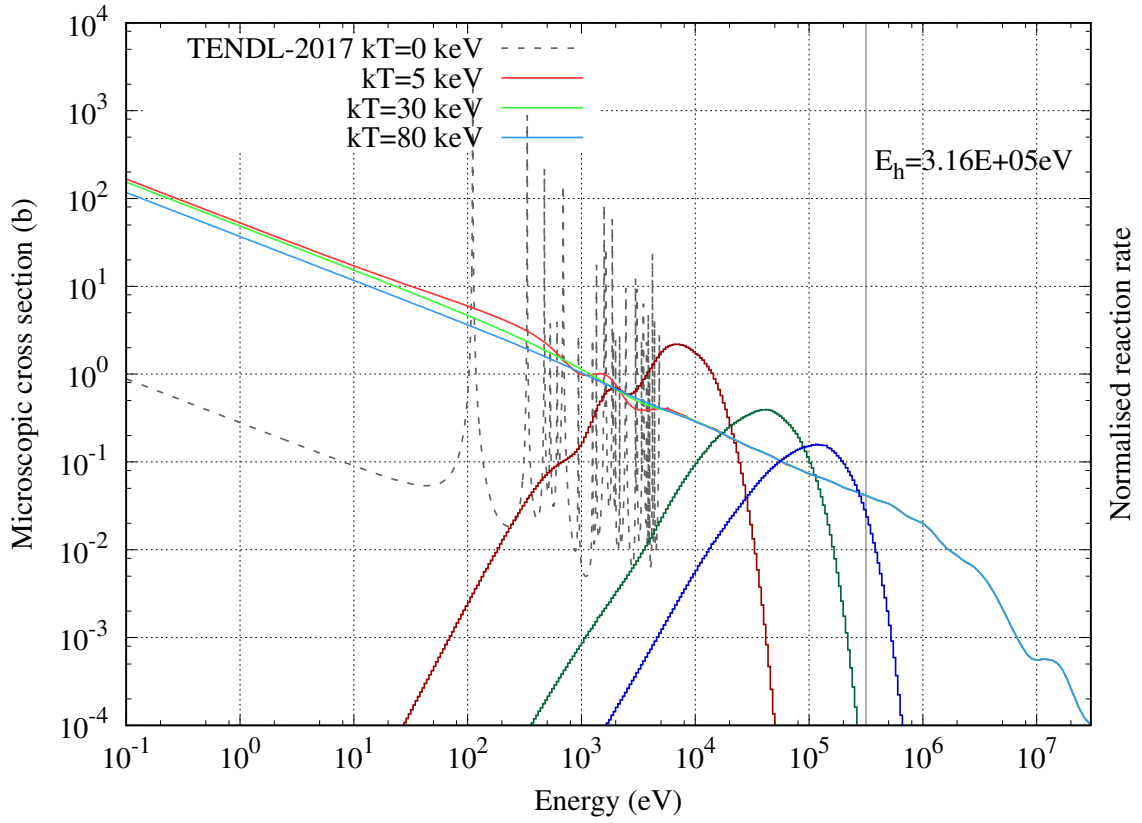
$^{68}\text{Zn}_{30}$ [Stable]



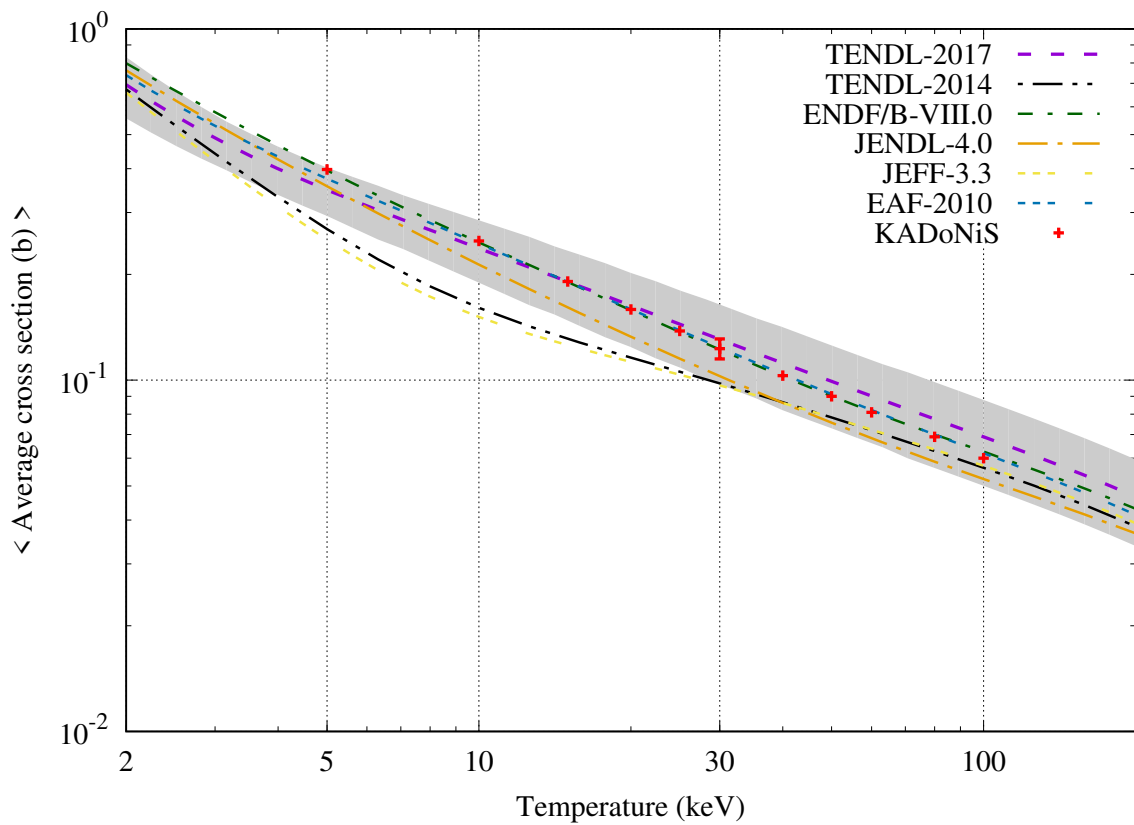
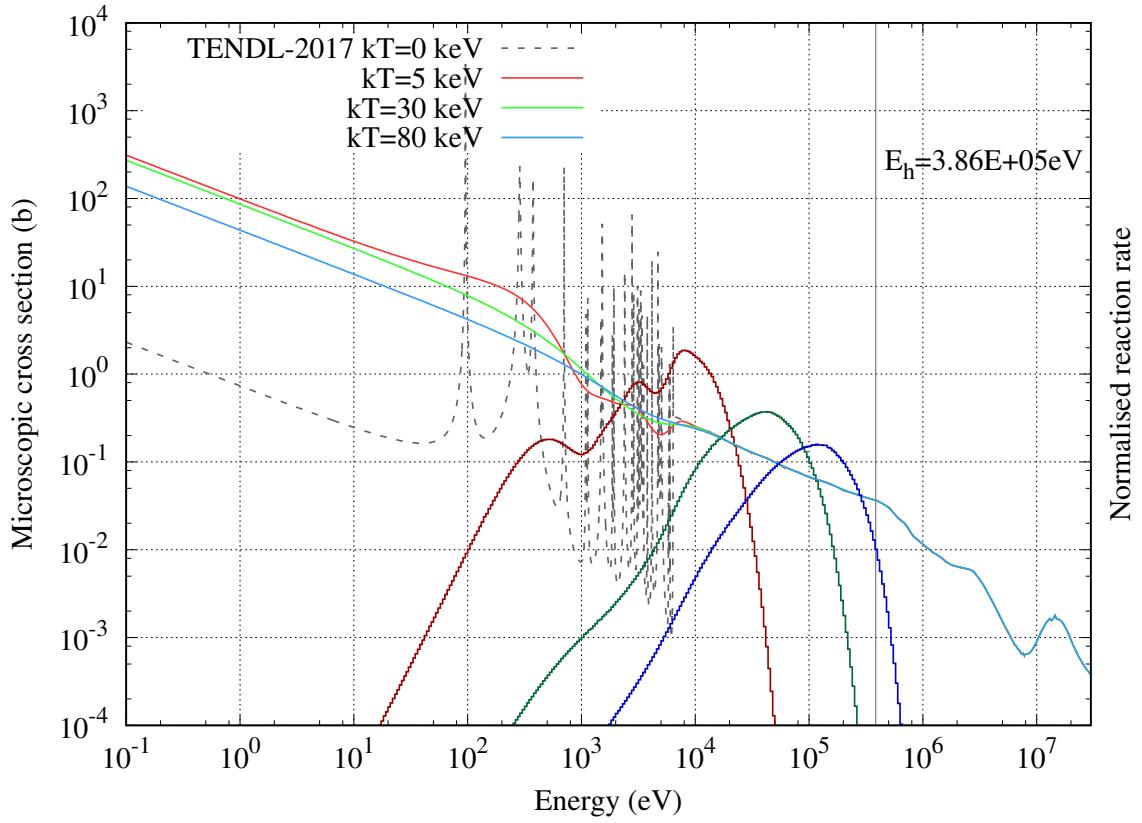
$^{70}\text{Zn}_{30}$ [Stable] (KADoNiS=SMC)



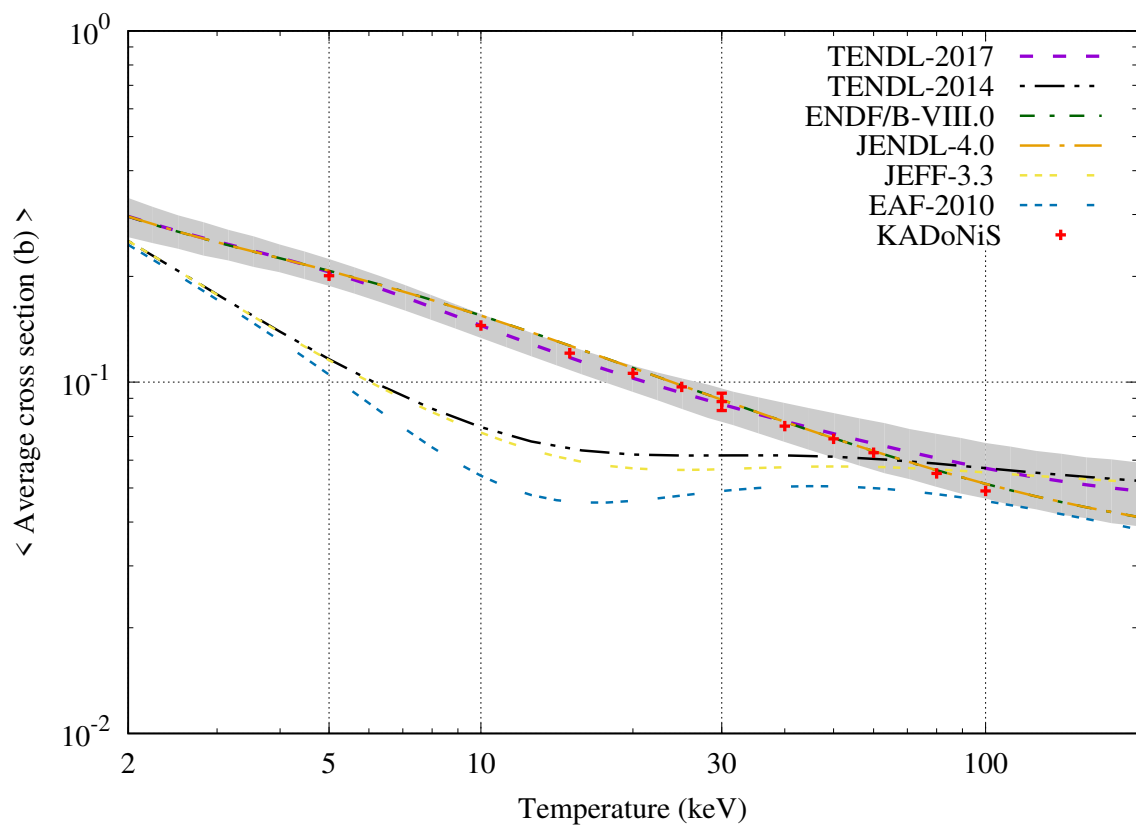
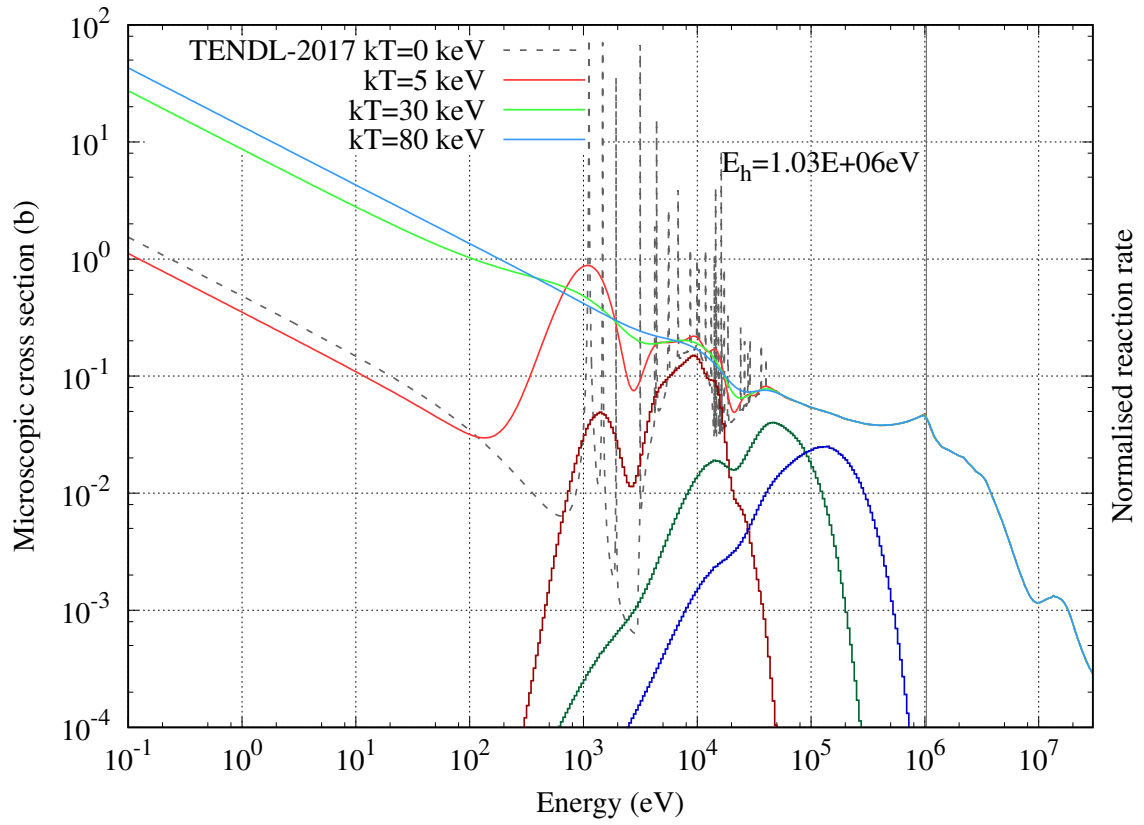
$^{69}\text{Ga}_{31}$ [Stable]



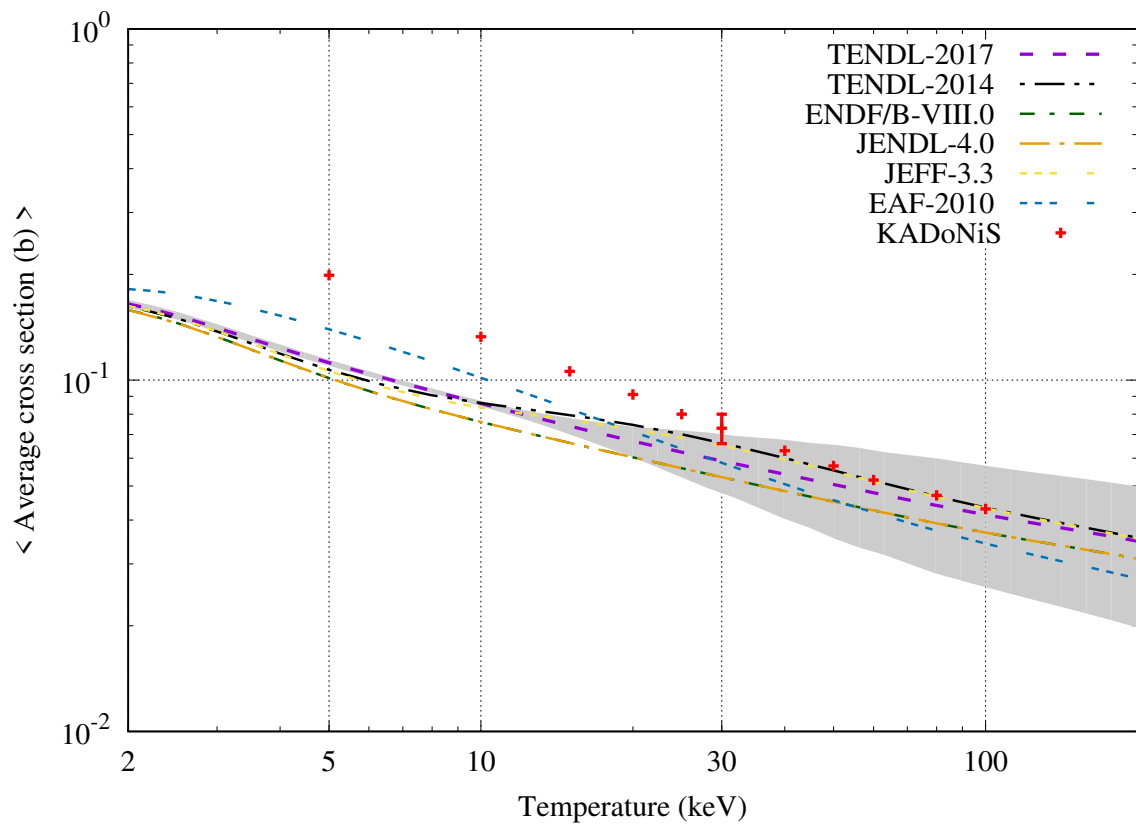
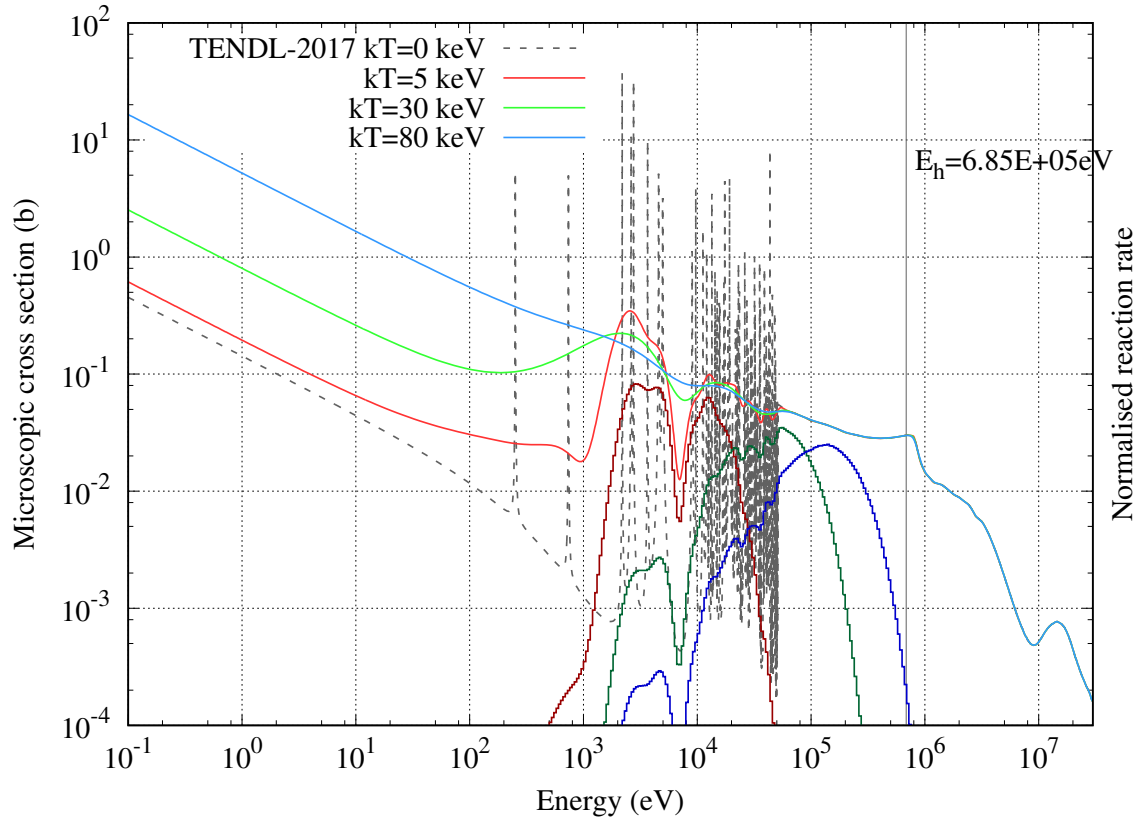
$^{71}\text{Ga}_{31}$ [Stable]



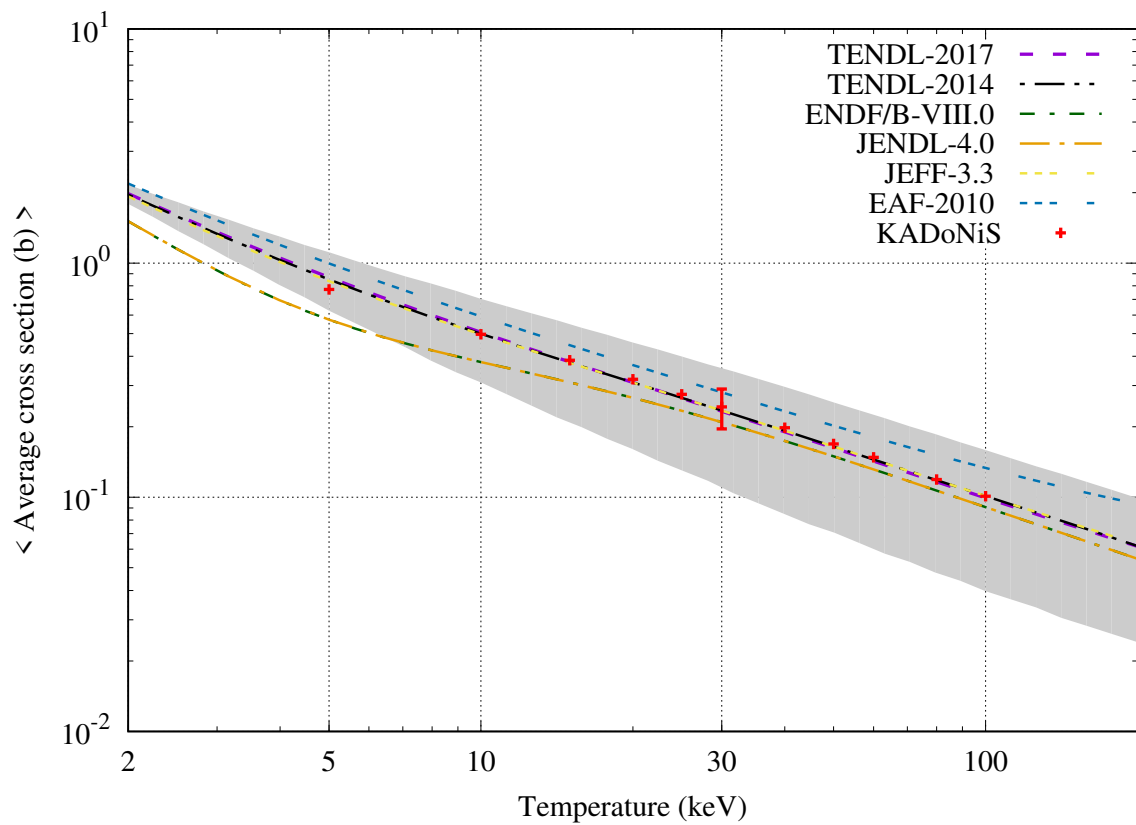
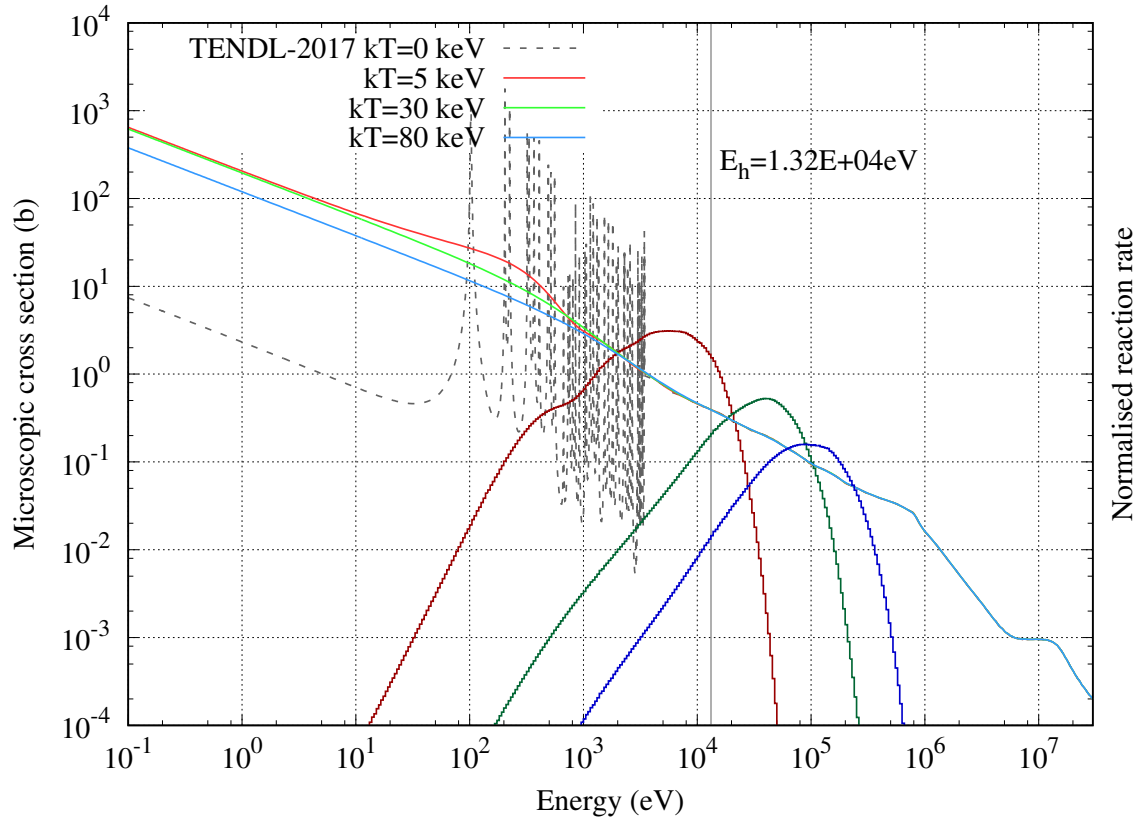
$^{70}\text{Ge}_{32}$ [Stable]



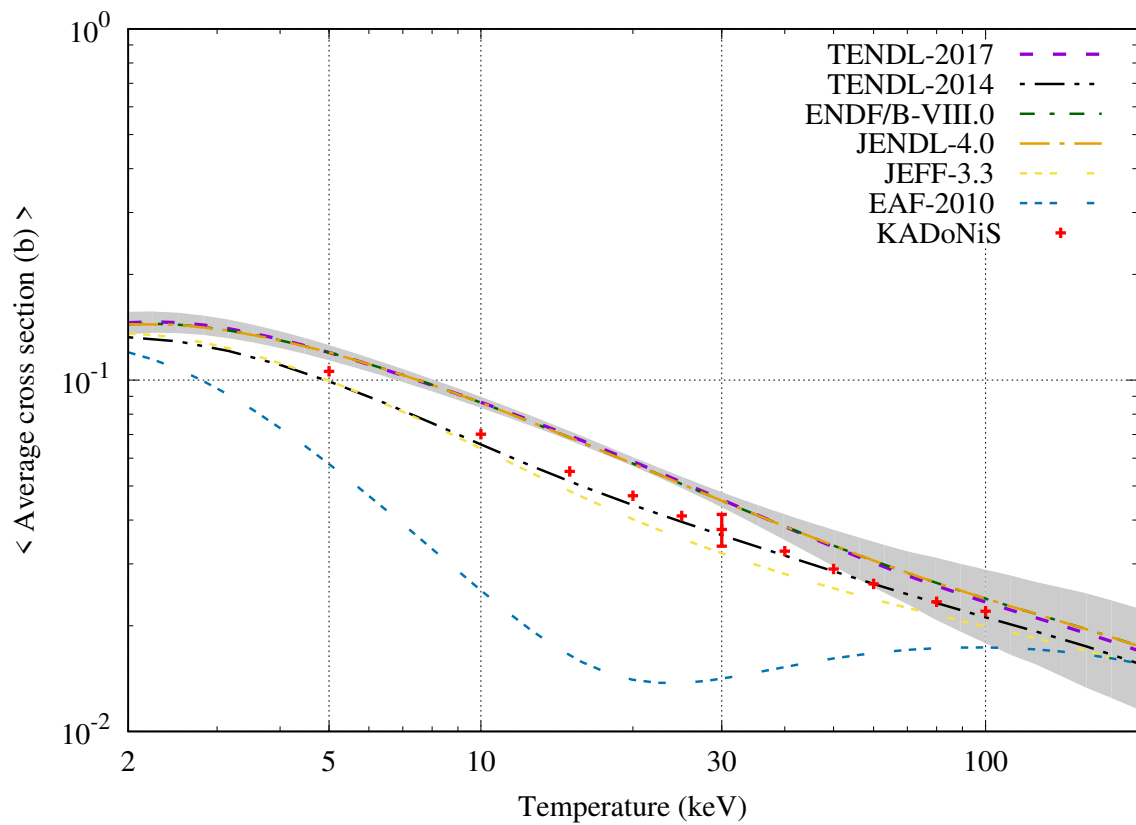
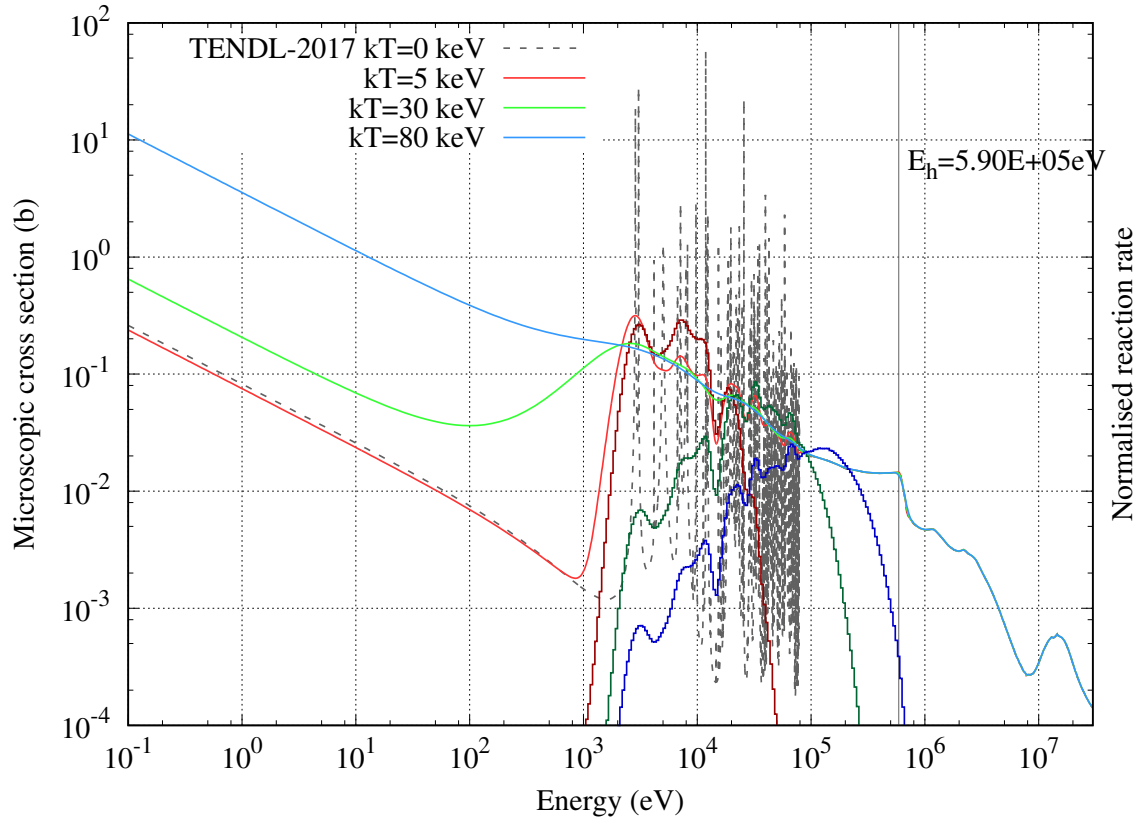
$^{72}\text{Ge}_{32}$ [Stable] (KADoNiS=SMC)



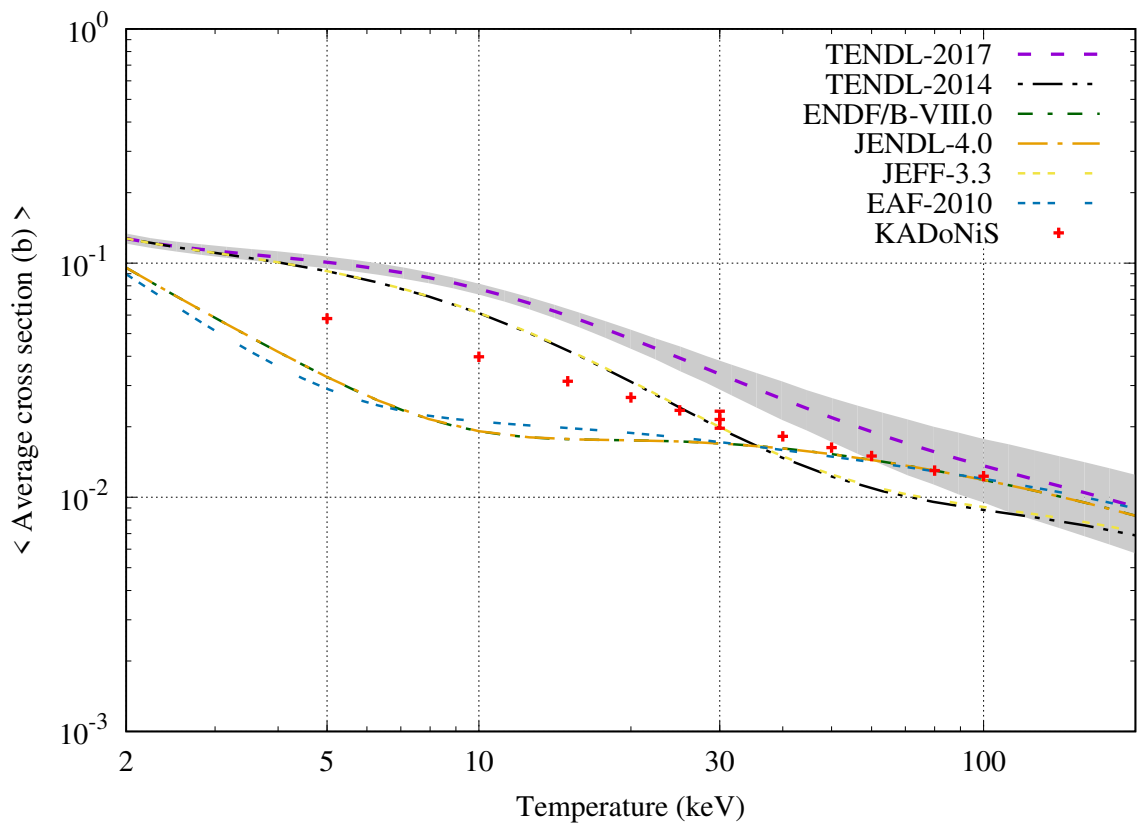
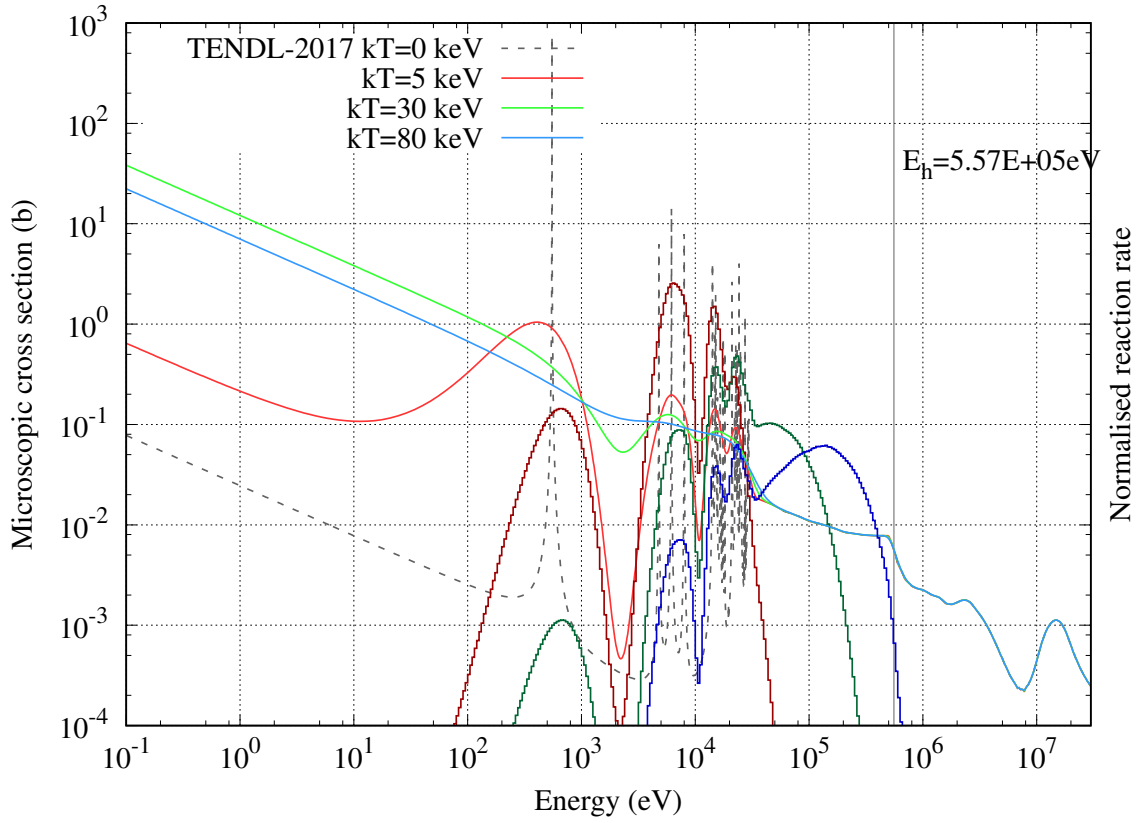
$^{73}\text{Ge}_{32}$ [Stable] (KADoNiS=SMC)



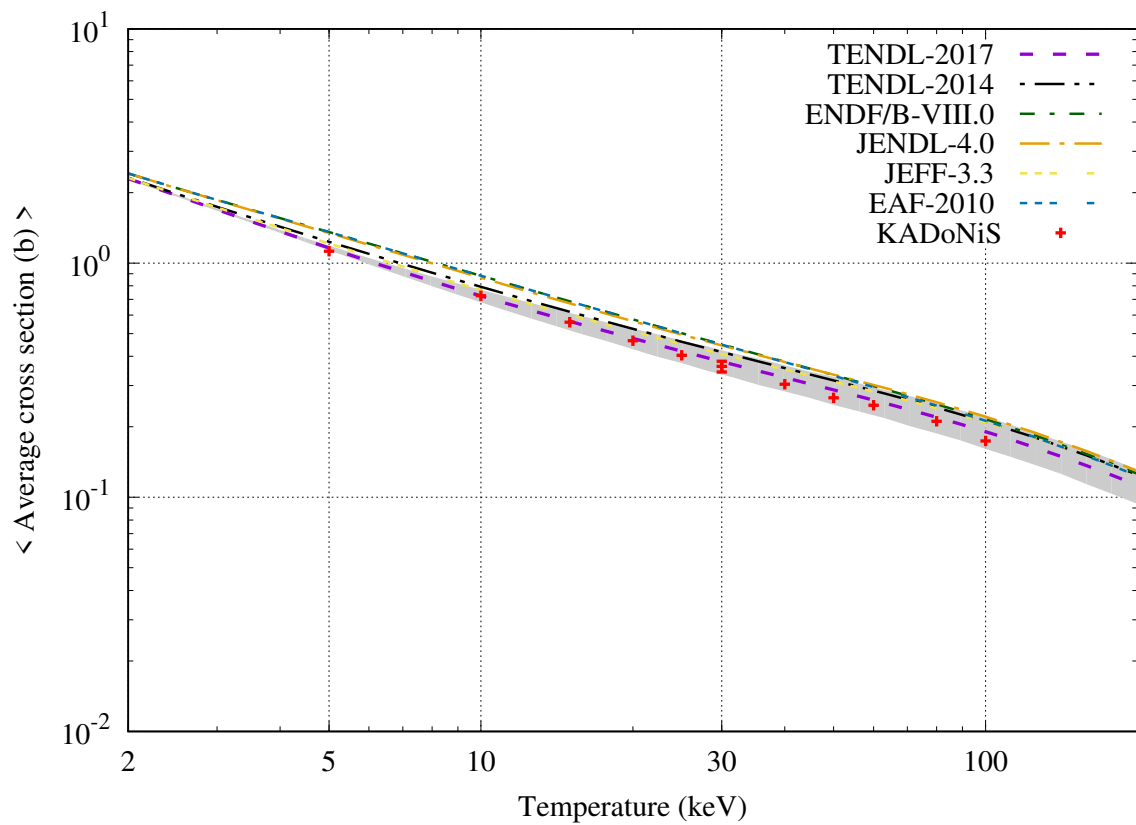
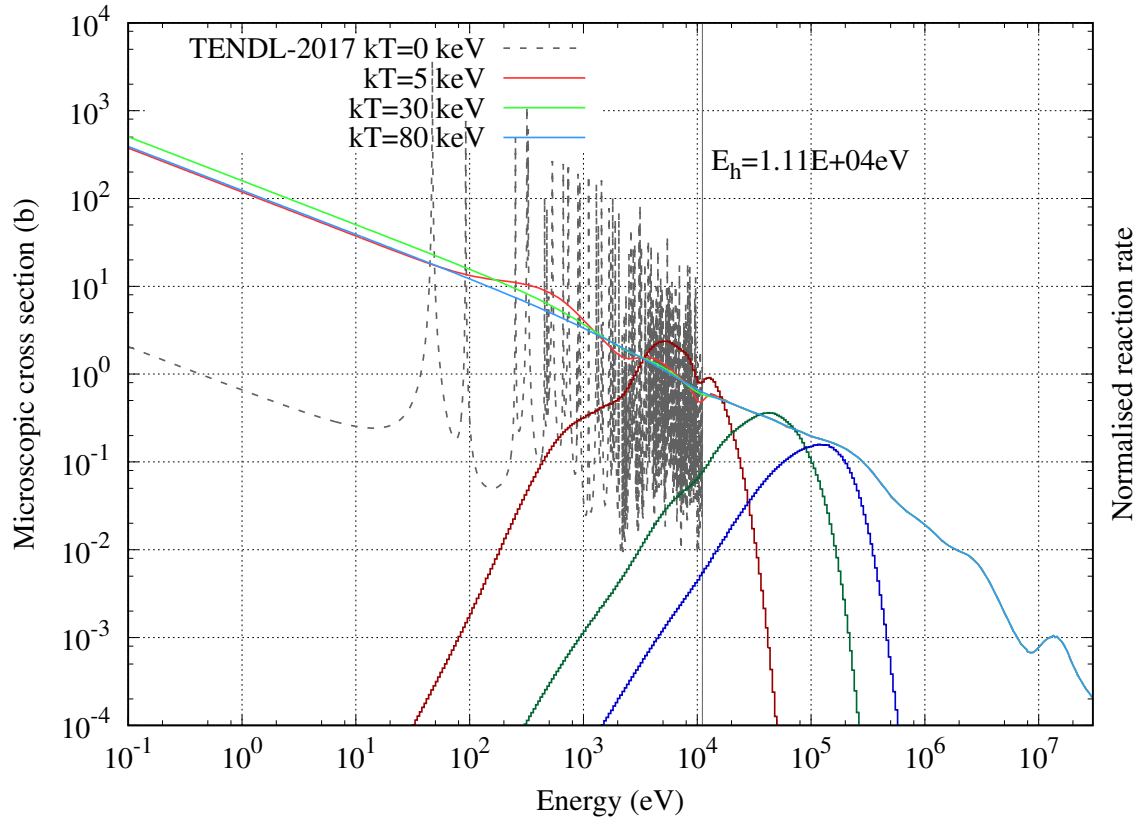
$^{74}\text{Ge}_{32}$ [Stable]



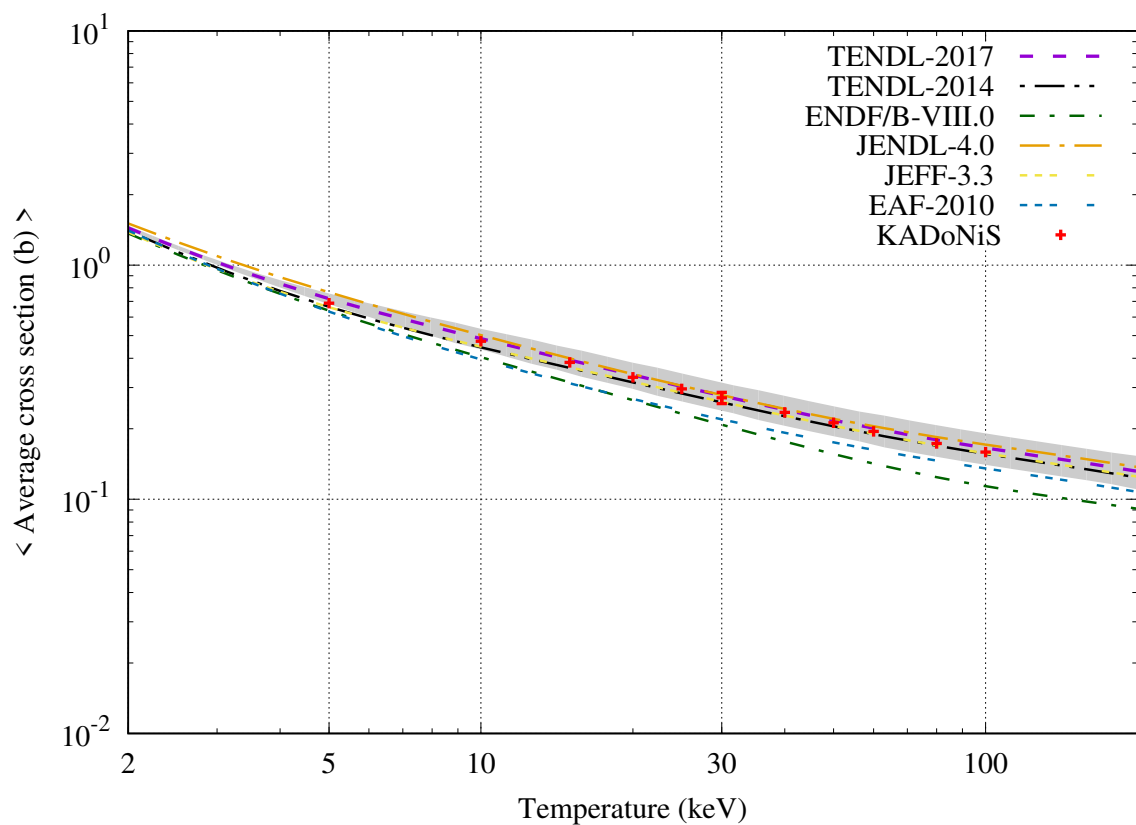
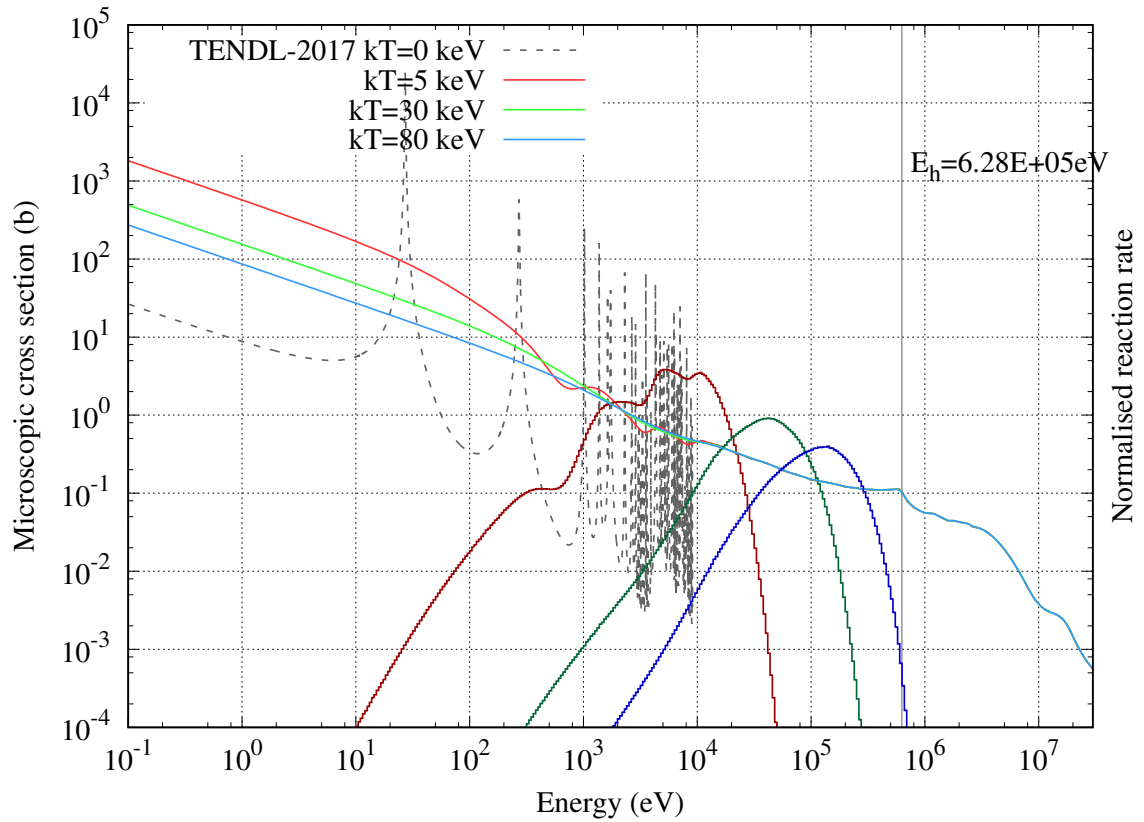
$^{76}\text{Ge}_{32}$ [$T_{1/2} = 1.58 \times 10^{21}$ years]



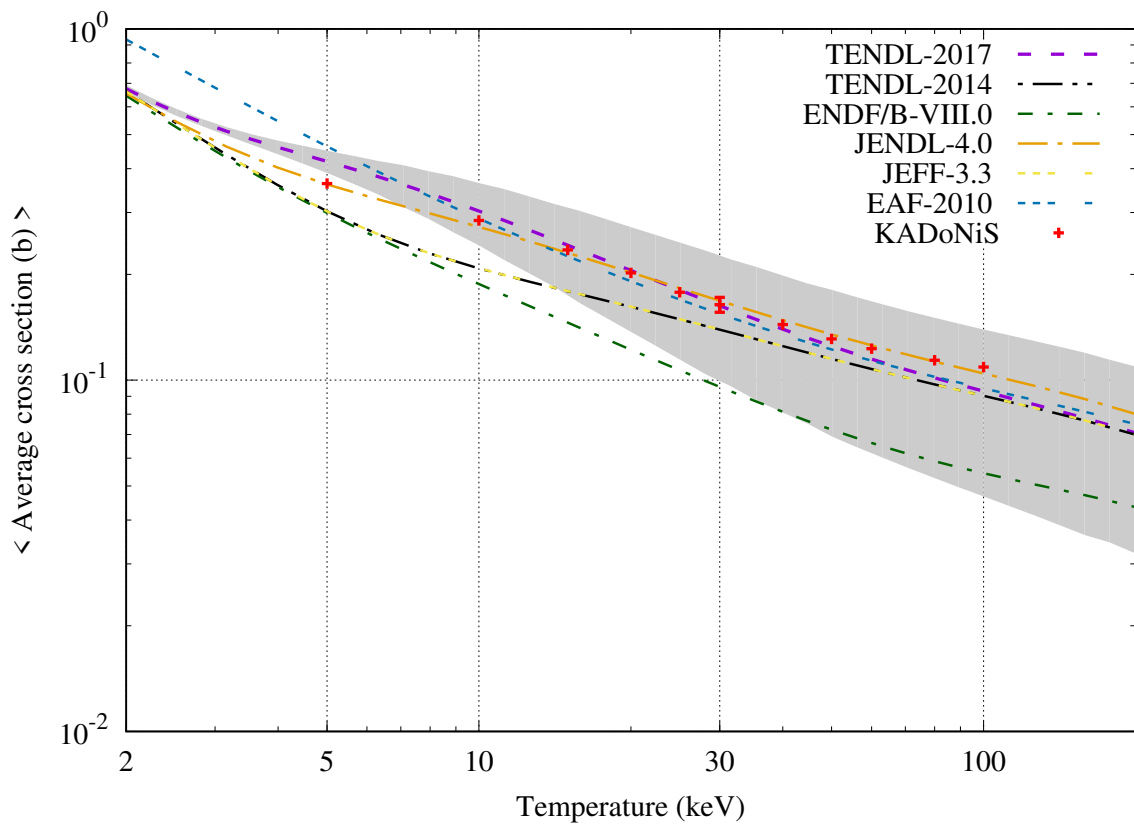
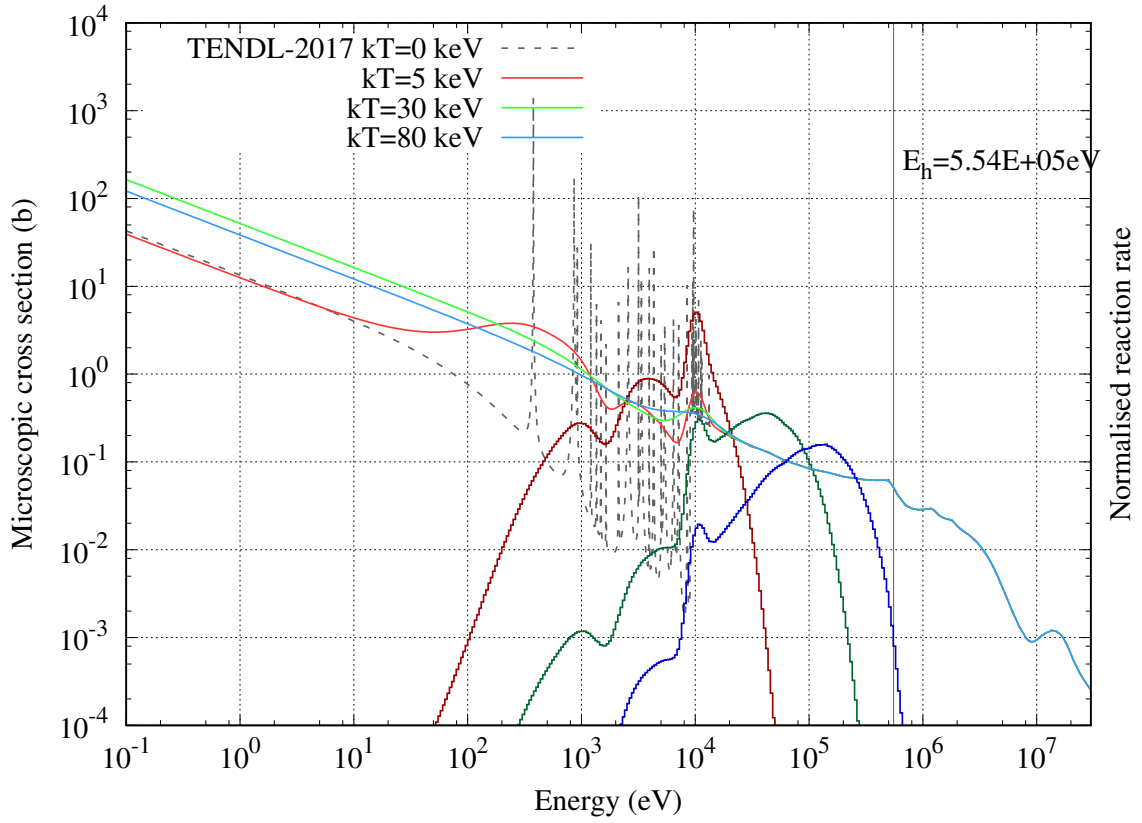
$^{75}\text{As}_{33}$ [Stable]



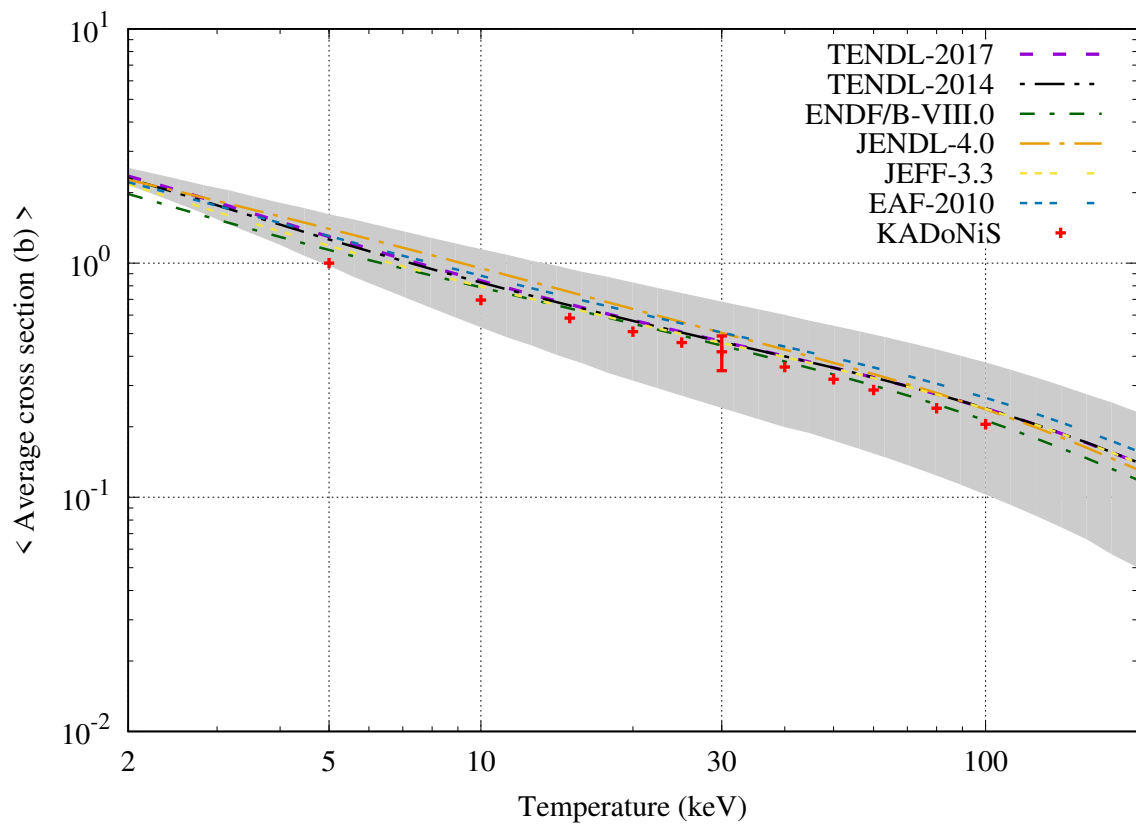
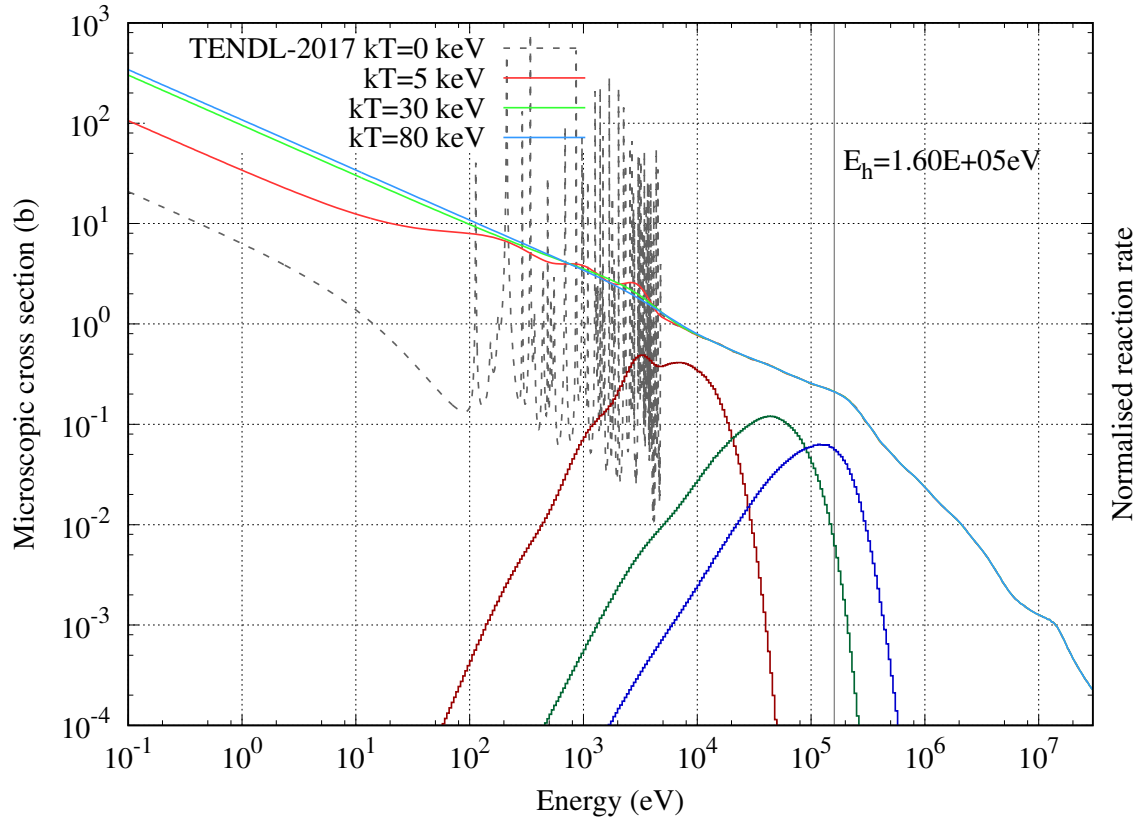
$^{74}\text{Se}_{34}$ [Stable]



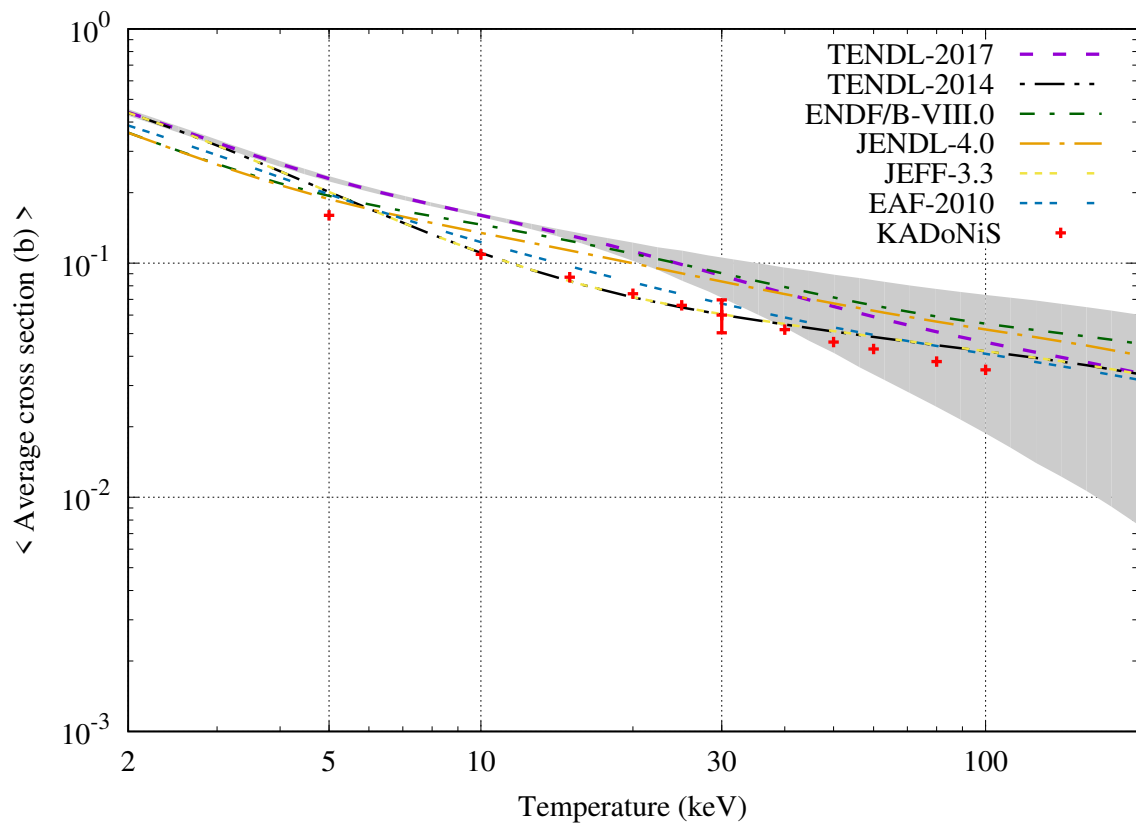
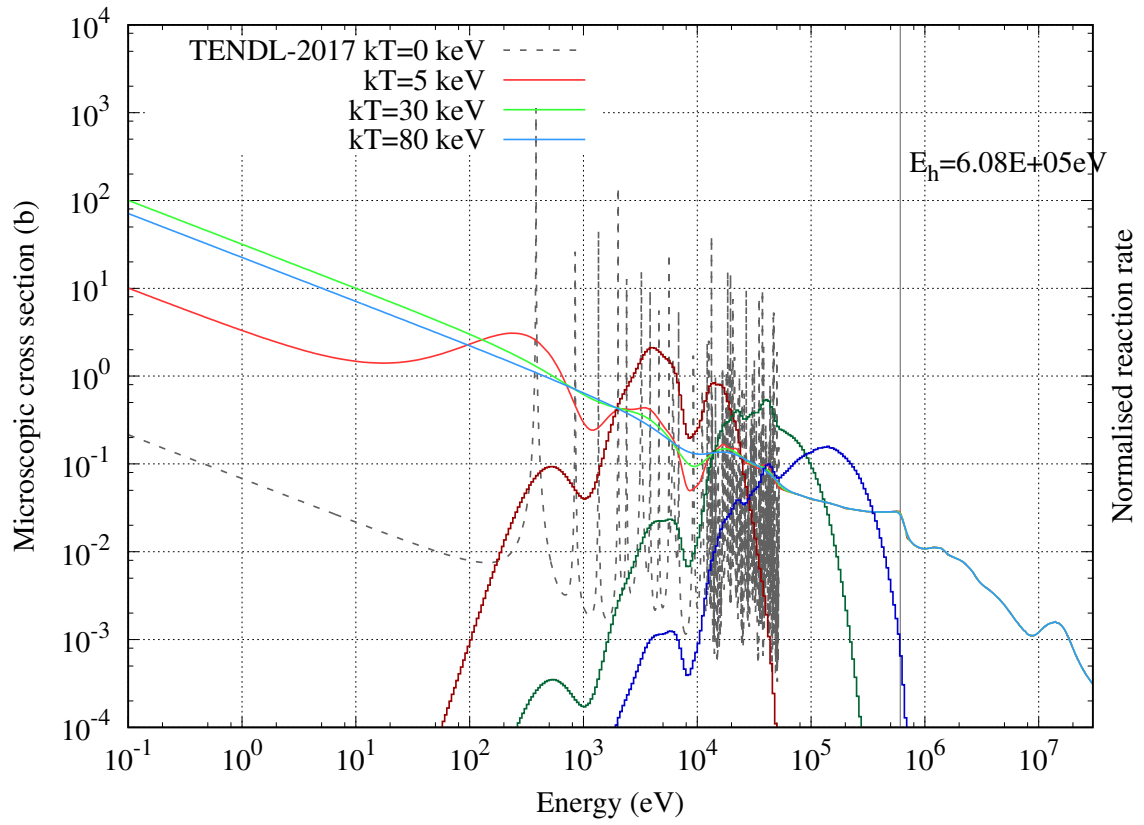
$^{76}\text{Se}_{34}$ [Stable]



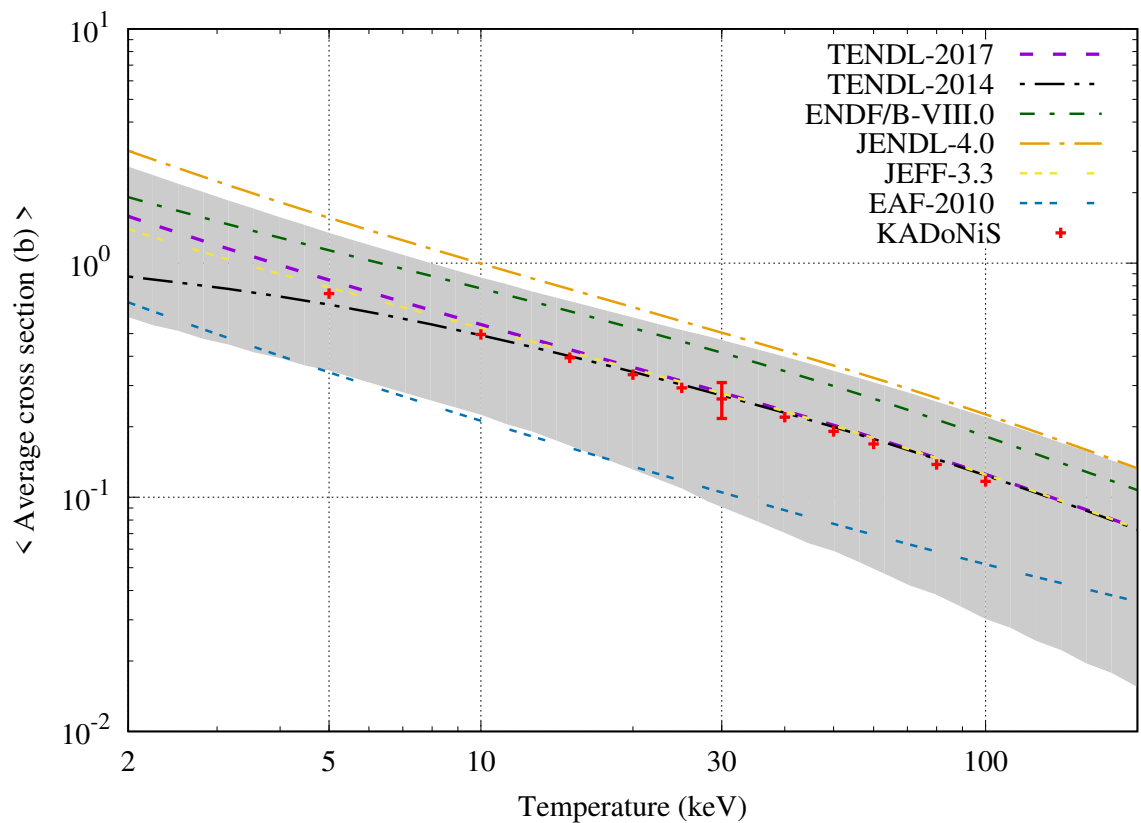
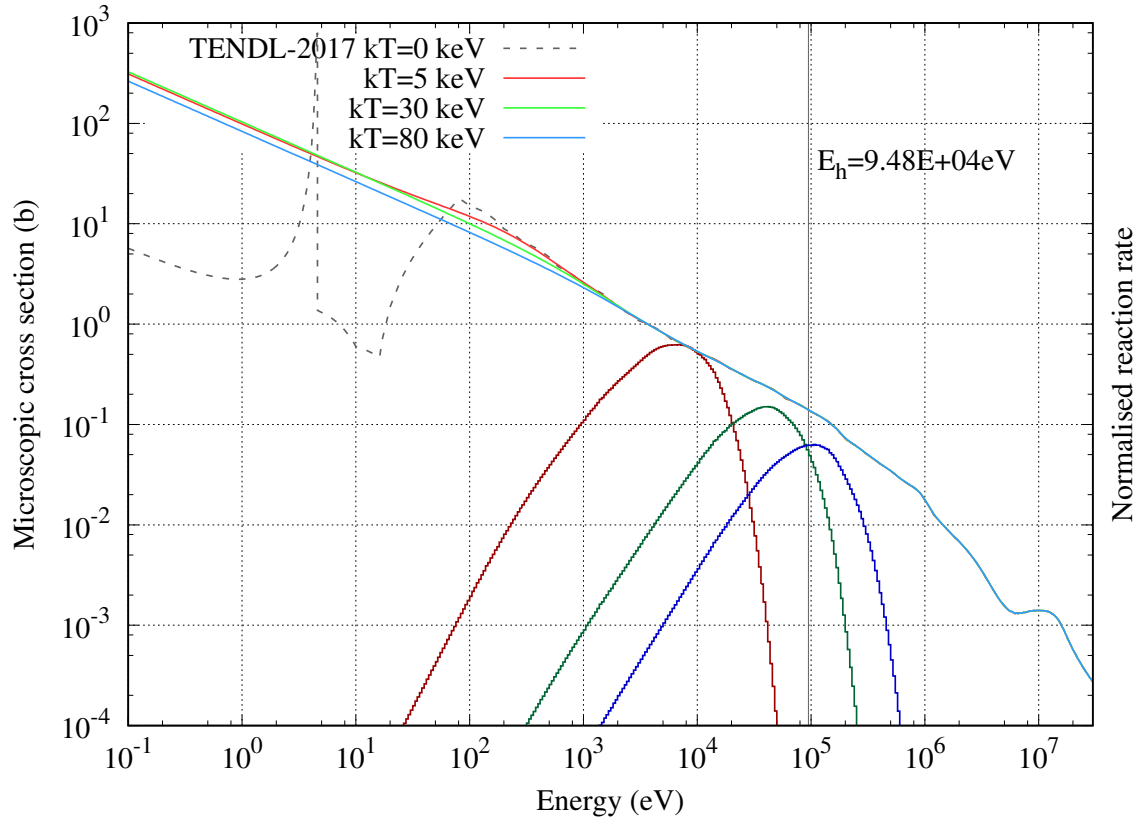
$^{77}\text{Se}_{34}$ [Stable] (KADoNiS=SMC)



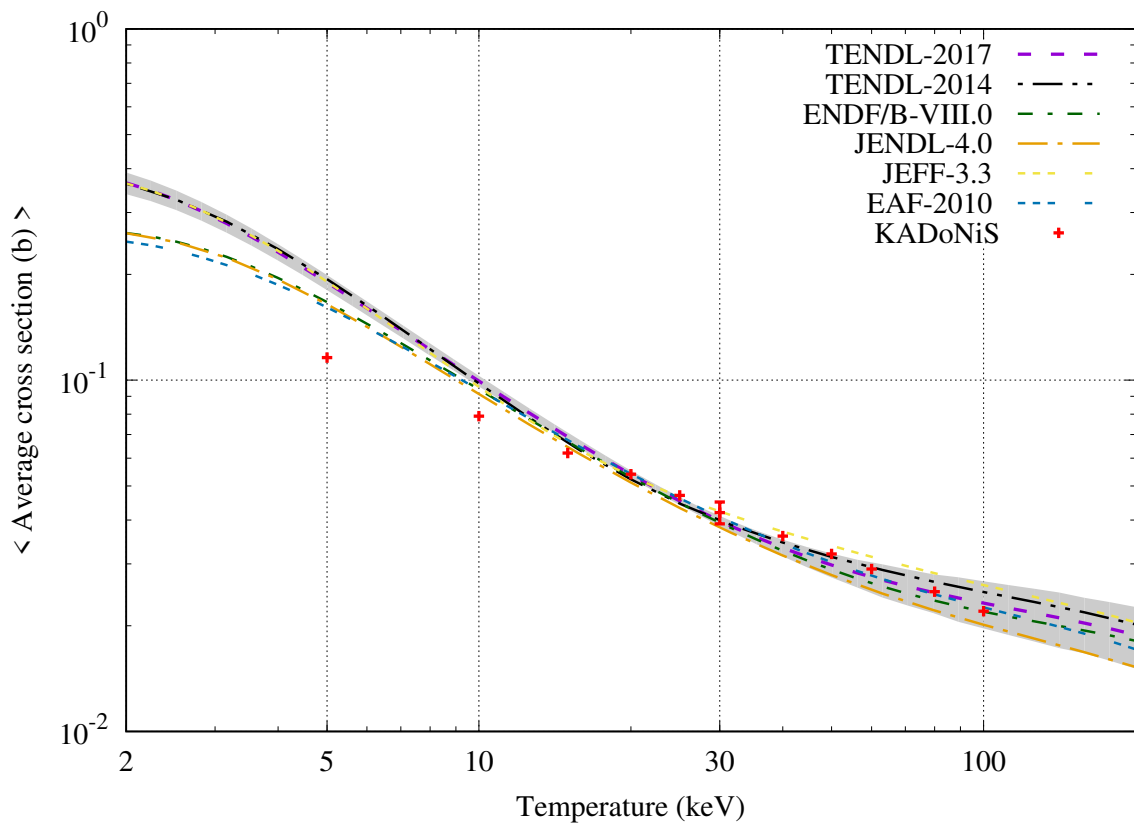
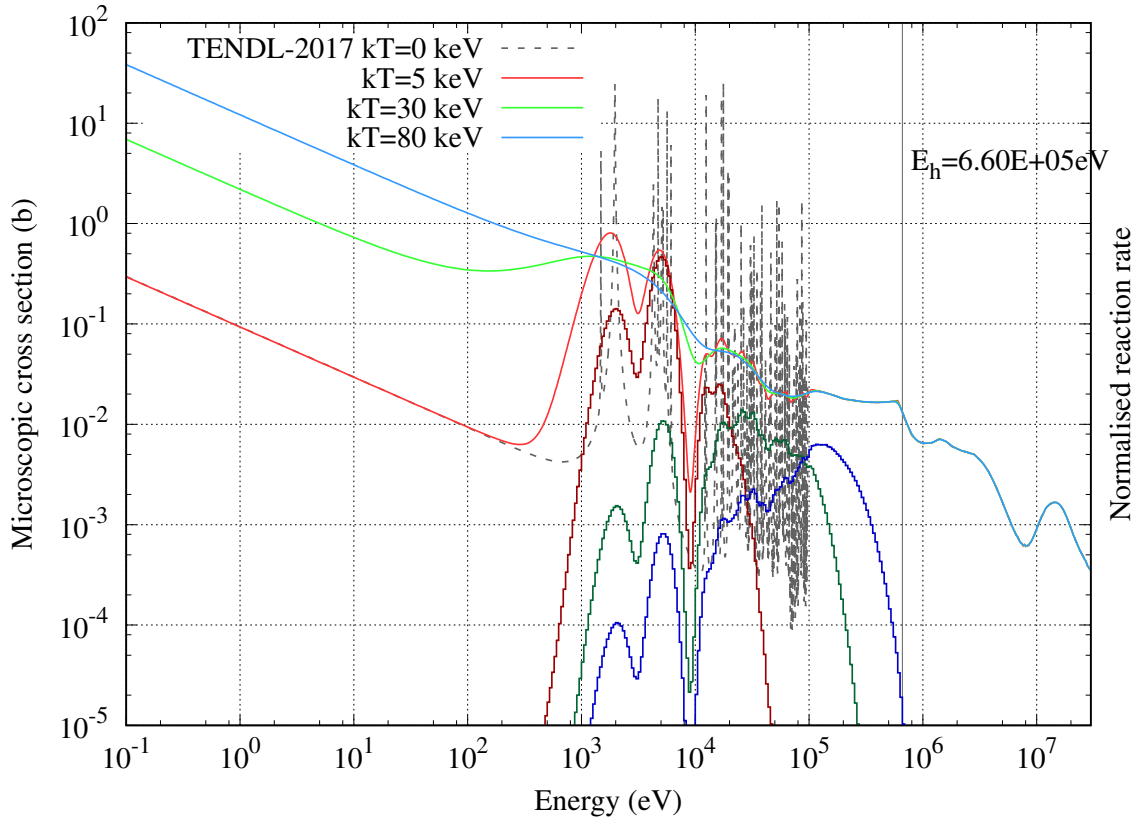
$^{78}\text{Se}_{34}$ [Stable]



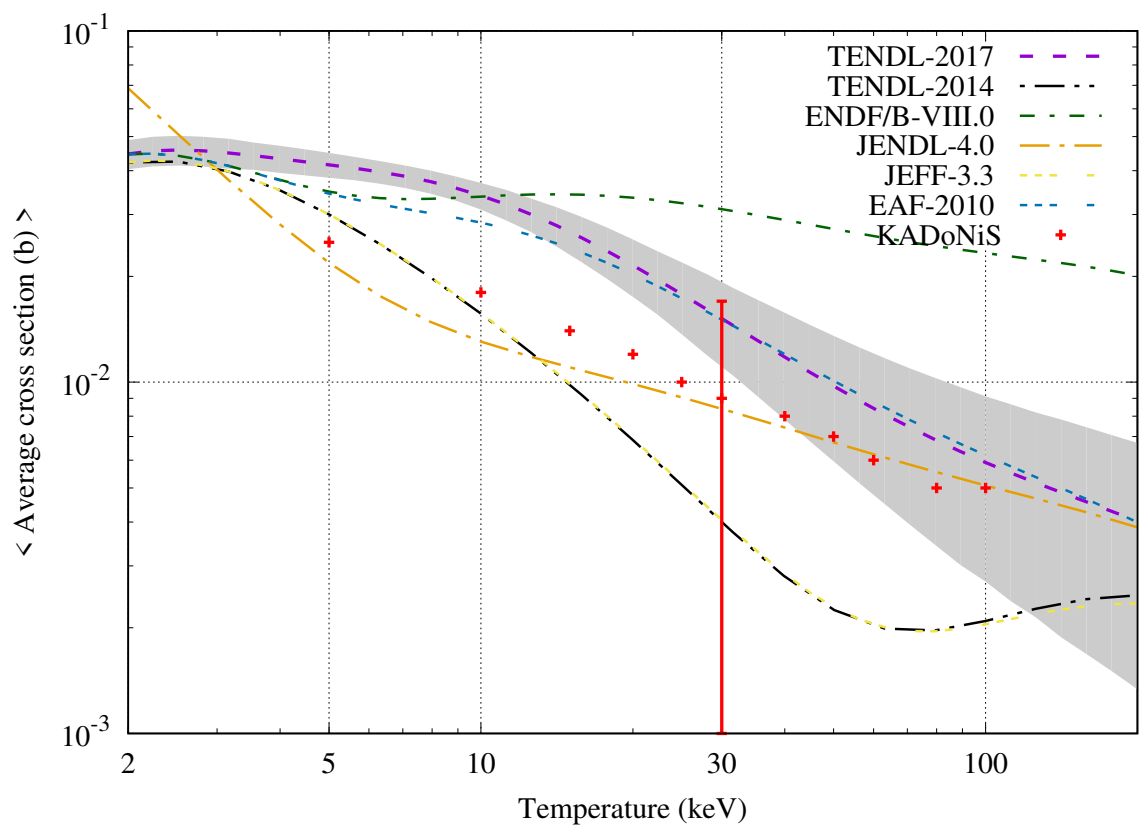
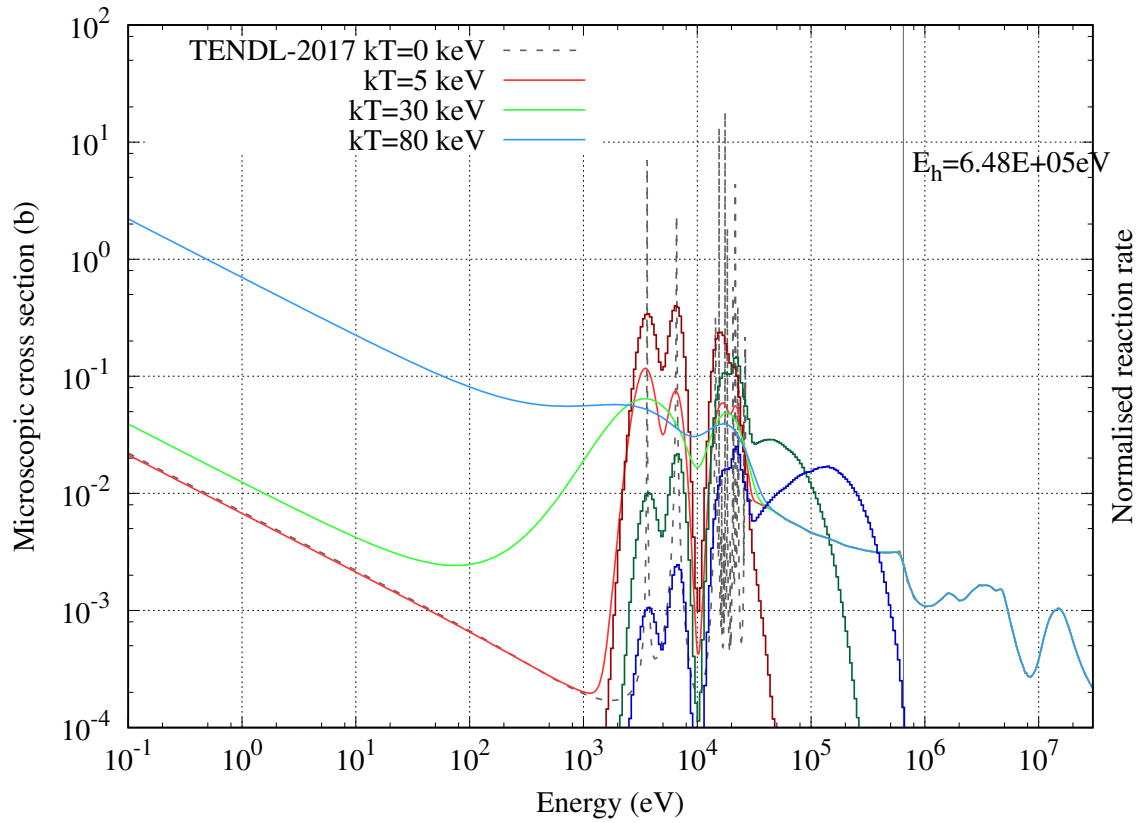
$^{79}\text{Se}_{34}$ [$T_{1/2} = 3.77 \times 10^5$ years] (KADoNiS=SMC)



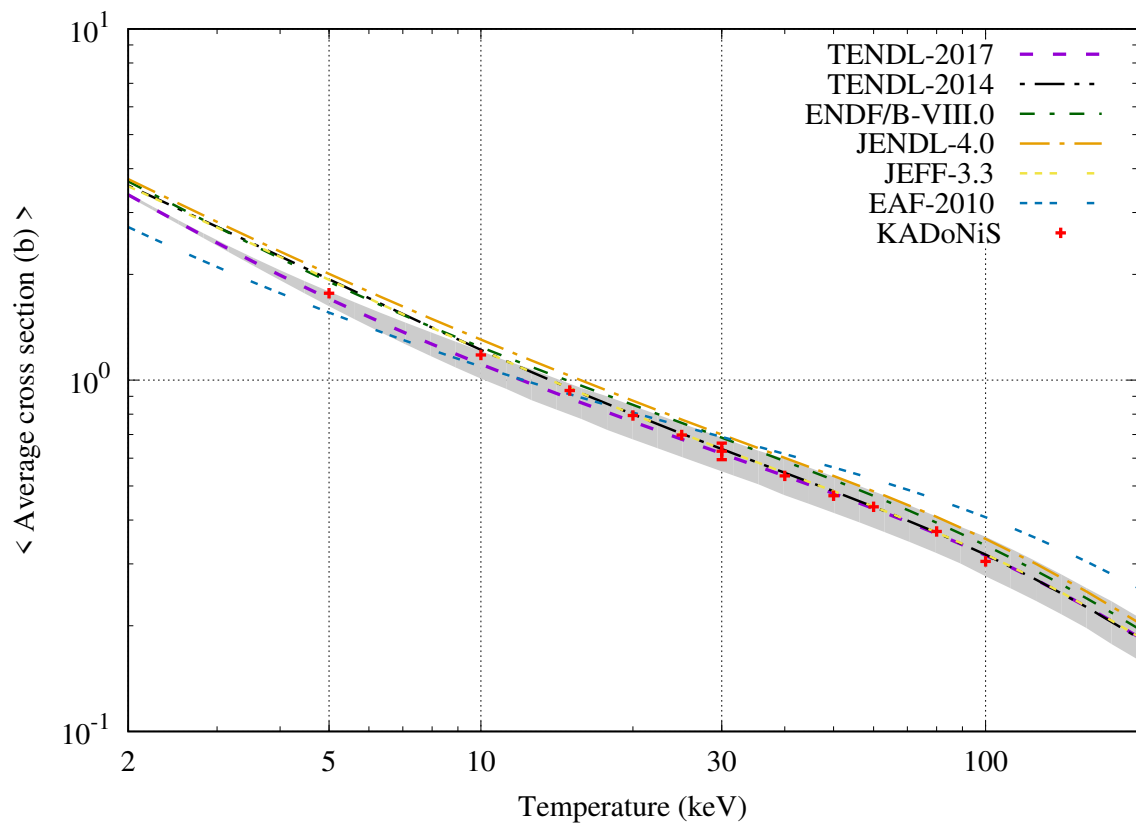
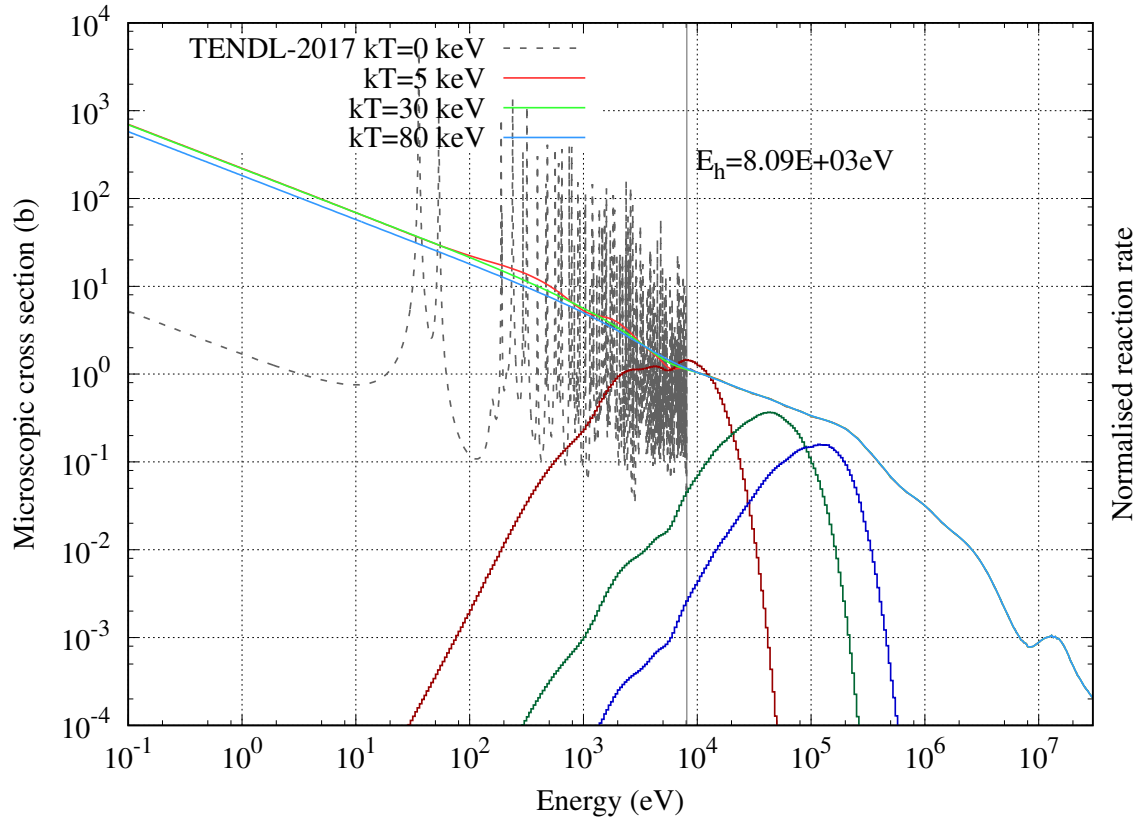
$^{80}\text{Se}_{34}$ [Stable]



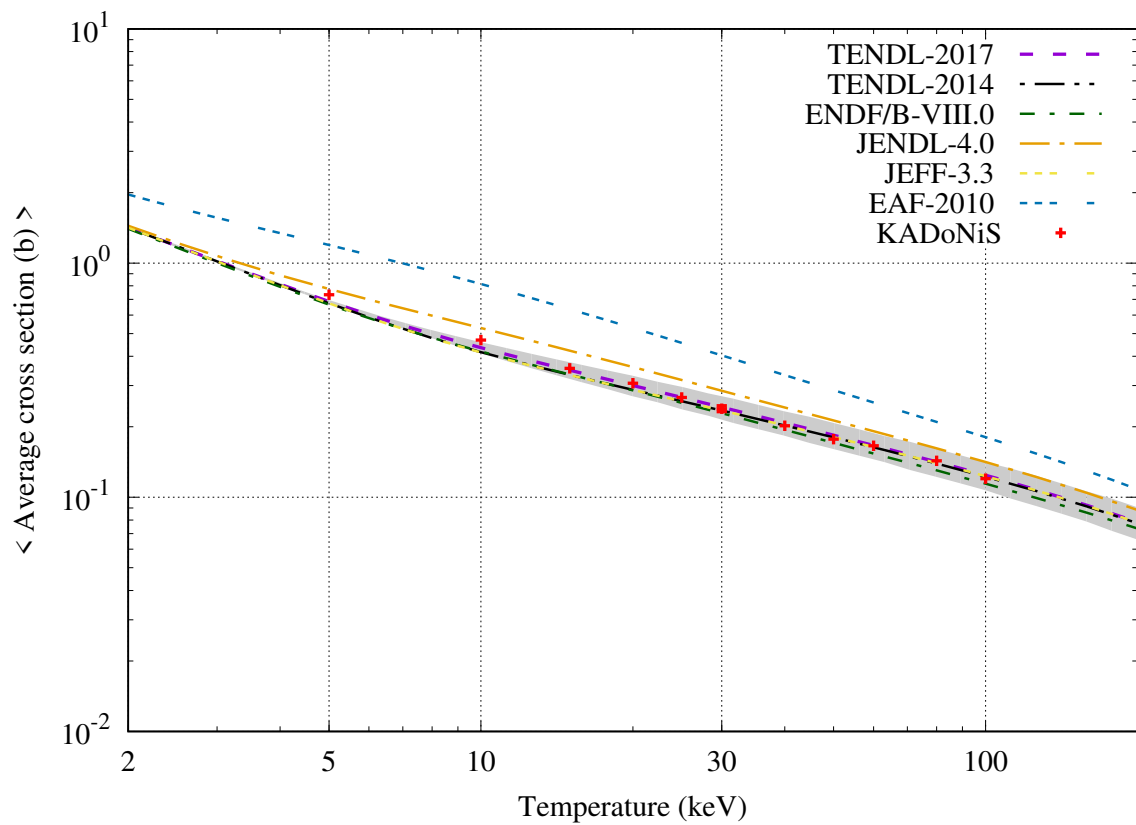
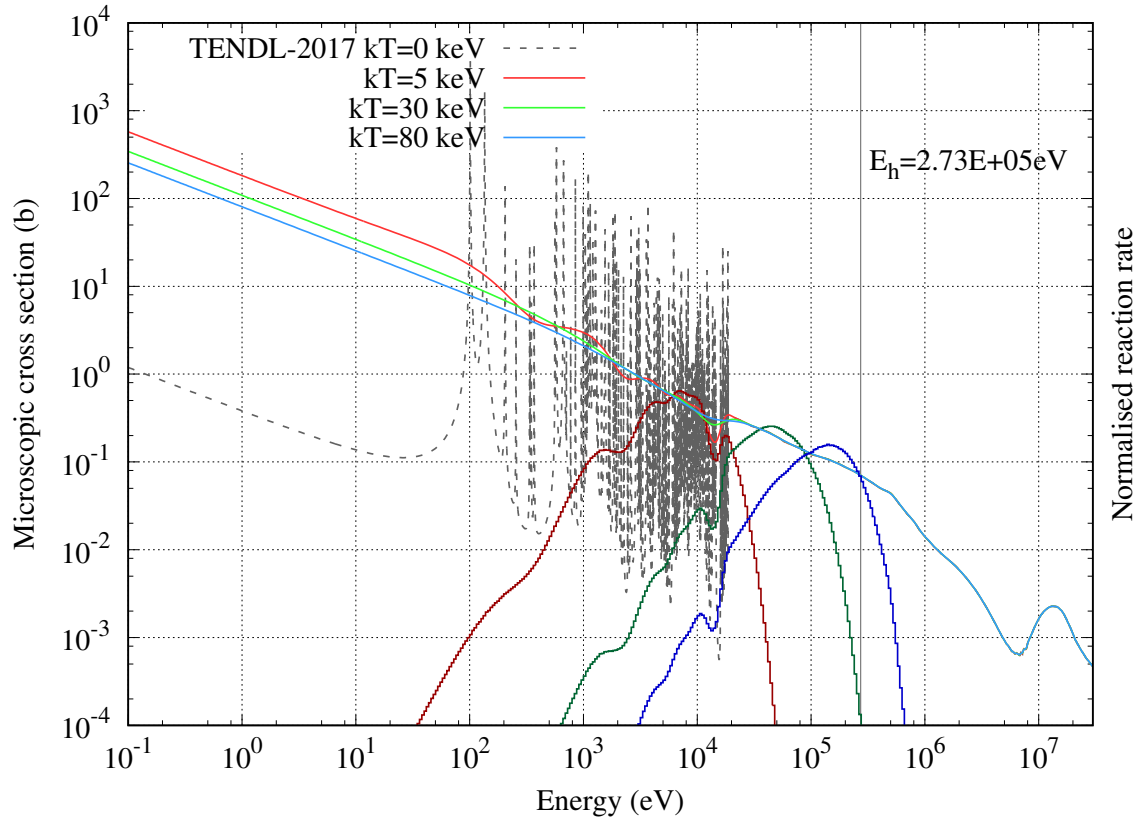
$^{82}\text{Se}_{34}$ [$T_{1/2} = 1.21 \times 10^{20}$ years] (KADoNiS=SMC)



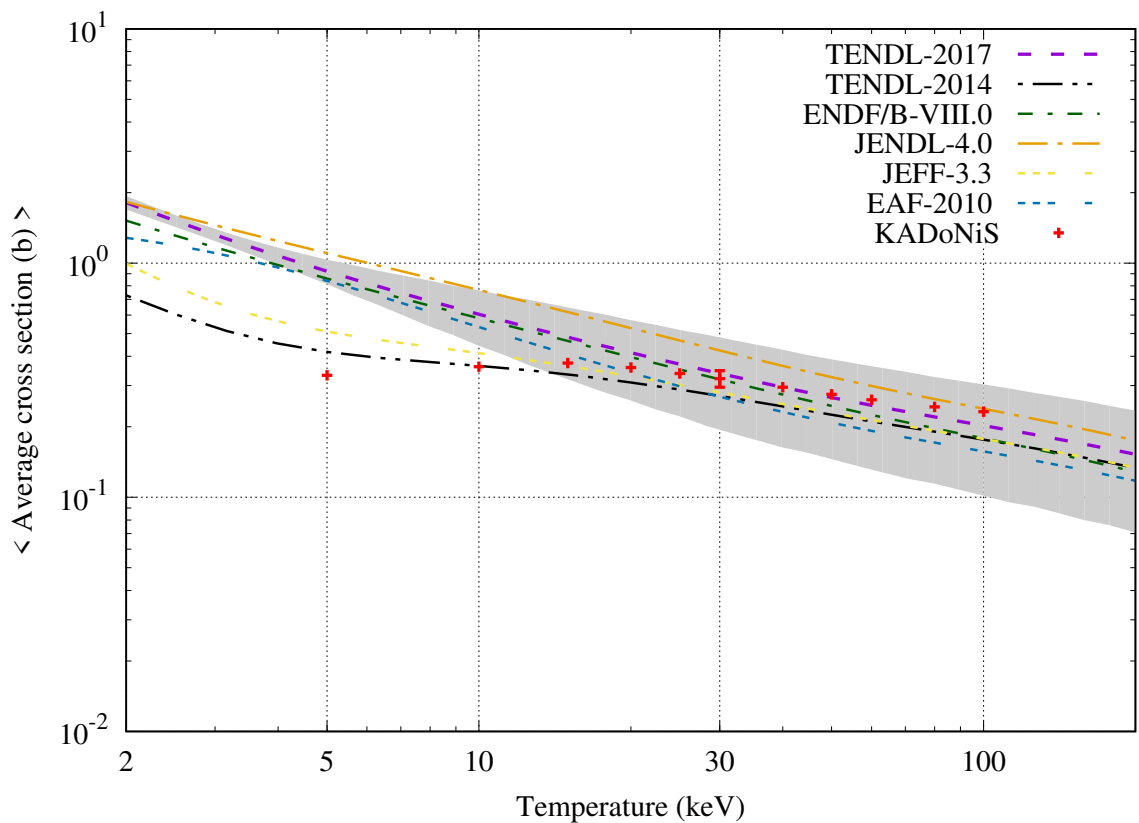
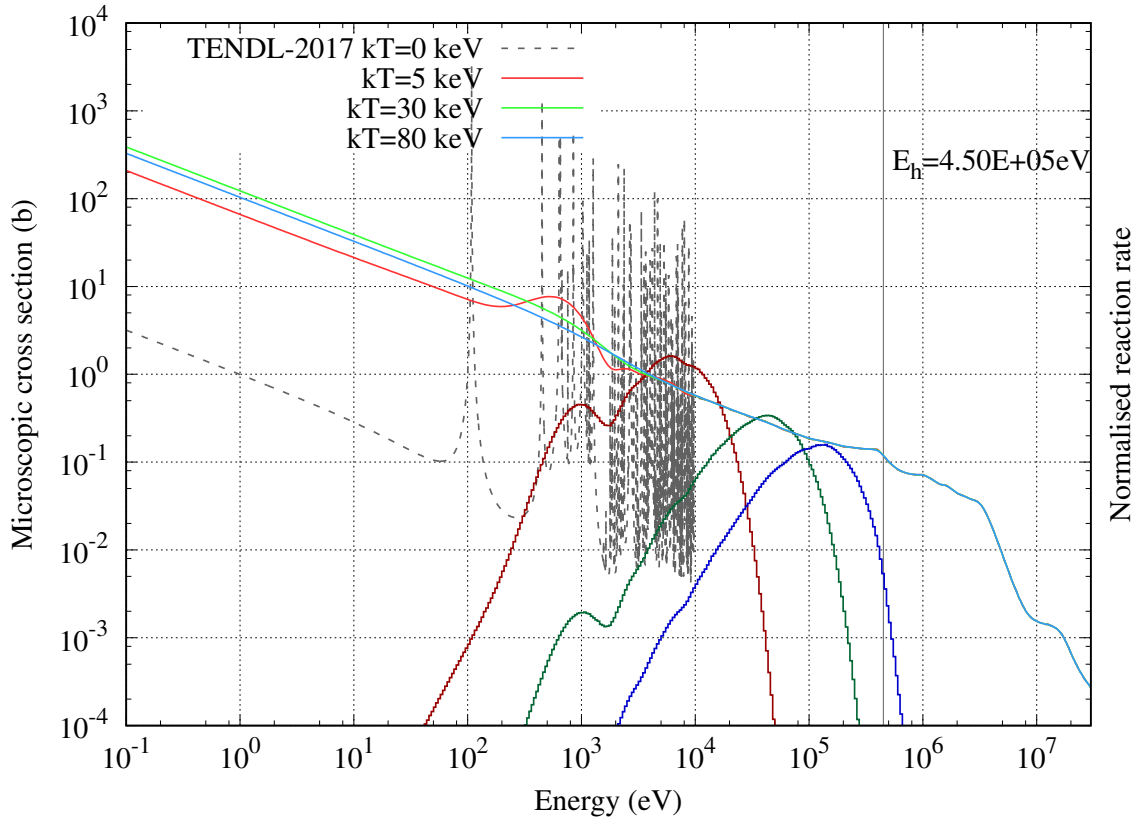
$^{79}\text{Br}_{35}$ [Stable]



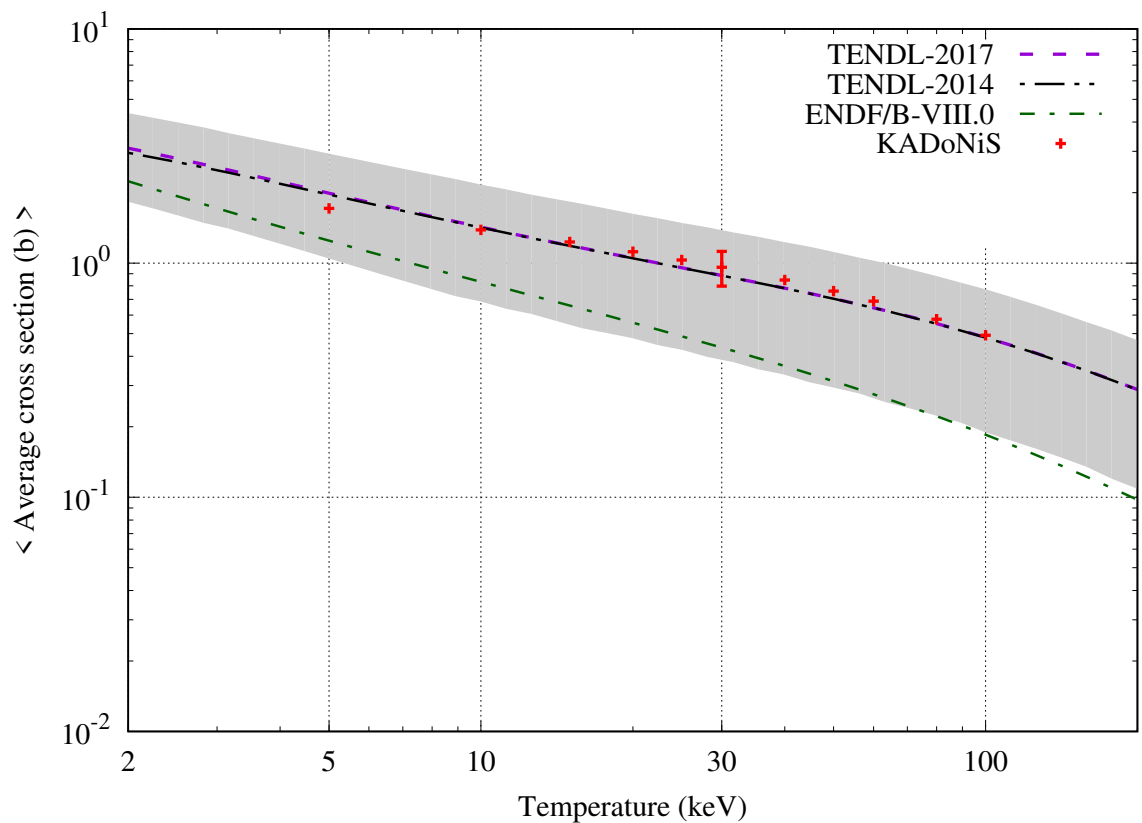
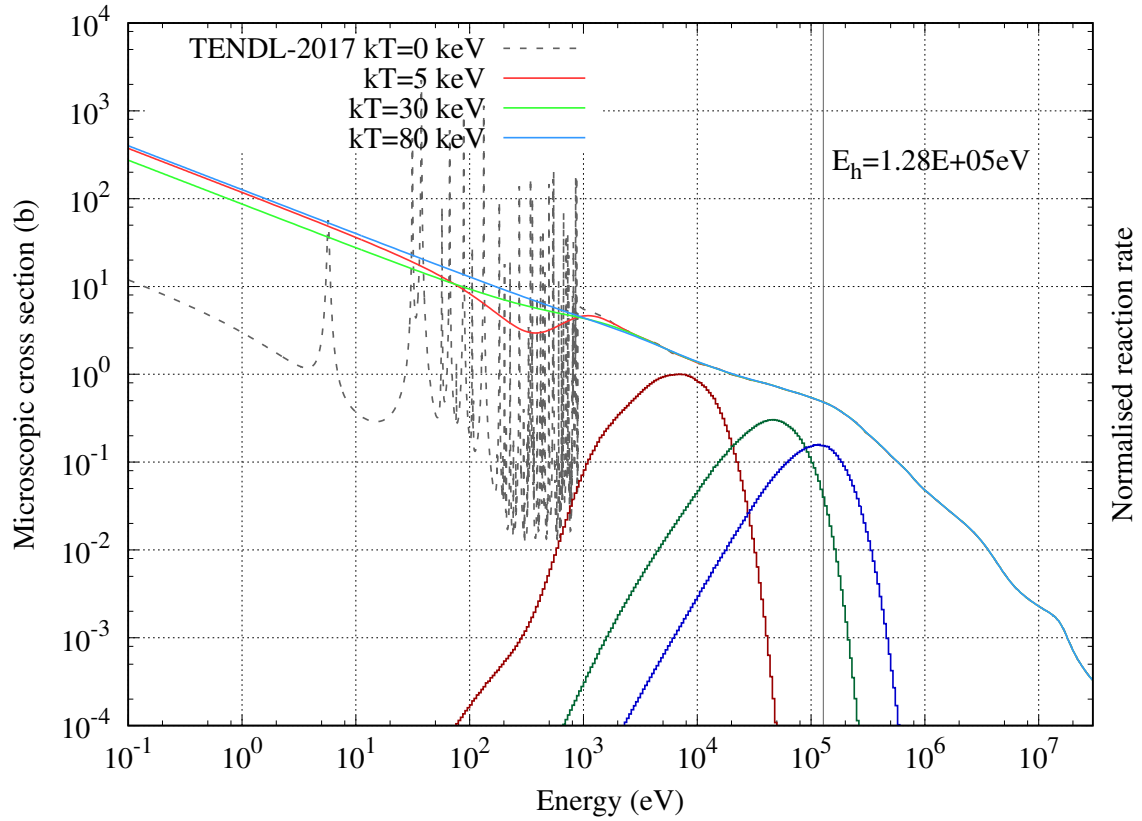
$^{81}\text{Br}_{35}$ [Stable]



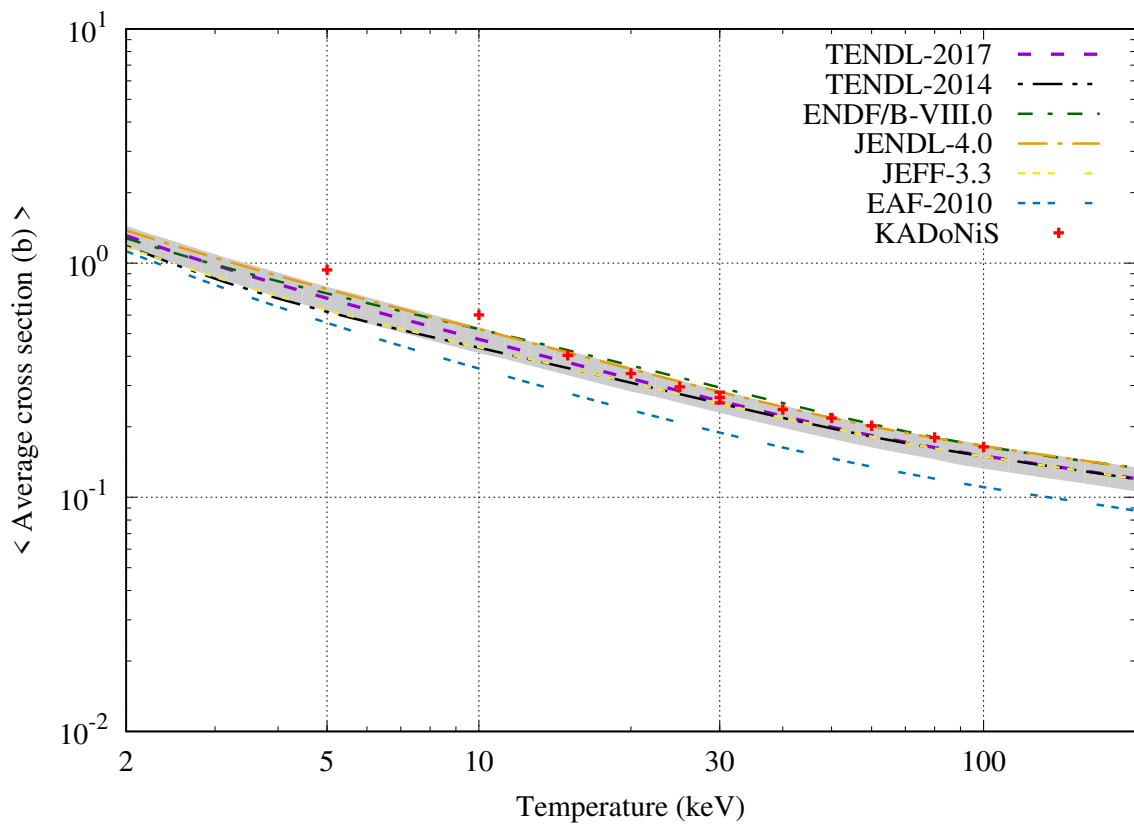
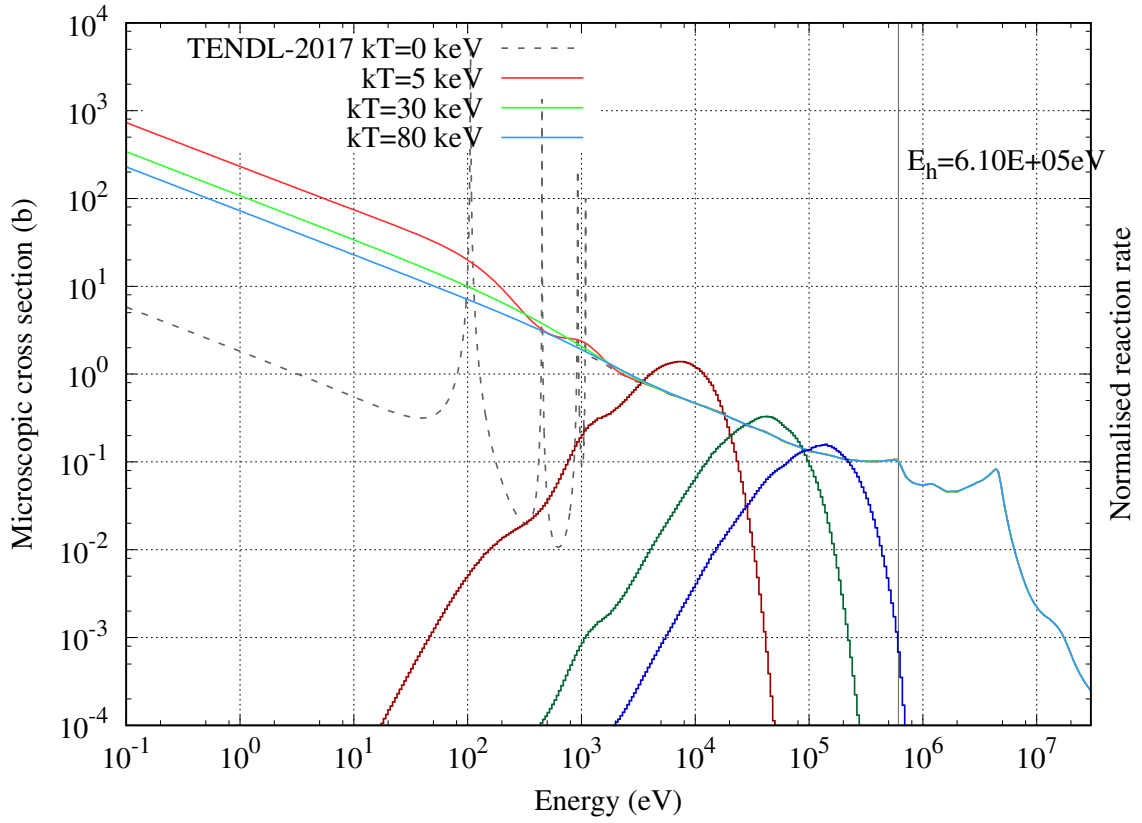
$^{78}\text{Kr}_{36}$ [$T_{1/2} = 1.10 \times 10^{20}$ years]



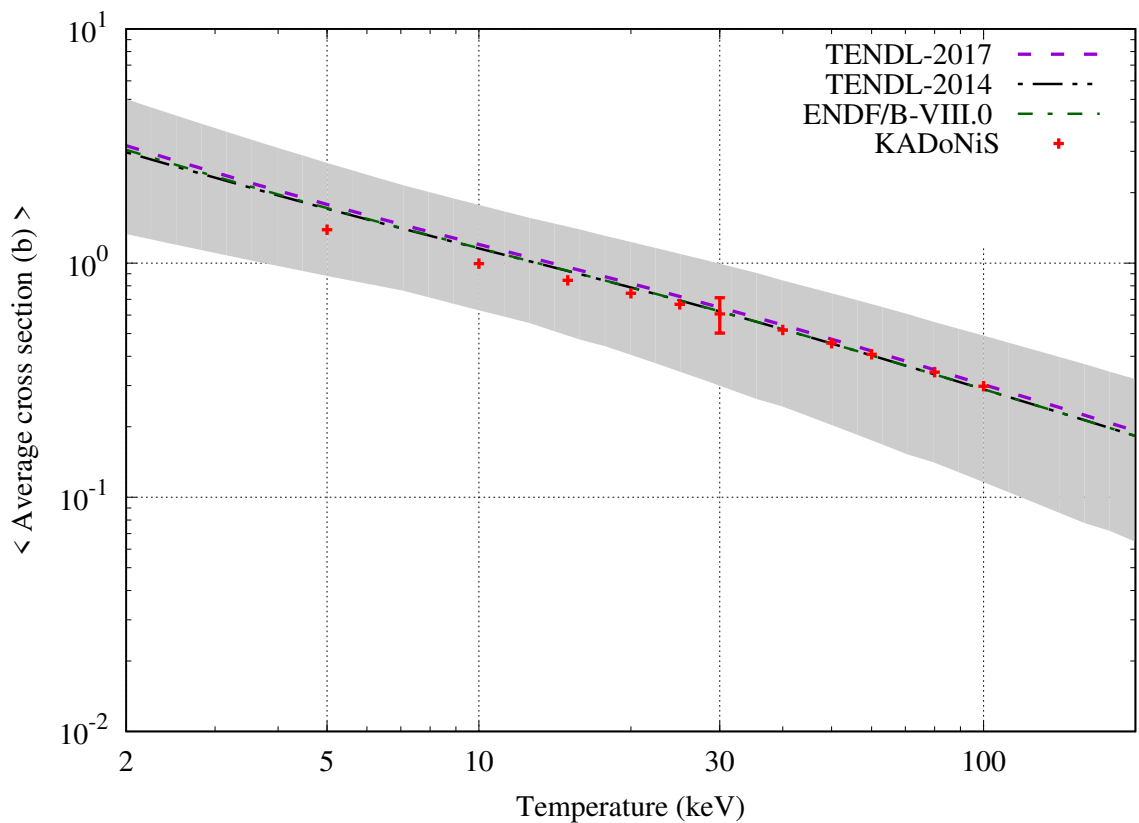
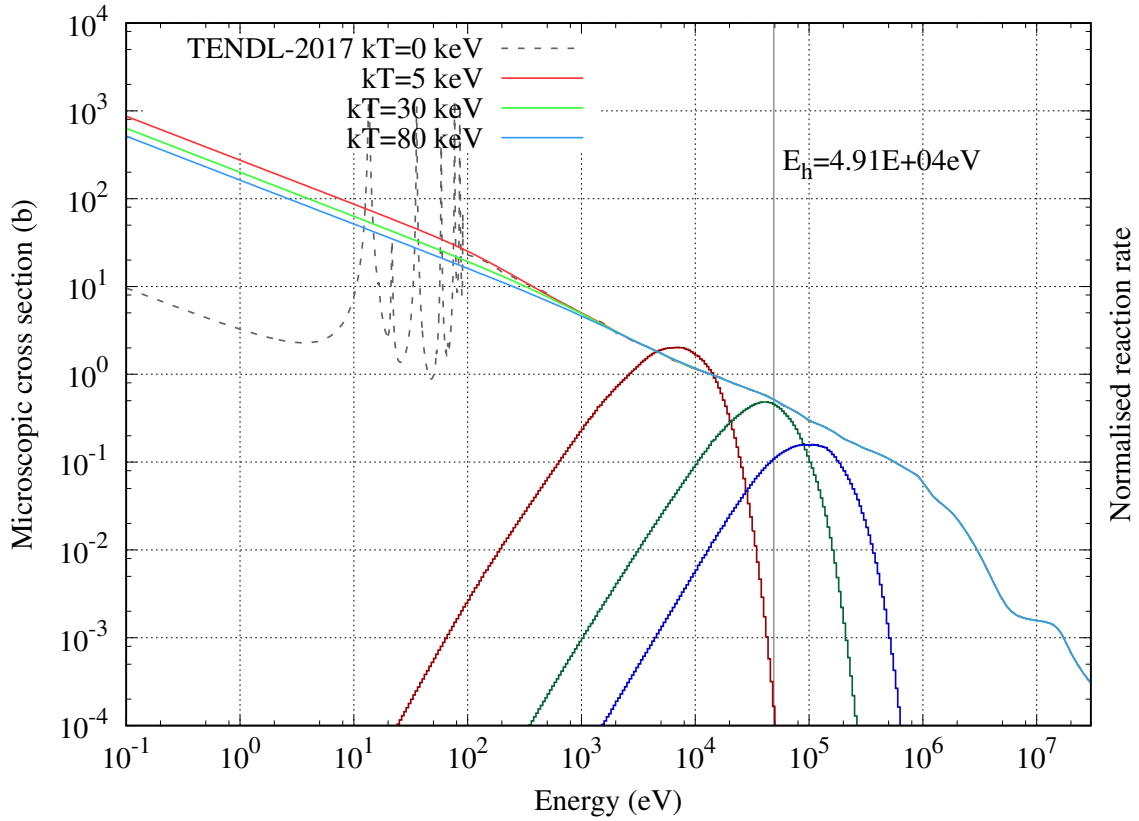
$^{79}\text{Kr}_{36}$ [$T_{1/2} = 1.46$ days] (KADoNiS=SMC)



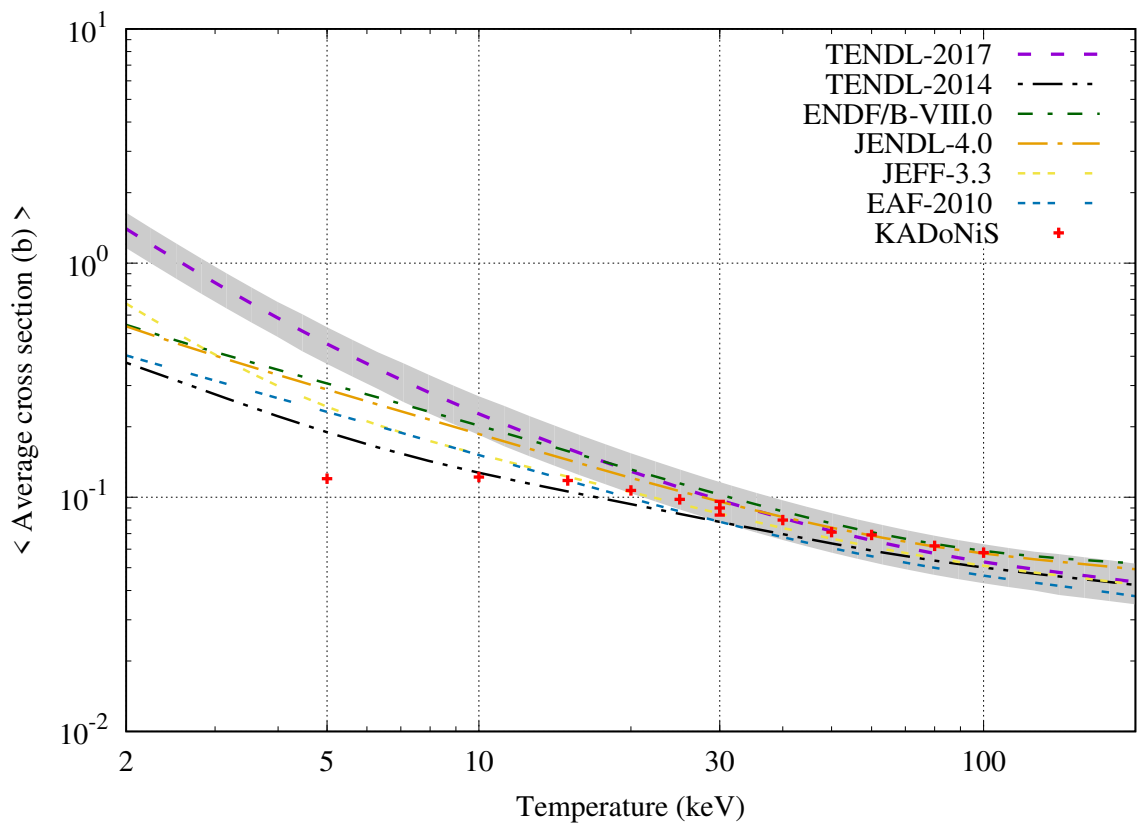
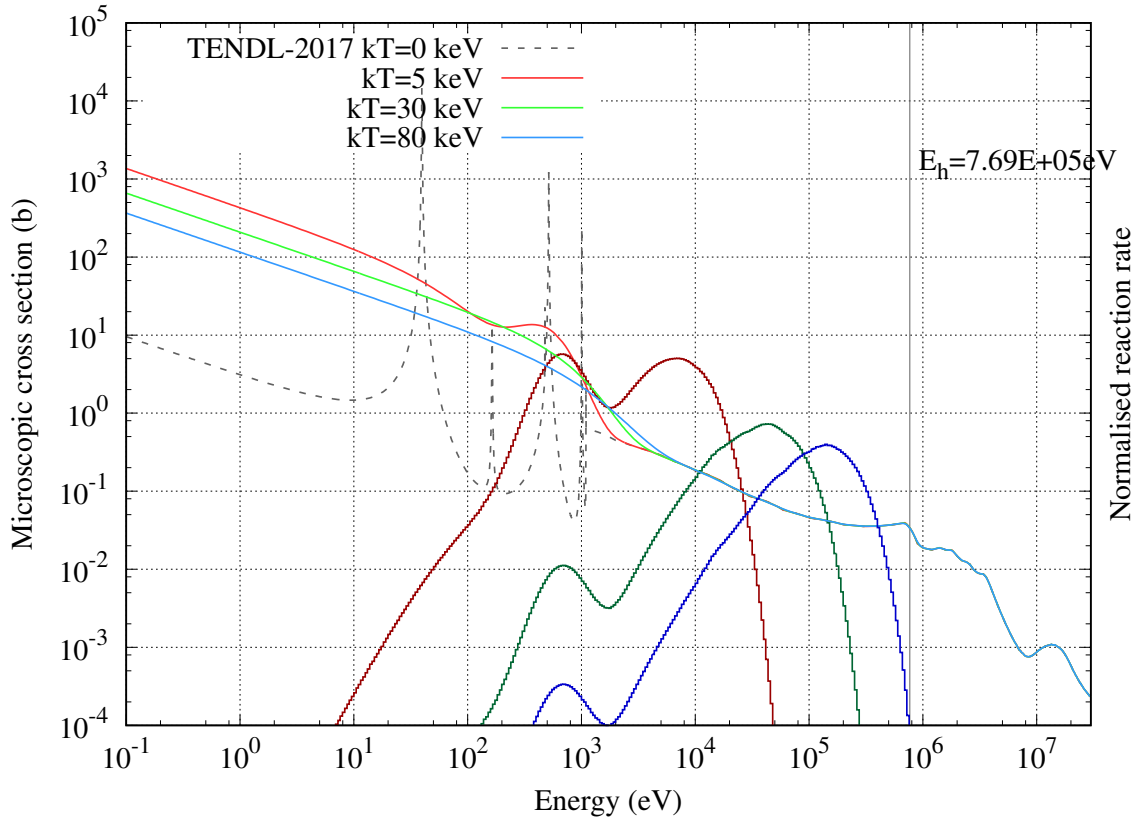
$^{80}\text{Kr}_{36}$ [Stable]



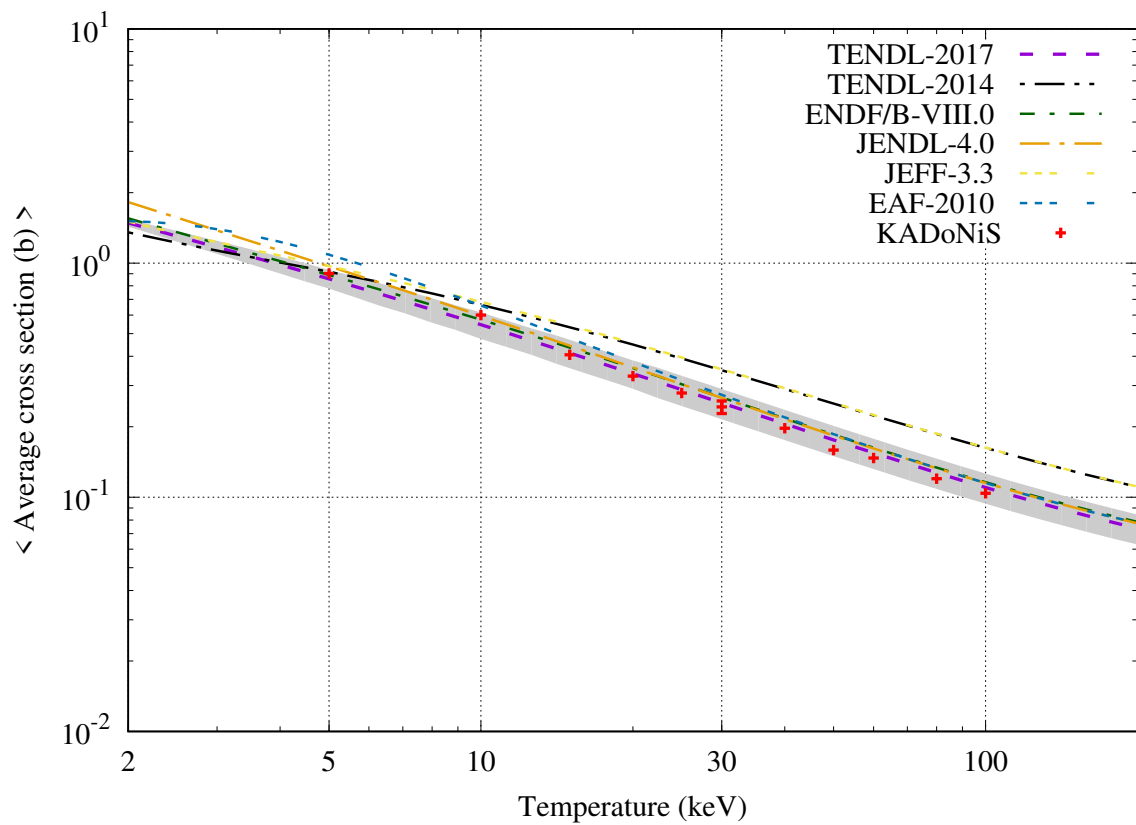
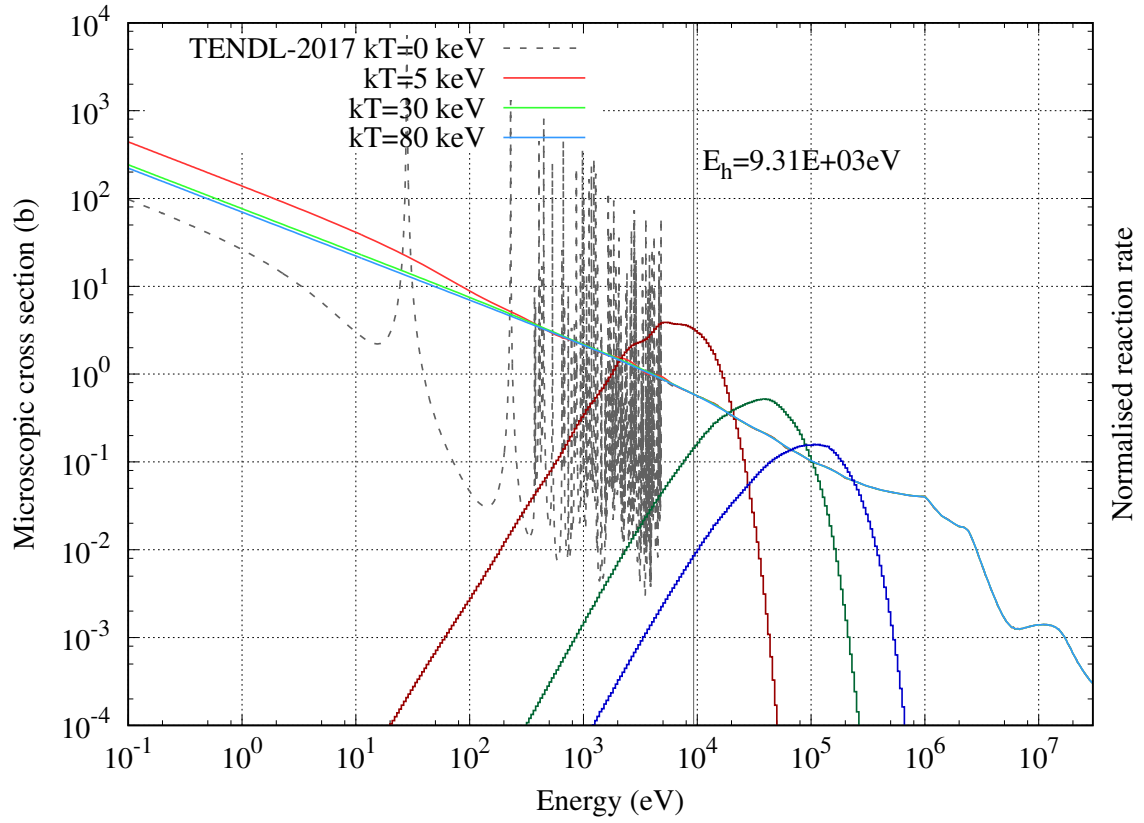
$^{81}\text{Kr}_{36}$ [$T_{1/2} = 2.10 \times 10^5$ years] (KADoNiS=SMC)



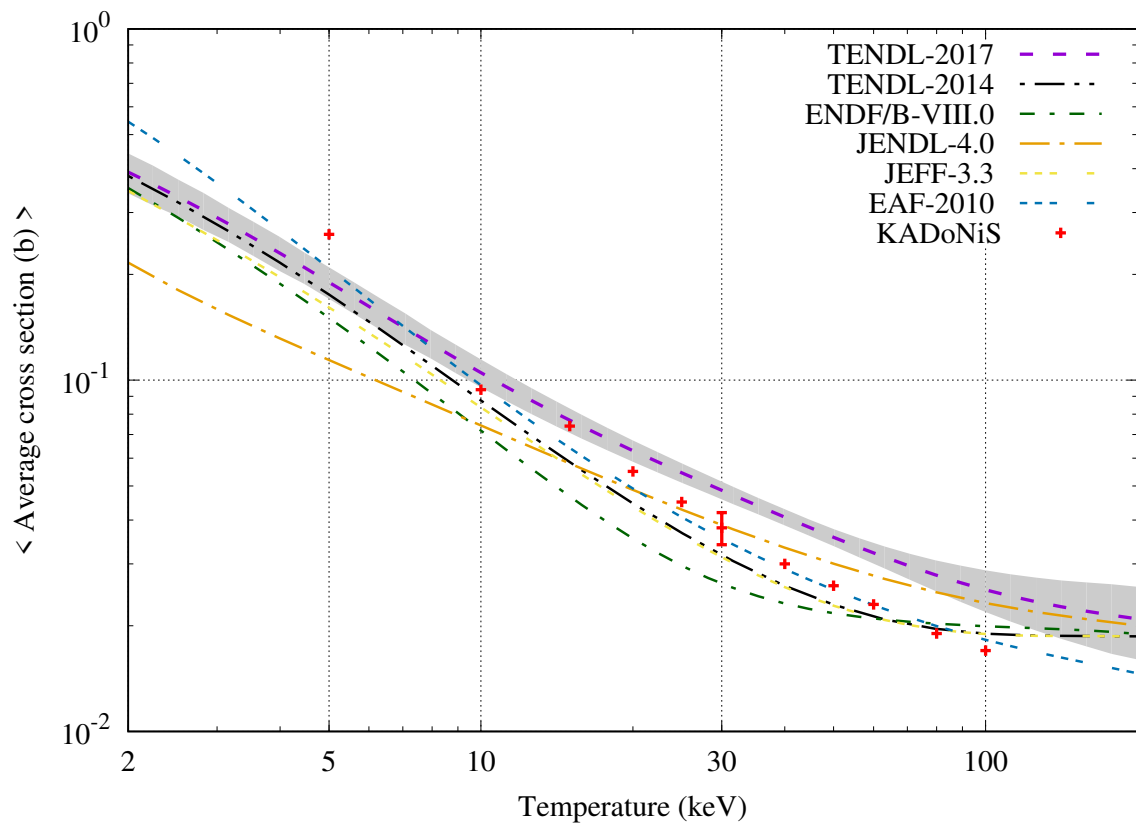
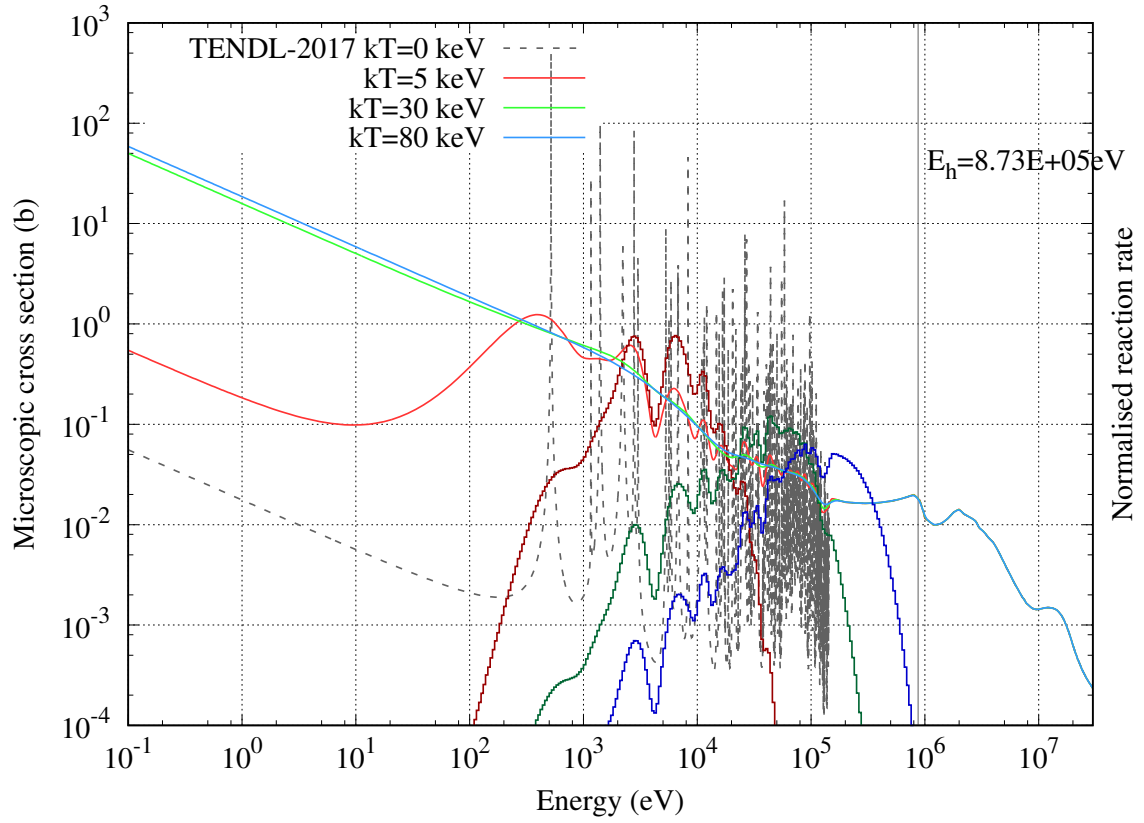
$^{82}\text{Kr}_{36}$ [Stable]



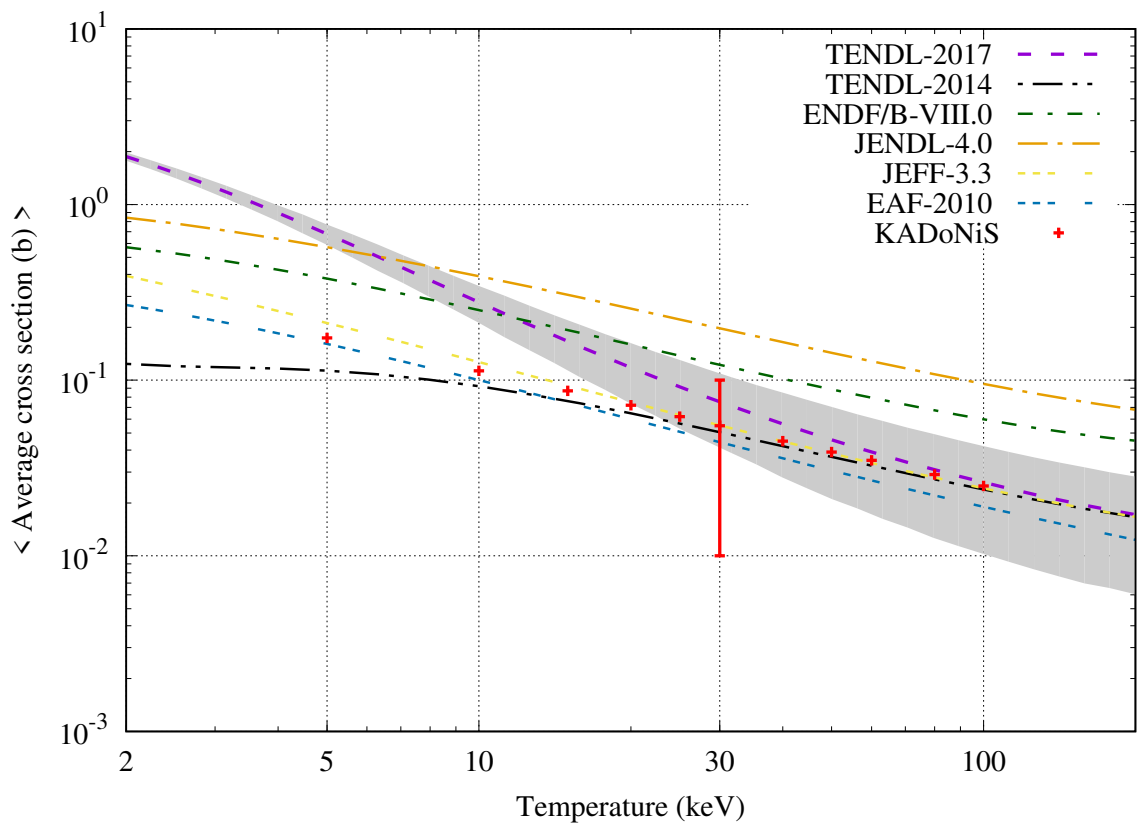
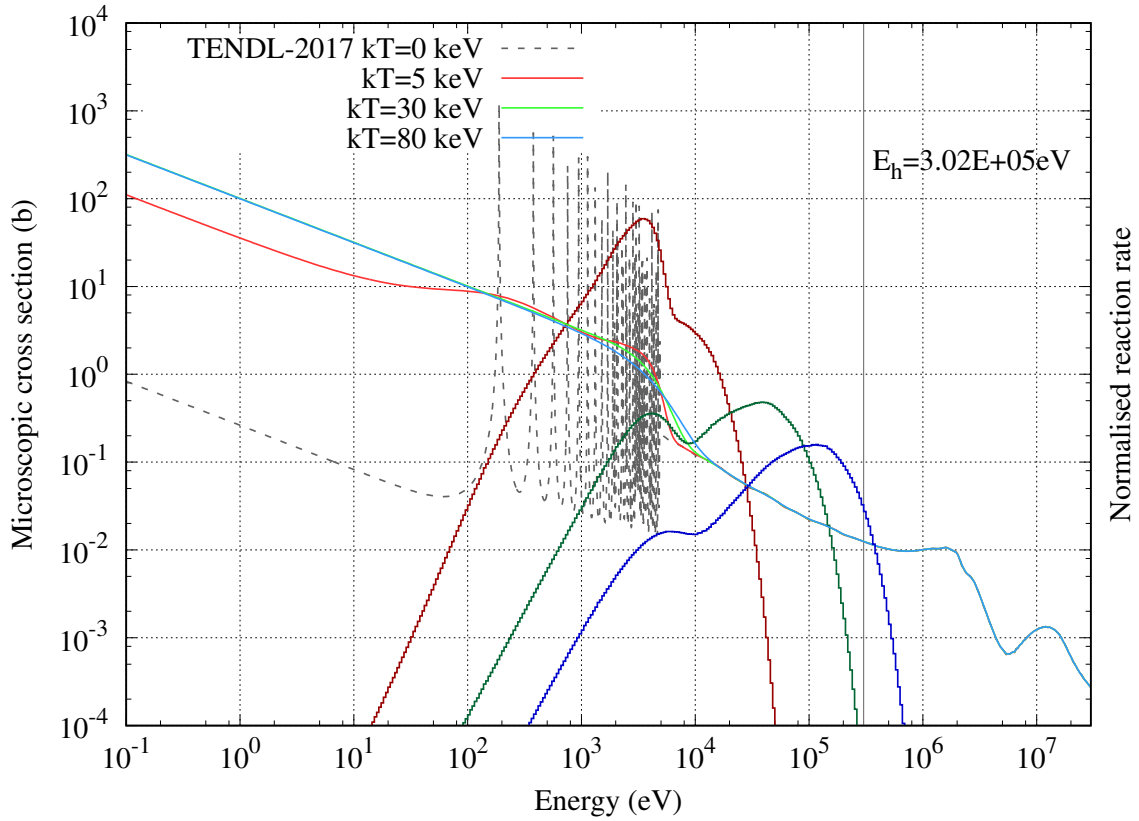
$^{83}\text{Kr}_{36}$ [Stable]



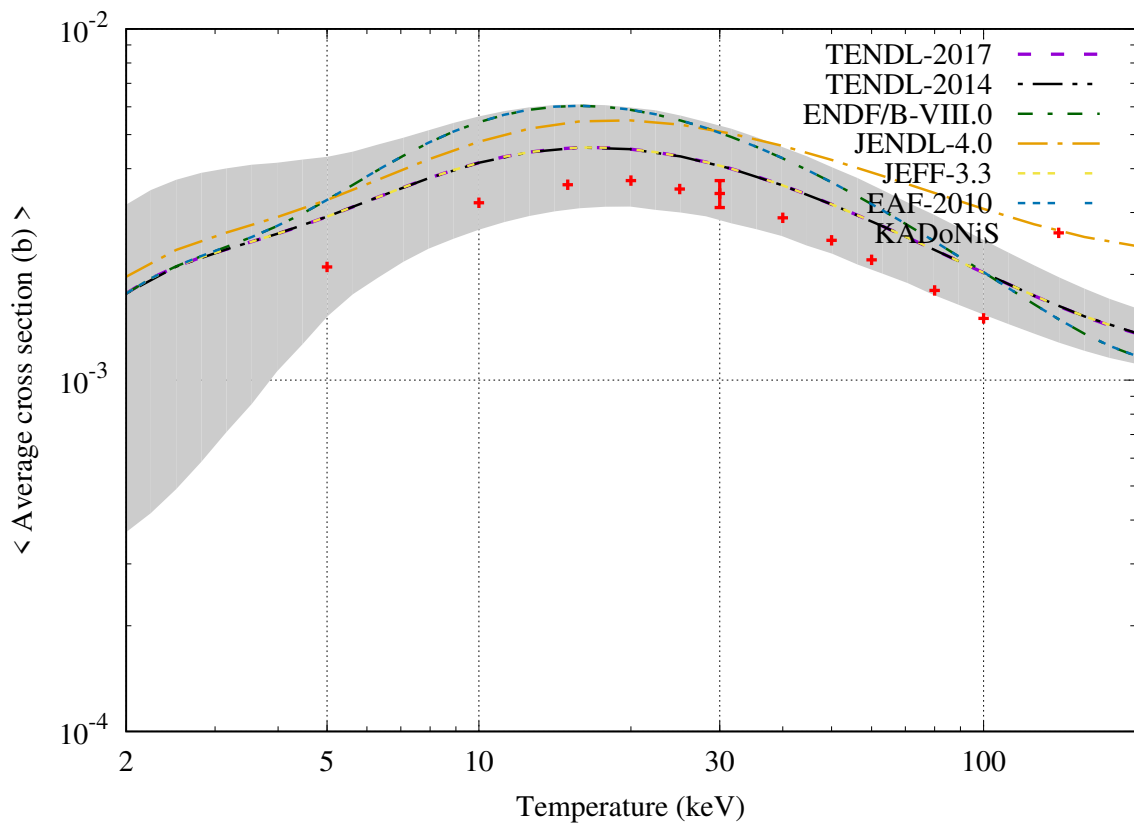
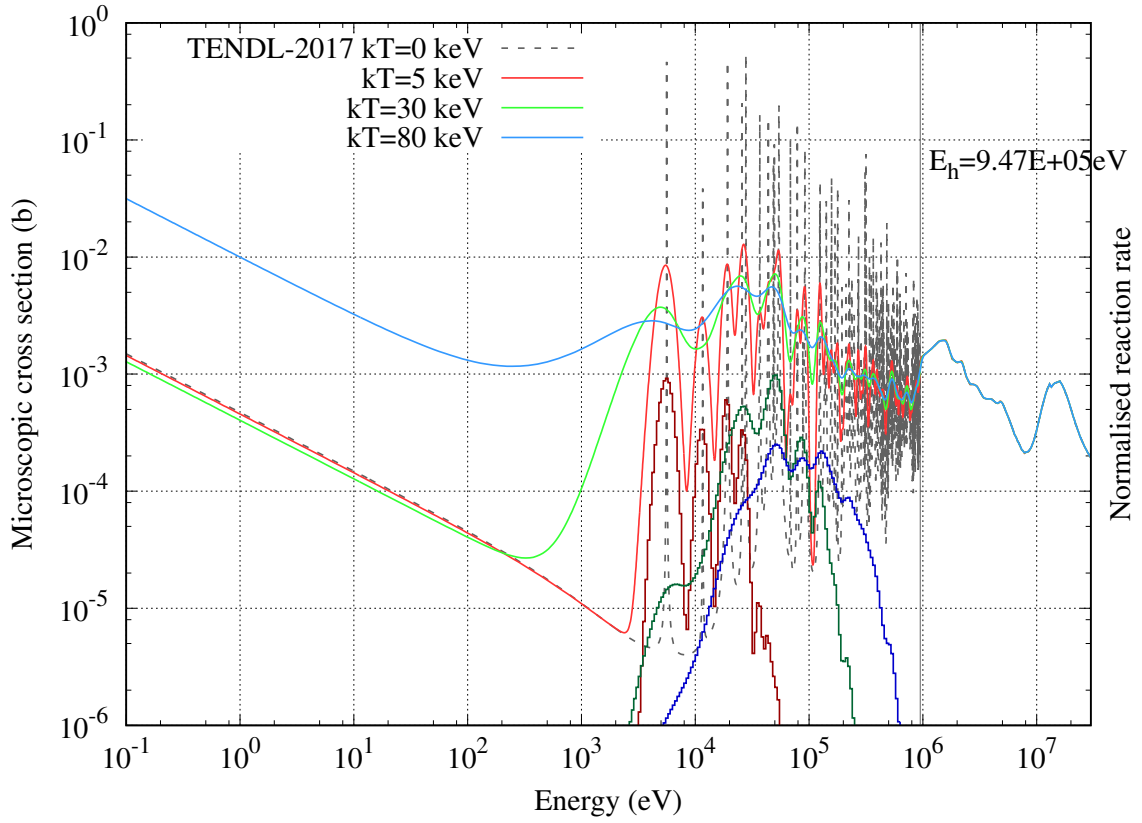
$^{84}\text{Kr}_{36}$ [Stable]



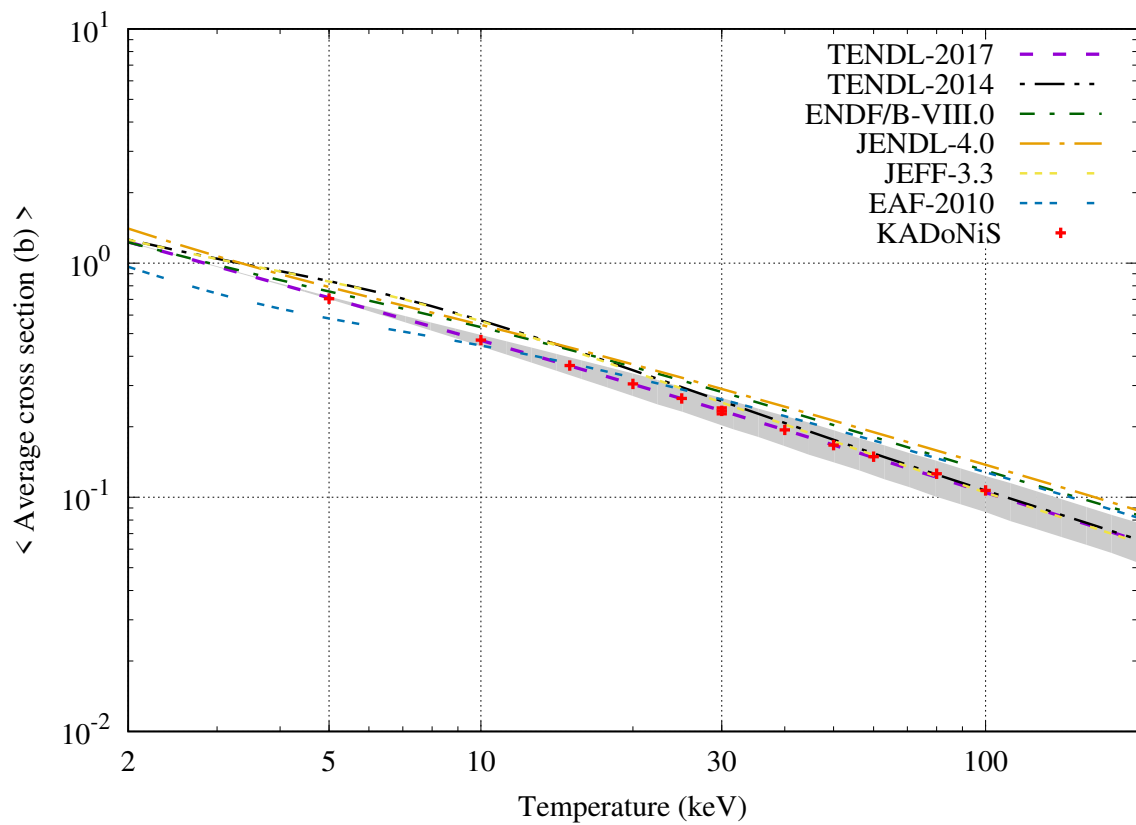
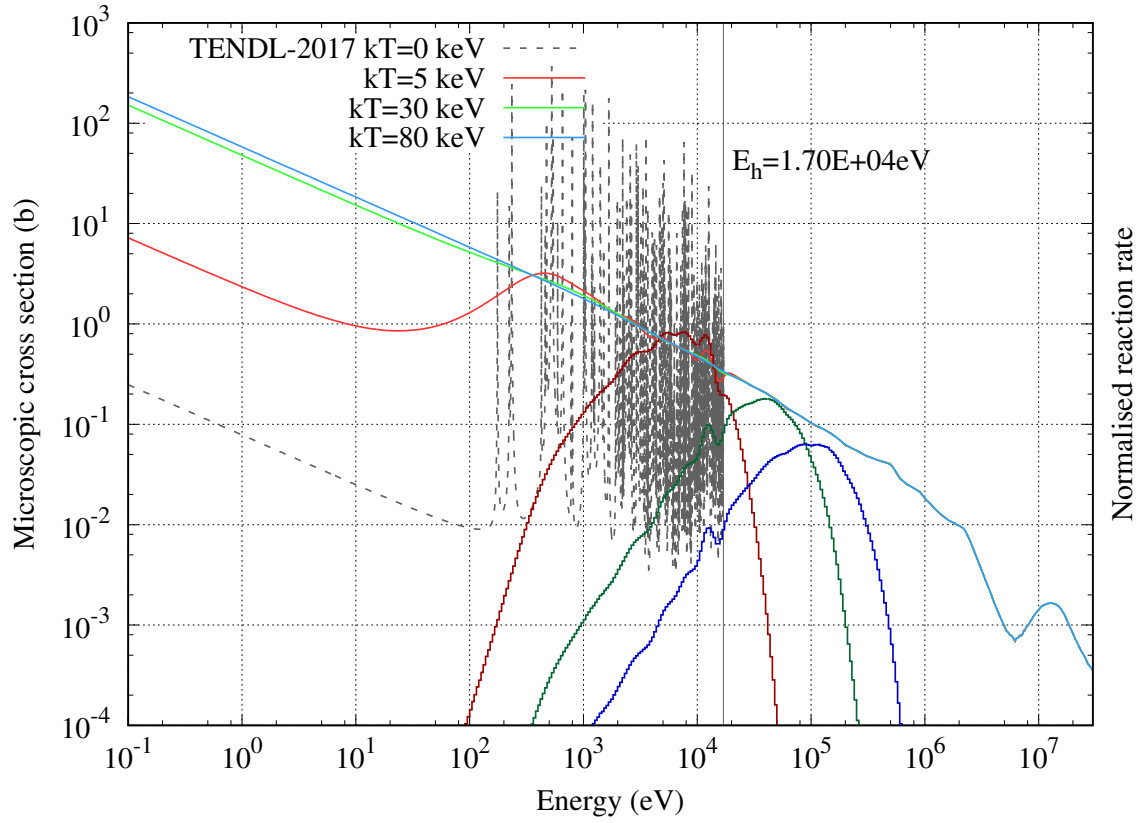
$^{85}\text{Kr}_{36}$ [$T_{1/2} = 10.75$ years] (KADoNiS=SMC)



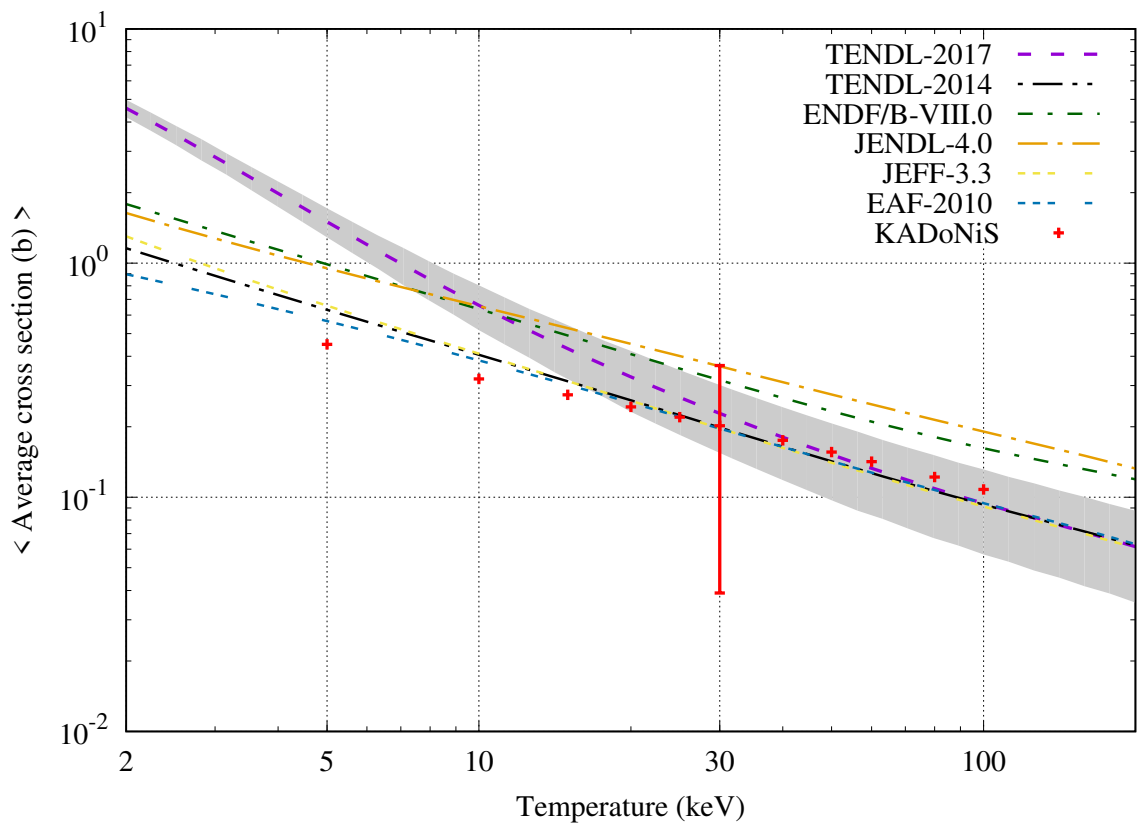
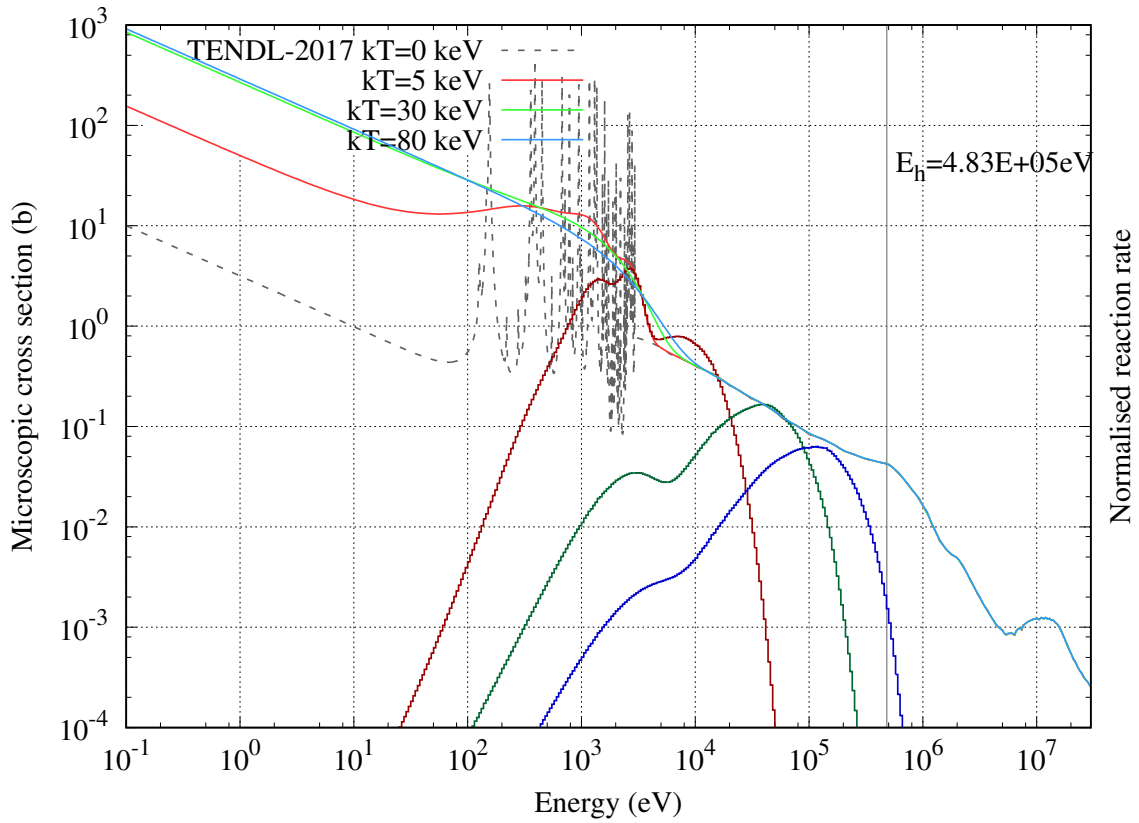
$^{86}\text{Kr}_{36}$ [Stable]



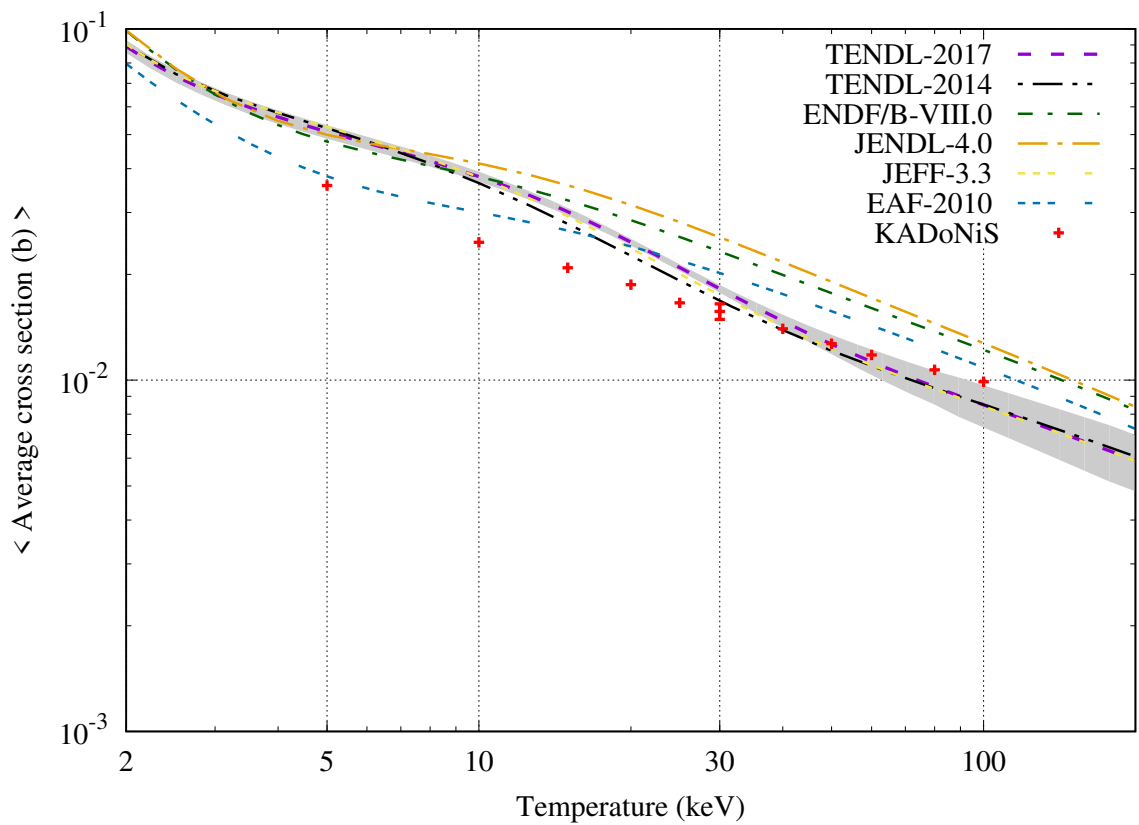
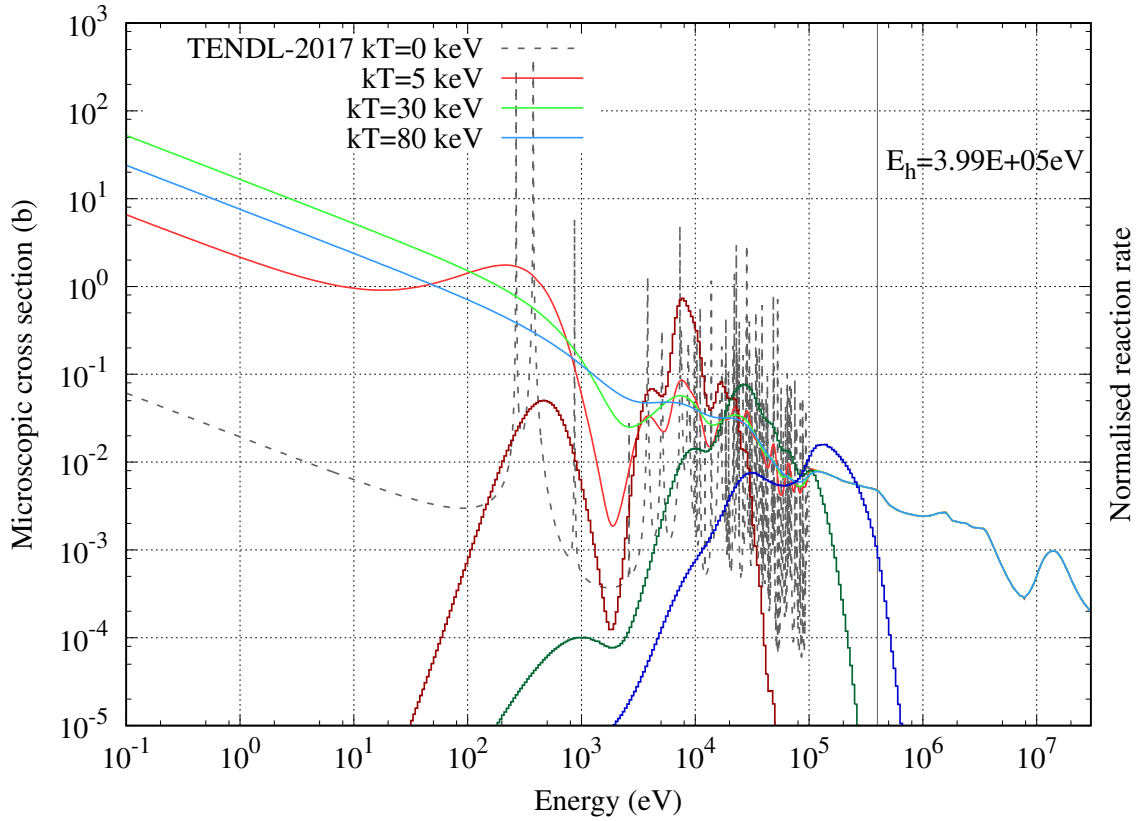
$^{85}\text{Rb}_{37}$ [Stable]



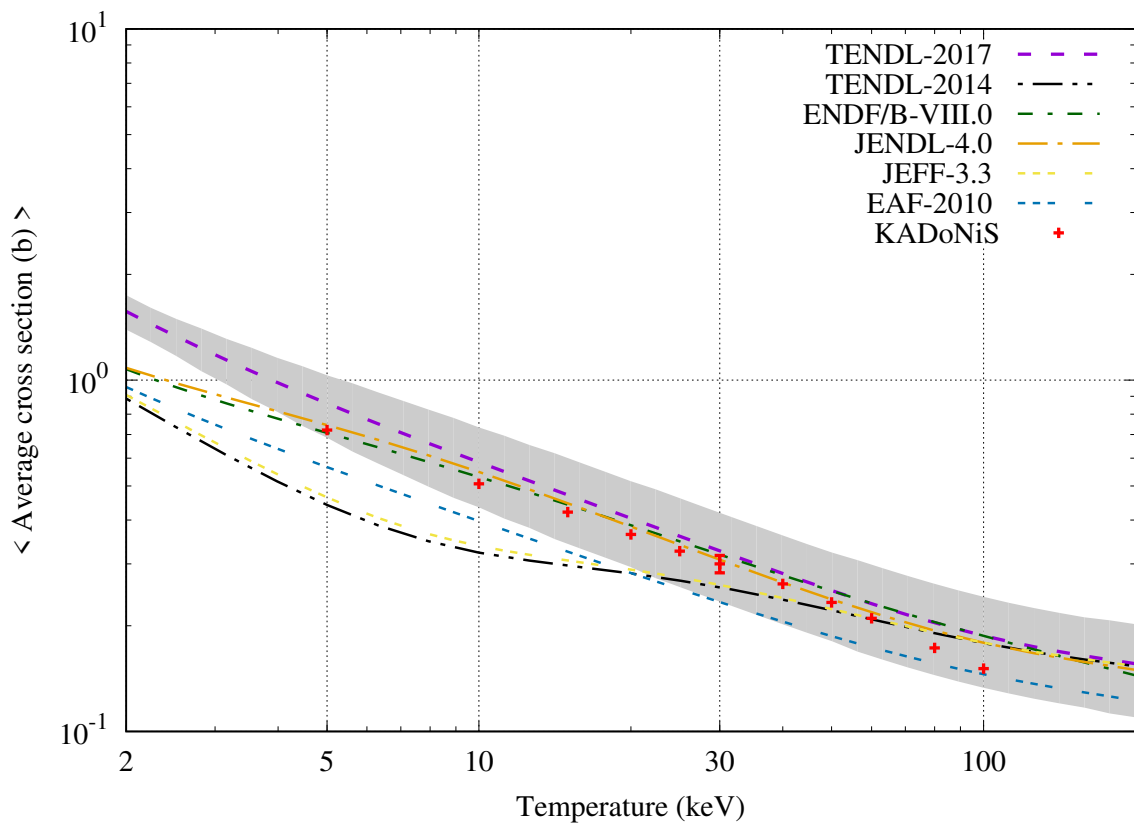
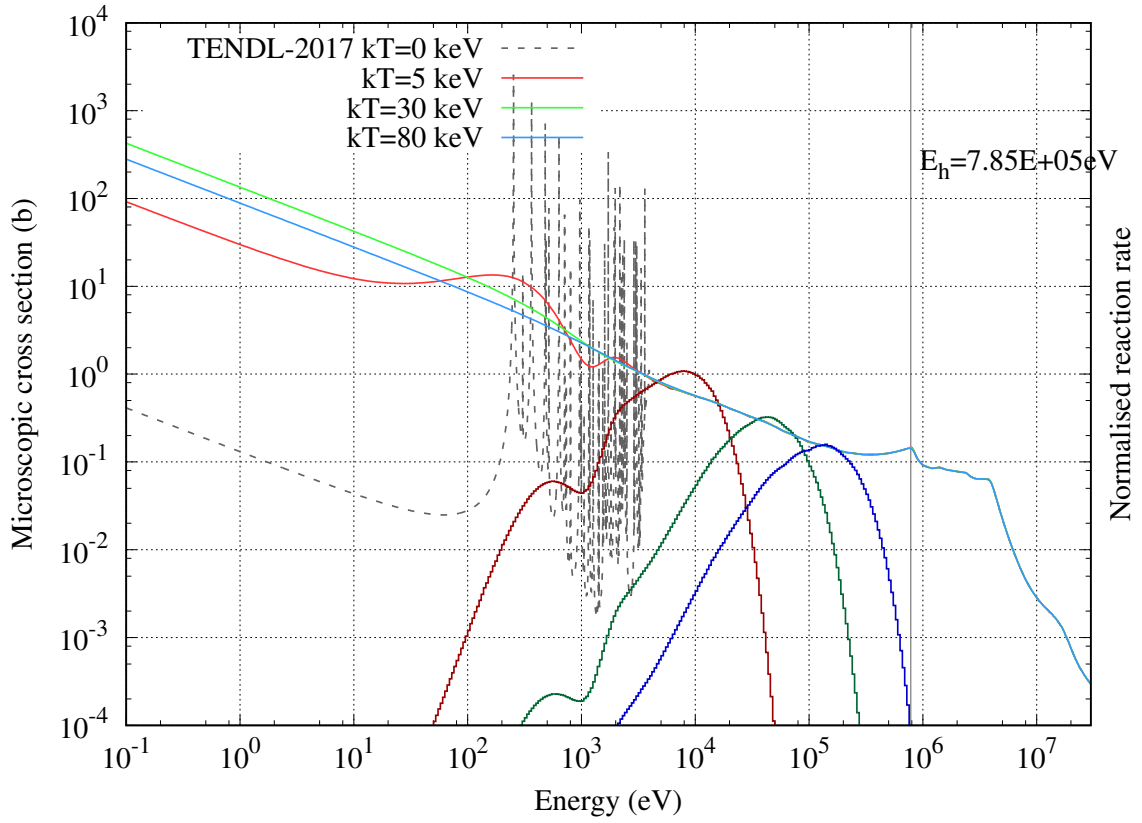
$^{86}\text{Rb}_{37}$ [$T_{1/2} = 18.64$ days] (KADoNiS=SMC)



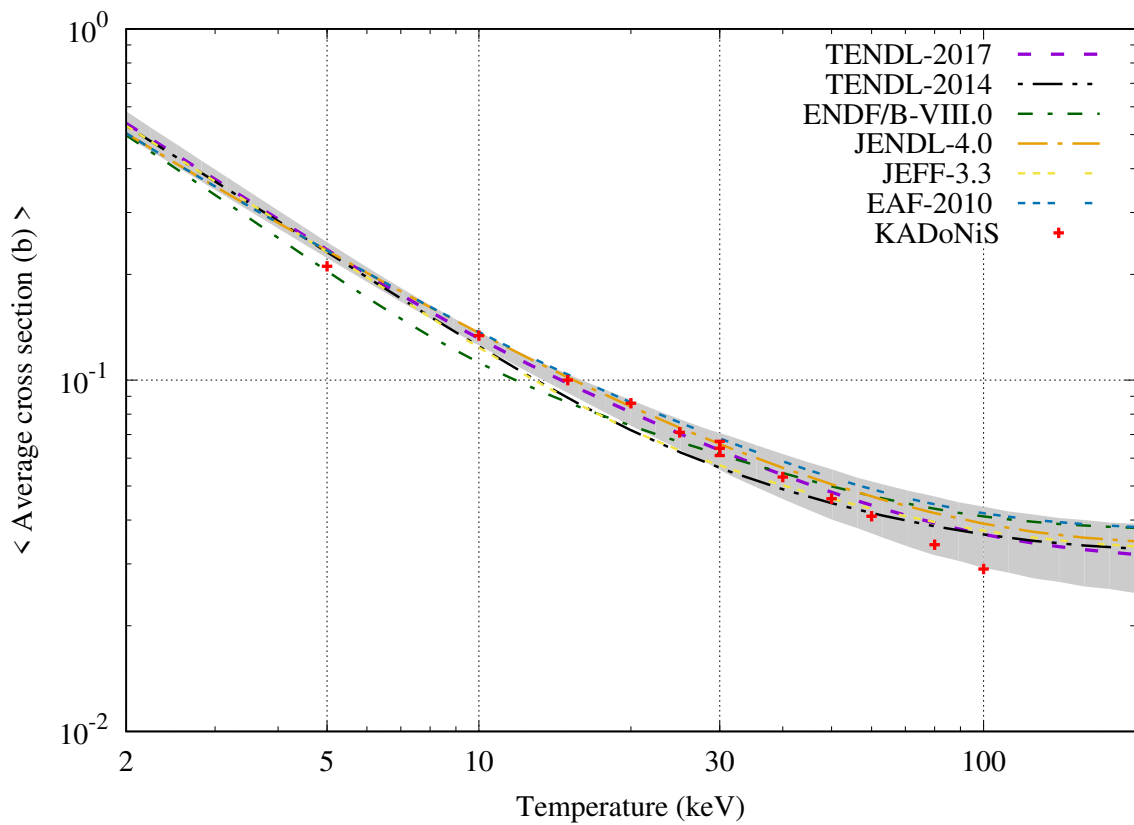
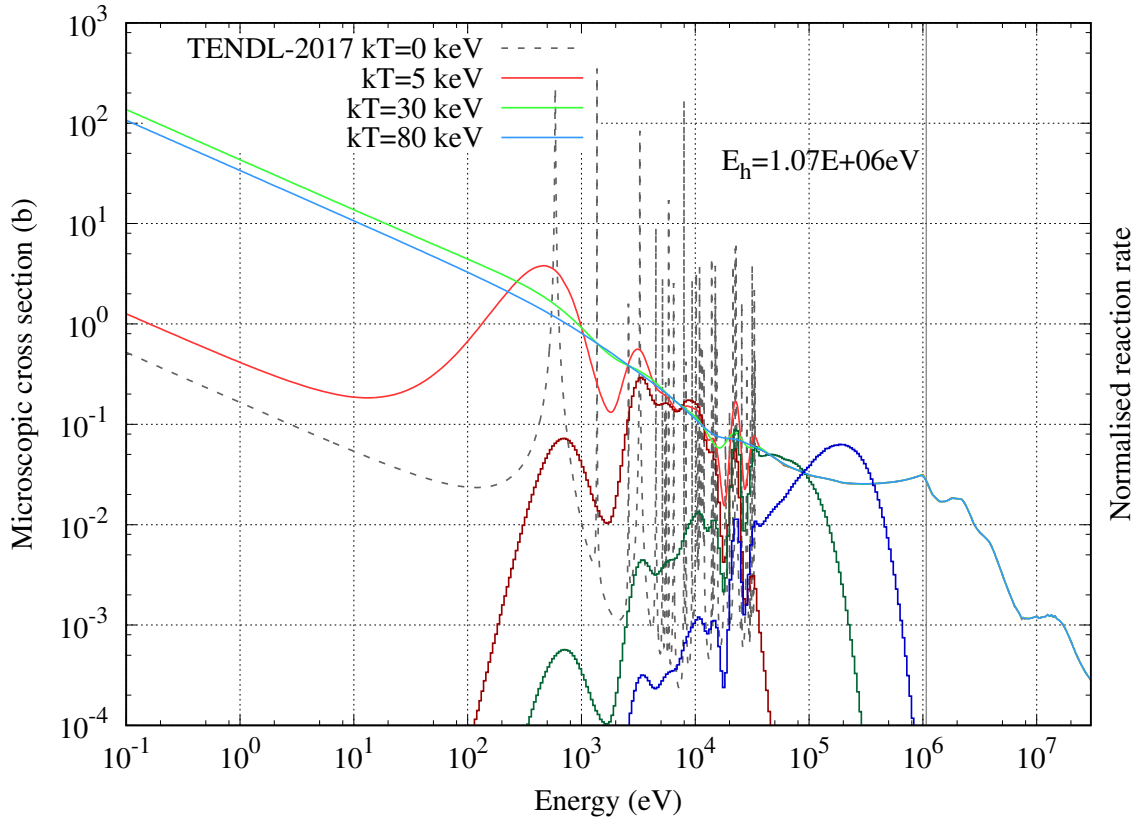
$^{87}\text{Rb}_{37}$ [$T_{1/2} = 4.81 \times 10^{10}$ years]



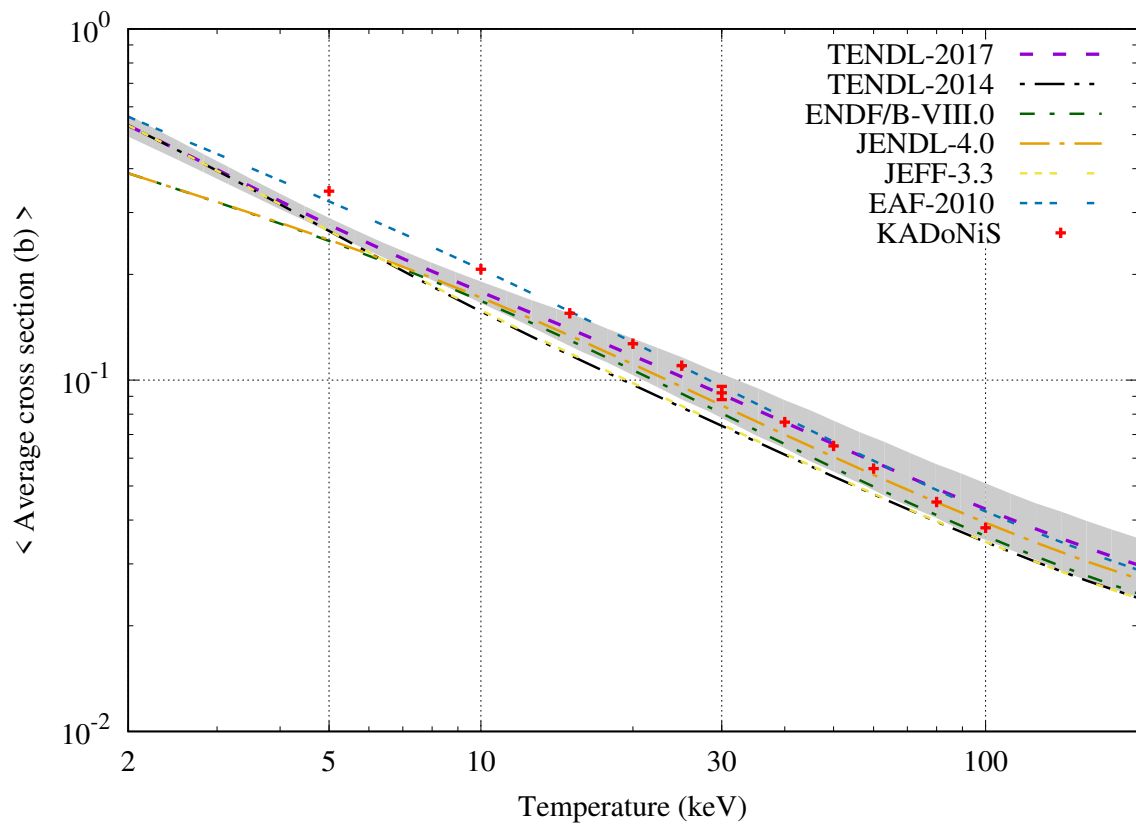
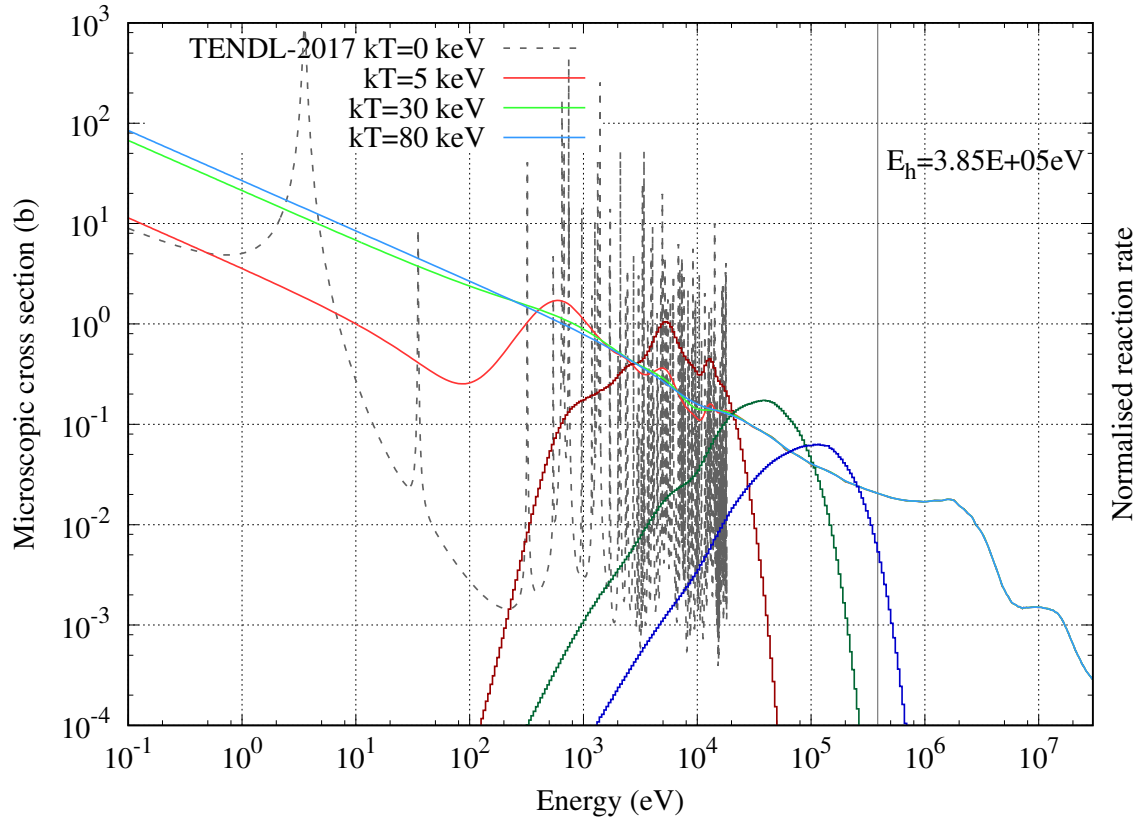
$^{84}\text{Sr}_{38}$ [Stable]



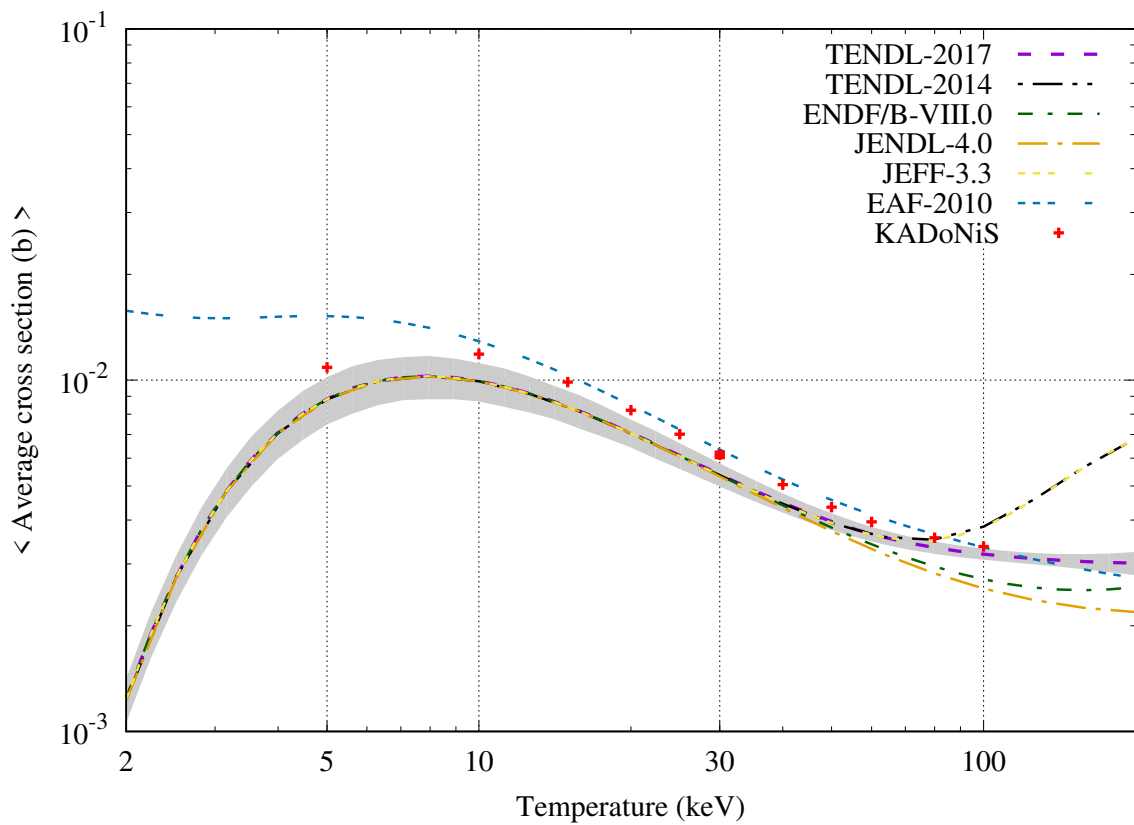
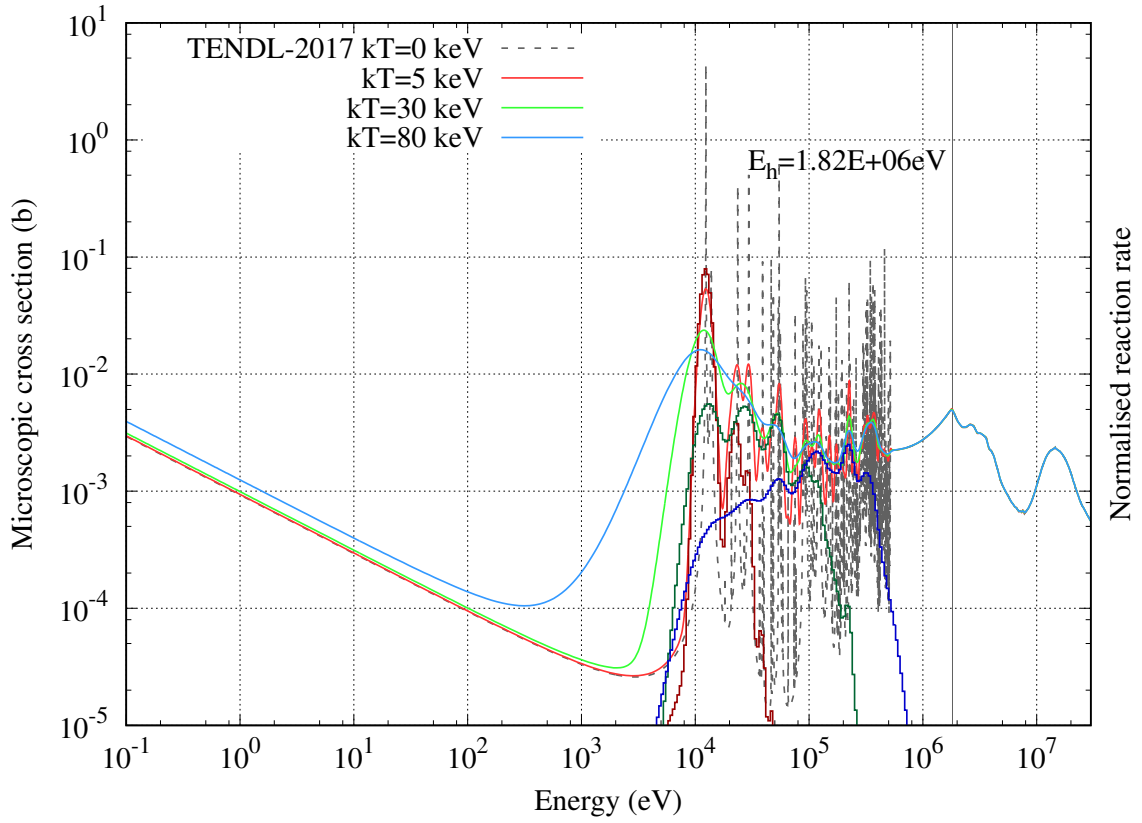
$^{86}\text{Sr}_{38}$ [Stable]



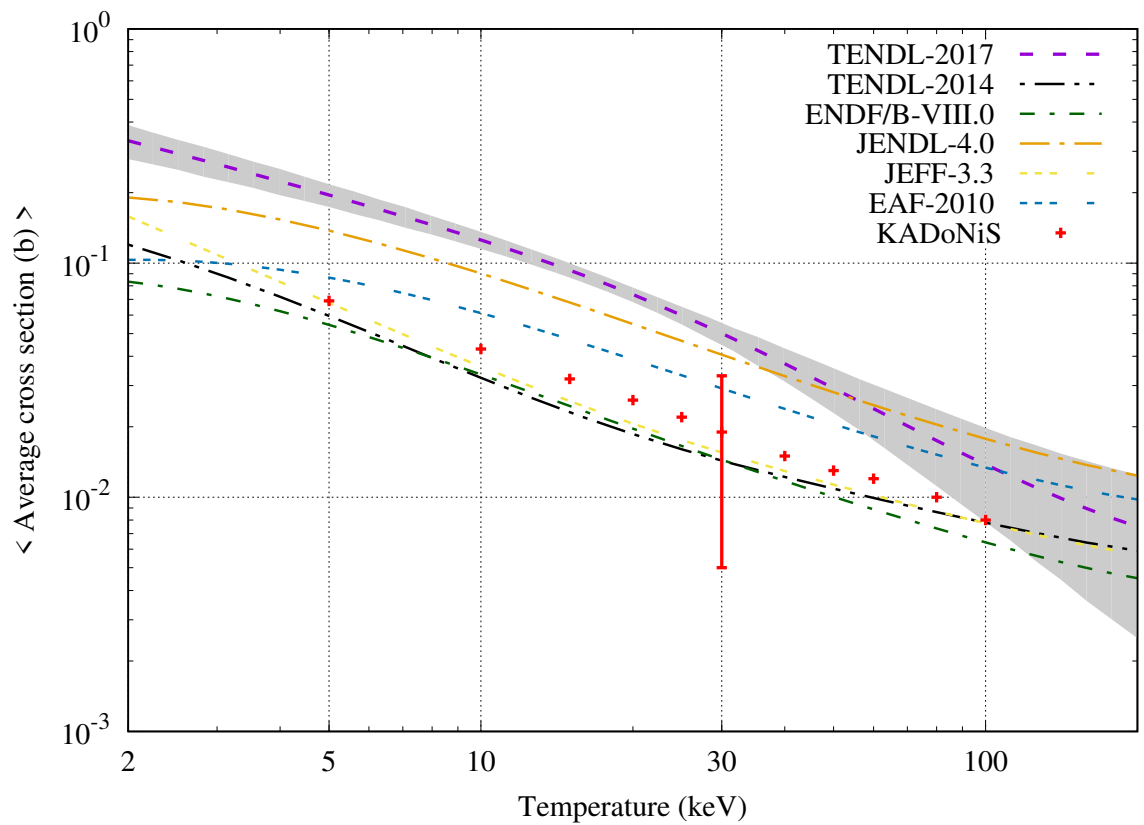
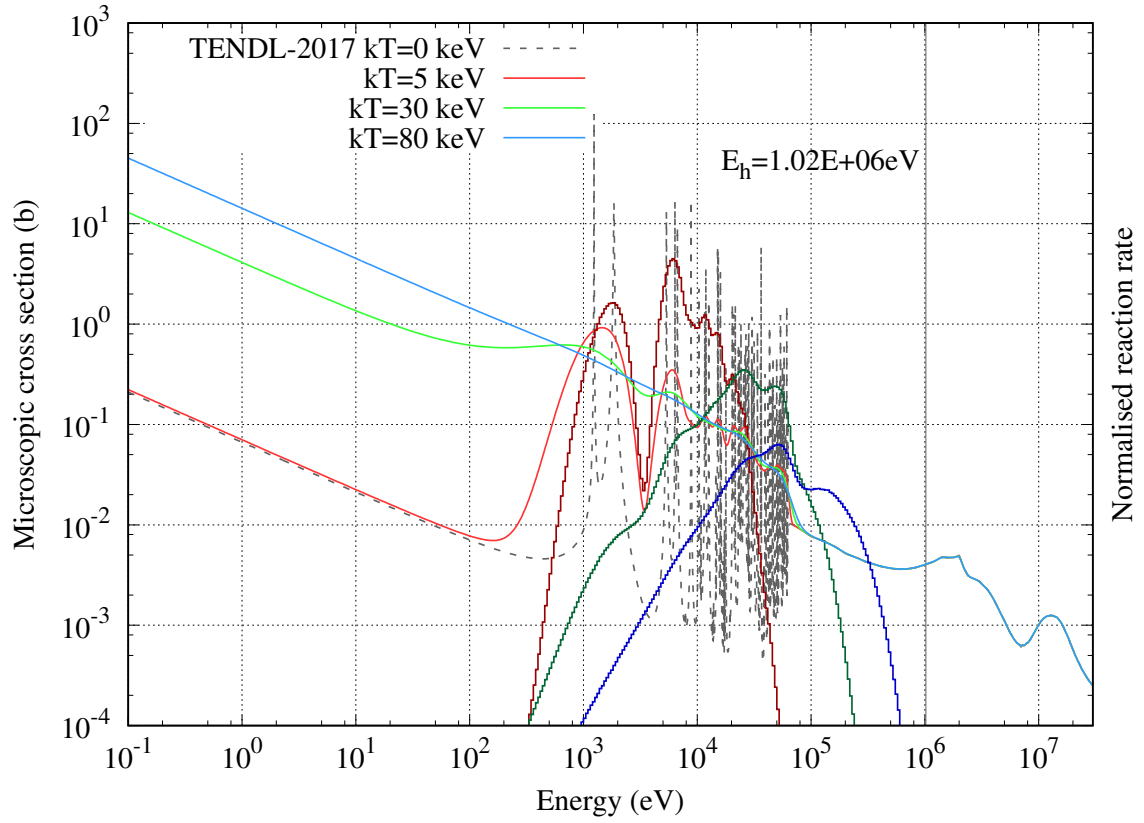
$^{87}\text{Sr}_{38}$ [Stable]



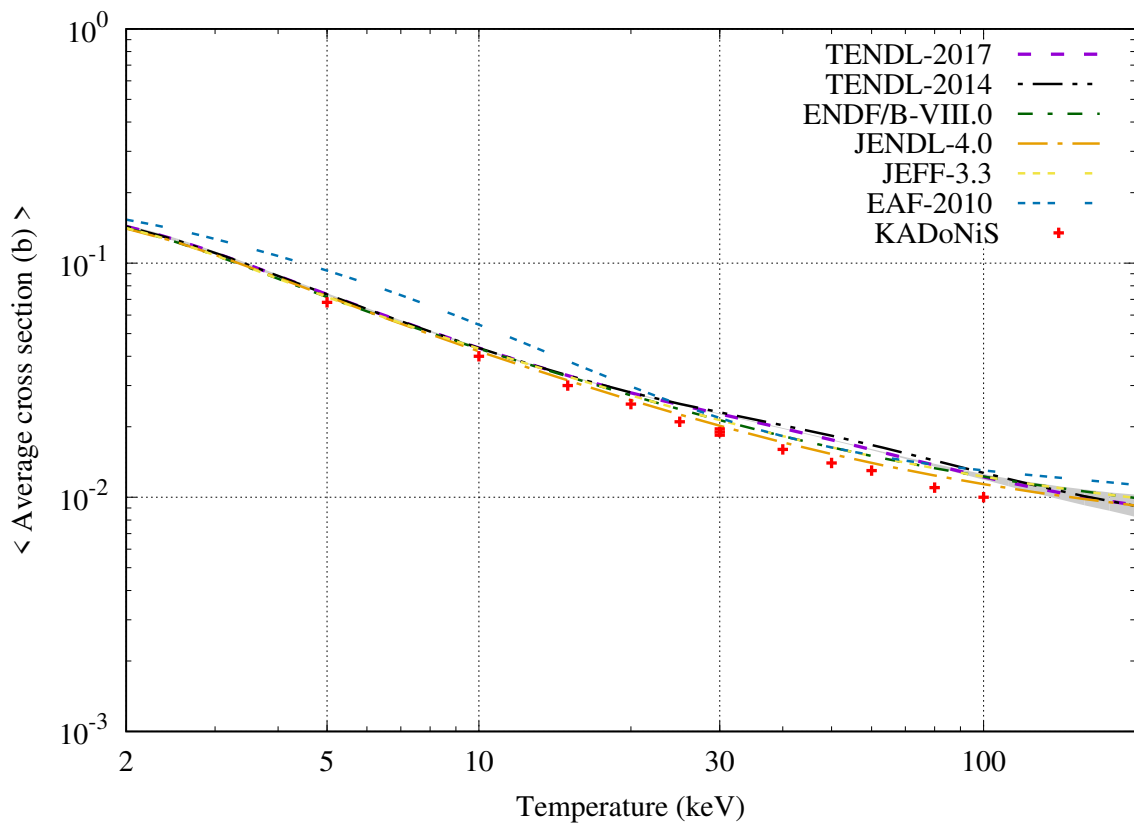
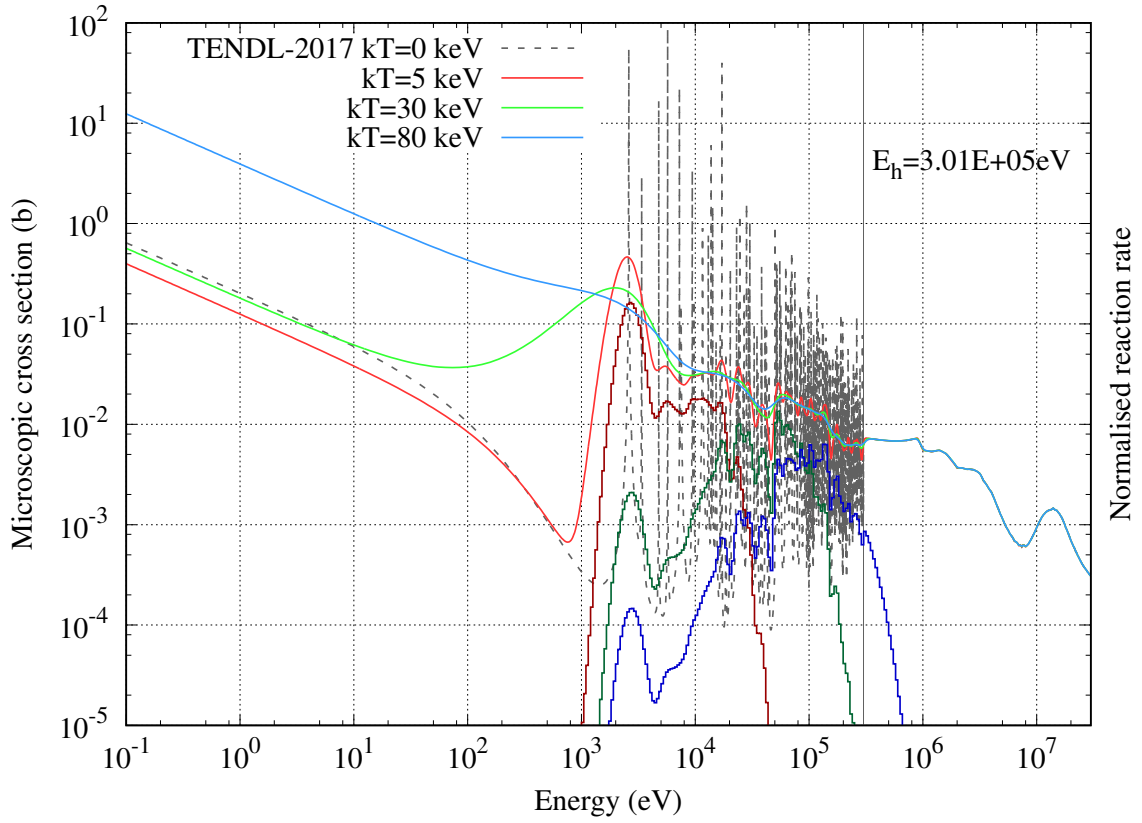
$^{88}\text{Sr}_{38}$ [Stable]



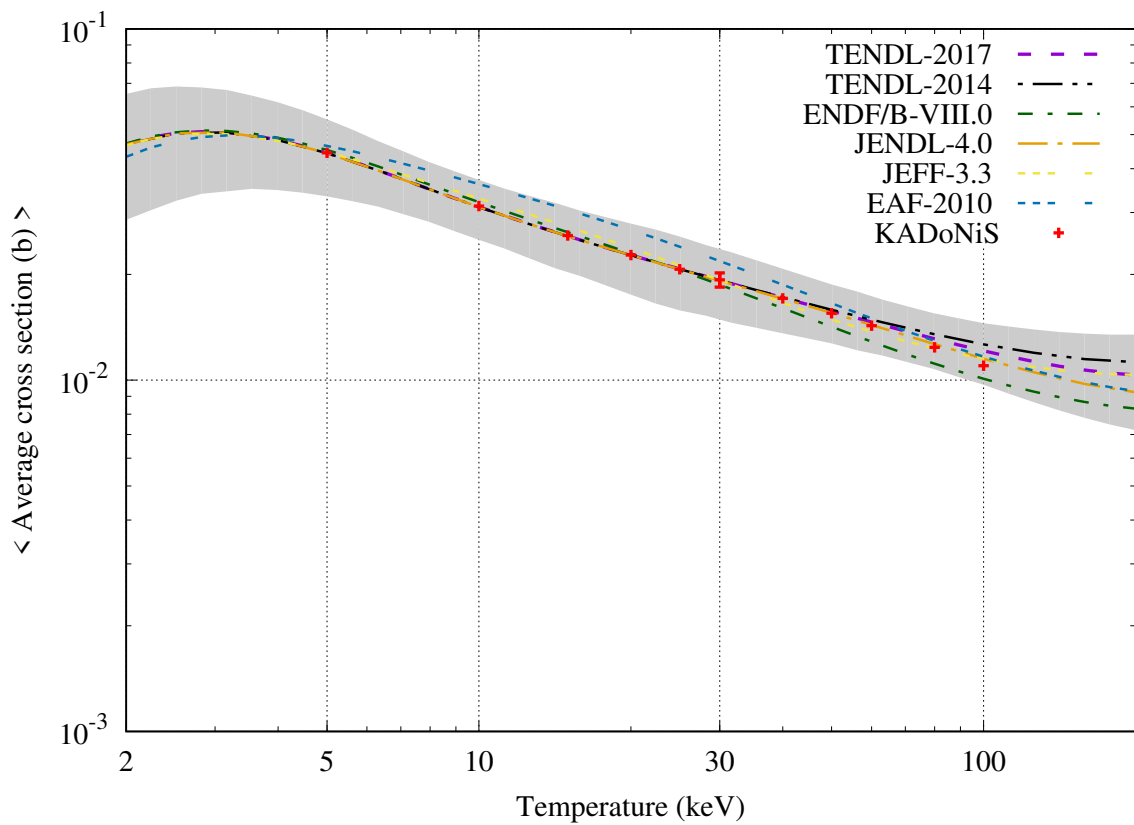
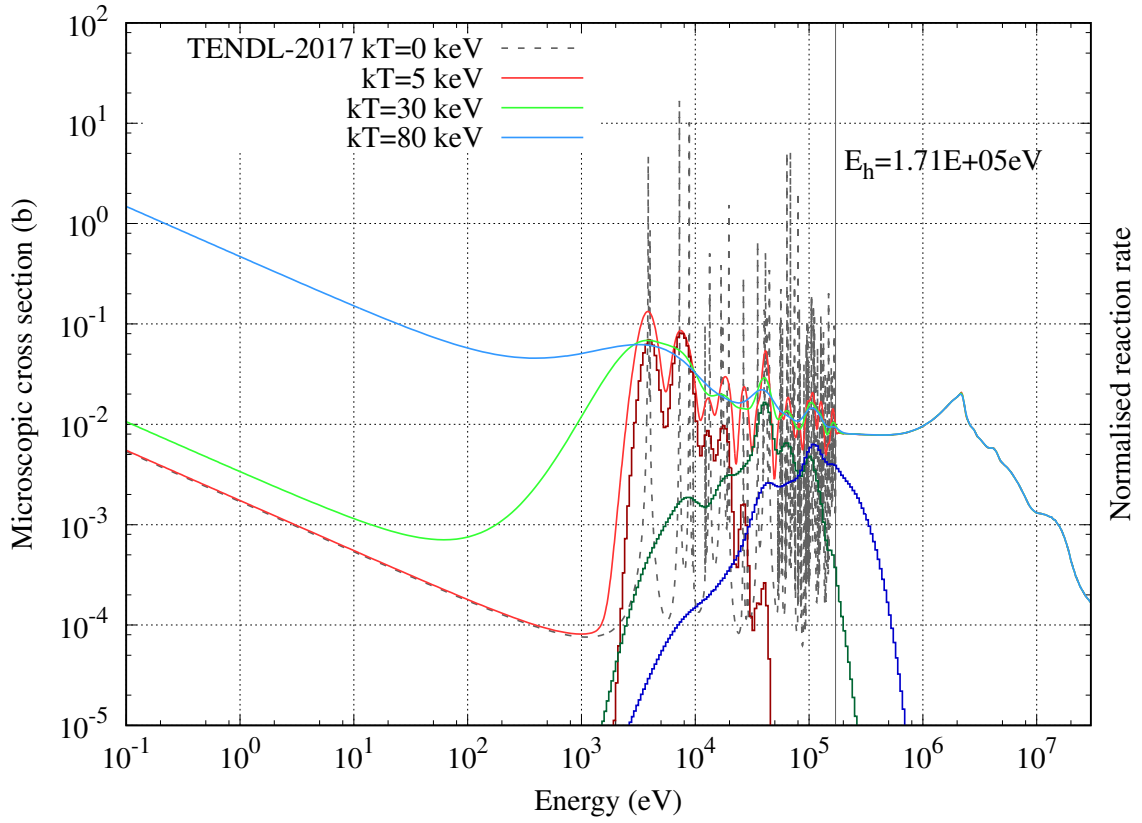
$^{89}\text{Sr}_{38}$ [$T_{1/2} = 50.57$ days] (KADoNiS=SMC)



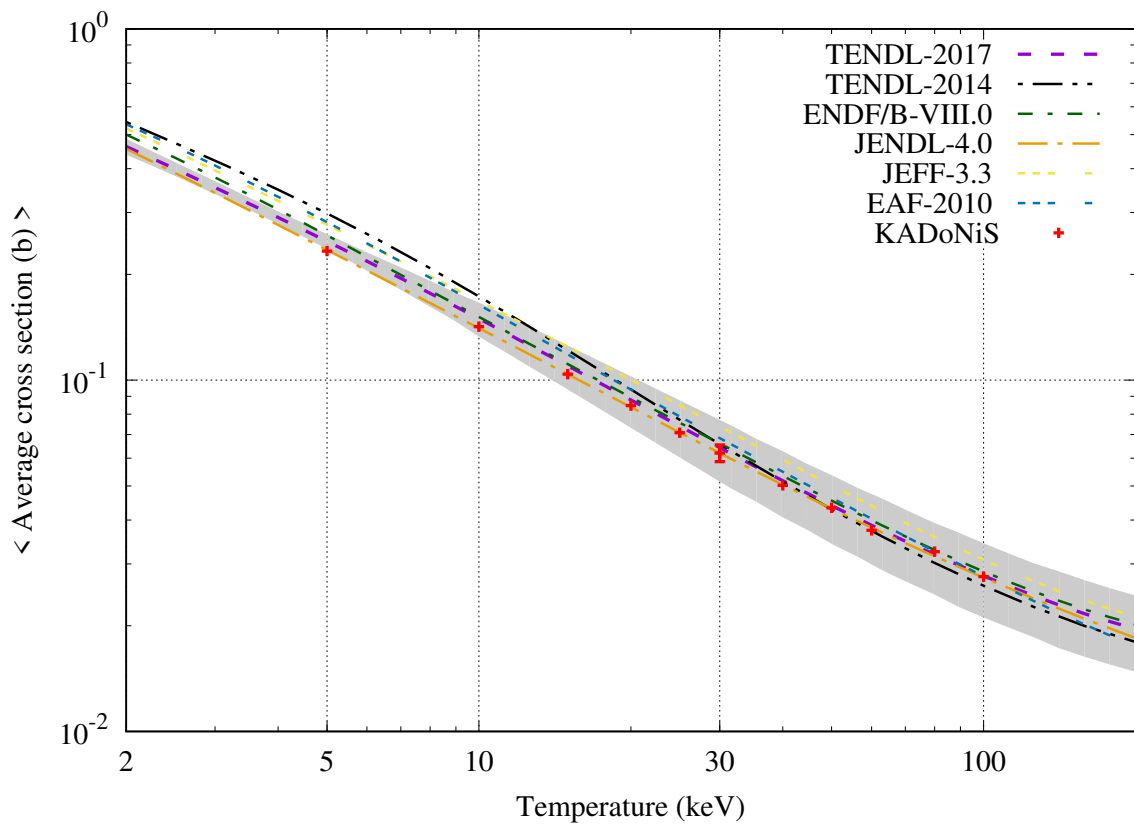
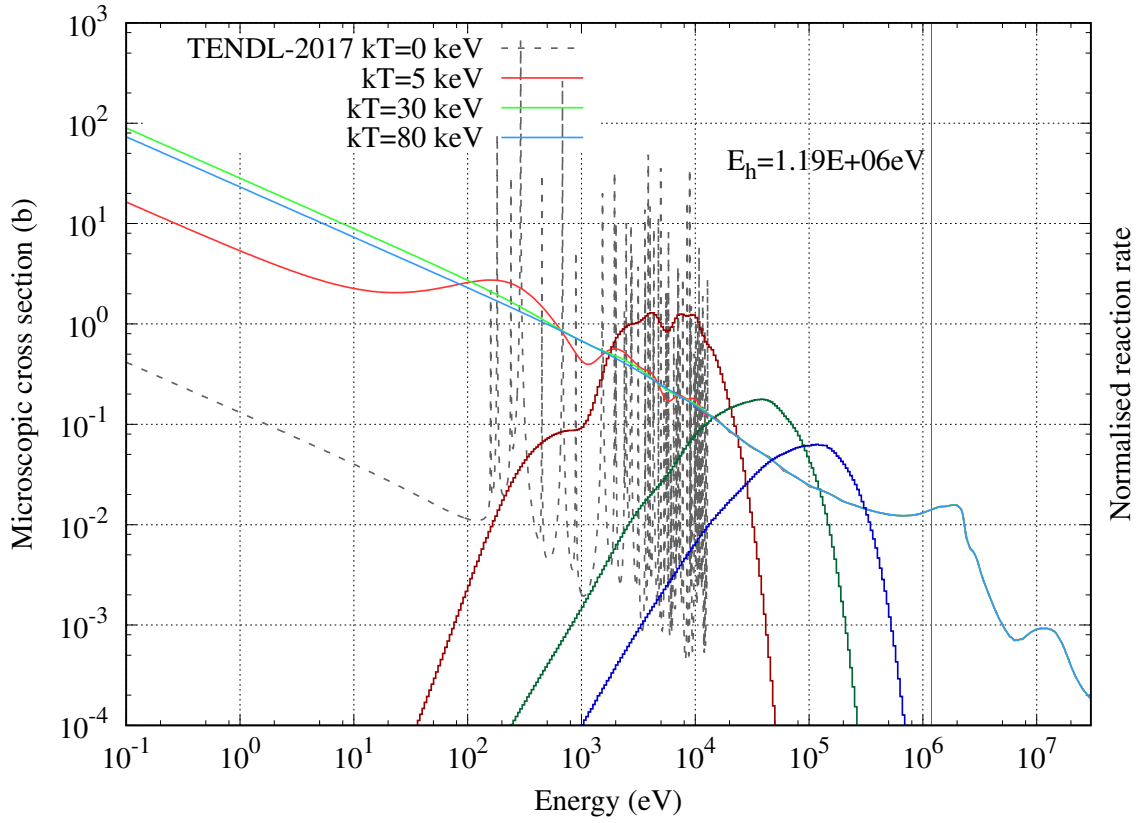
$^{89}\text{Y}_{39}$ [Stable]



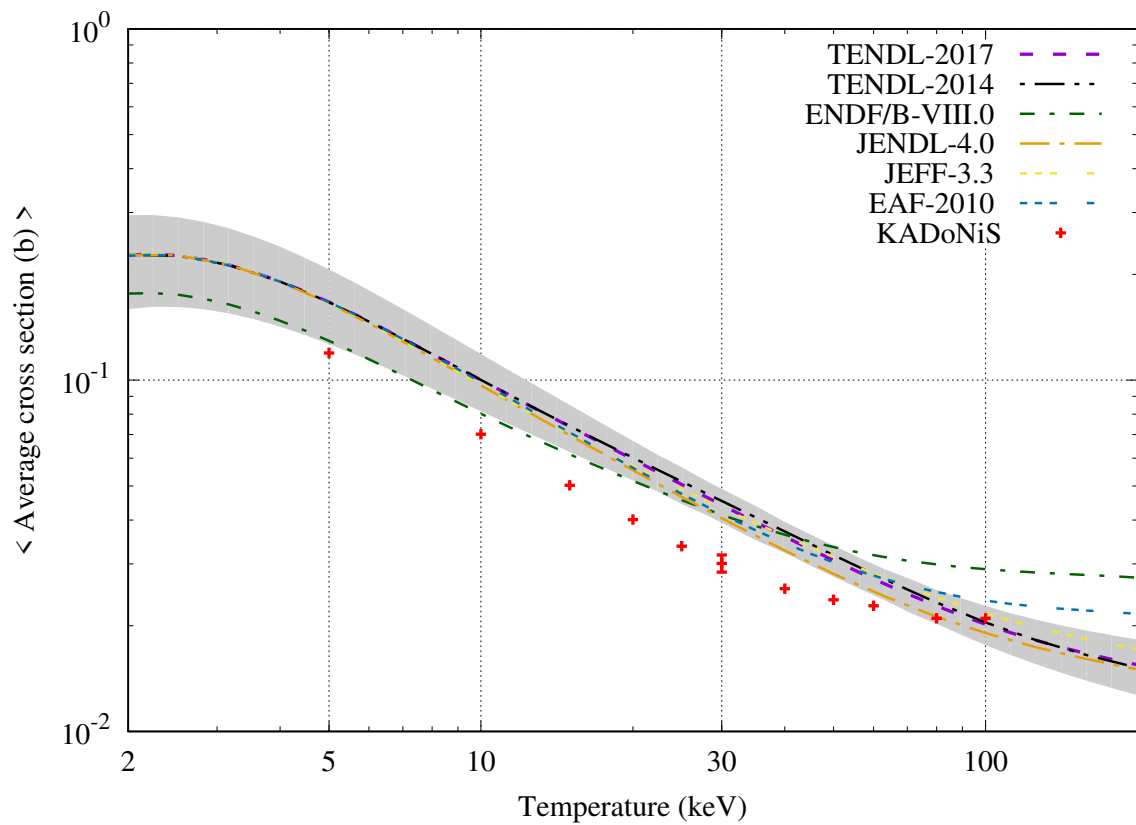
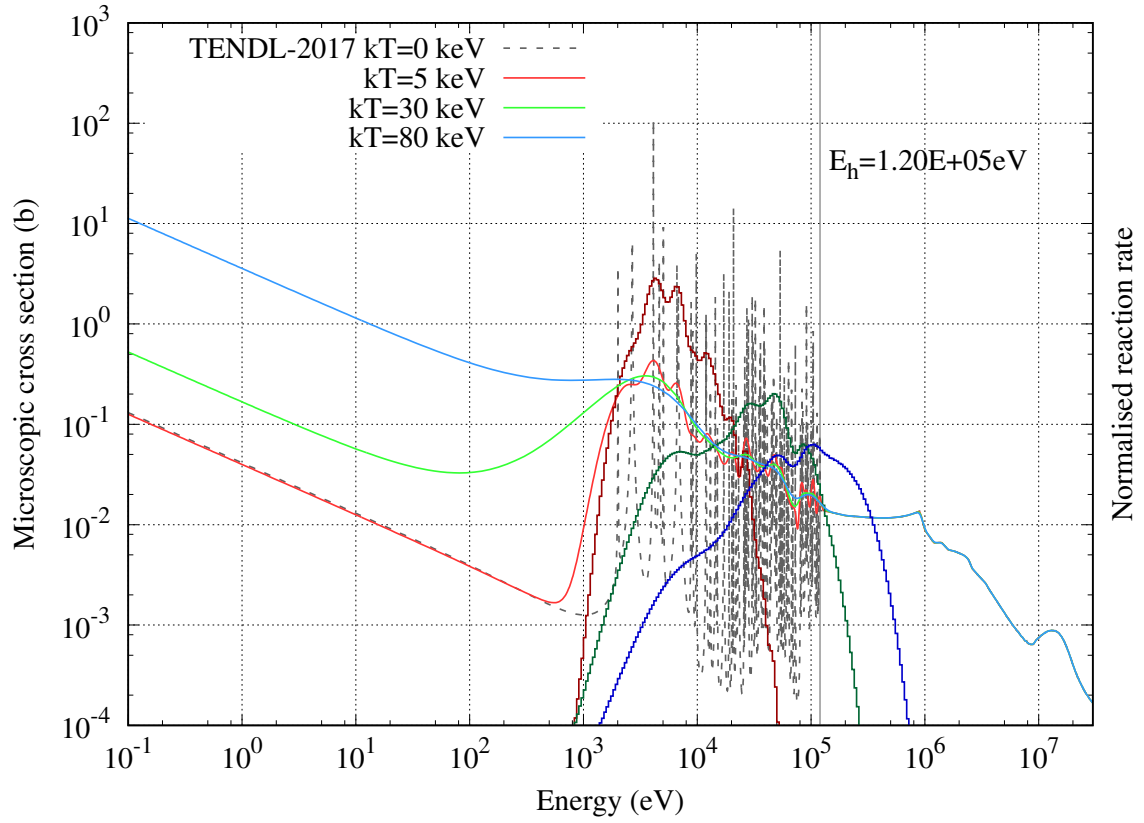
$^{90}\text{Zr}_{40}$ [Stable]



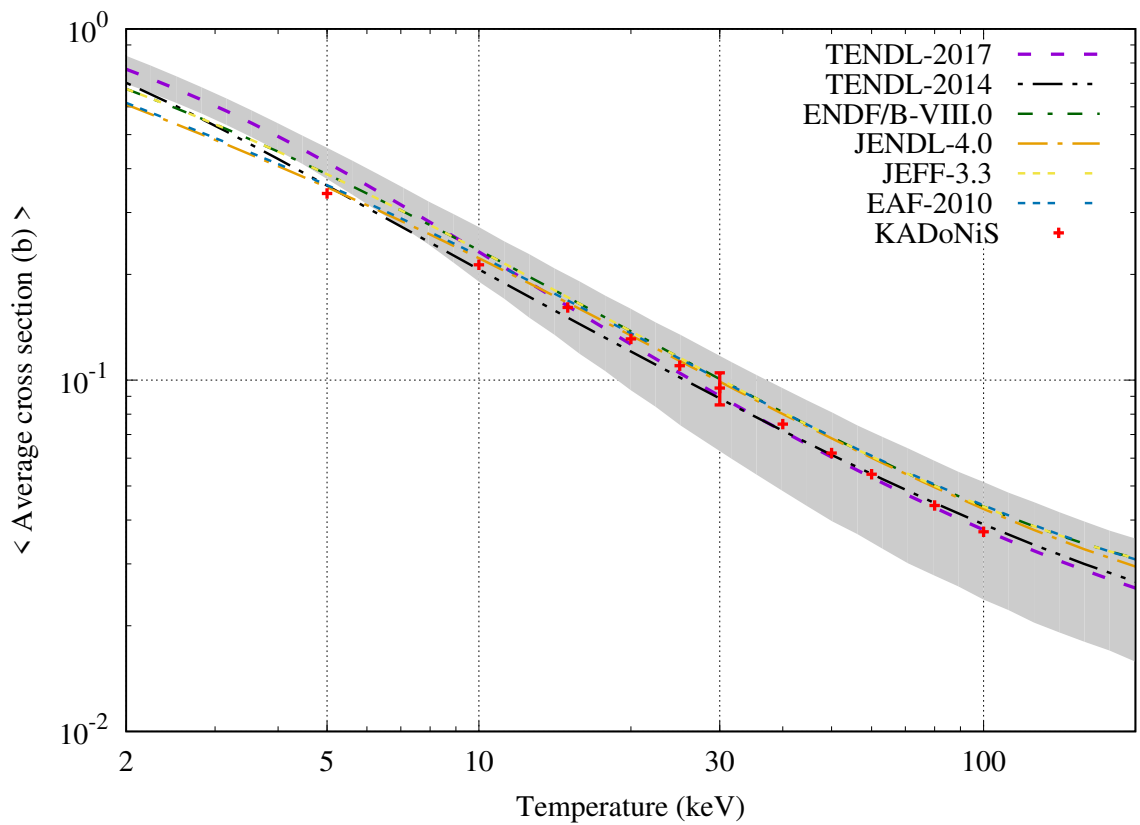
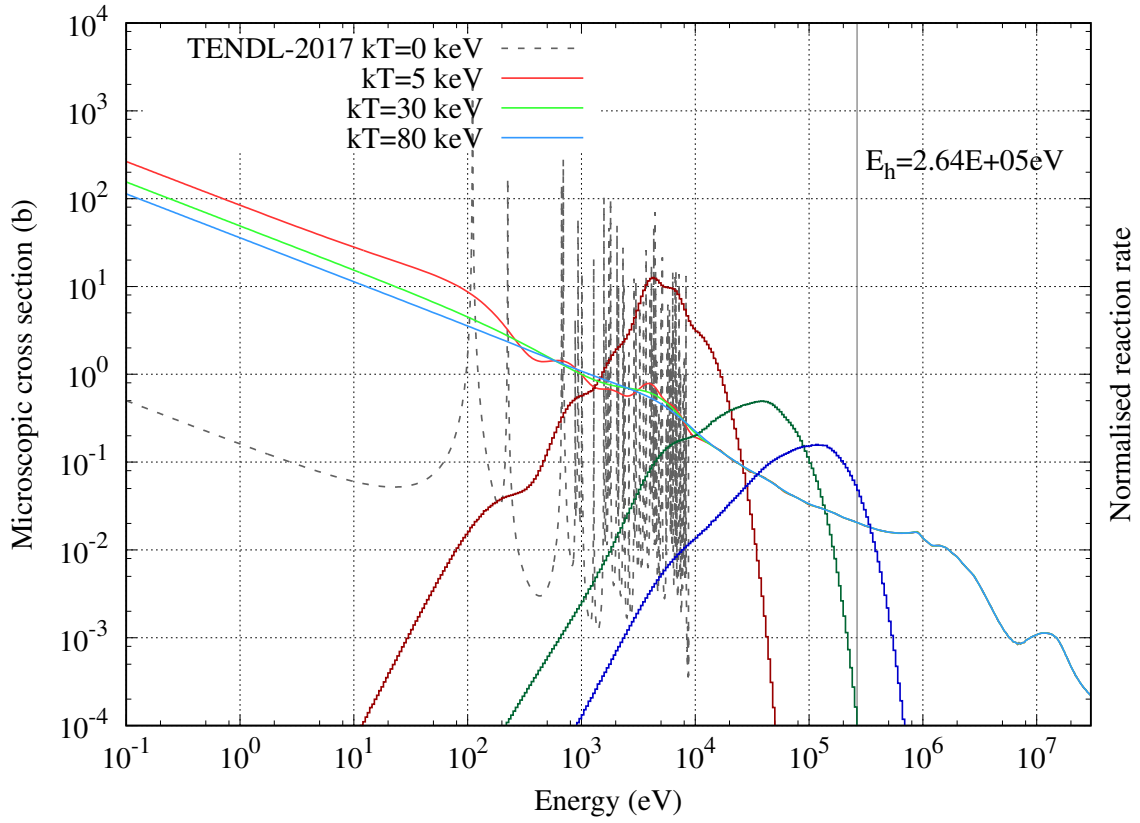
$^{91}\text{Zr}_{40}$ [Stable]



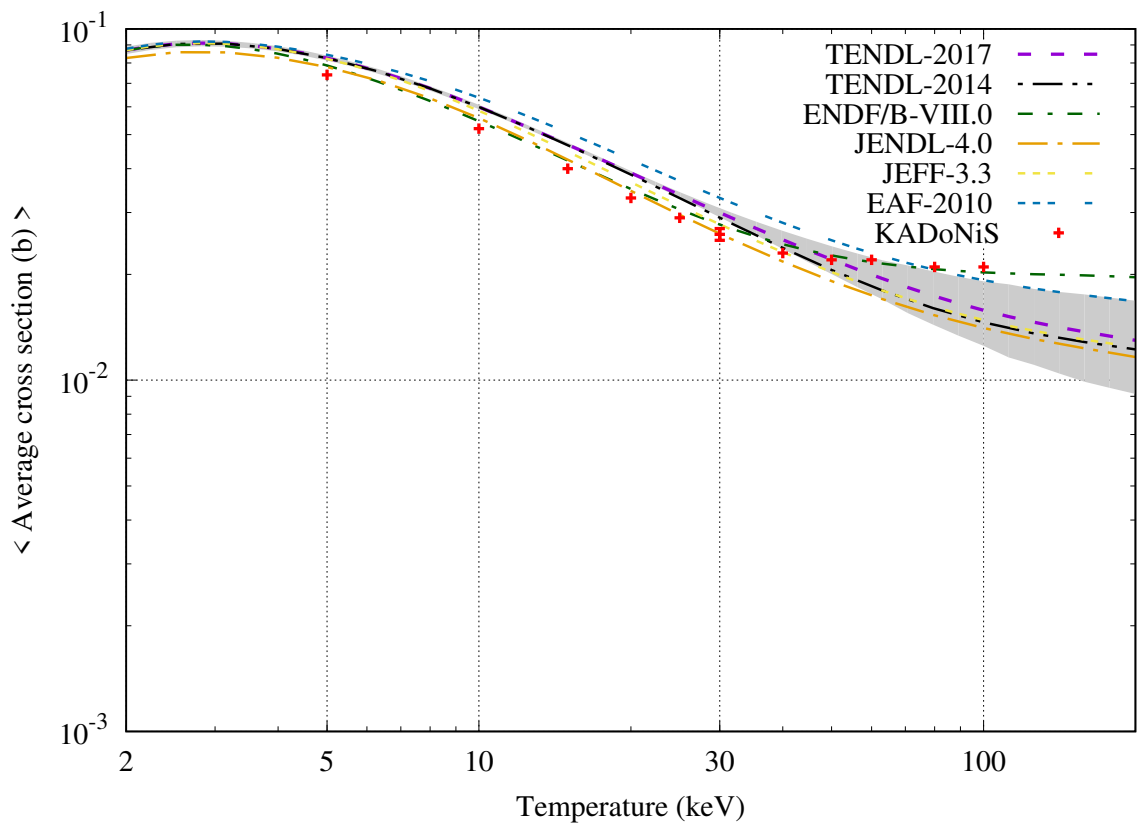
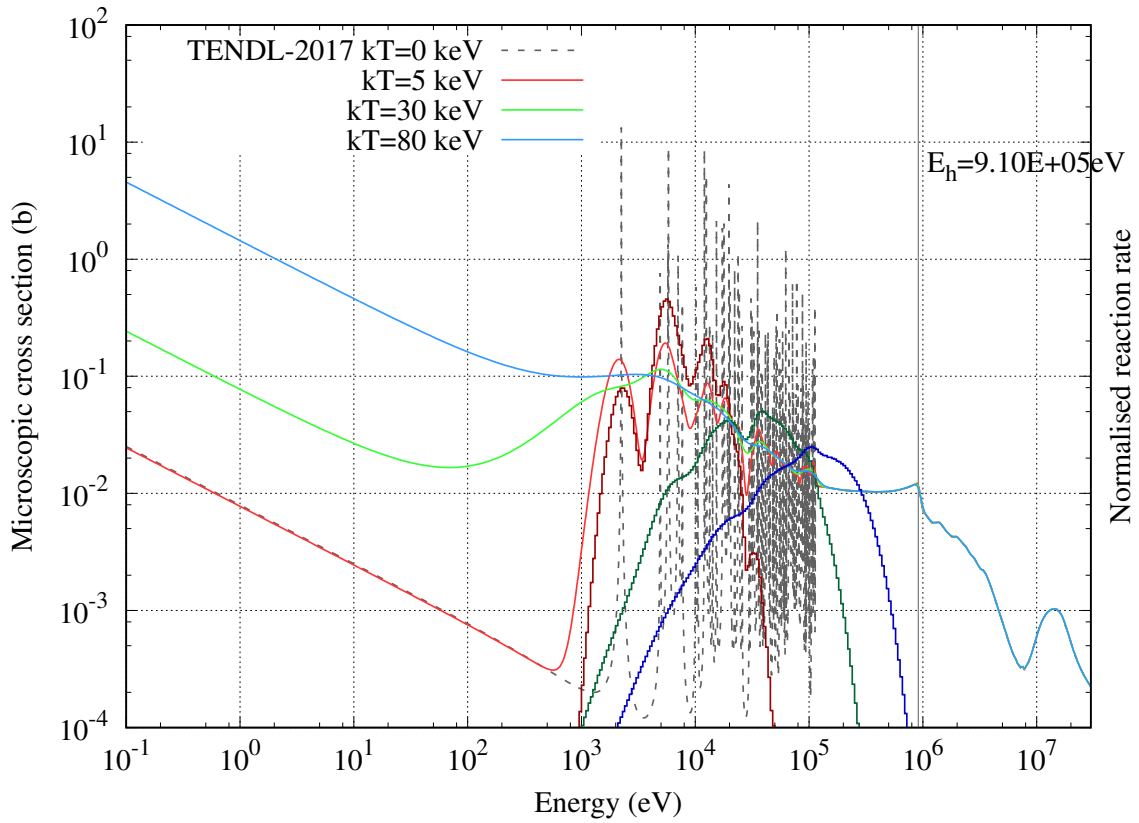
$^{92}\text{Zr}_{40}$ [Stable]



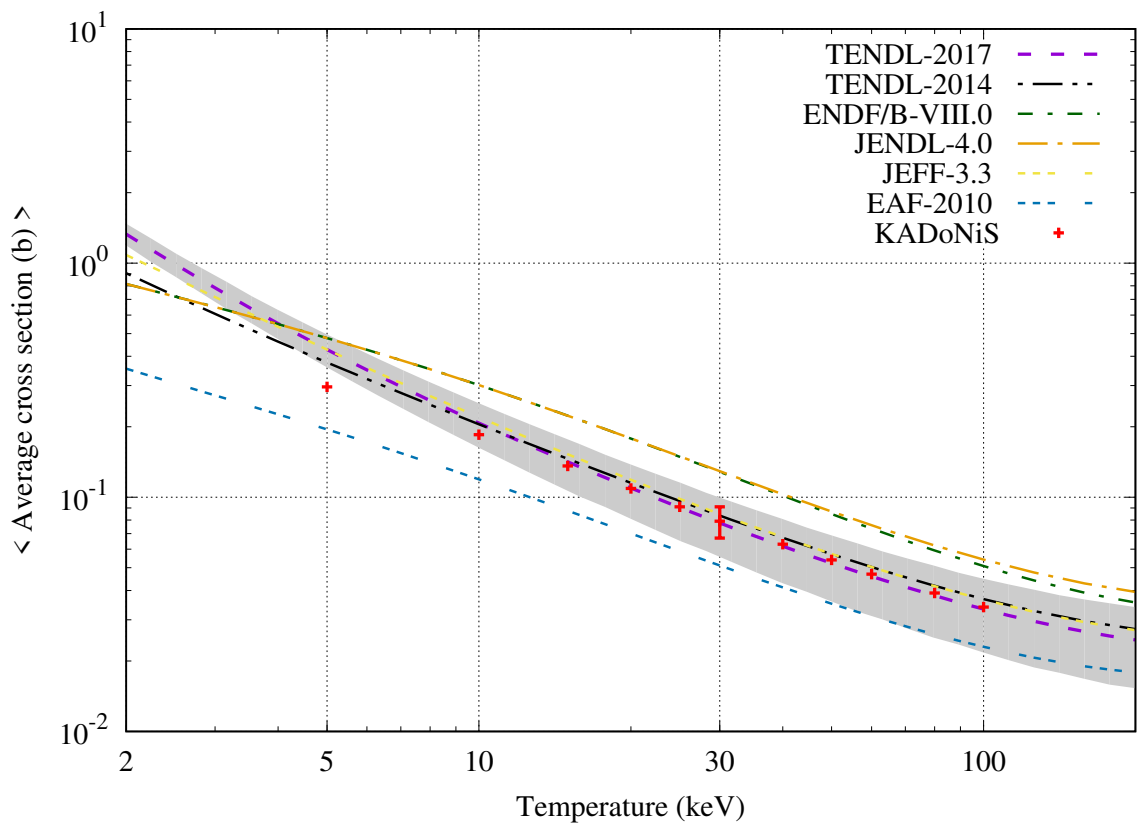
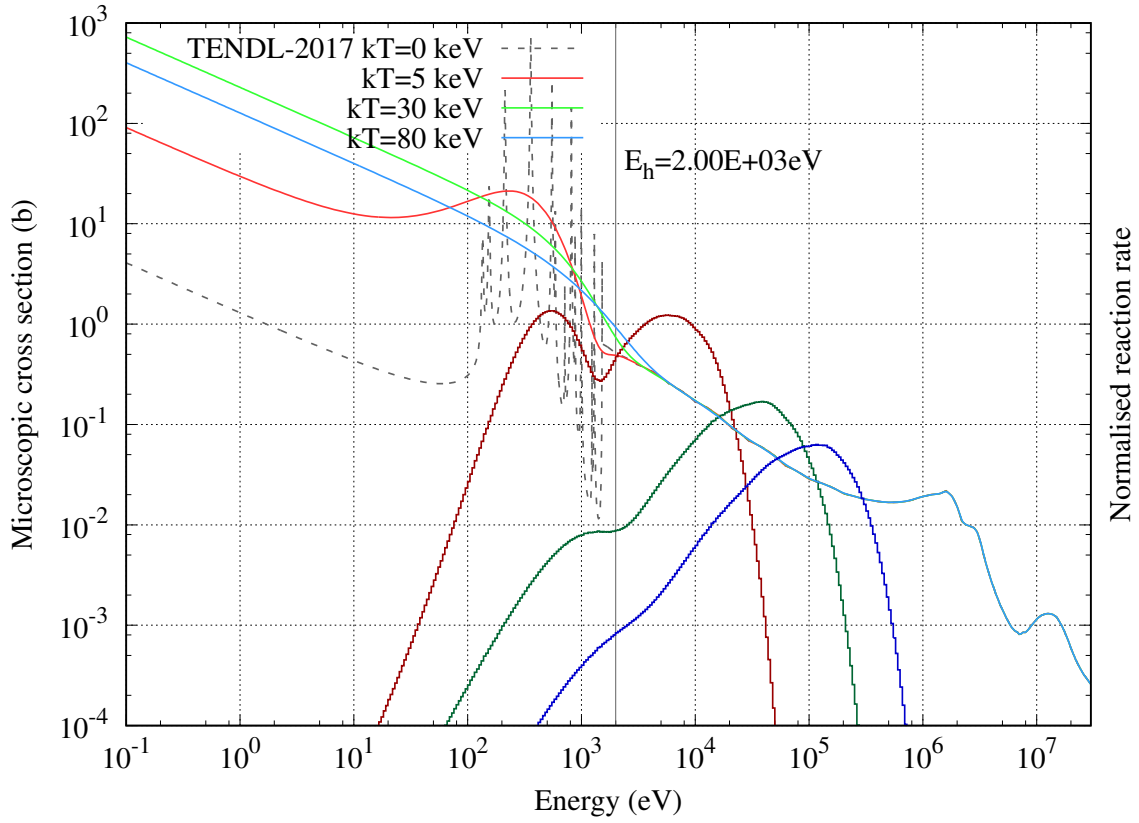
$^{93}\text{Zr}_{40}$ [$T_{1/2} = 1.53 \times 10^6$ years]



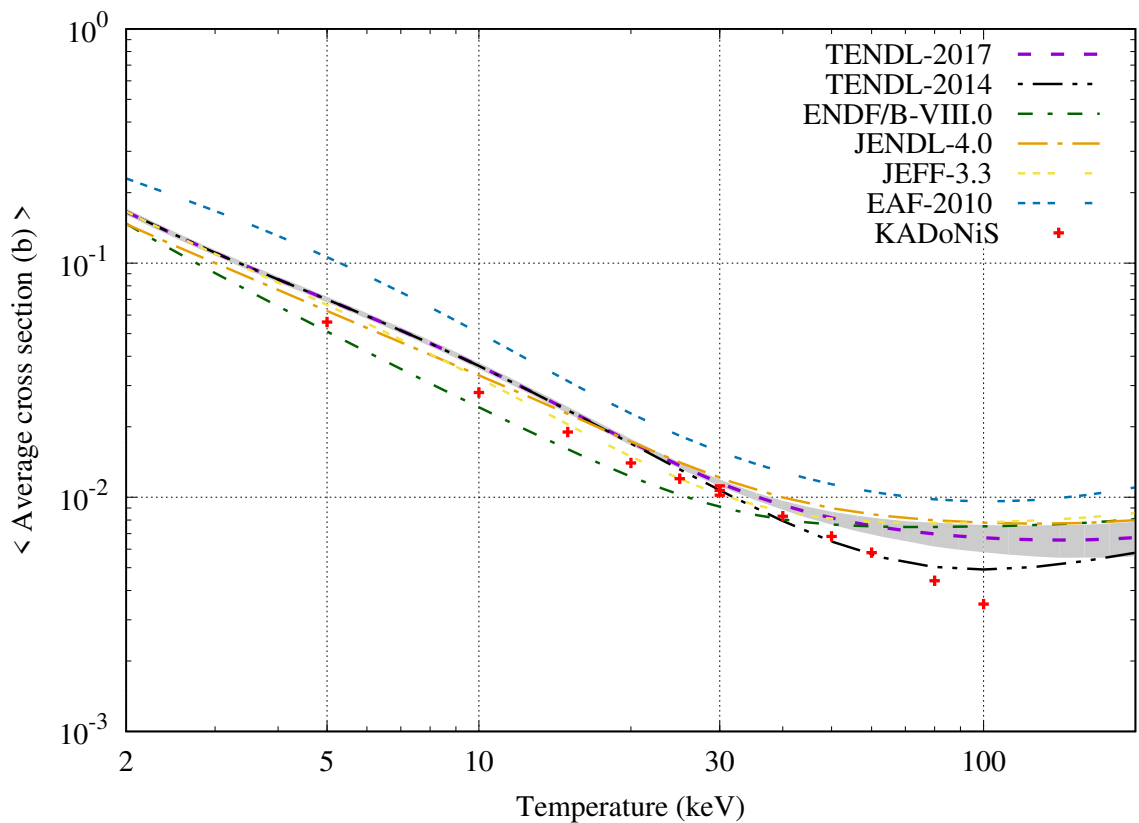
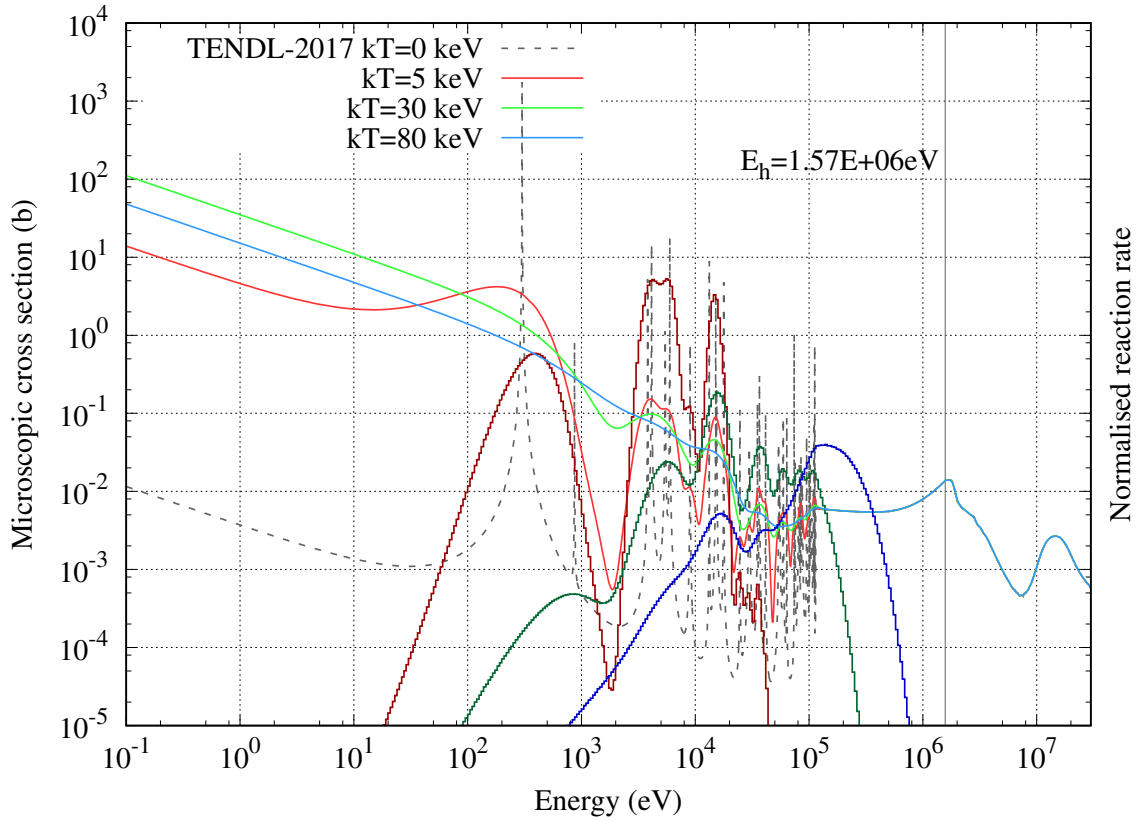
$^{94}\text{Zr}_{40}$ [$T_{1/2} = 6.00 \times 10^{15}$ years]



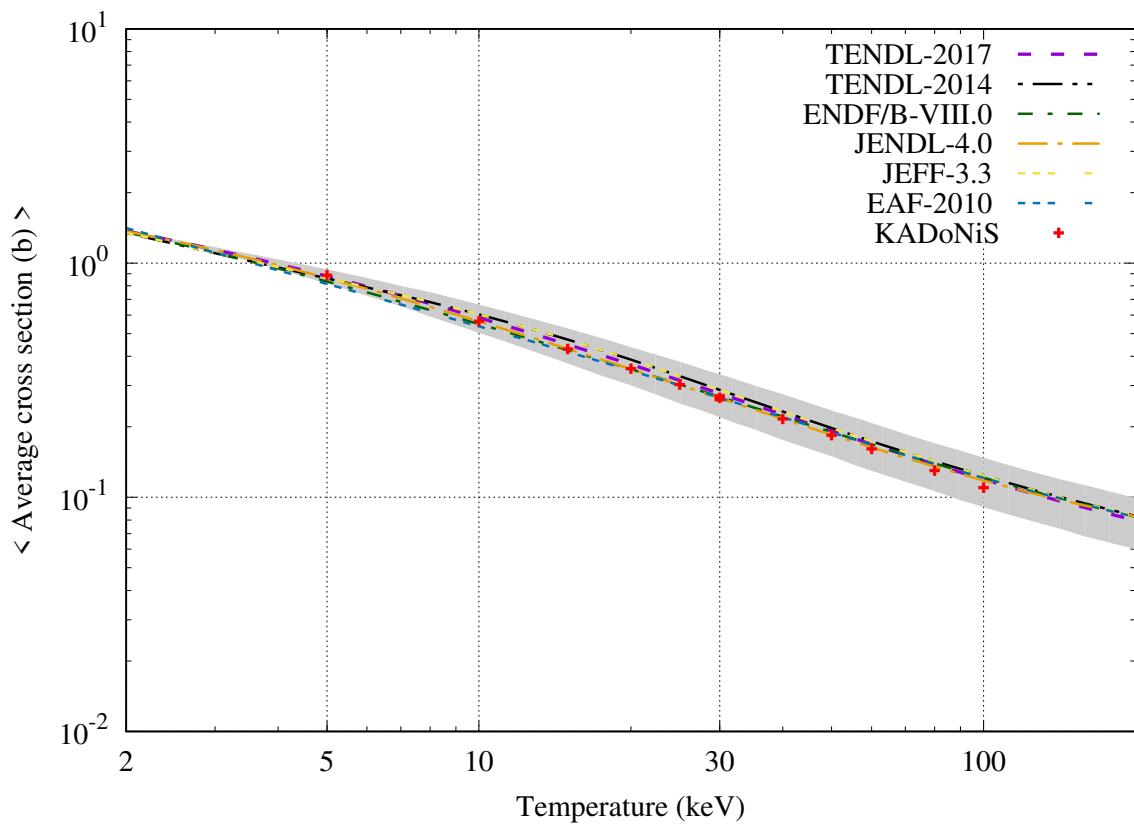
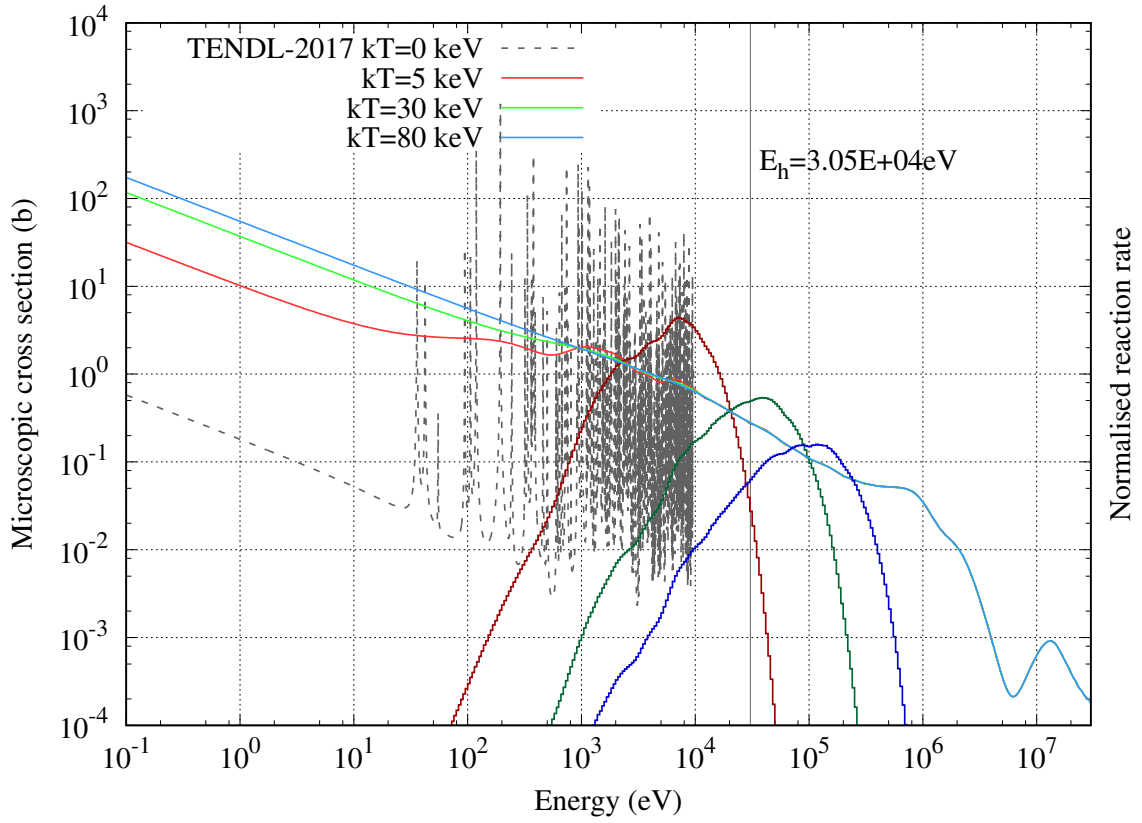
$^{95}\text{Zr}_{40}$ [$T_{1/2} = 64.03$ days] (KADoNiS=SMC)



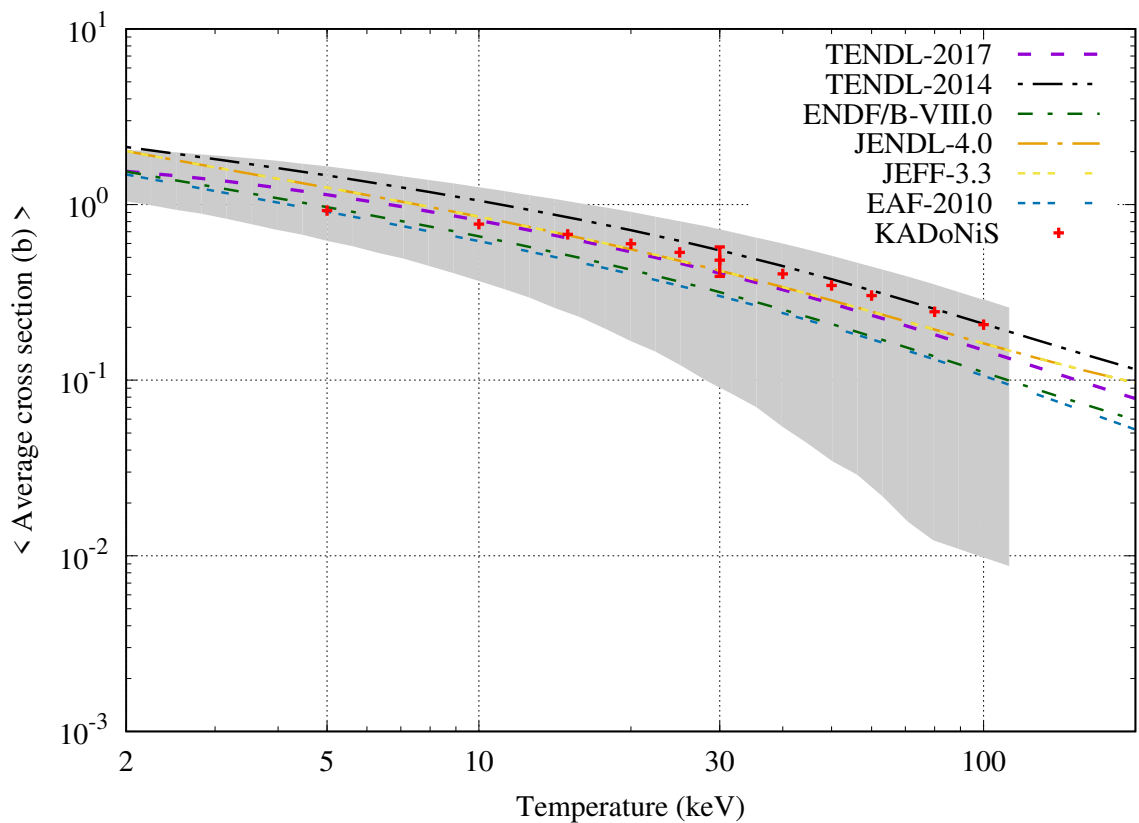
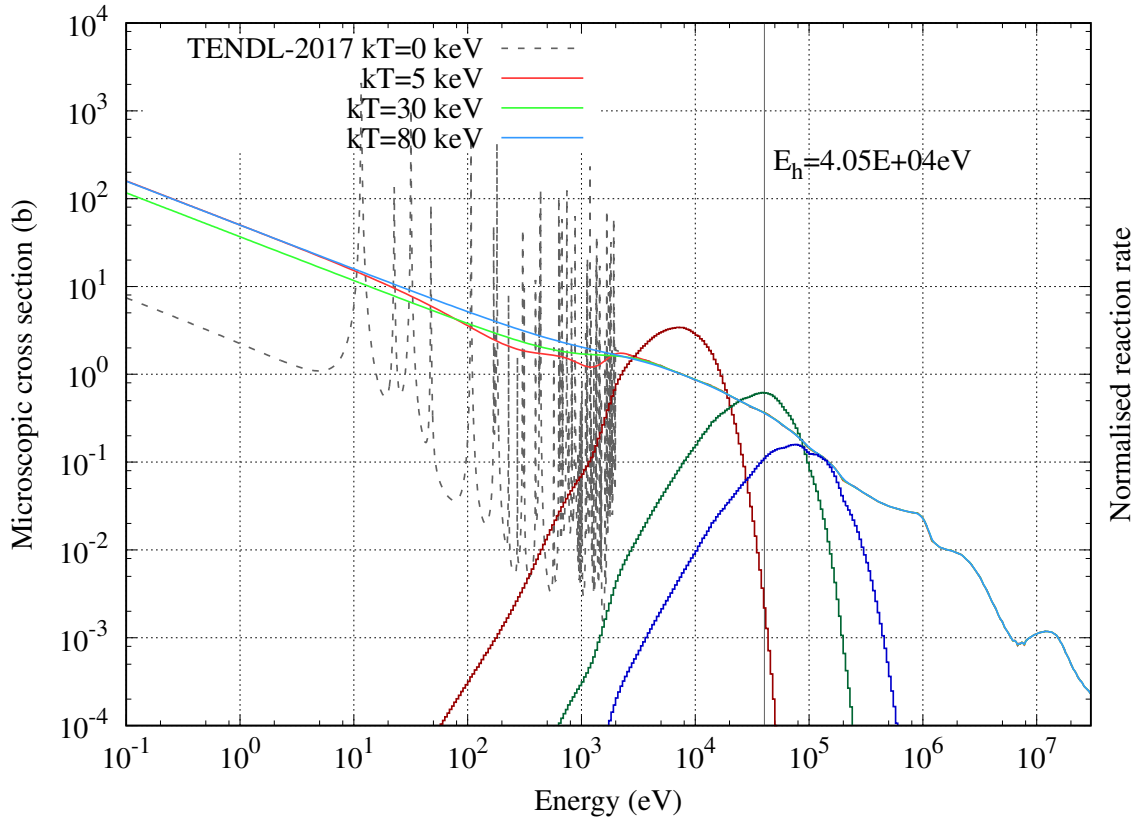
$^{96}\text{Zr}_{40}$ [$T_{1/2} = 3.90 \times 10^{19}$ years]



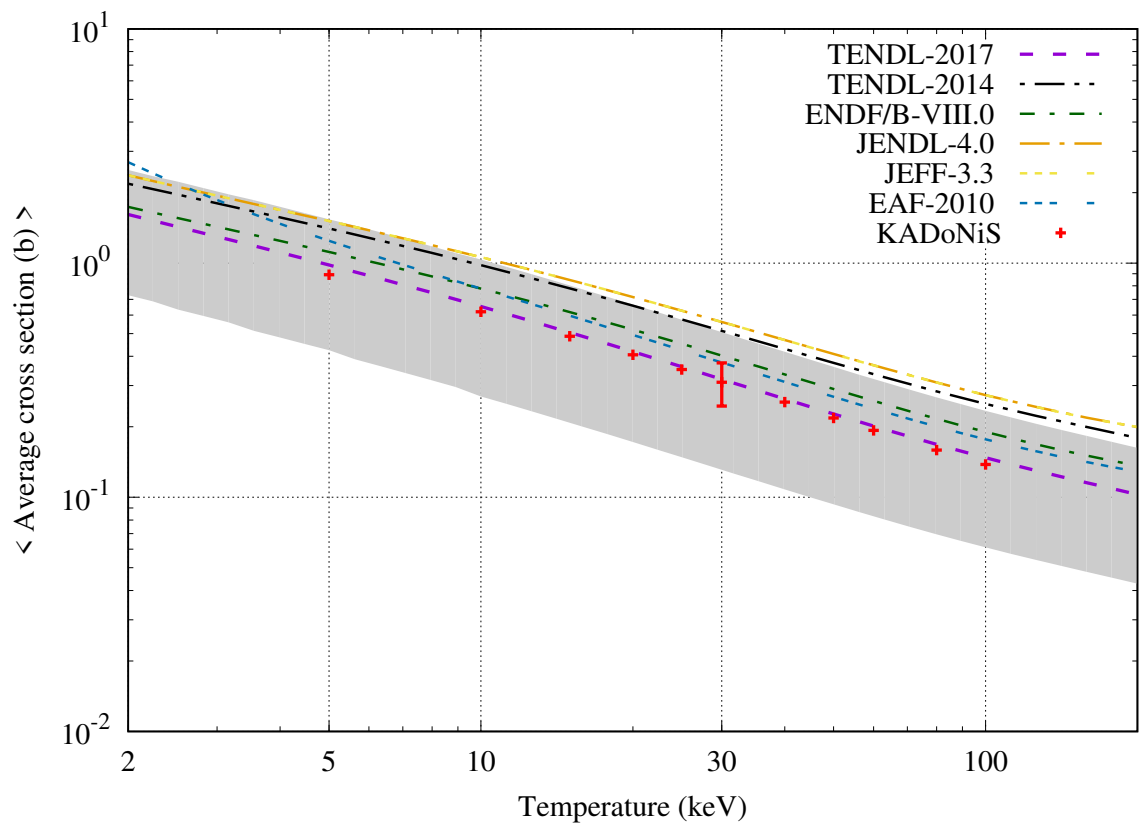
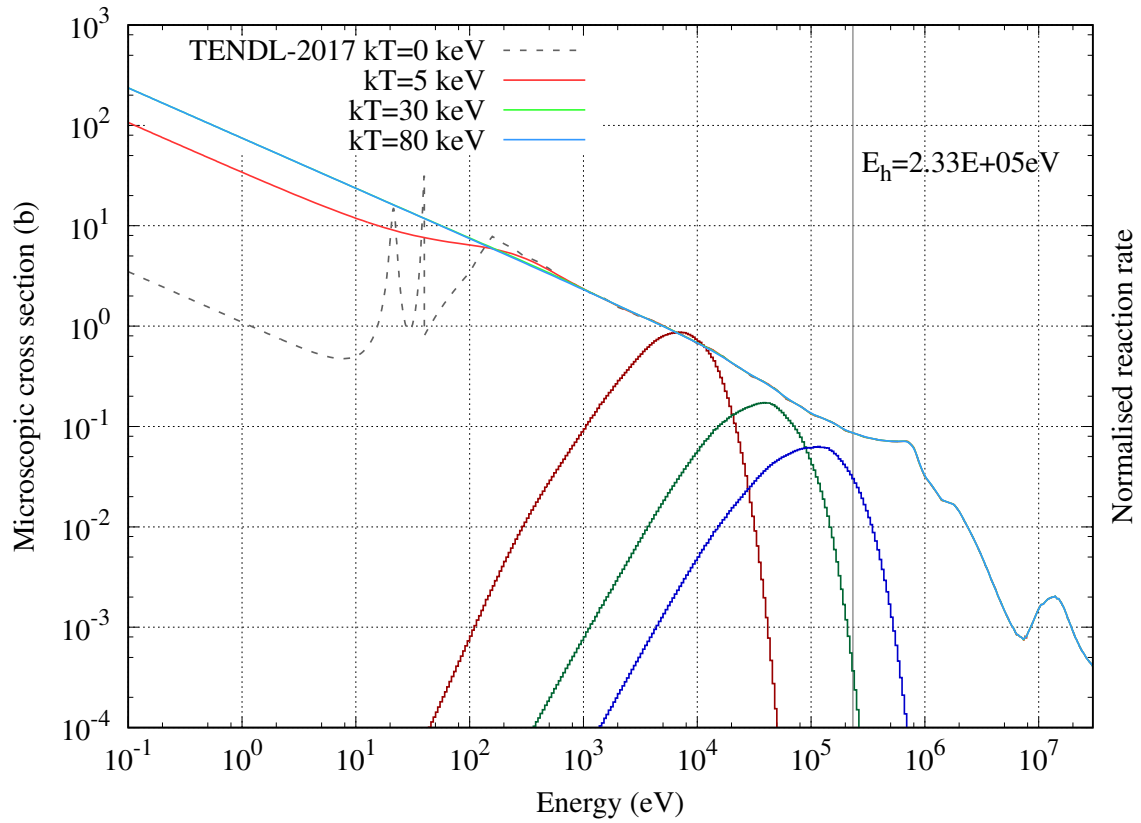
$^{93}\text{Nb}_{41}$ [Stable]



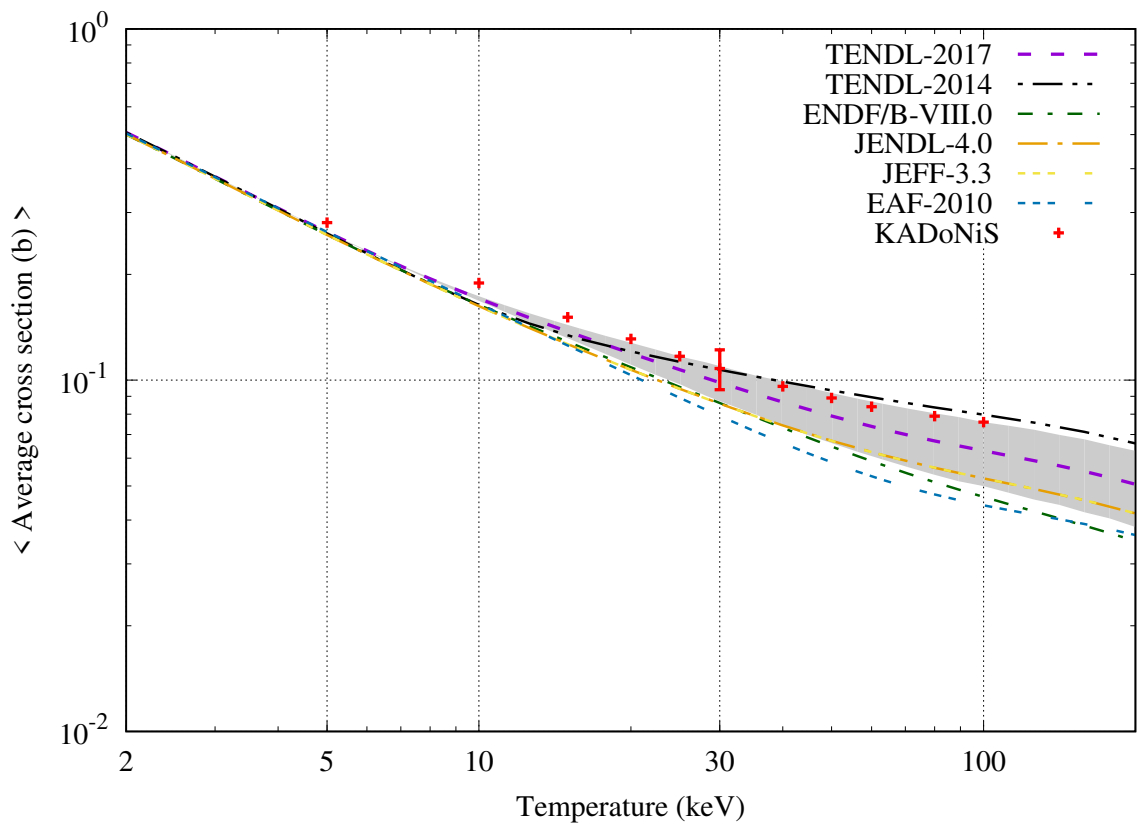
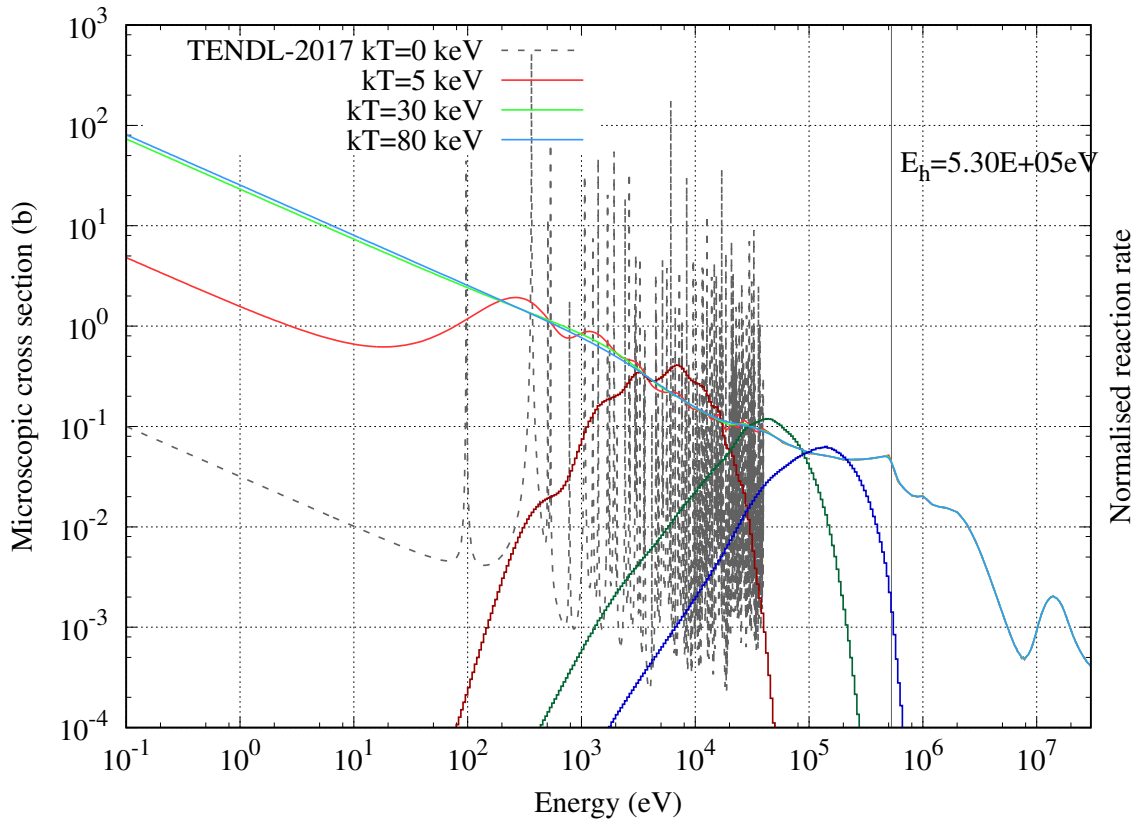
$^{94}\text{Nb}_{41}$ [$T_{1/2} = 2.00 \times 10^4$ years] (KADoNiS=SMC)



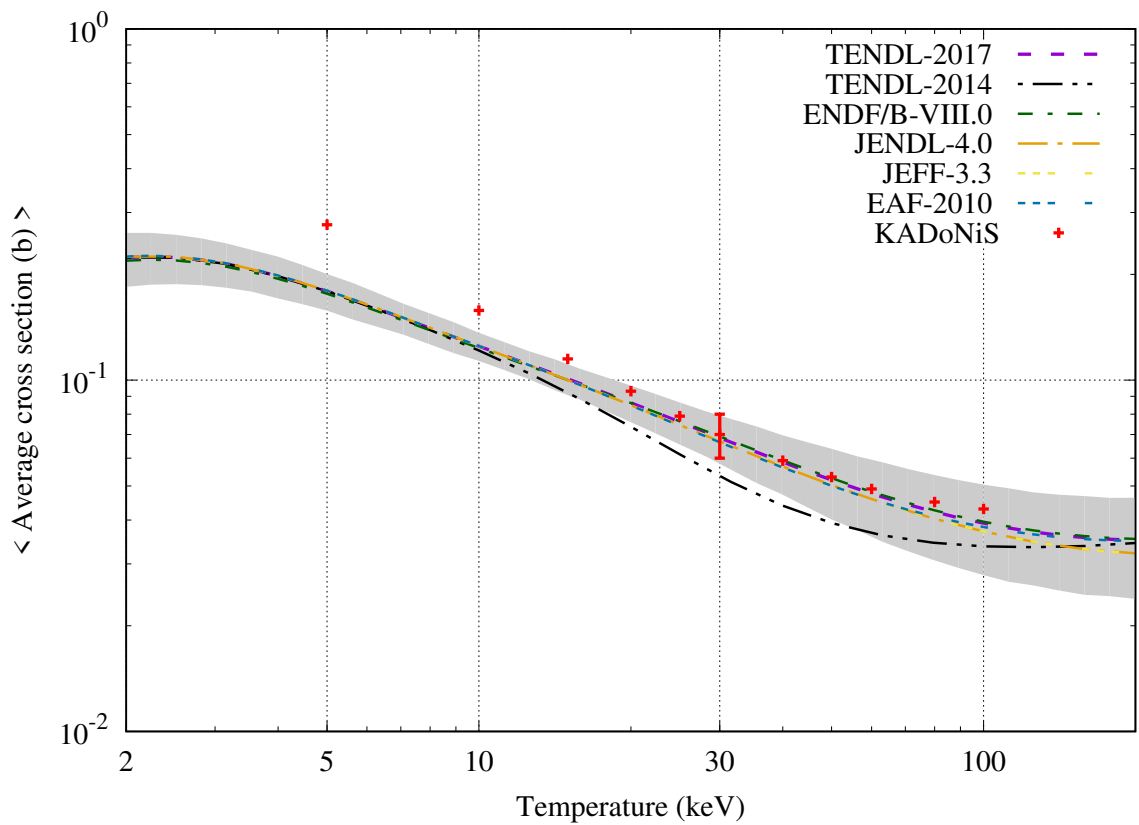
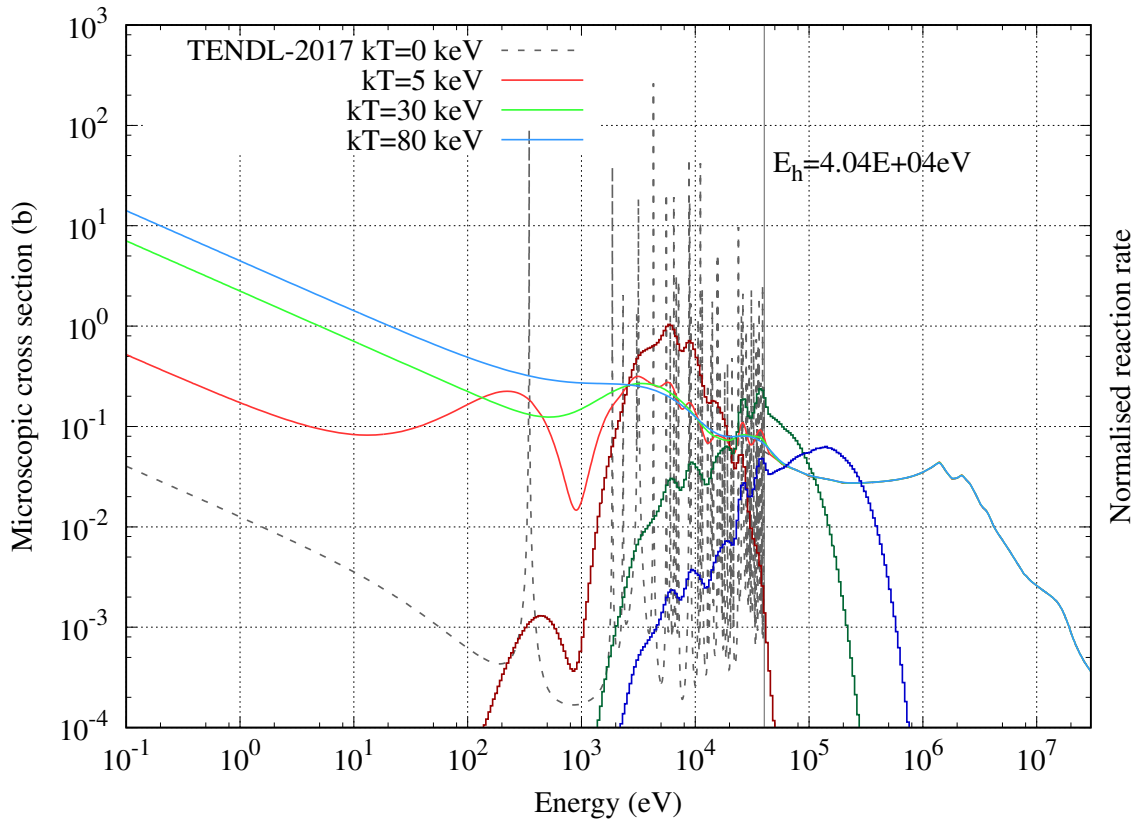
$^{95}\text{Nb}_{41}$ [$T_{1/2} = 34.99$ days] (KADoNiS=SMC)



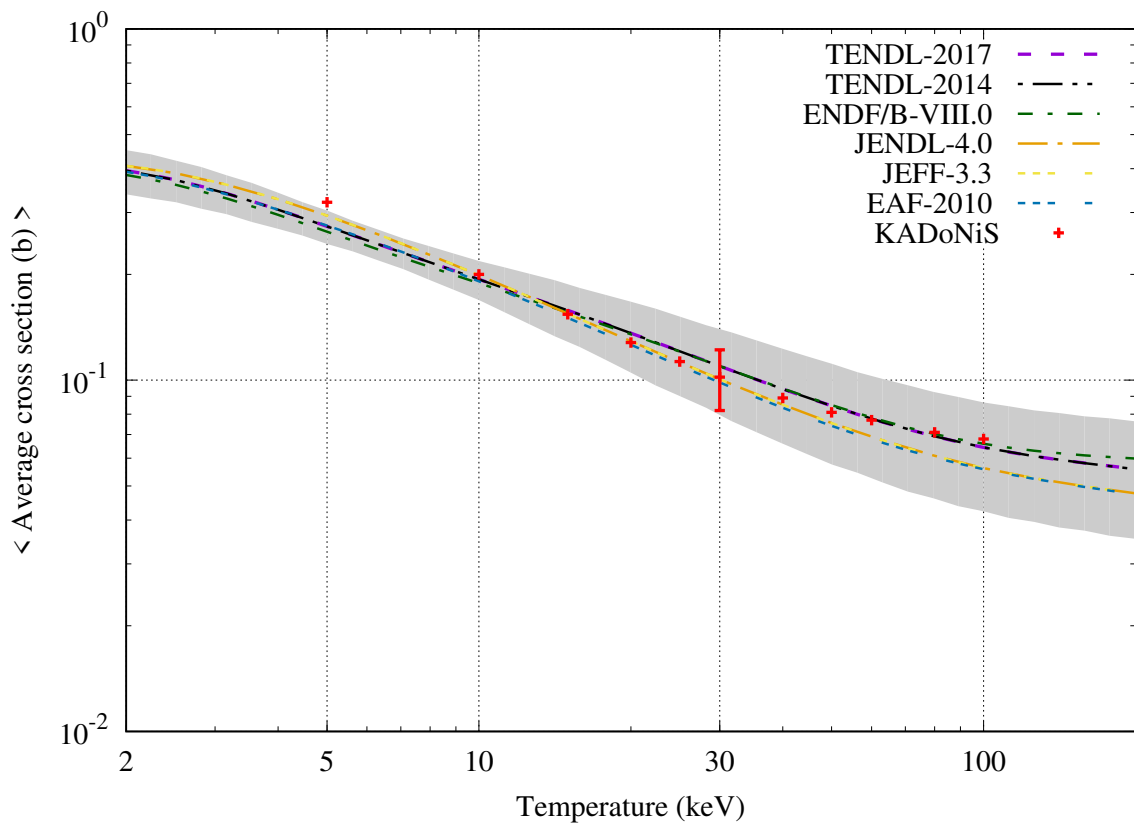
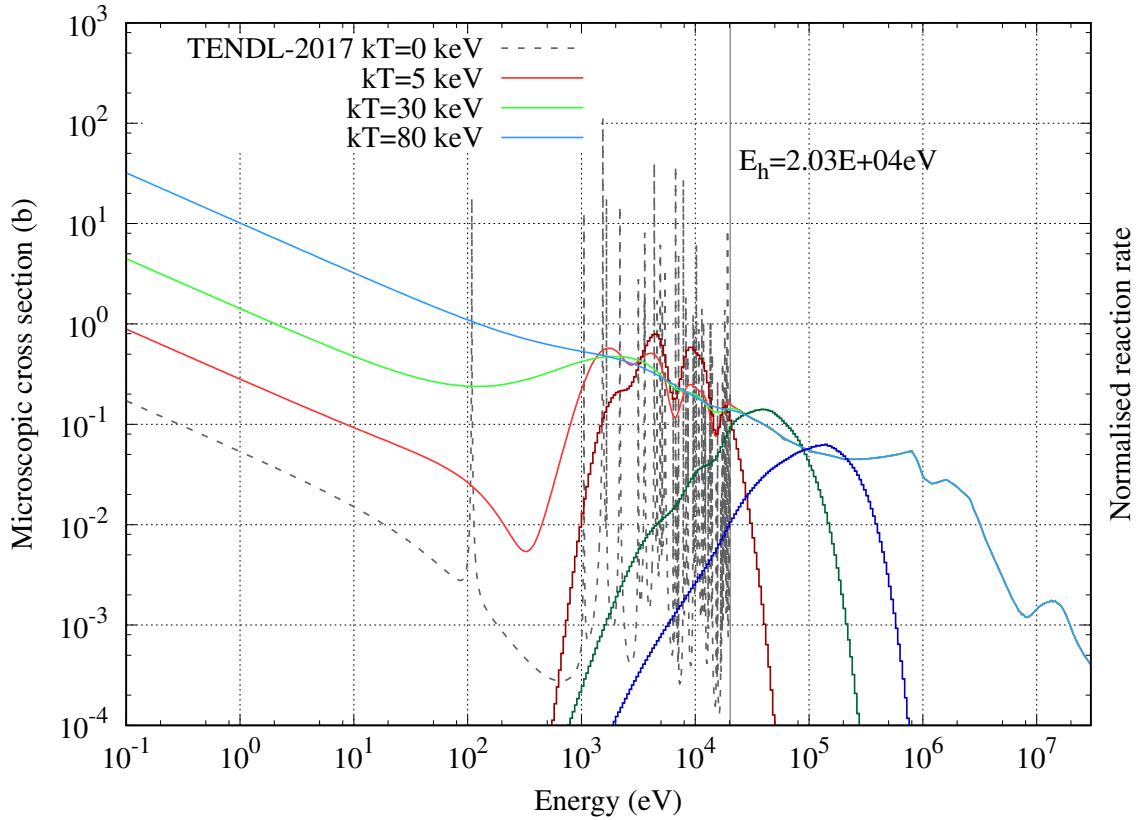
$^{100}\text{Mo}_{42}$ [$T_{1/2} = 9.90 \times 10^{18}$ years]



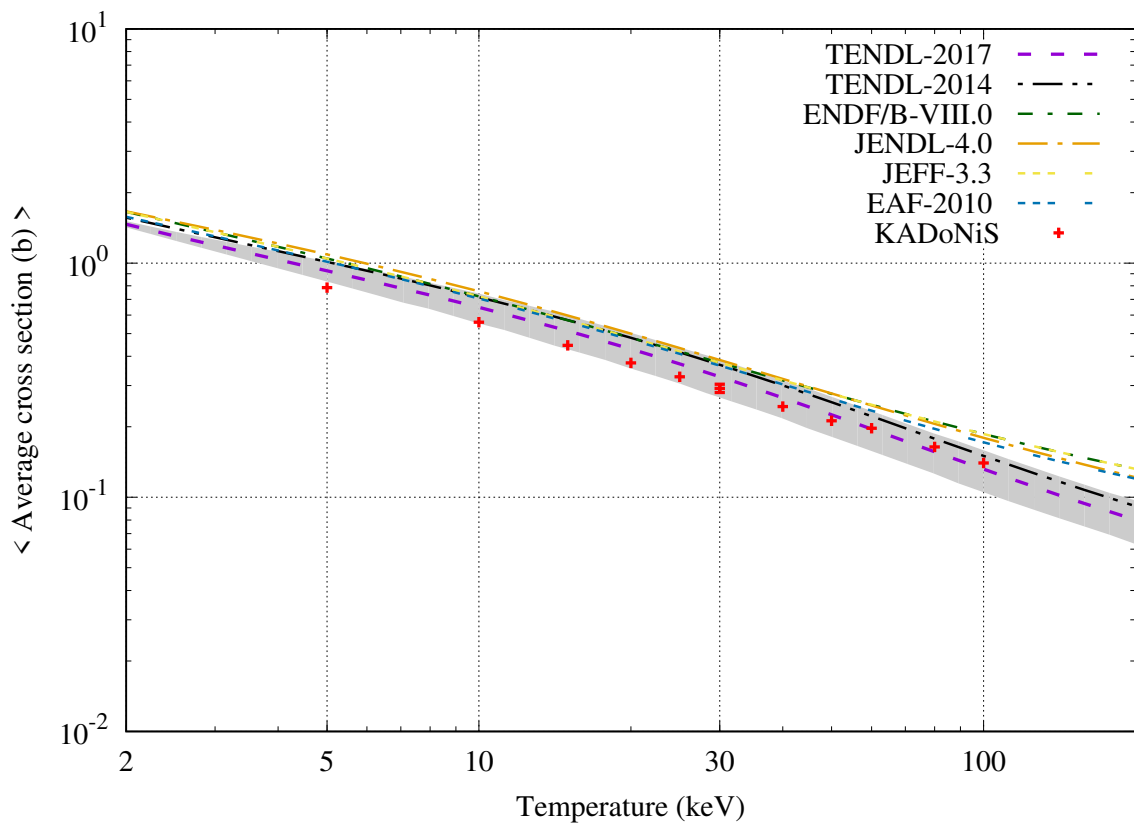
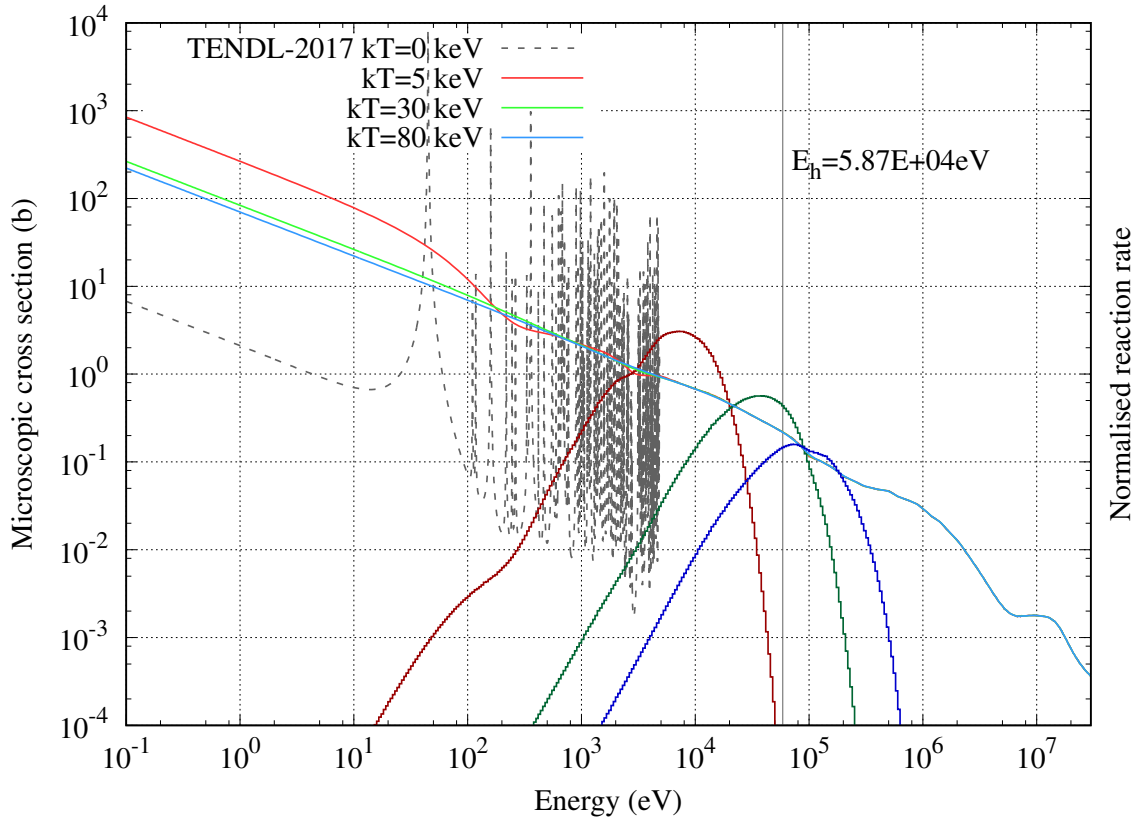
$^{92}\text{Mo}_{42}$ [$T_{1/2} = 1.90 \times 10^{20}$ years]



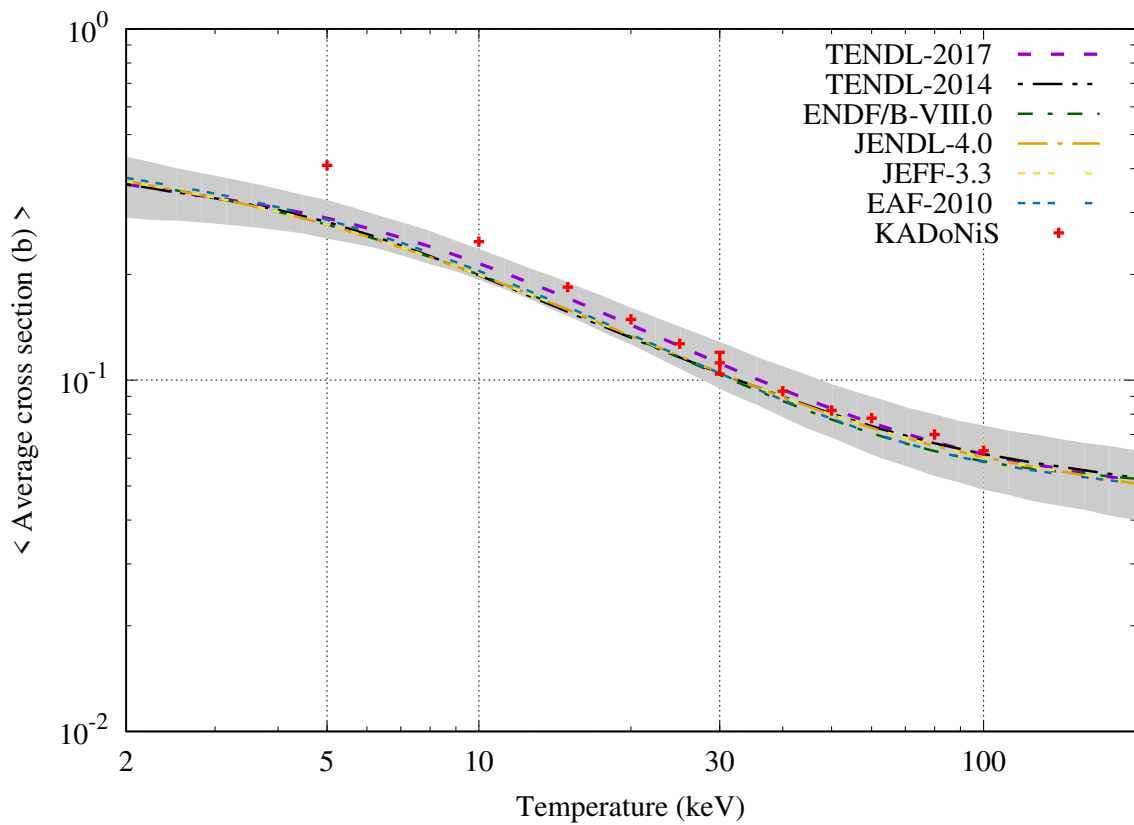
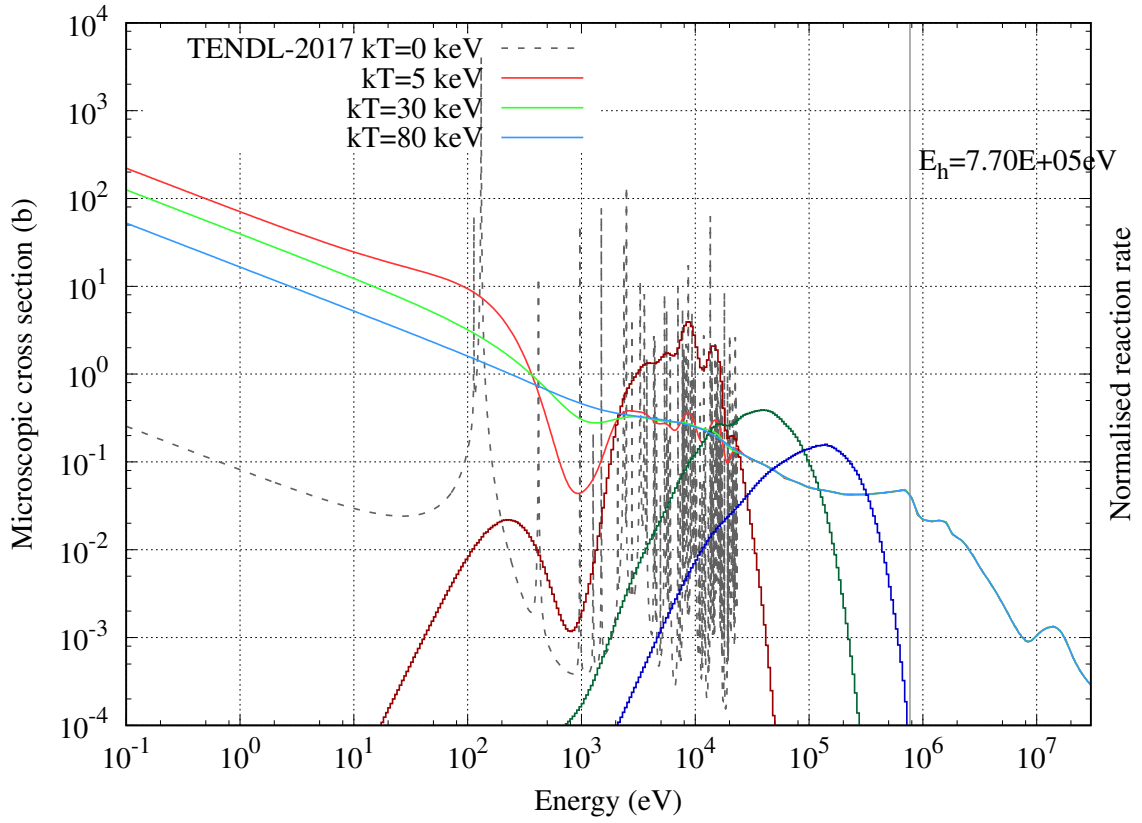
$^{94}\text{Mo}_{42}$ [Stable]



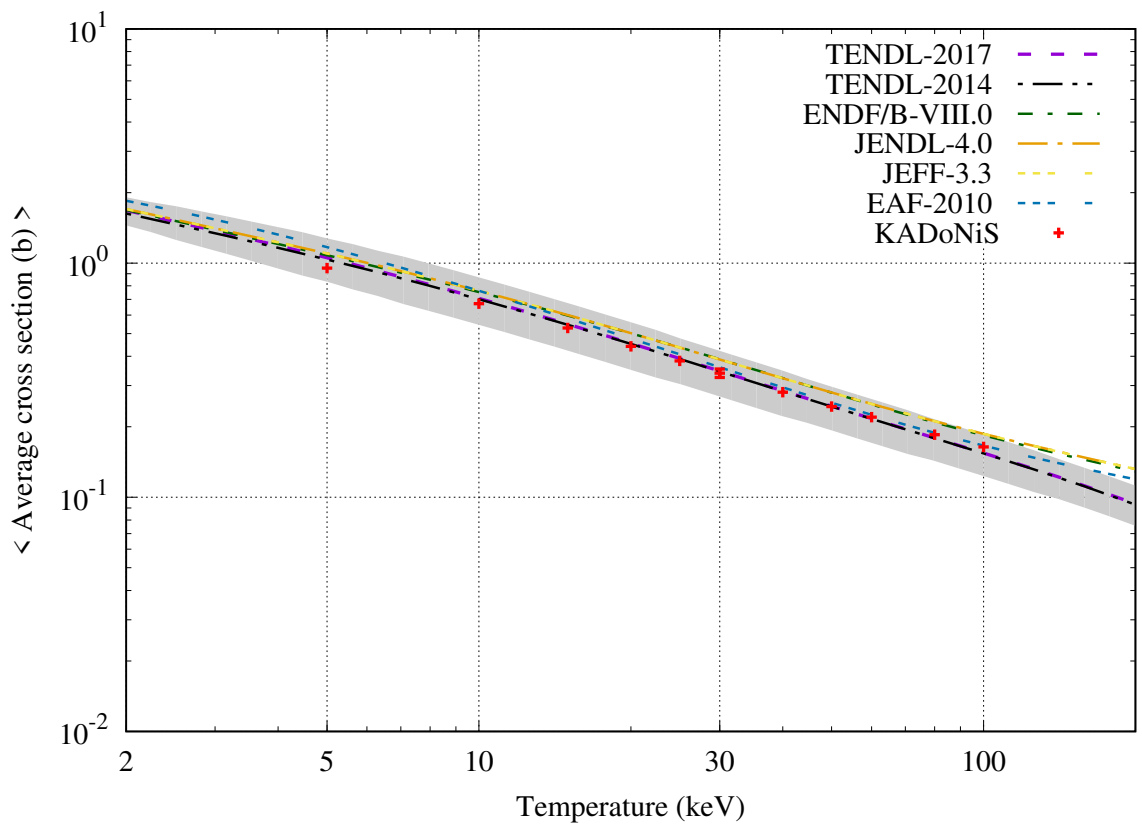
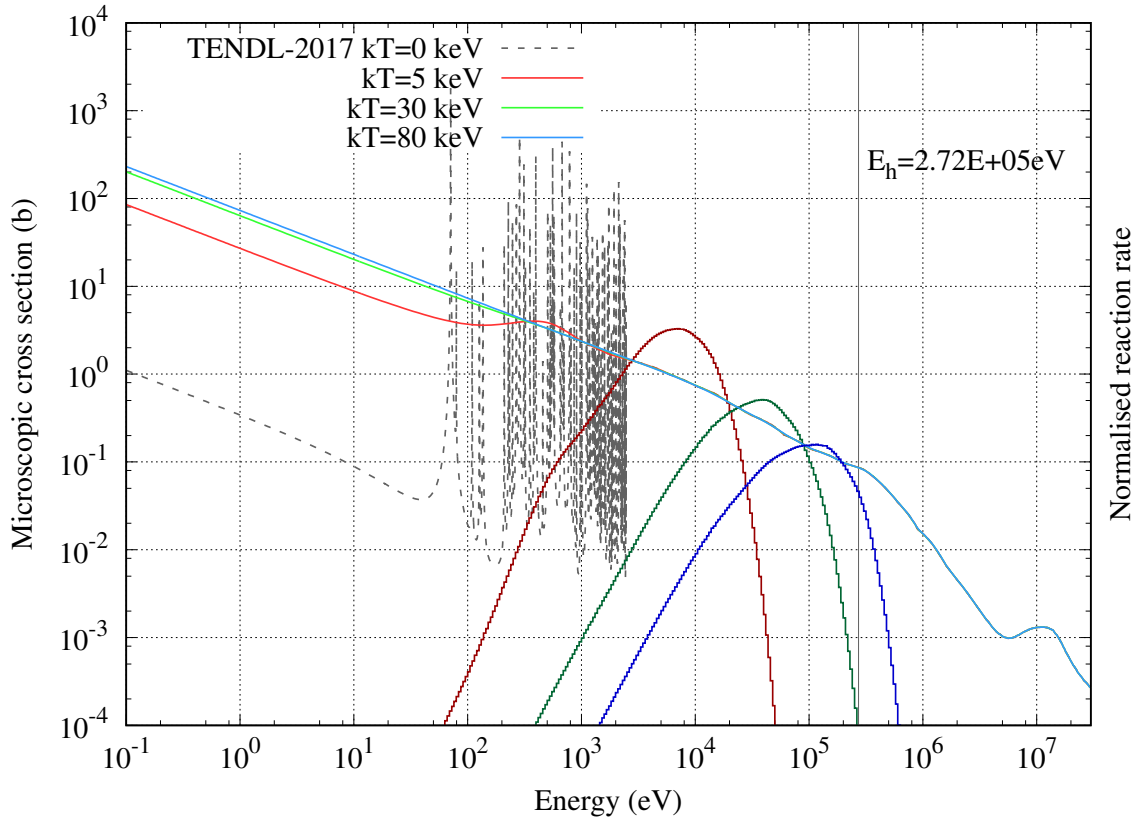
$^{95}\text{Mo}_{42}$ [Stable]



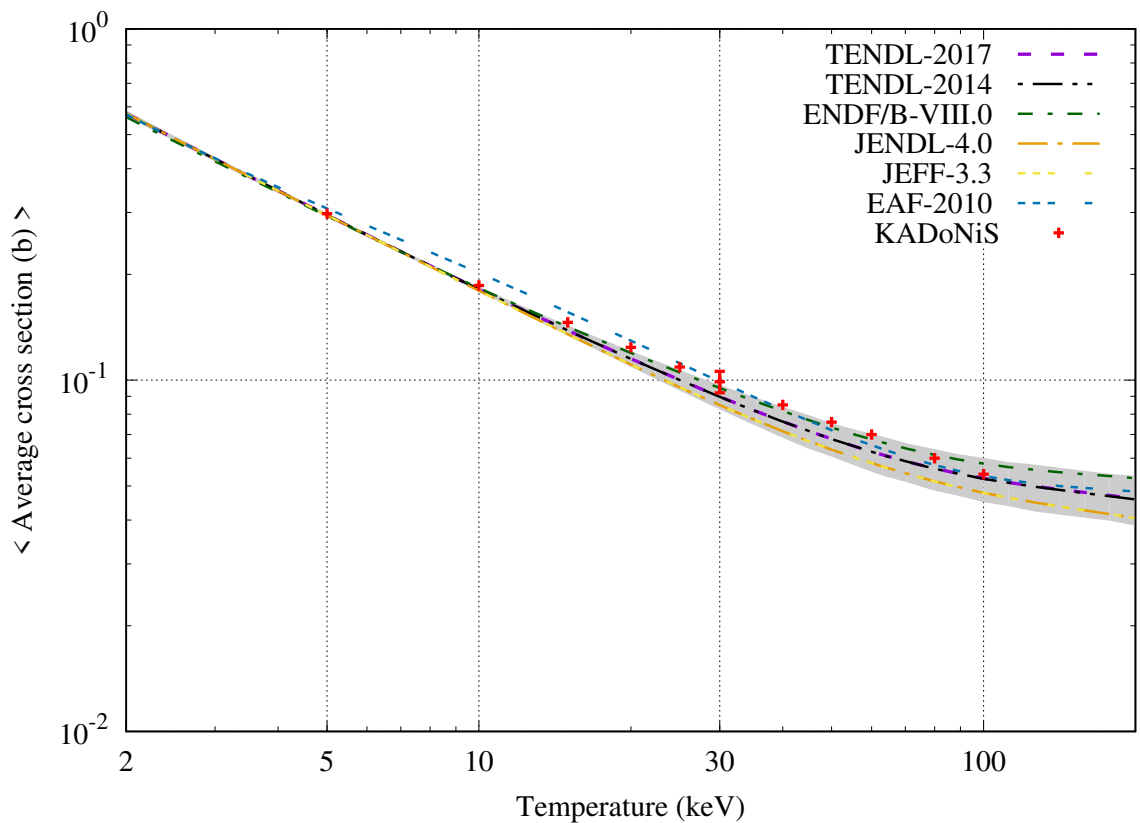
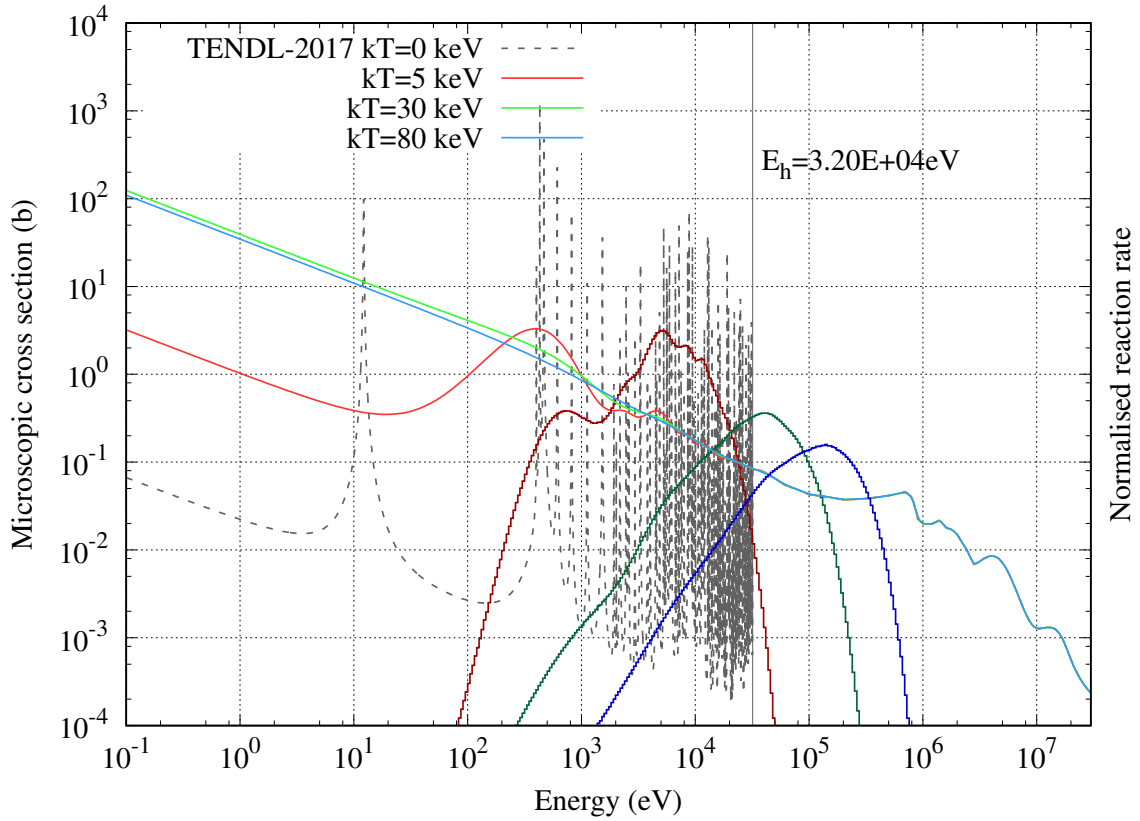
$^{96}\text{Mo}_{42}$ [Stable]



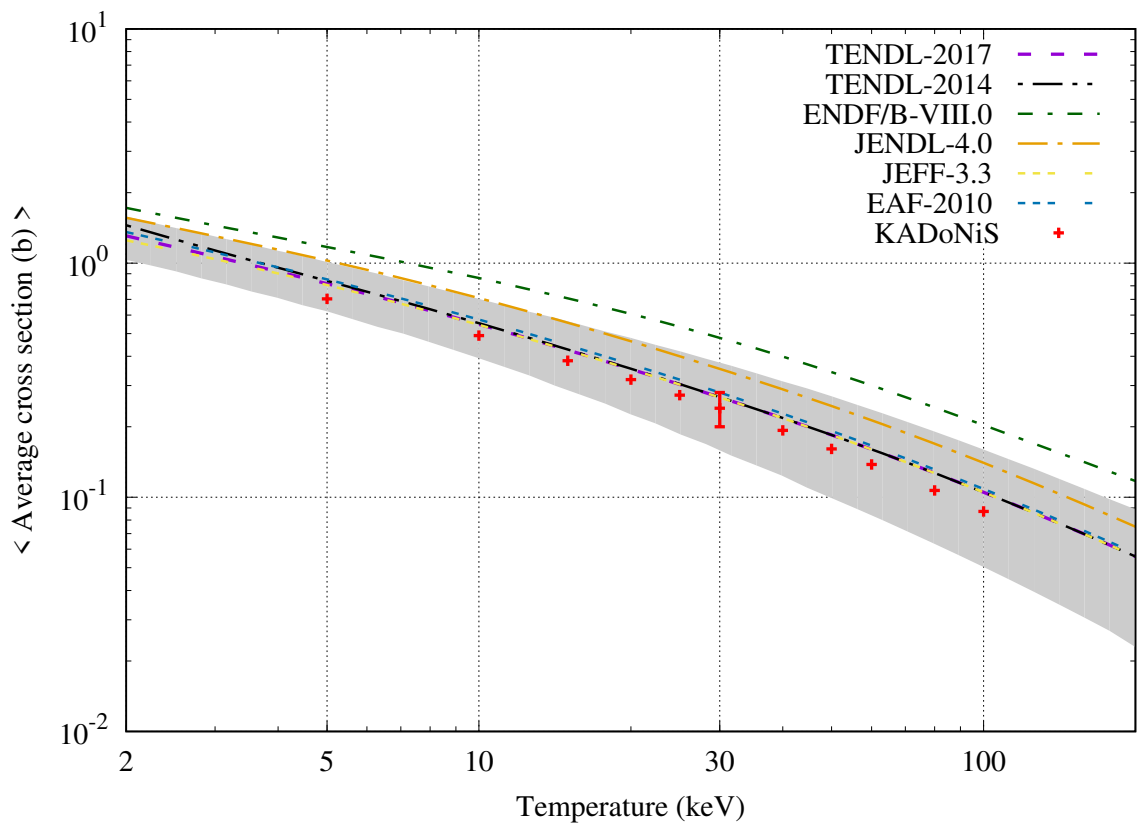
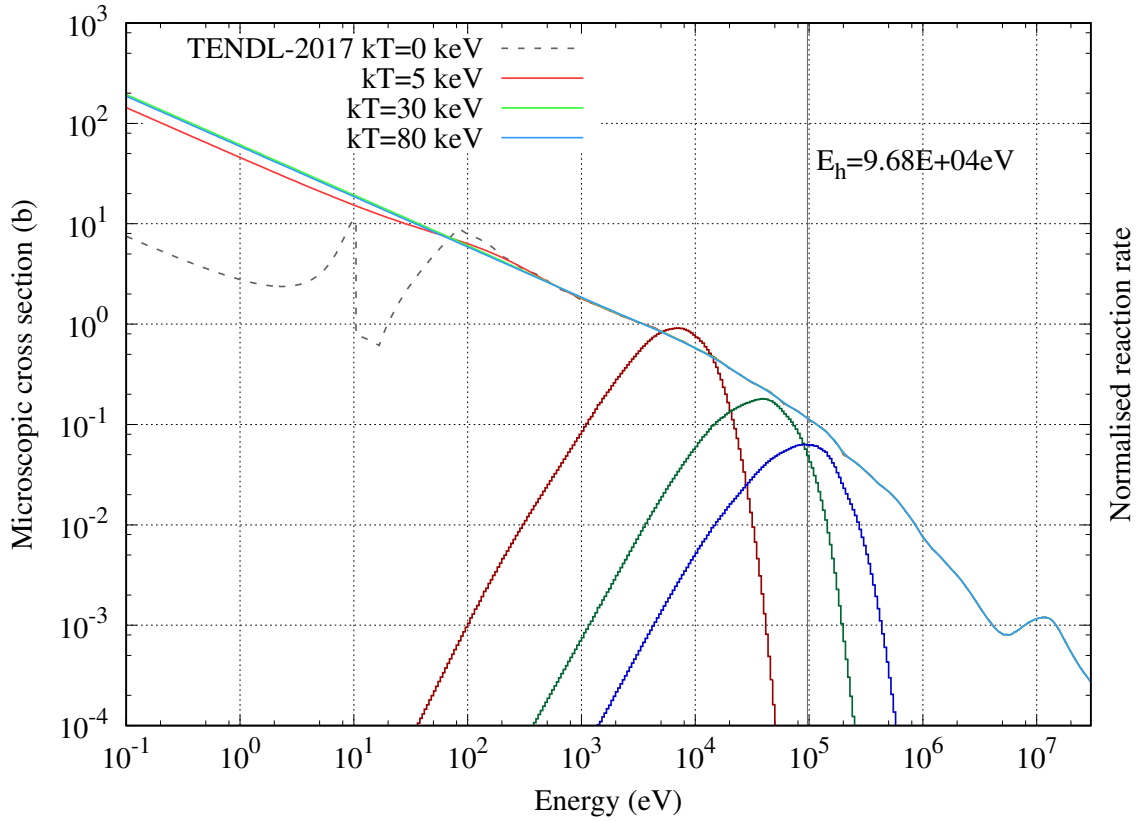
$^{97}\text{Mo}_{42}$ [Stable]



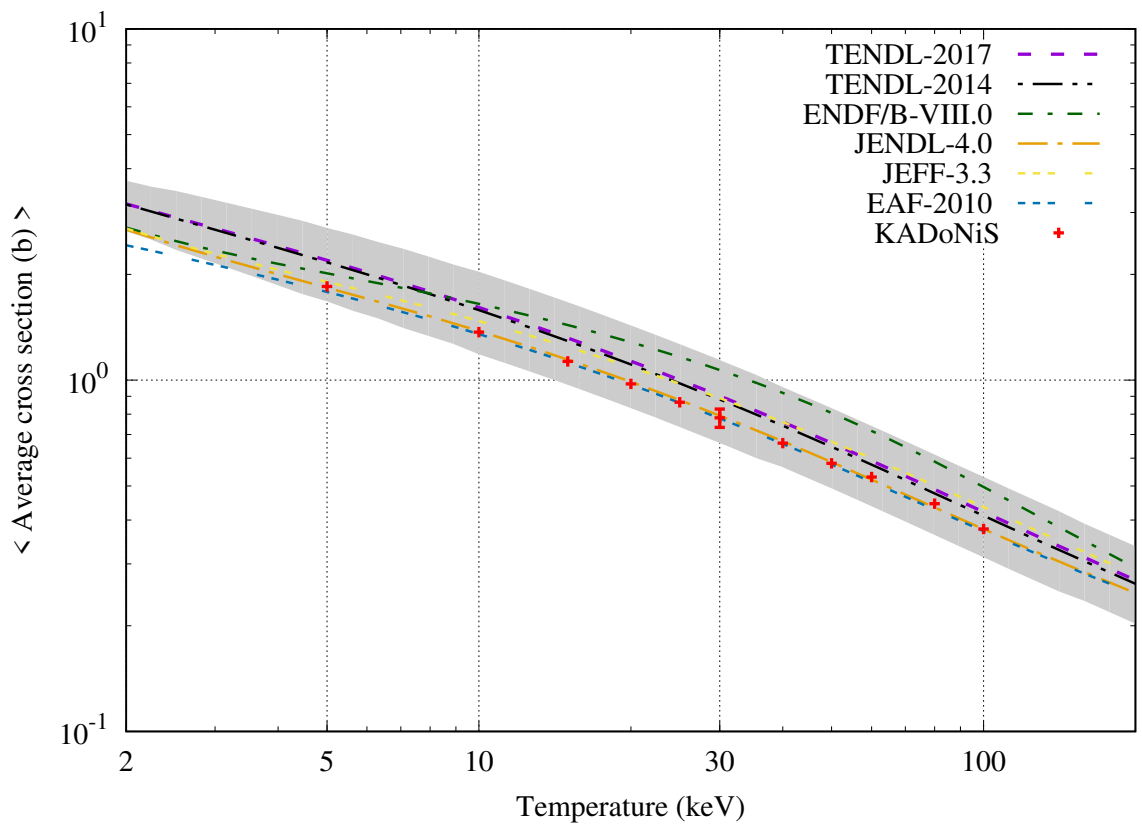
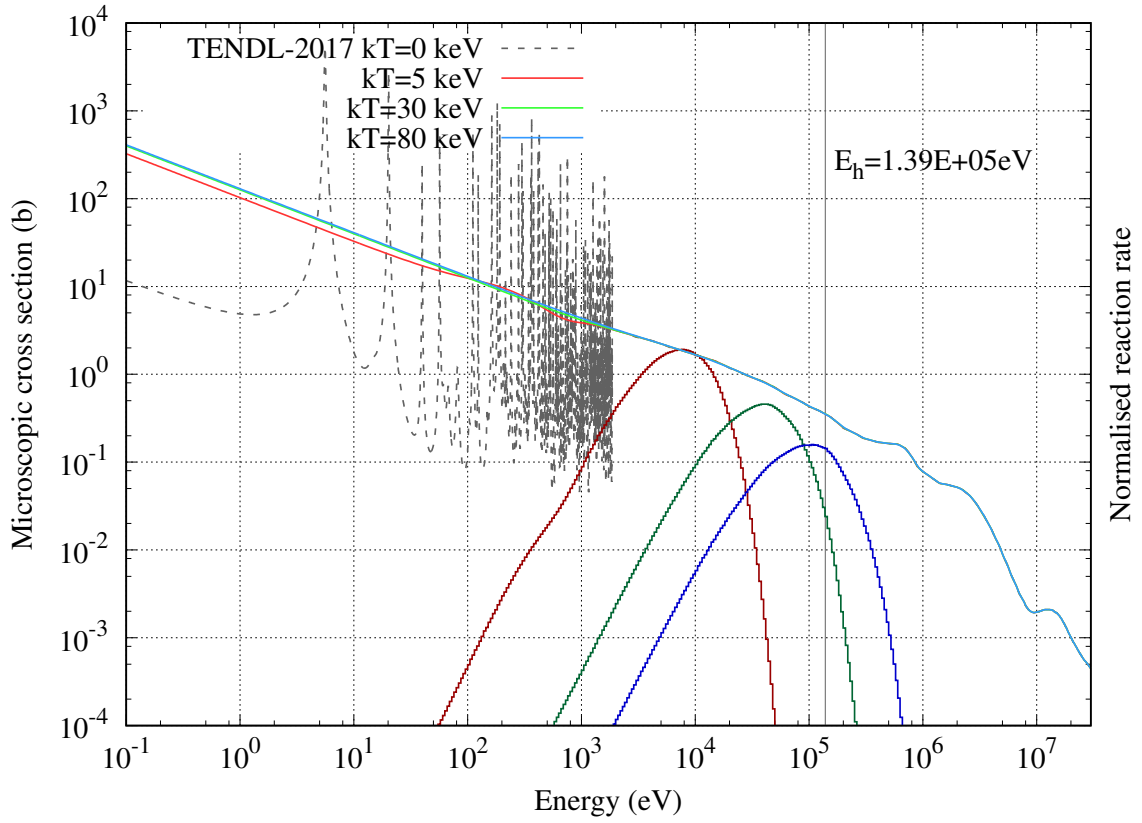
$^{98}\text{Mo}_{42}$ [$T_{1/2} = 1.00 \times 10^{14}$ years]



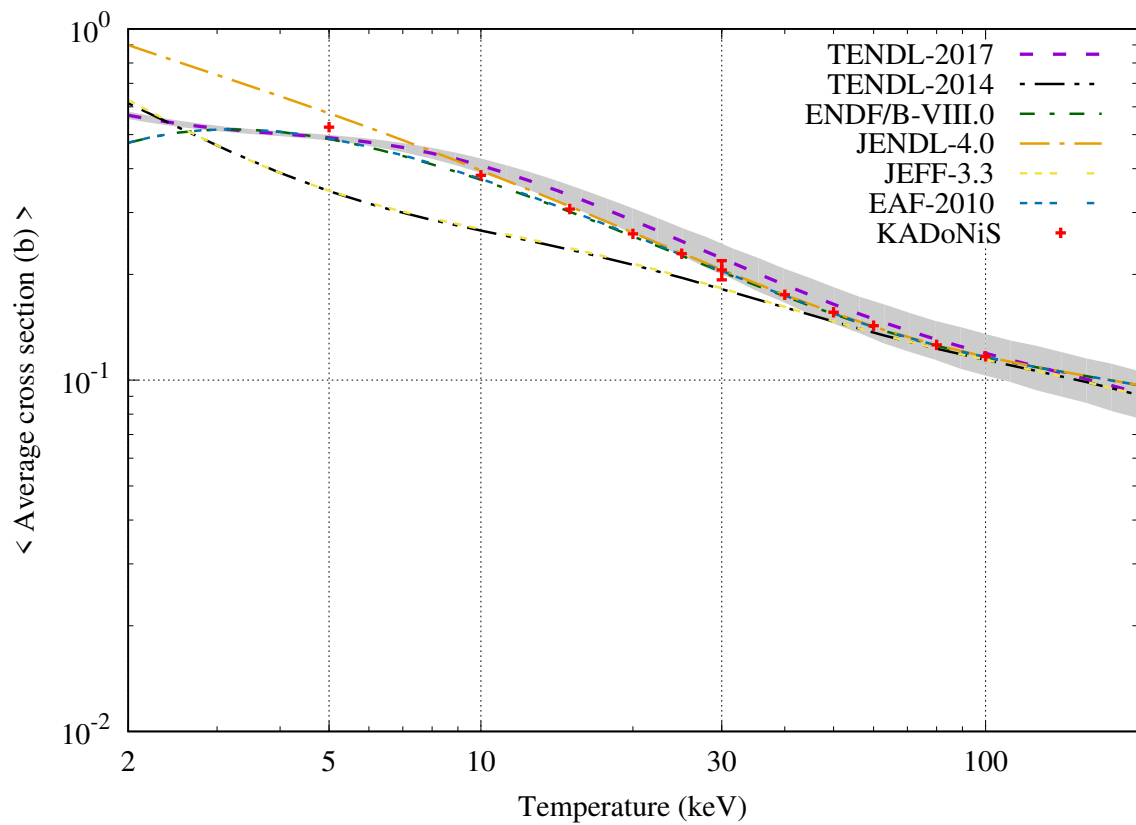
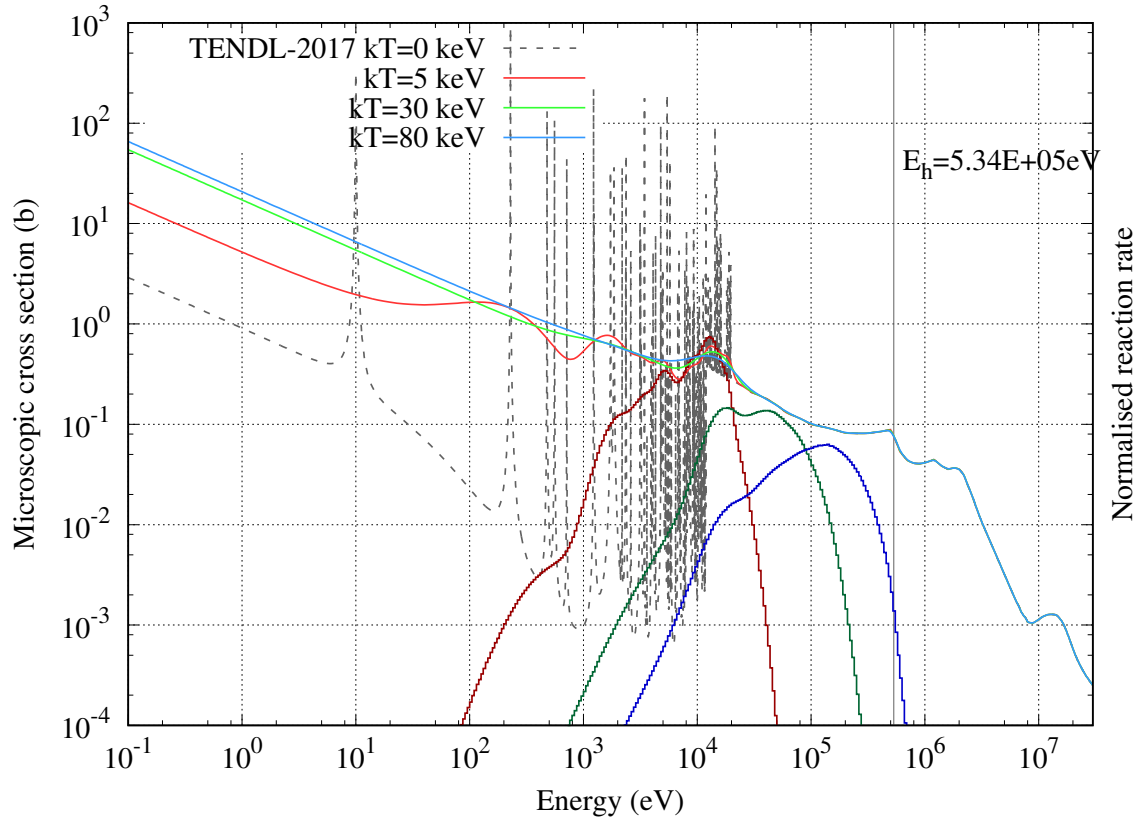
$^{99}\text{Mo}_{42}$ [$T_{1/2} = 2.75$ days] (KADoNiS=SMC)



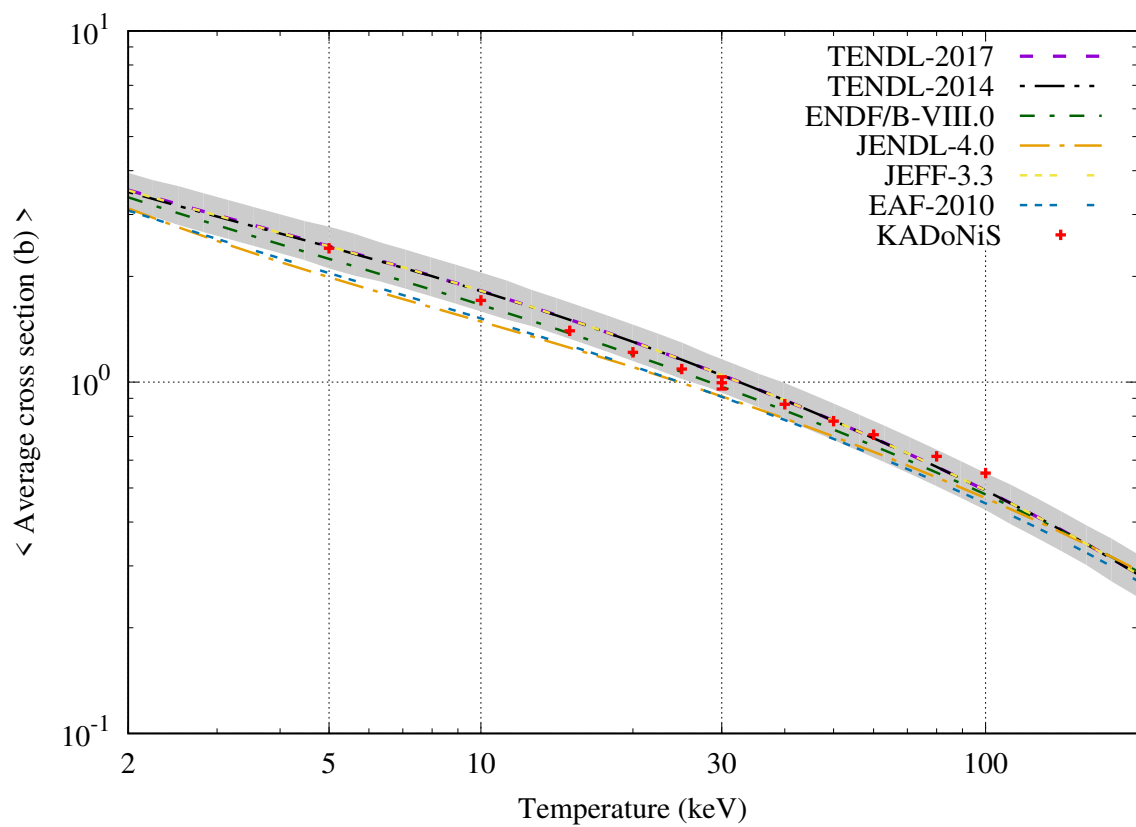
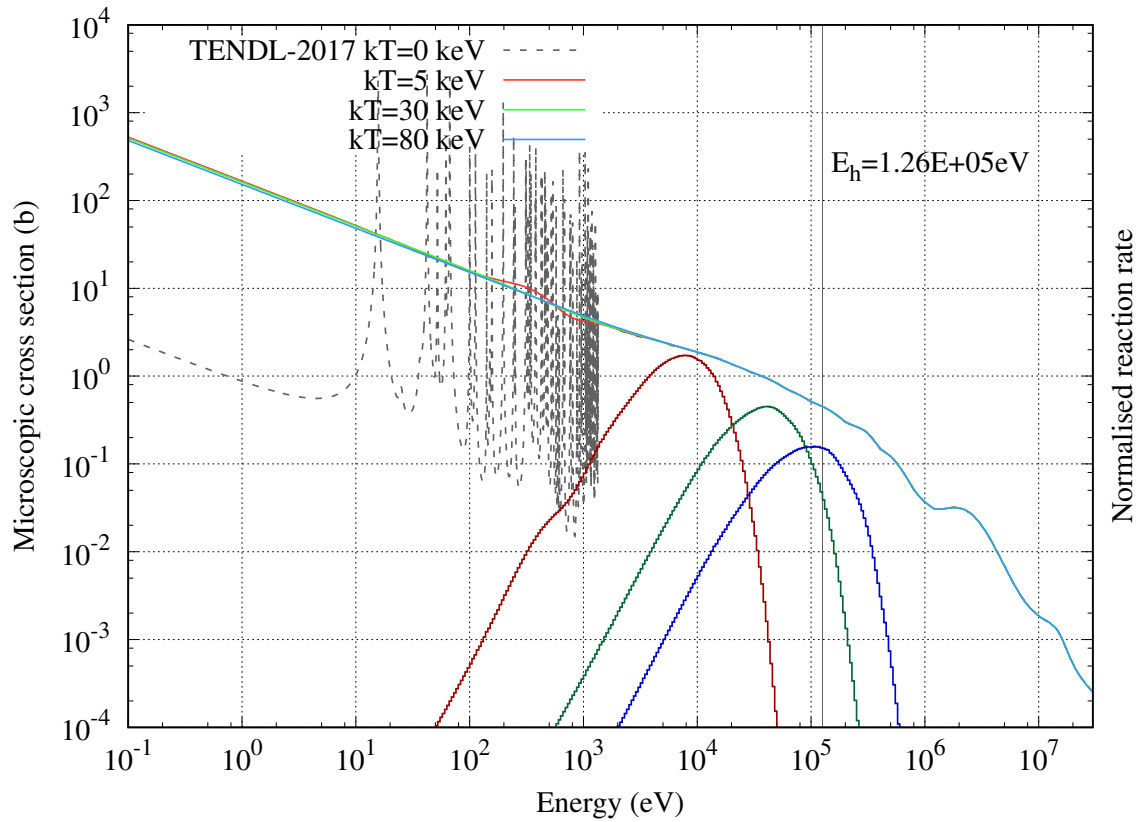
$^{99}\text{Tc}_{43}$ [$T_{1/2} = 2.14 \times 10^5$ years]



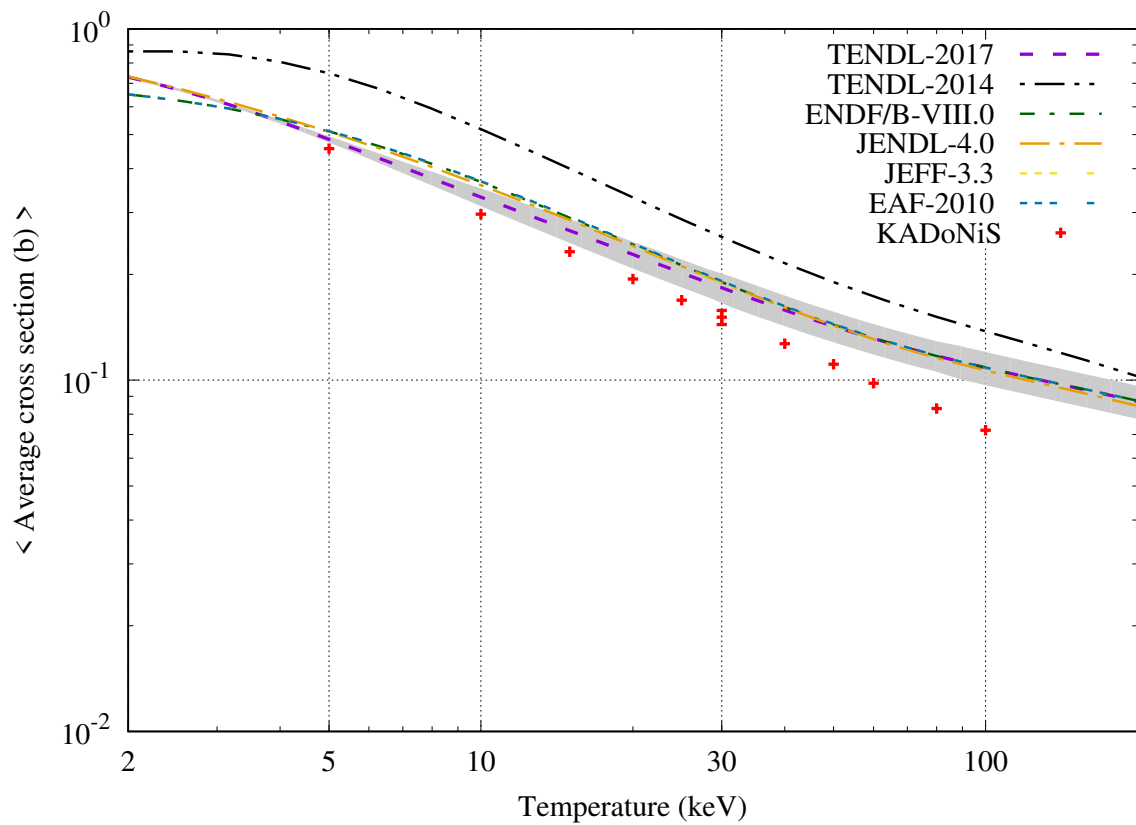
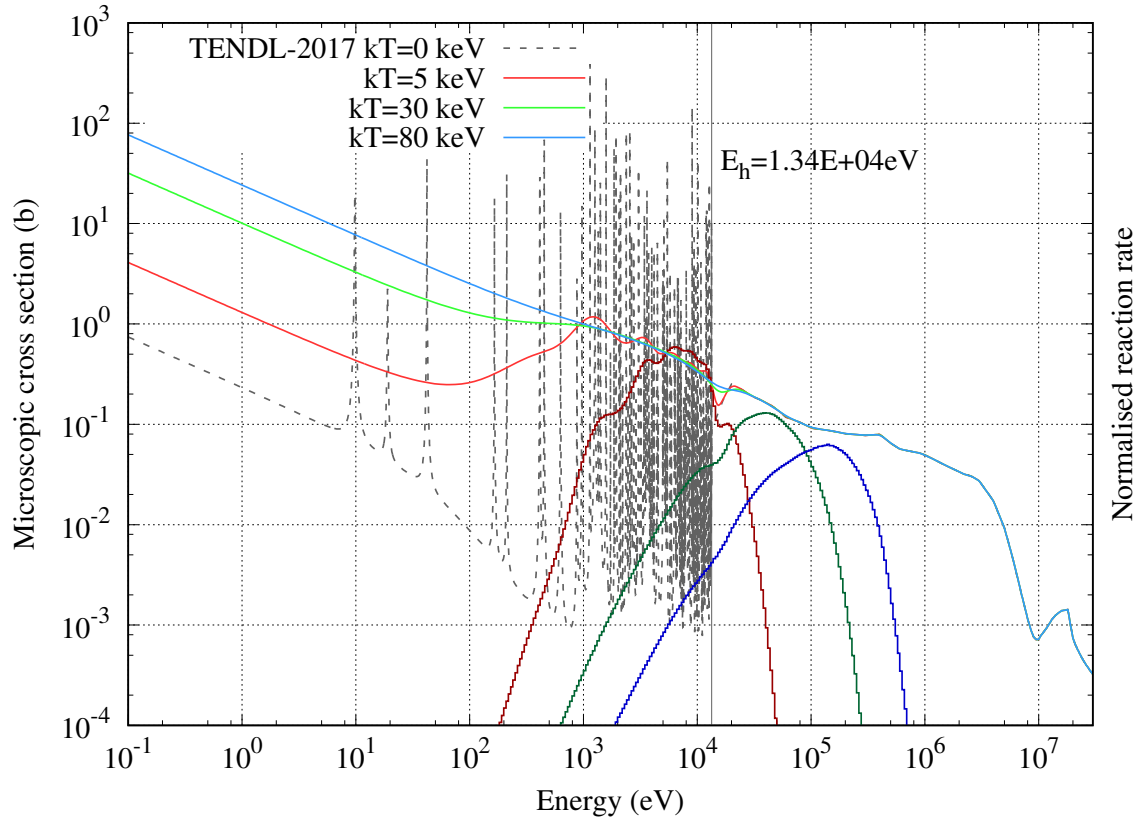
$^{100}\text{Ru}_{44}$ [Stable]



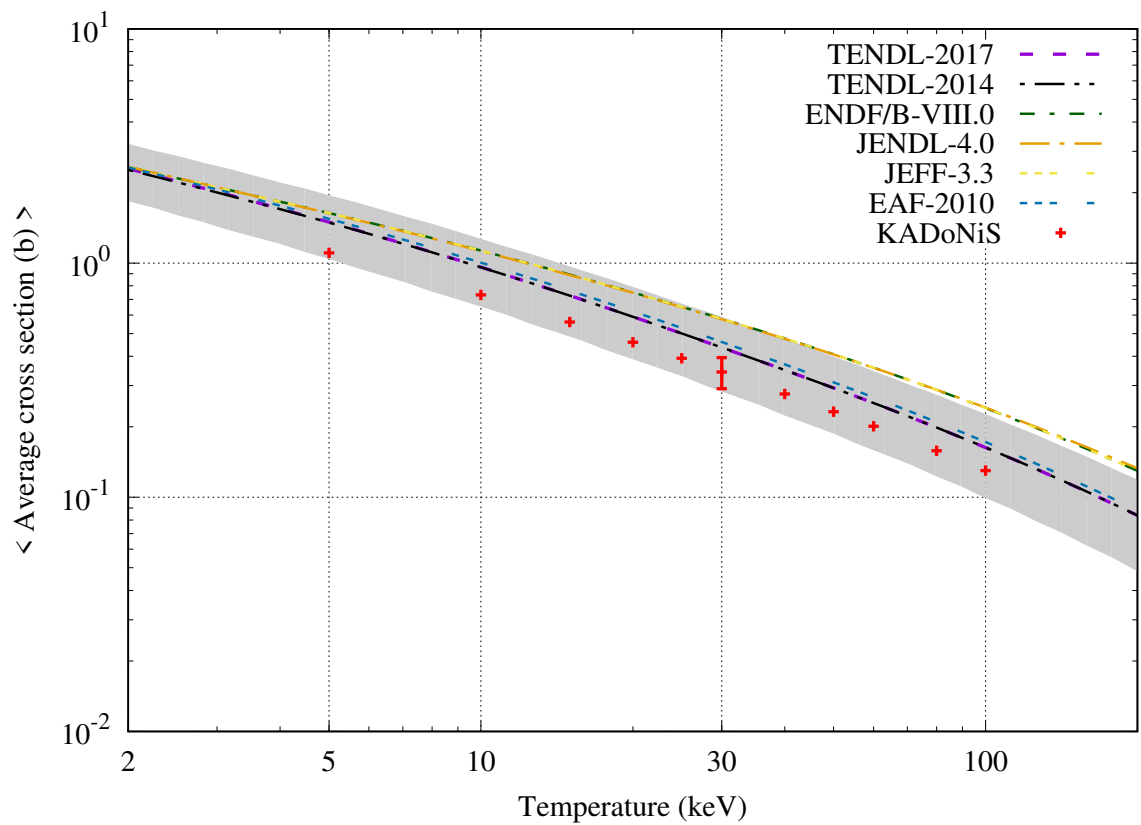
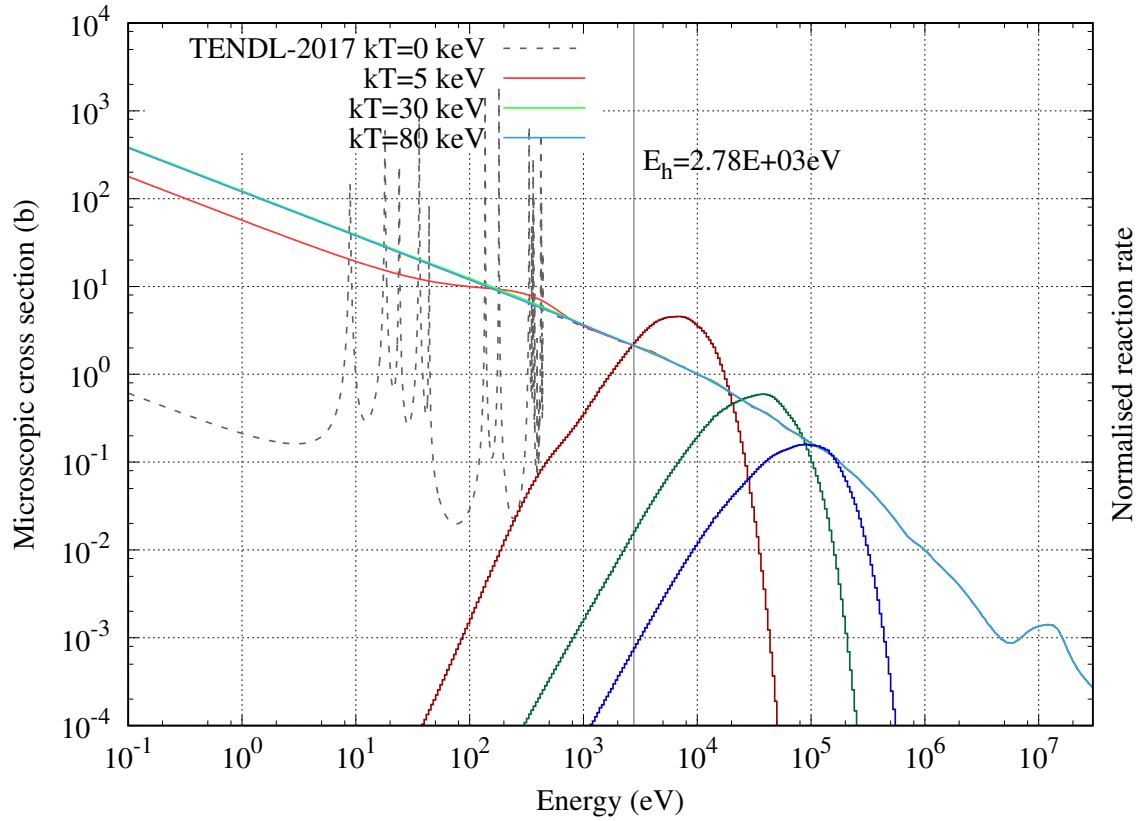
$^{101}\text{Ru}_{44}$ [Stable]



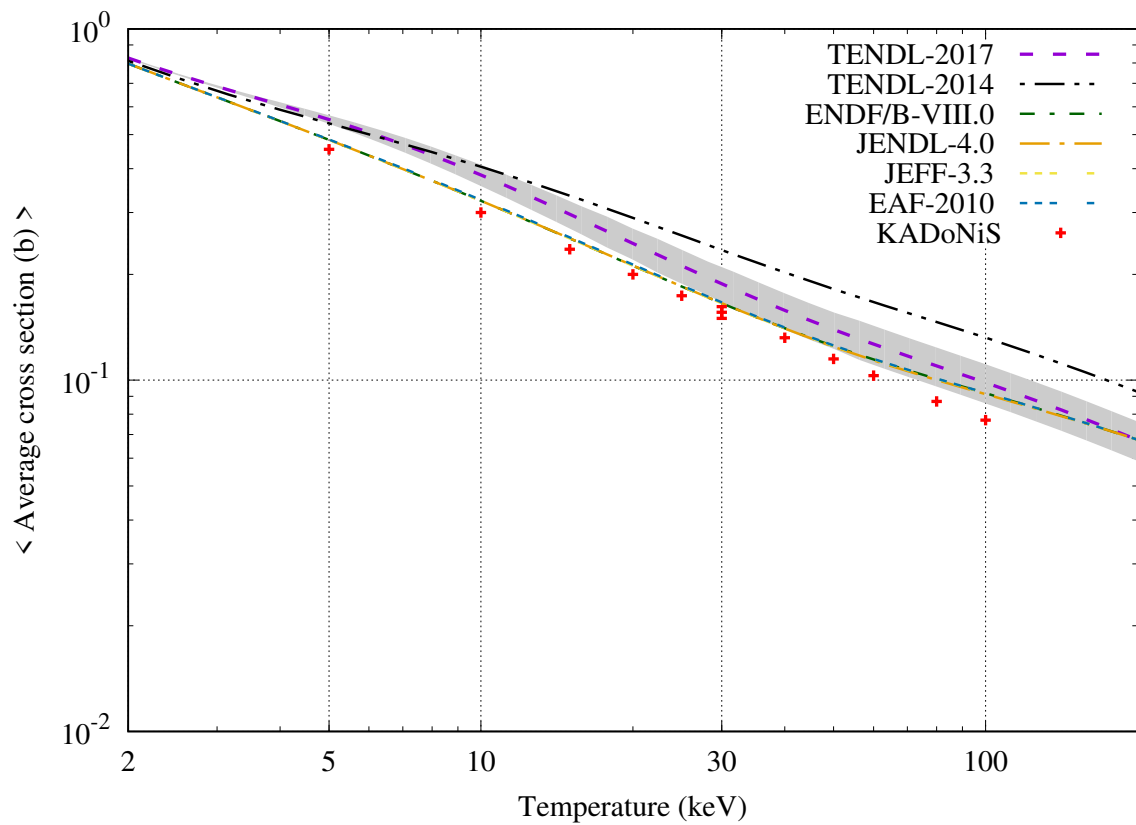
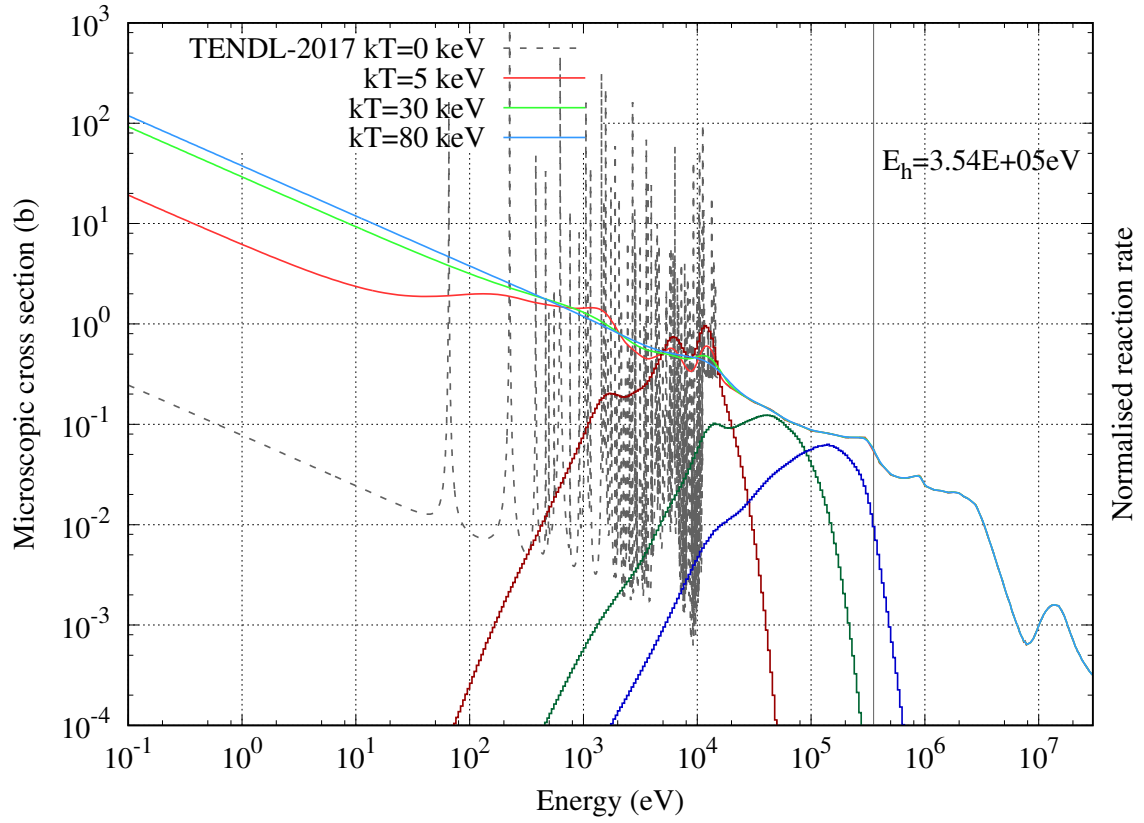
$^{102}\text{Ru}_{44}$ [Stable]



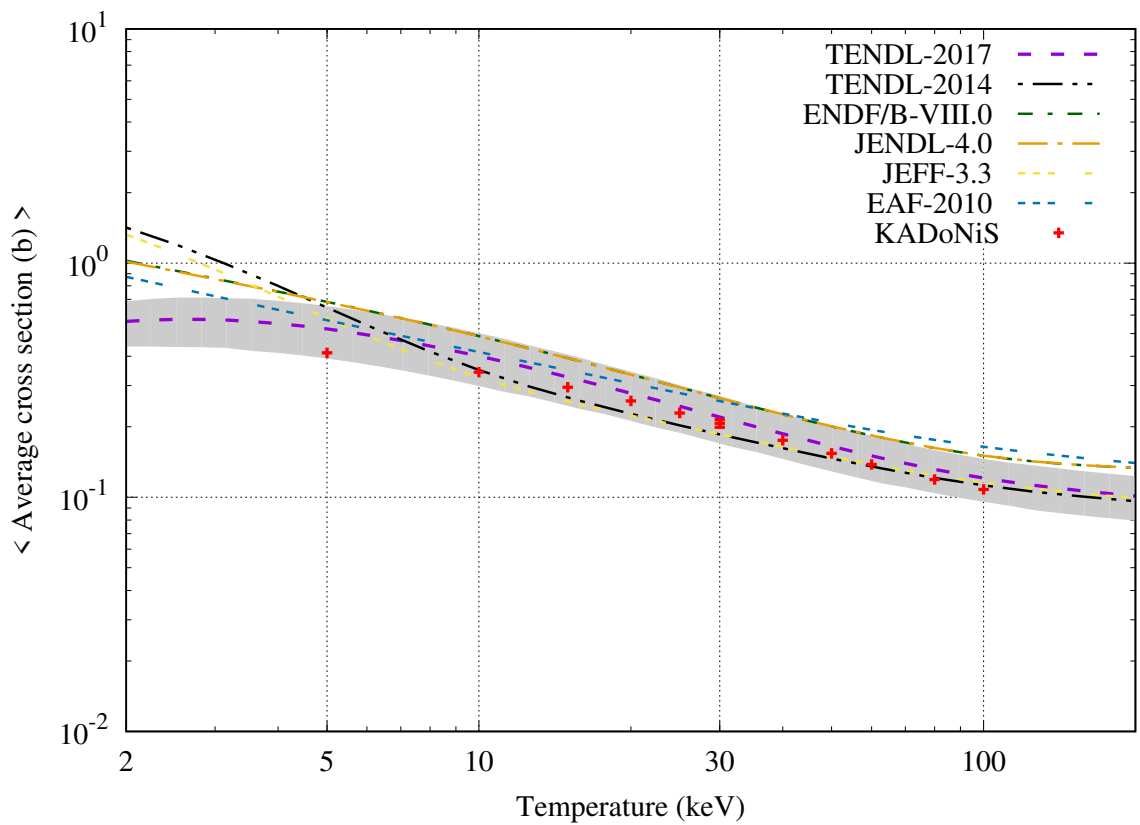
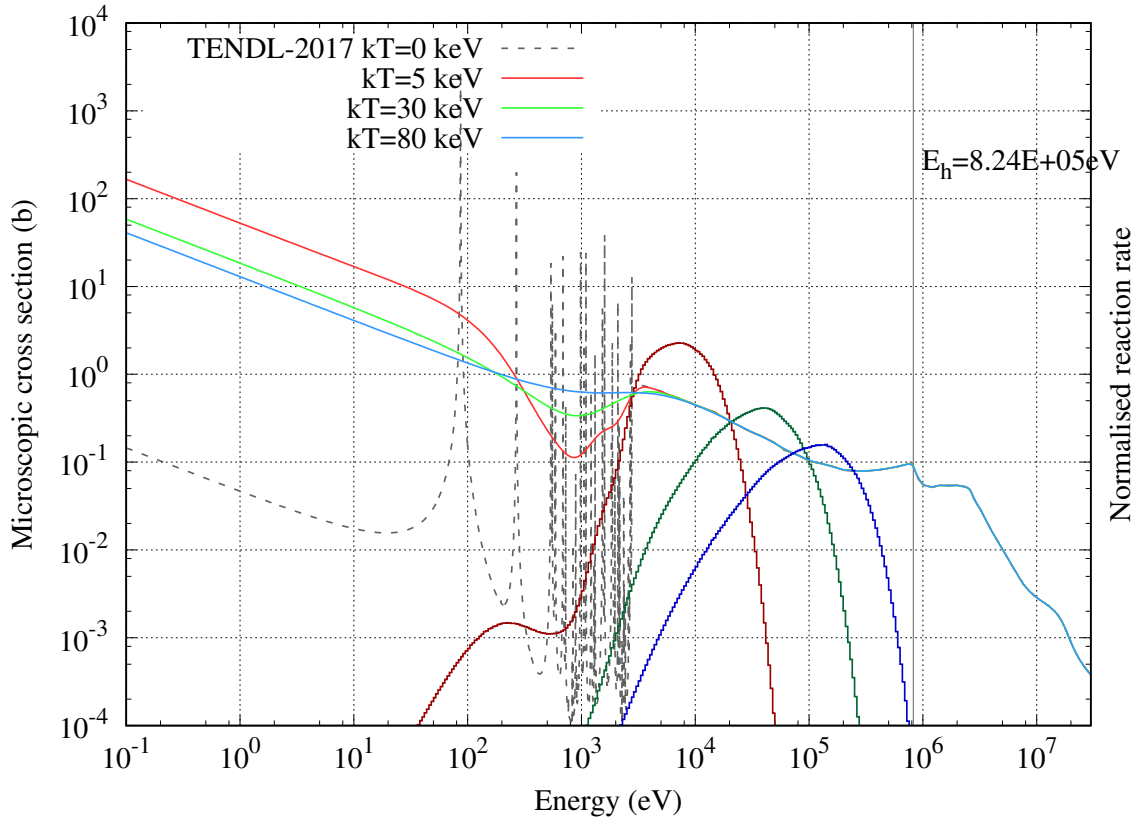
$^{103}\text{Ru}_{44}$ [$T_{1/2} = 39.26$ days] (KADoNiS=SMC)



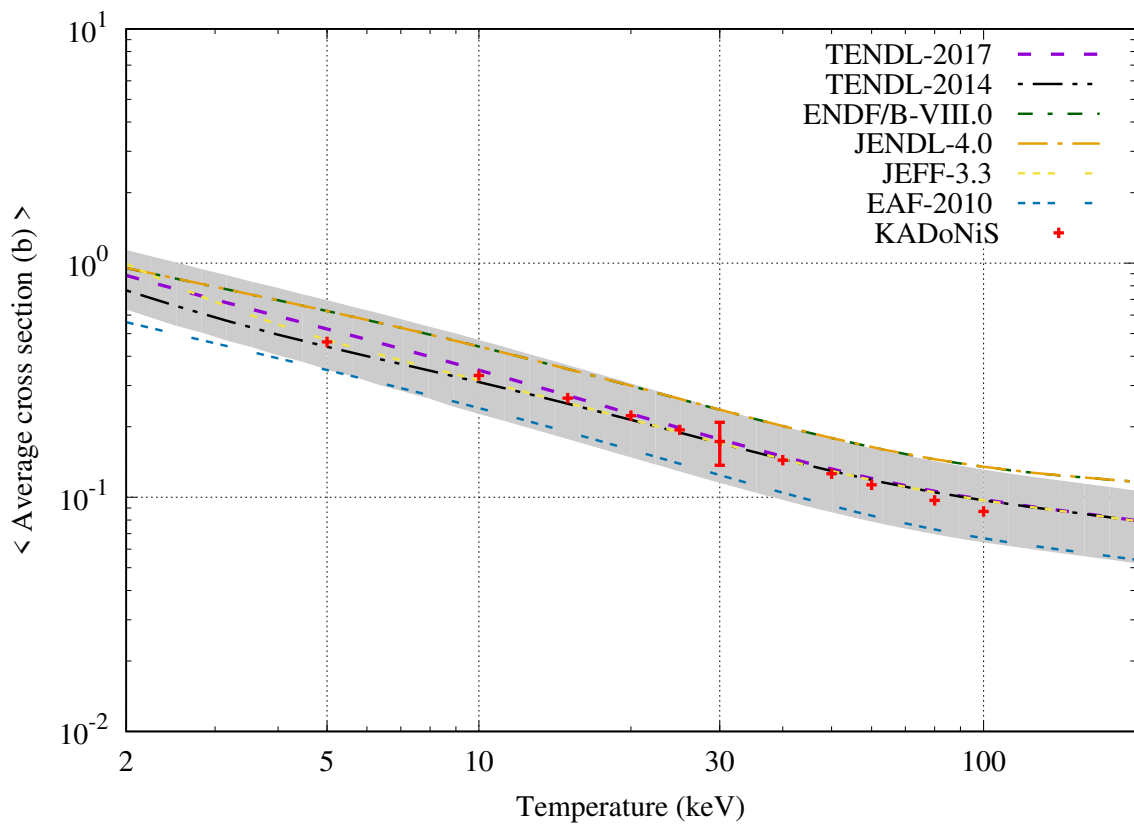
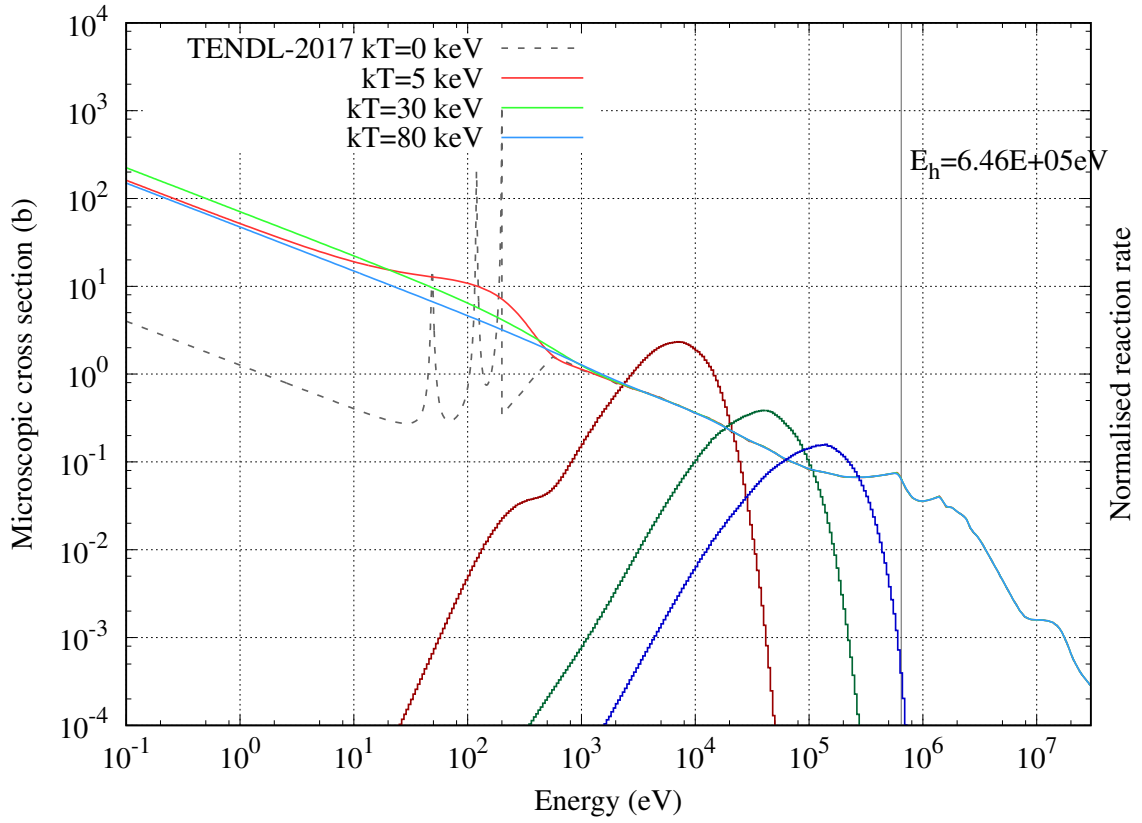
$^{104}\text{Ru}_{44}$ [Stable]



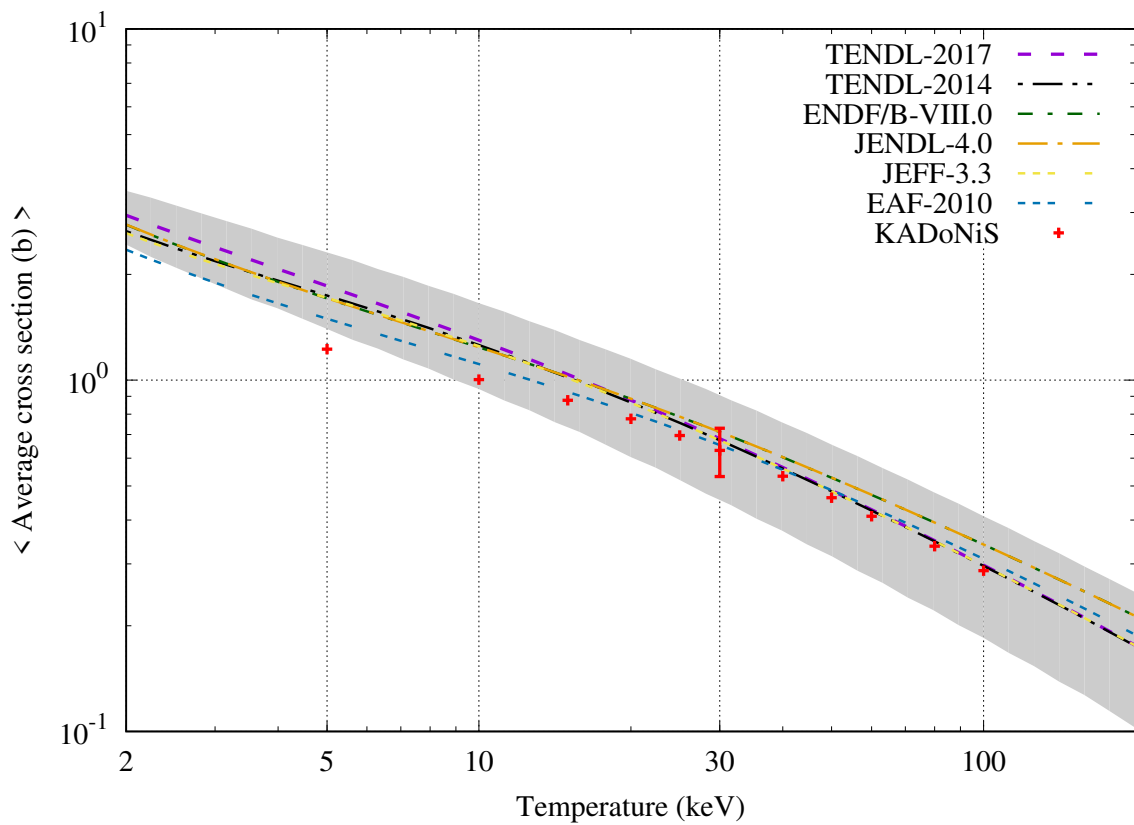
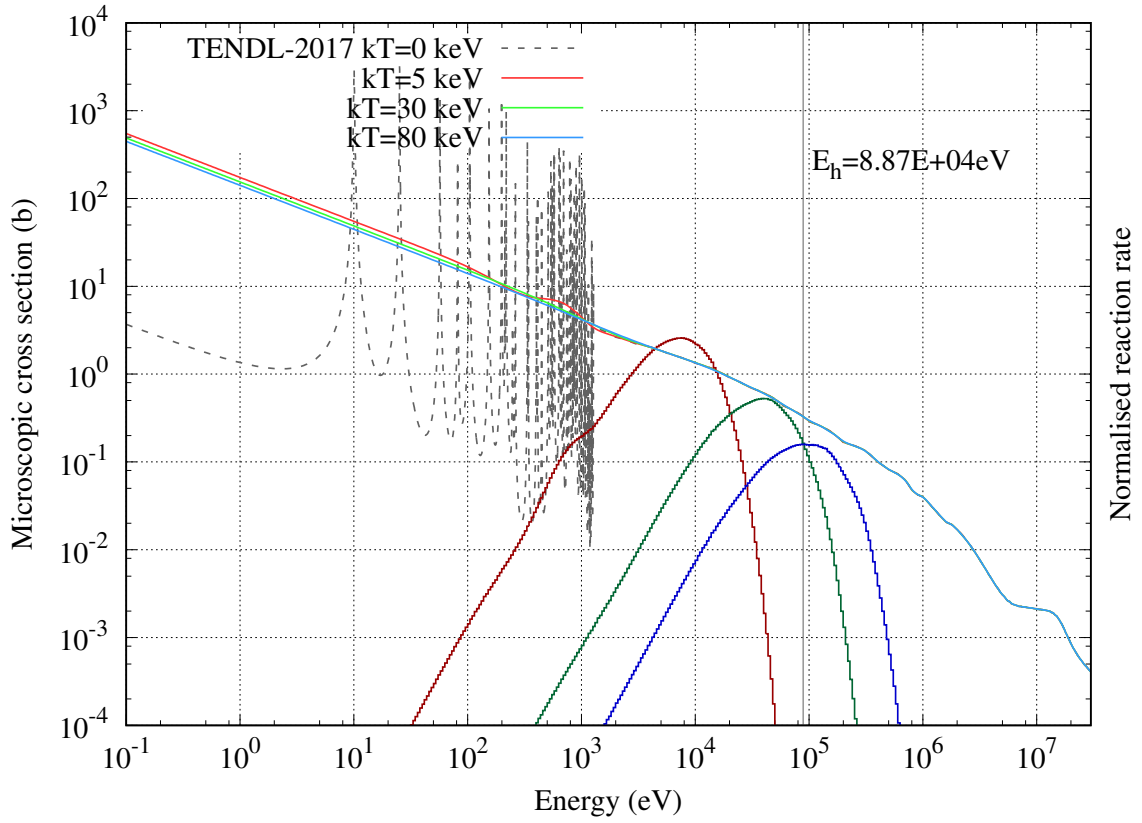
$^{96}\text{Ru}_{44}$ [$T_{1/2} = 6.70 \times 10^{16}$ years]



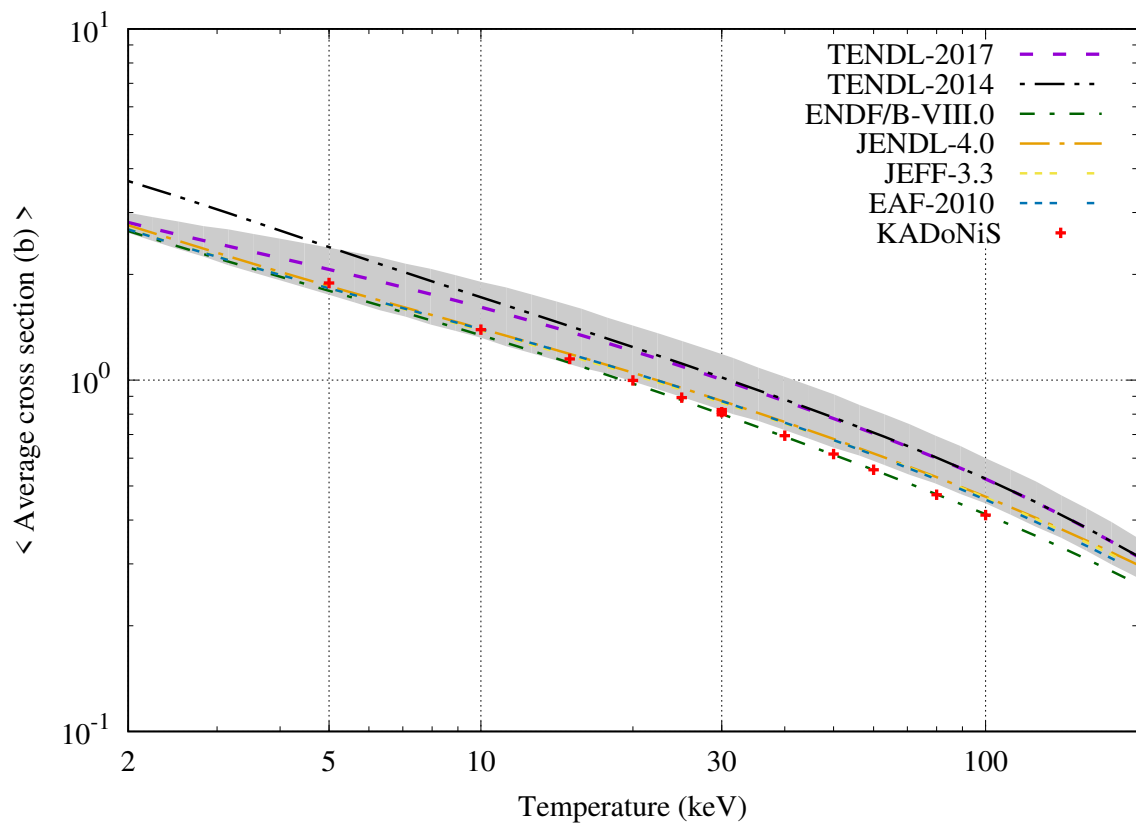
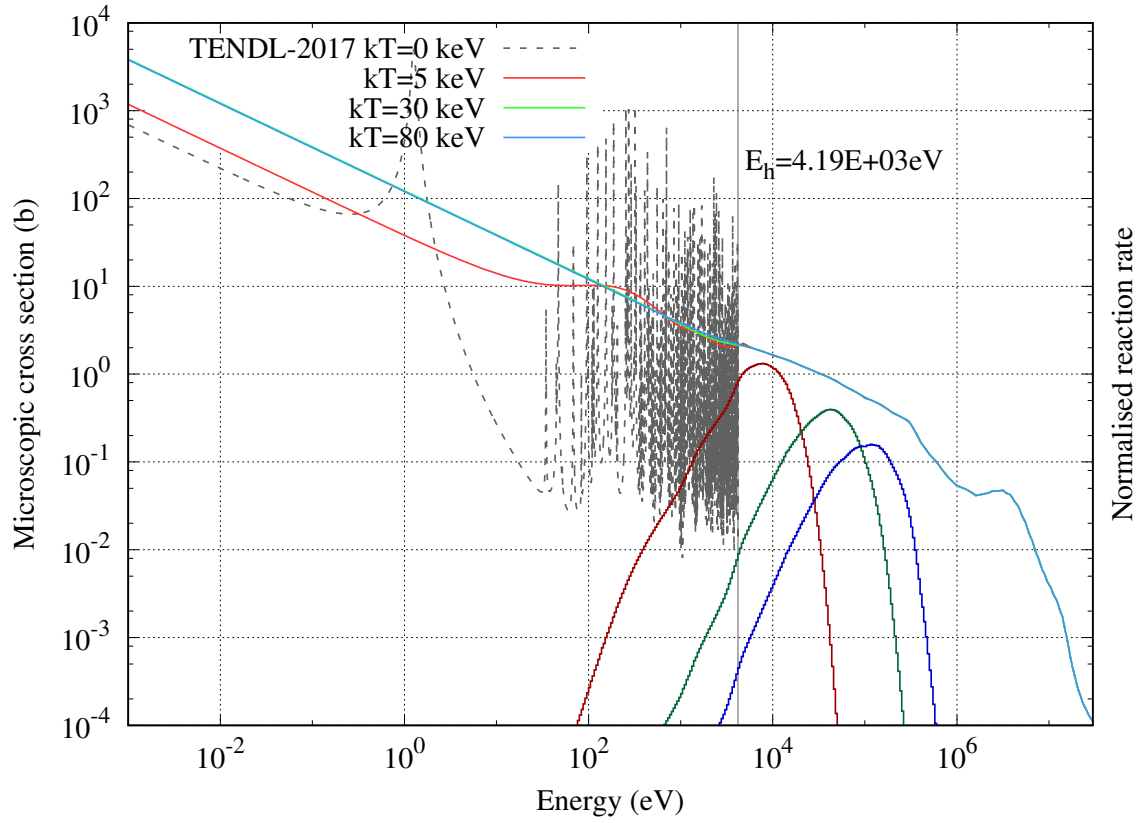
$^{98}\text{Ru}_{44}$ [Stable] (KADoNiS=SMC)



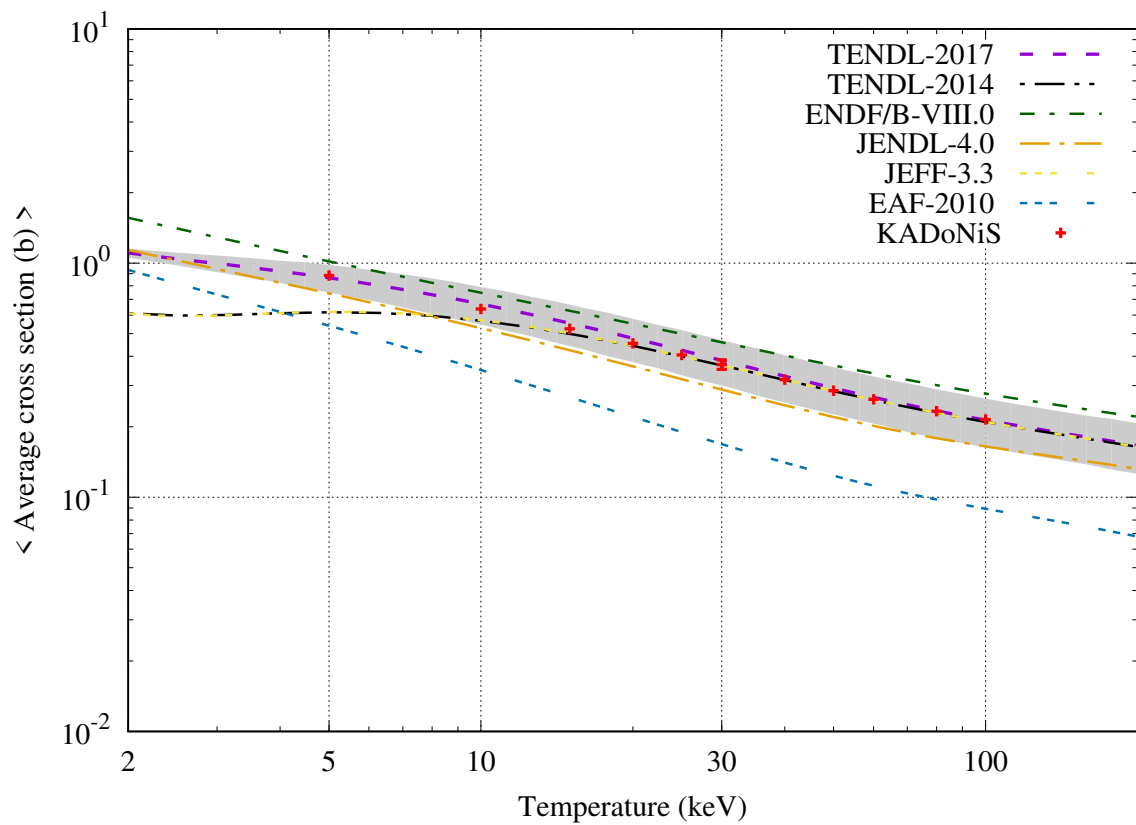
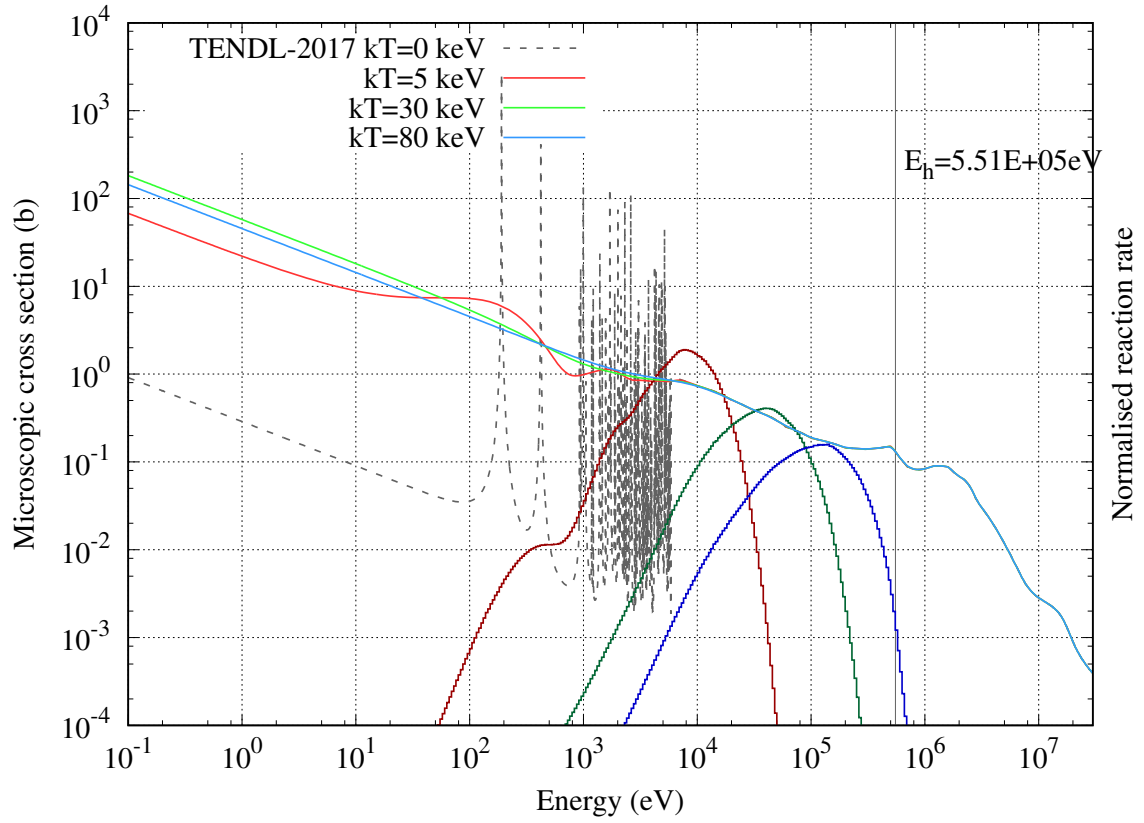
$^{99}\text{Ru}_{44}$ [Stable] (KADoNiS=SMC)



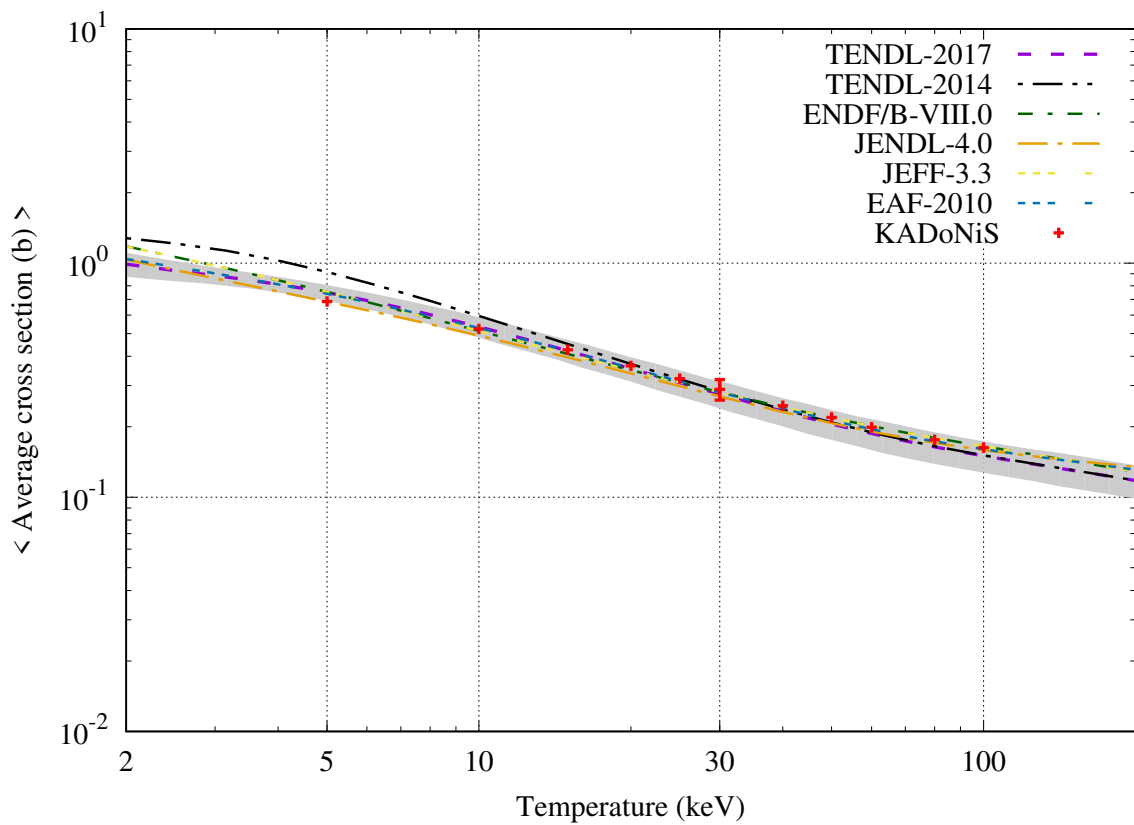
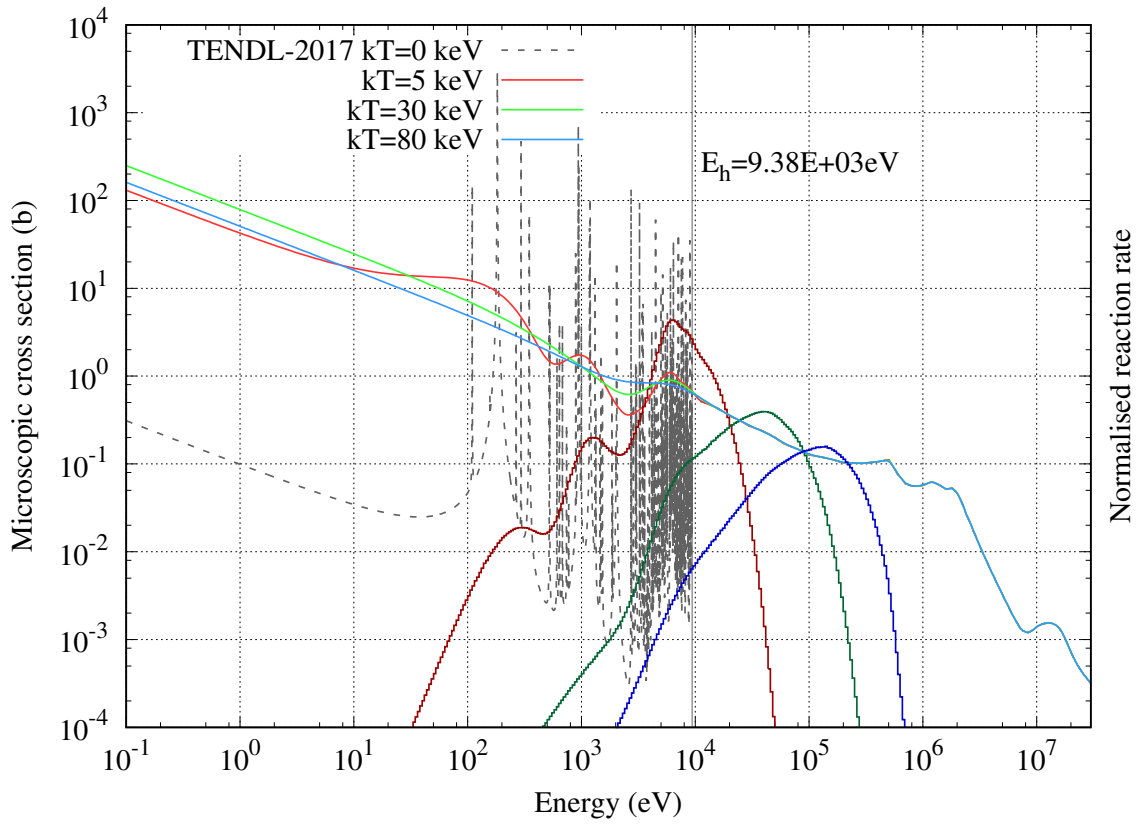
$^{103}\text{Rh}_{45}$ [Stable]



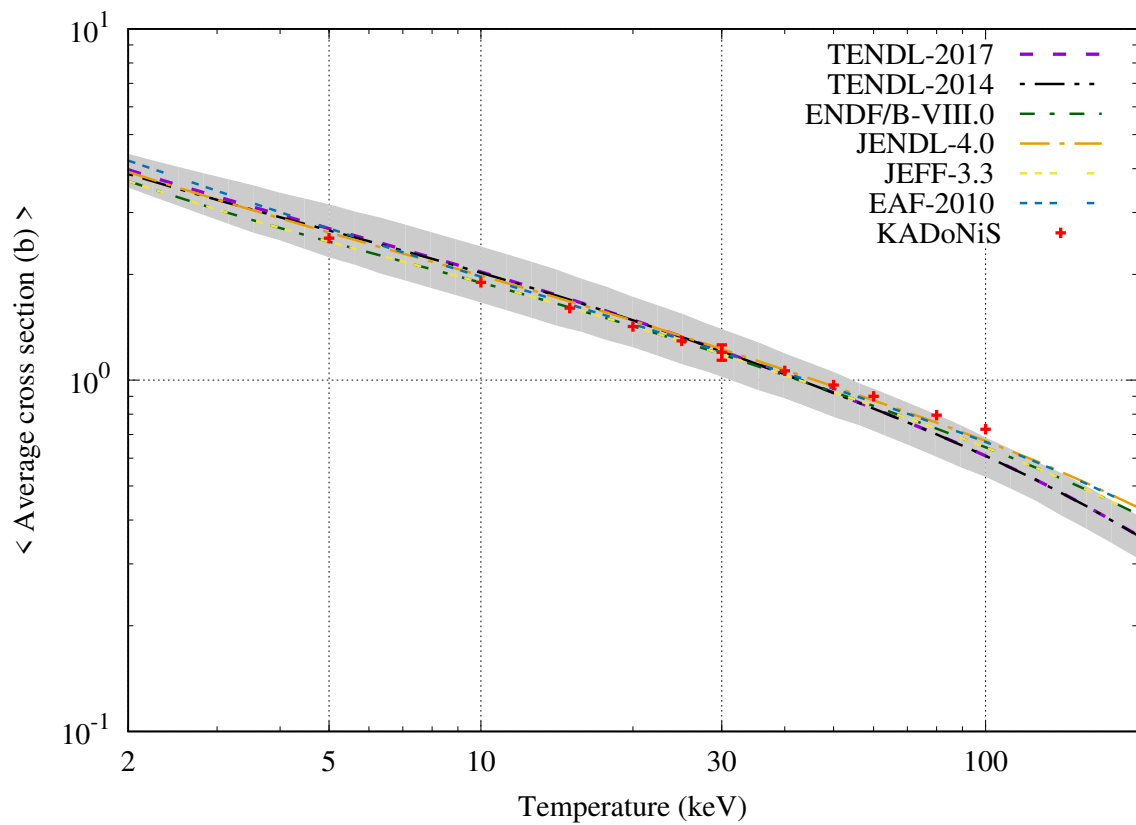
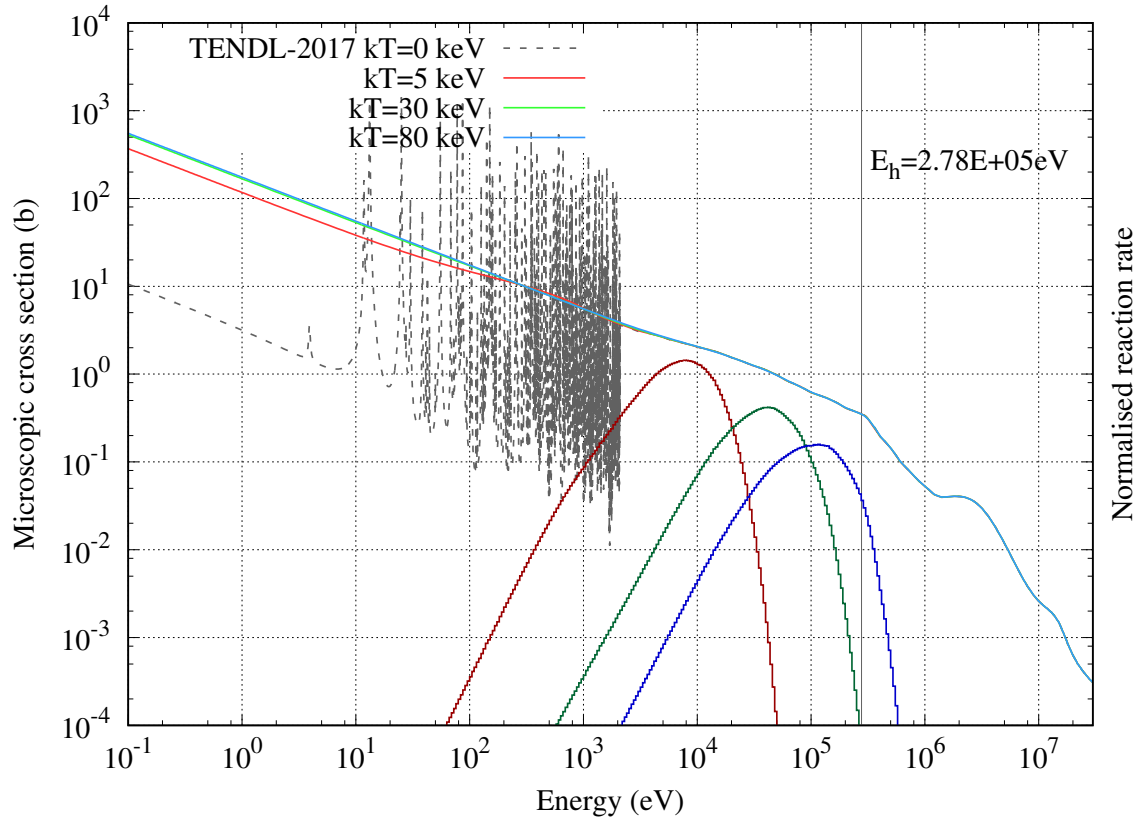
$^{102}\text{Pd}_{46}$ [Stable]



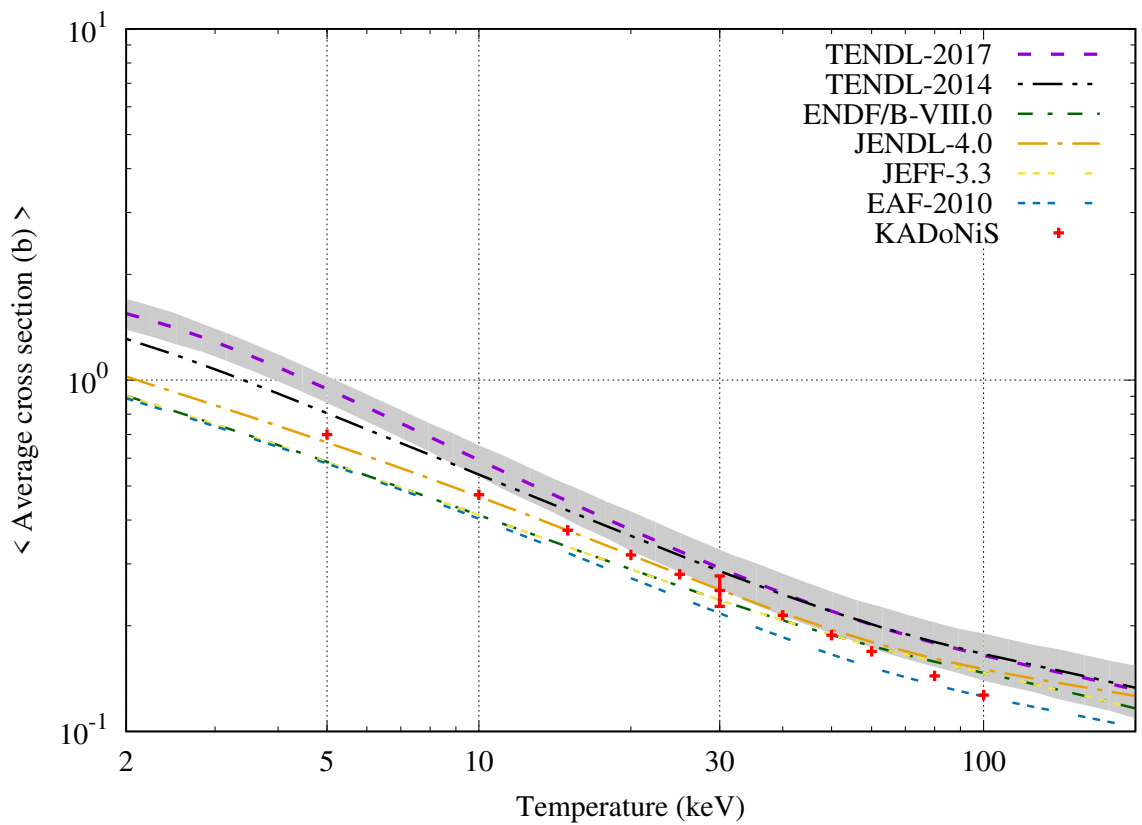
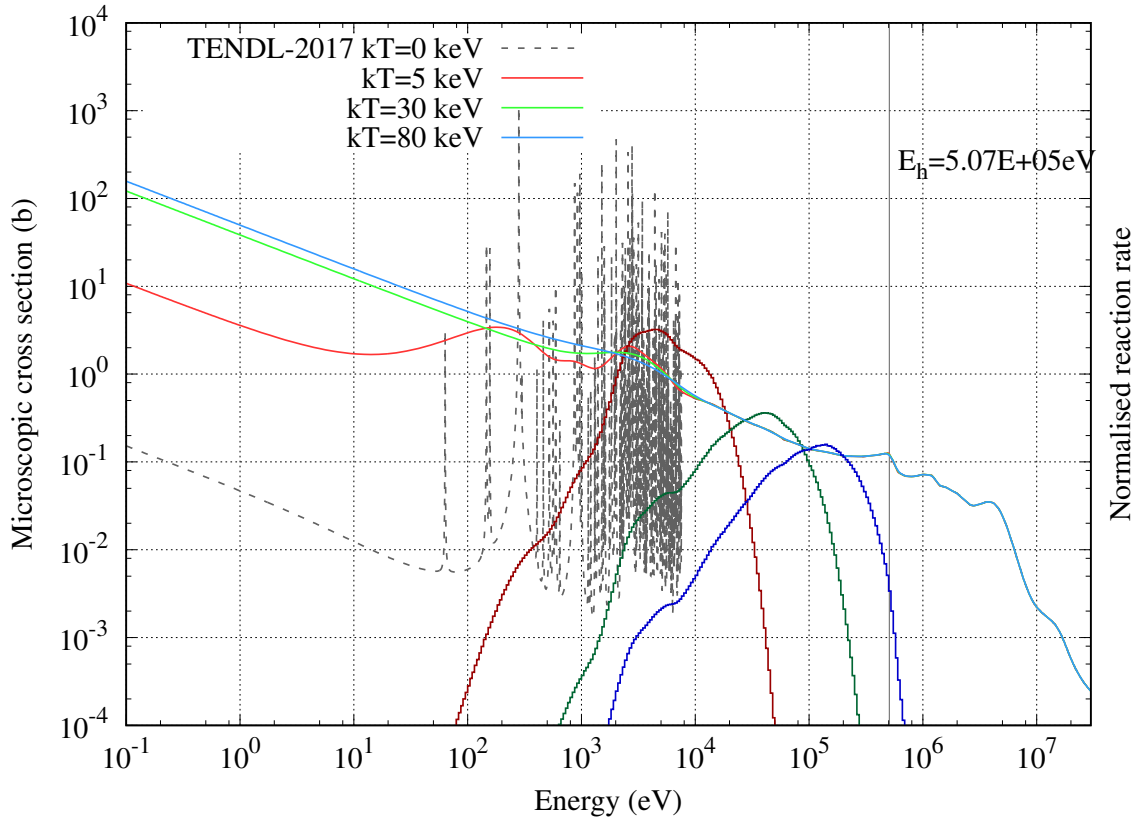
$^{104}\text{Pd}_{46}$ [Stable]



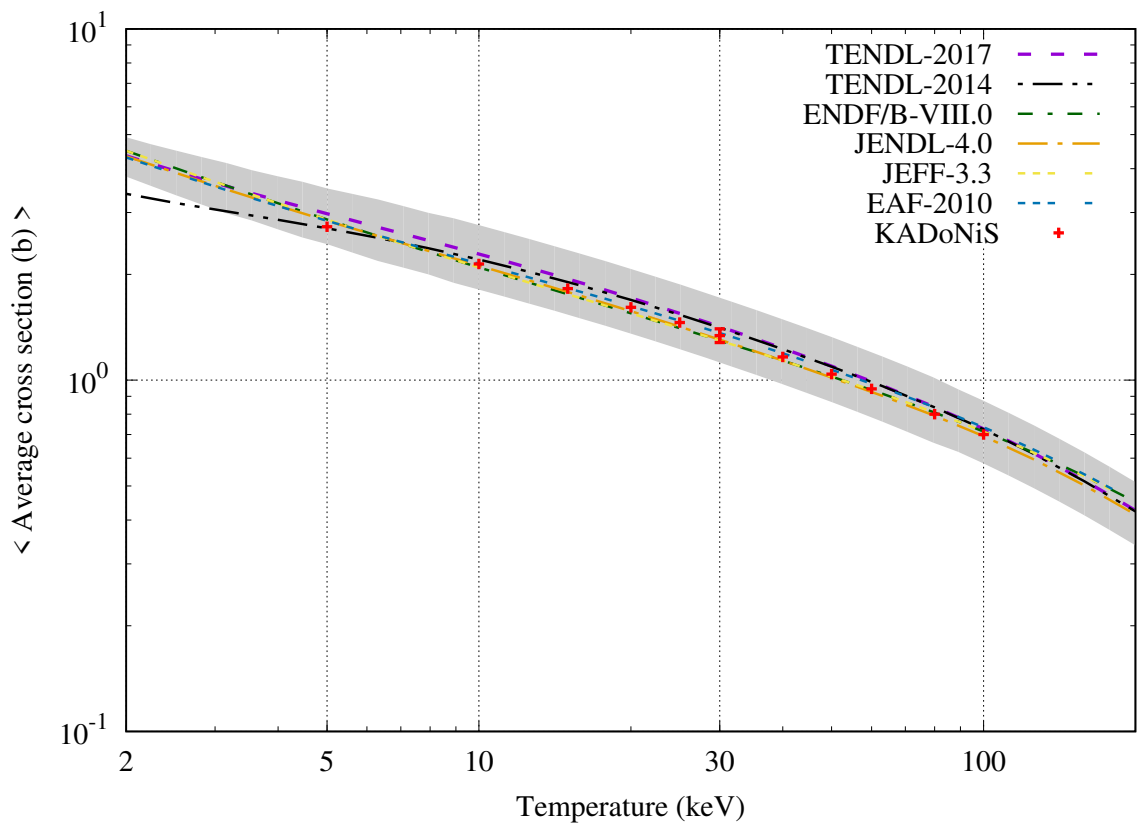
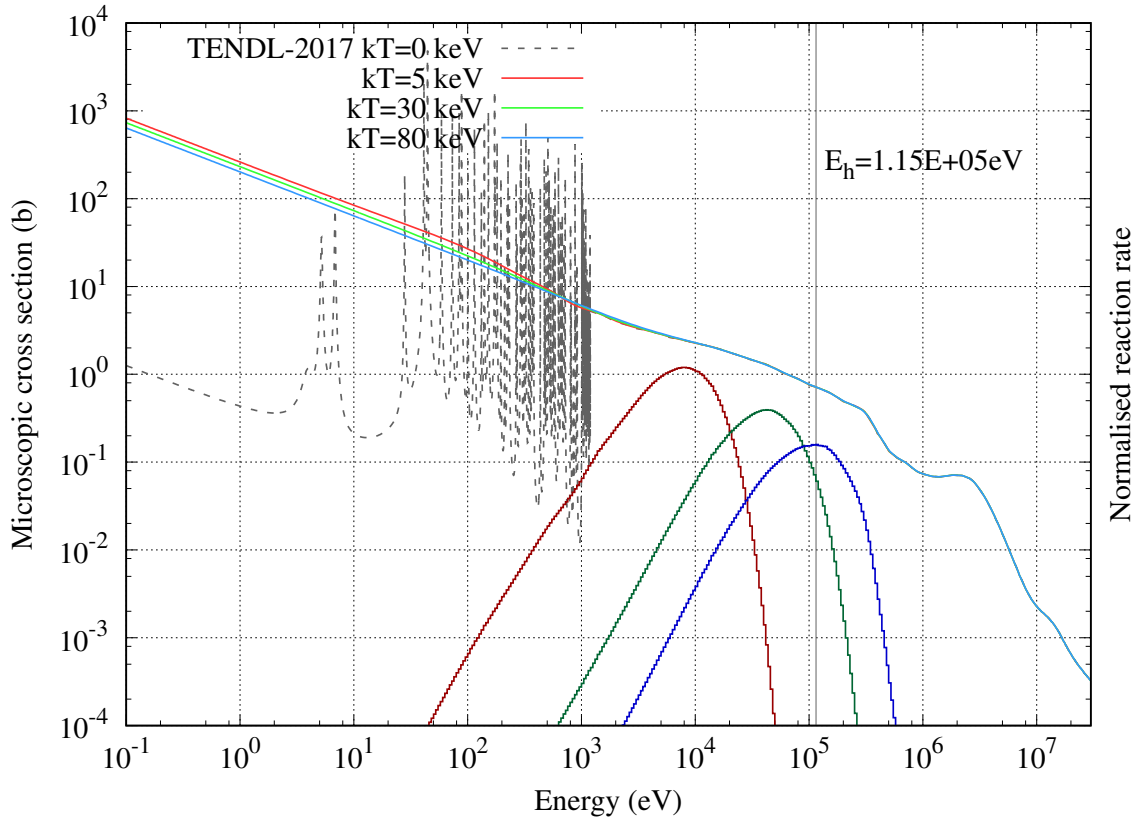
$^{105}\text{Pd}_{46}$ [Stable]



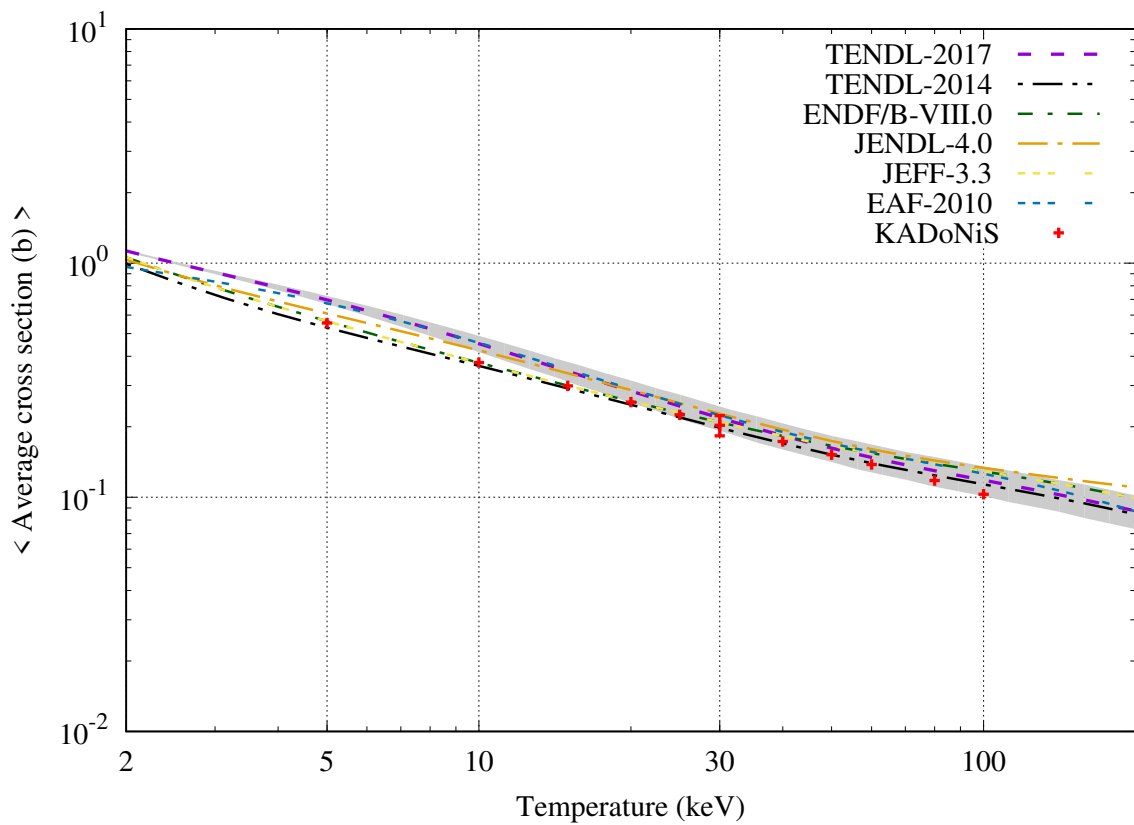
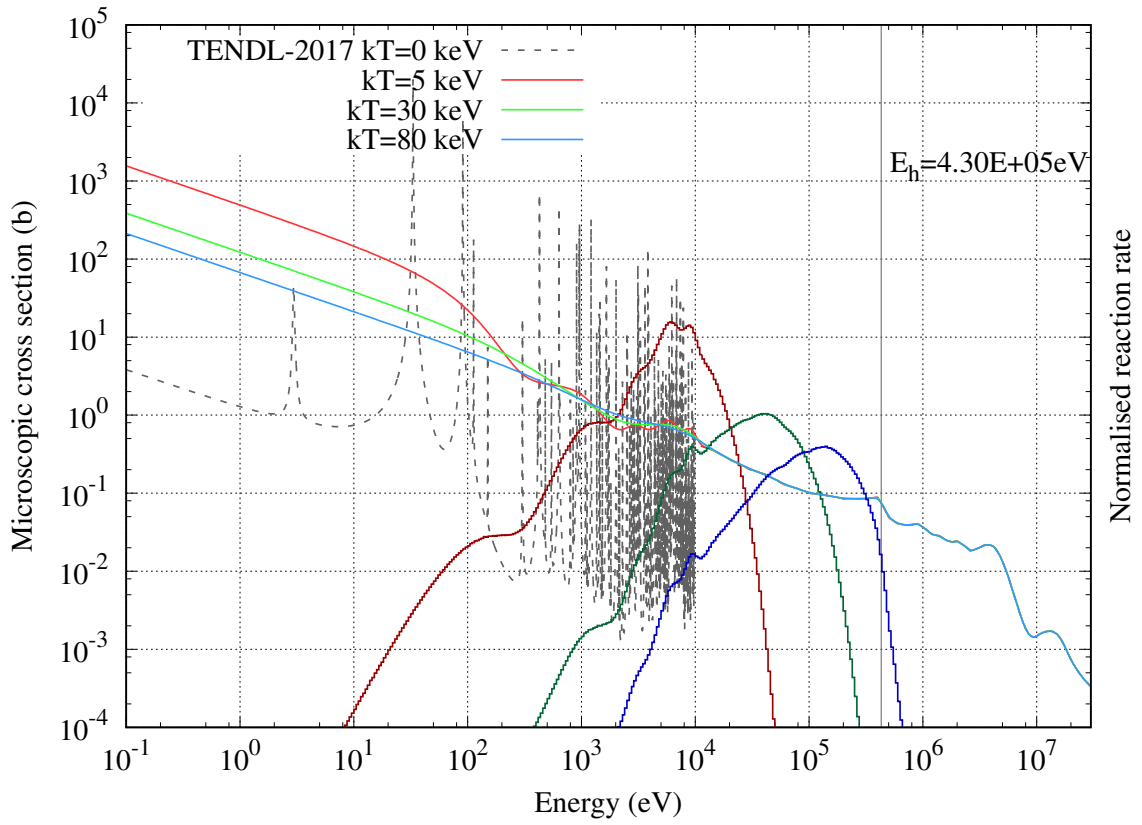
$^{106}\text{Pd}_{46}$ [Stable]



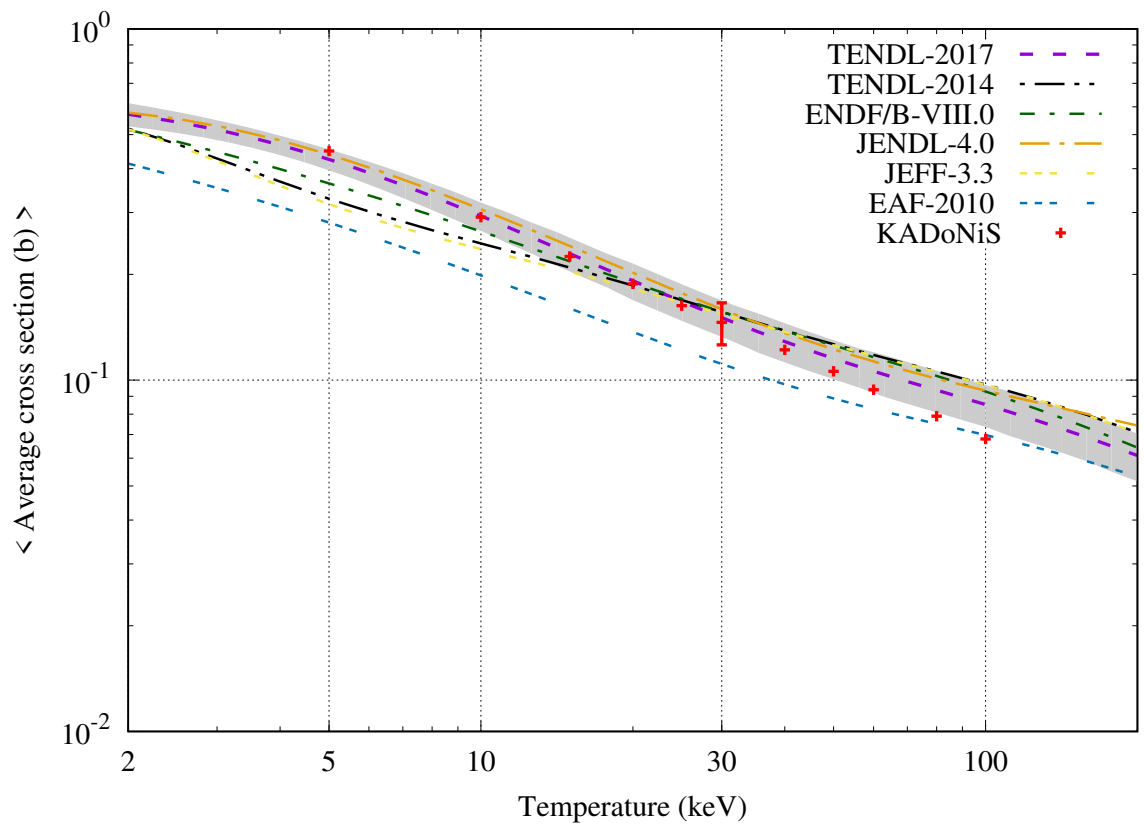
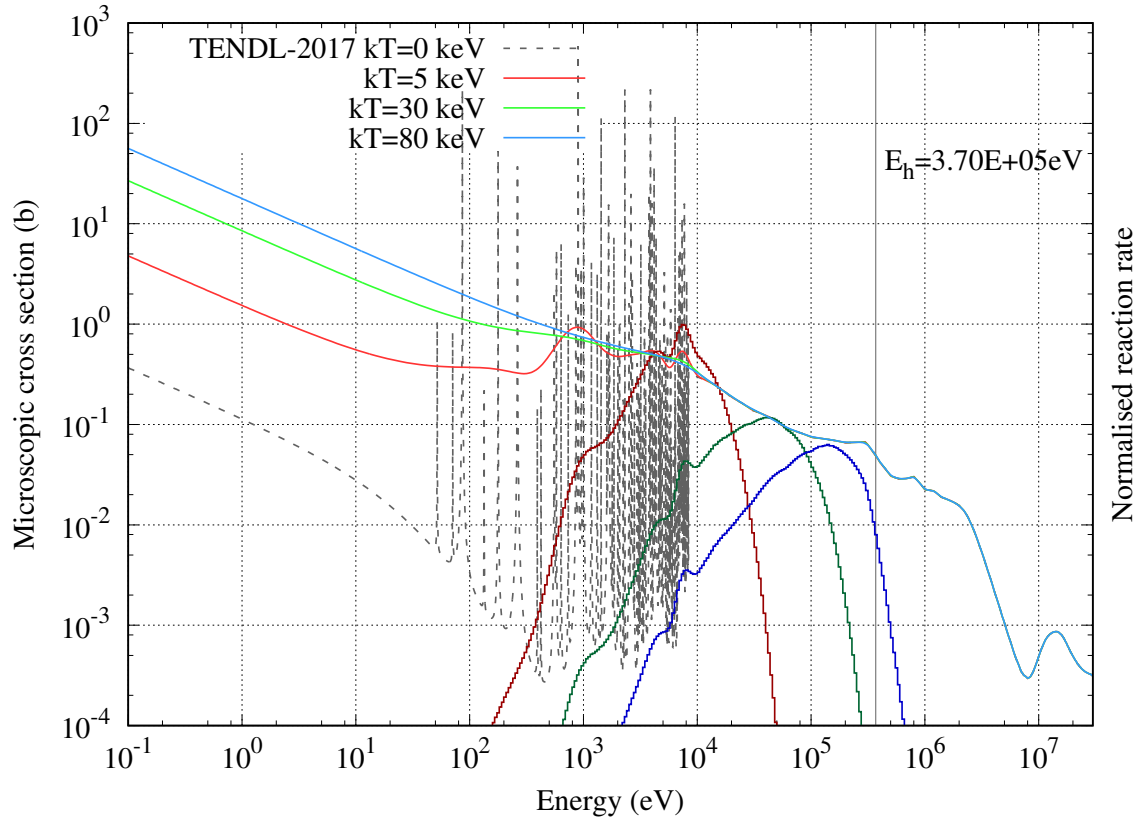
$^{107}\text{Pd}_{46}$ [$T_{1/2} = 6.50 \times 10^6$ years]



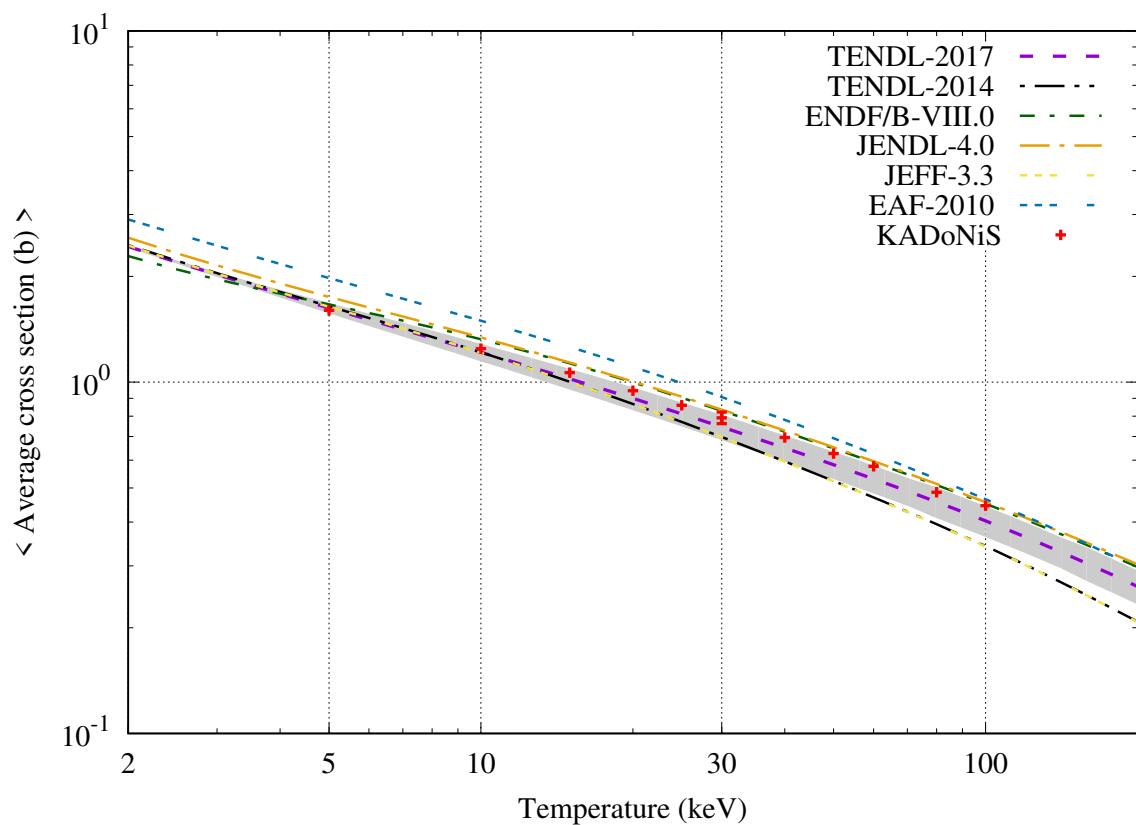
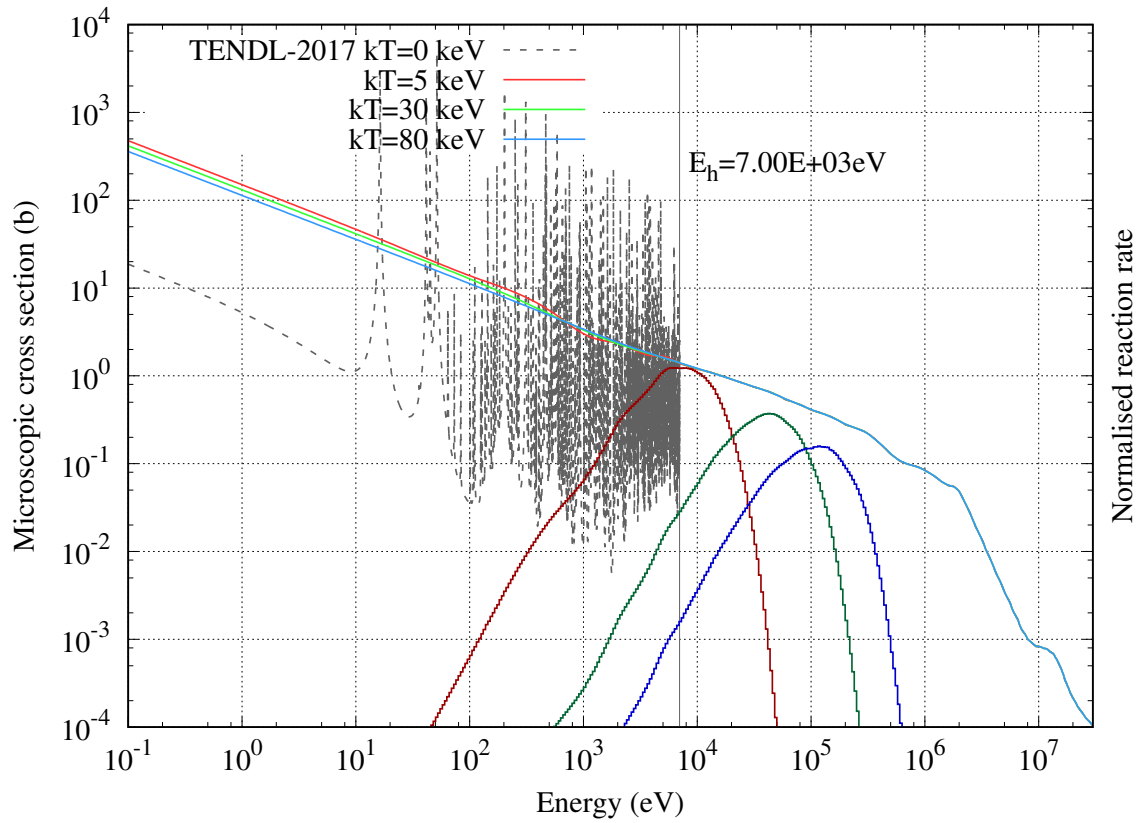
$^{108}\text{Pd}_{46}$ [Stable]



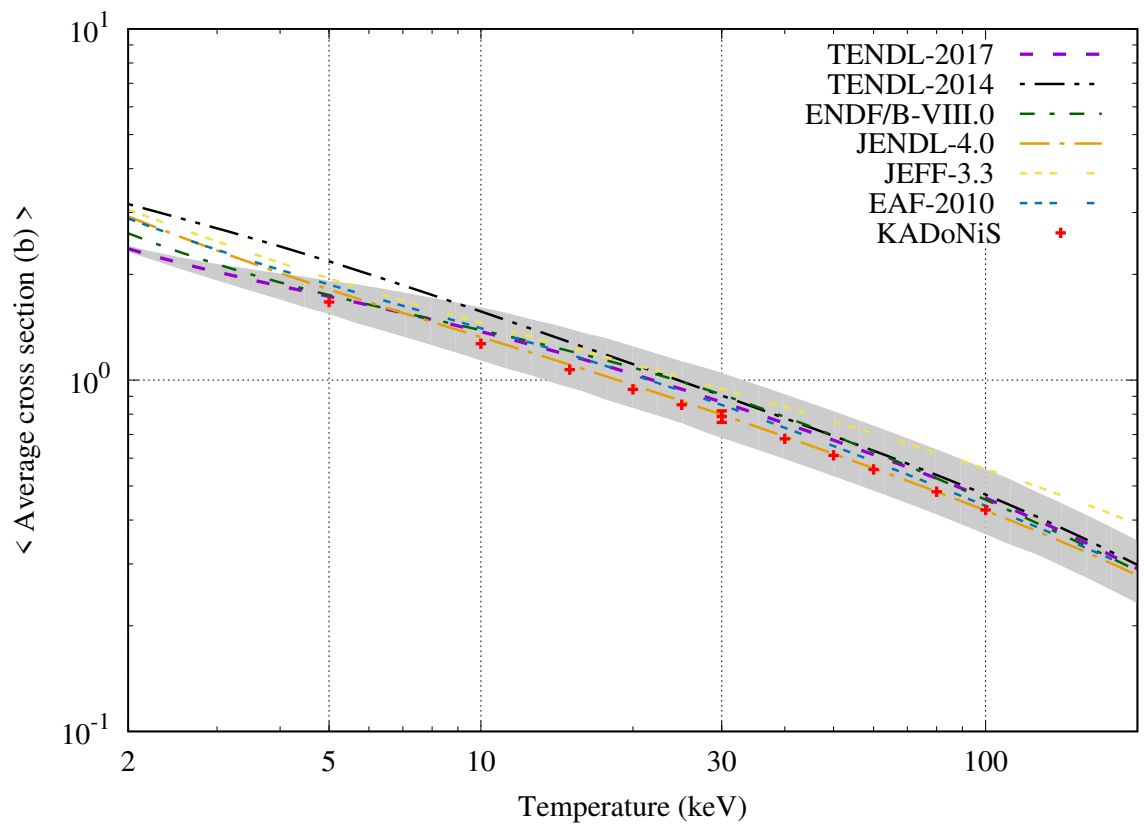
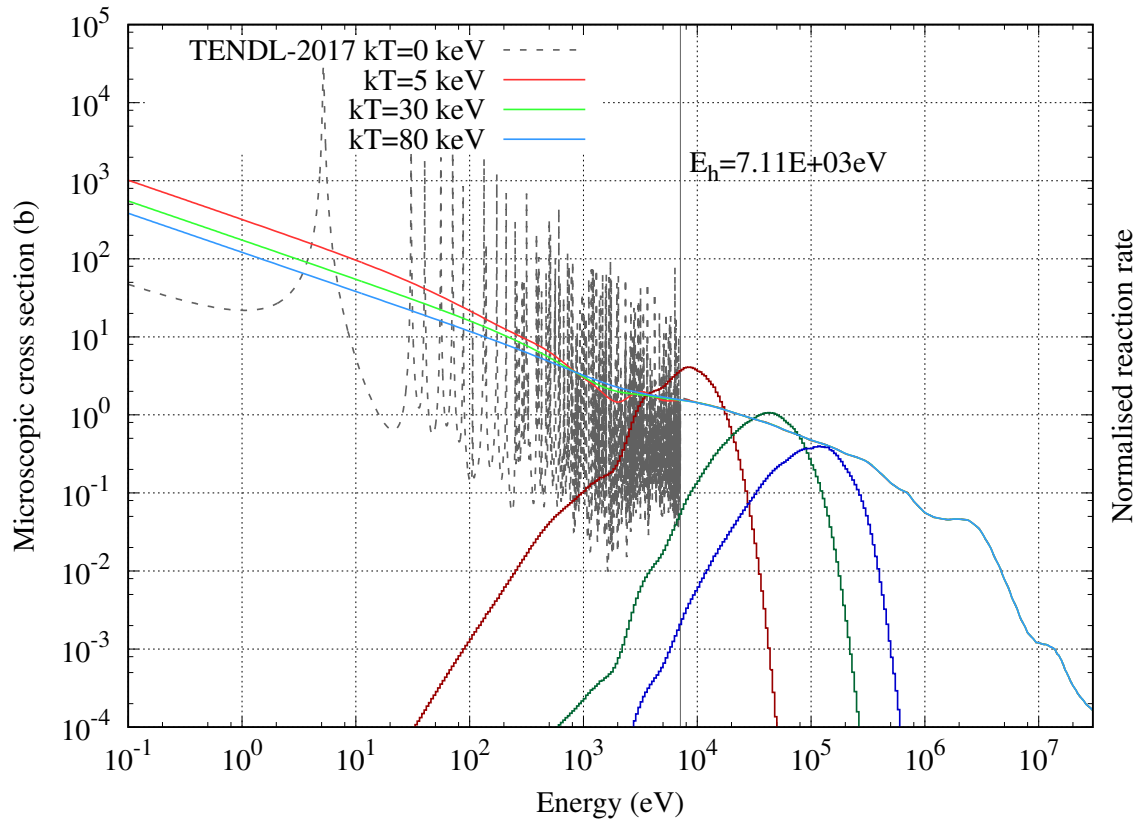
$^{110}\text{Pd}_{46}$ [$T_{1/2} = 6.00 \times 10^{17}$ years]



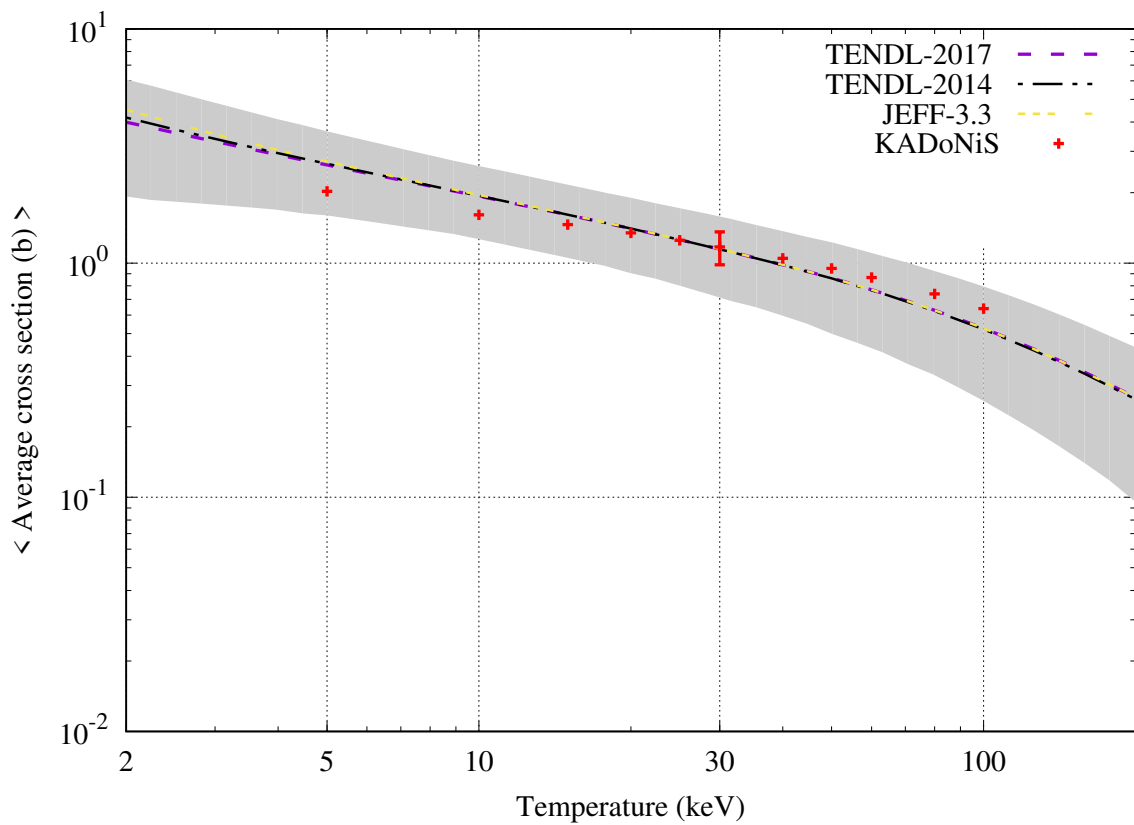
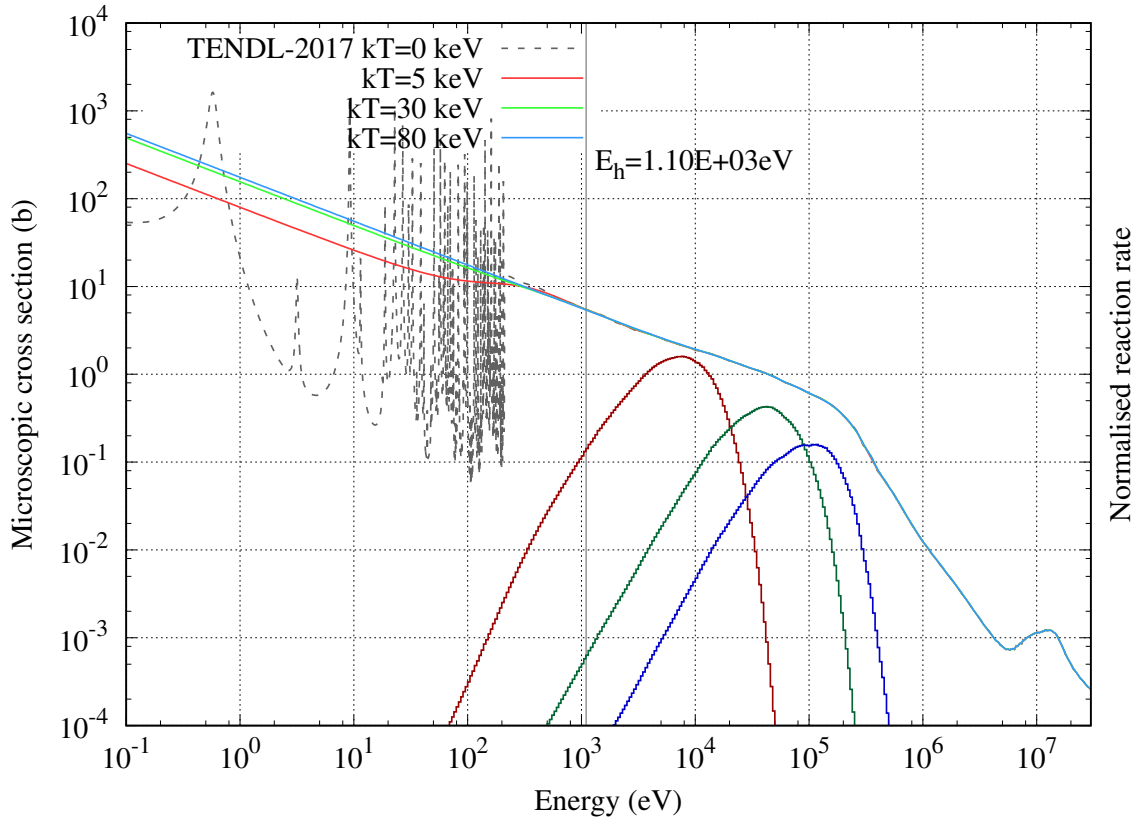
$^{107}\text{Ag}_{47}$ [Stable]



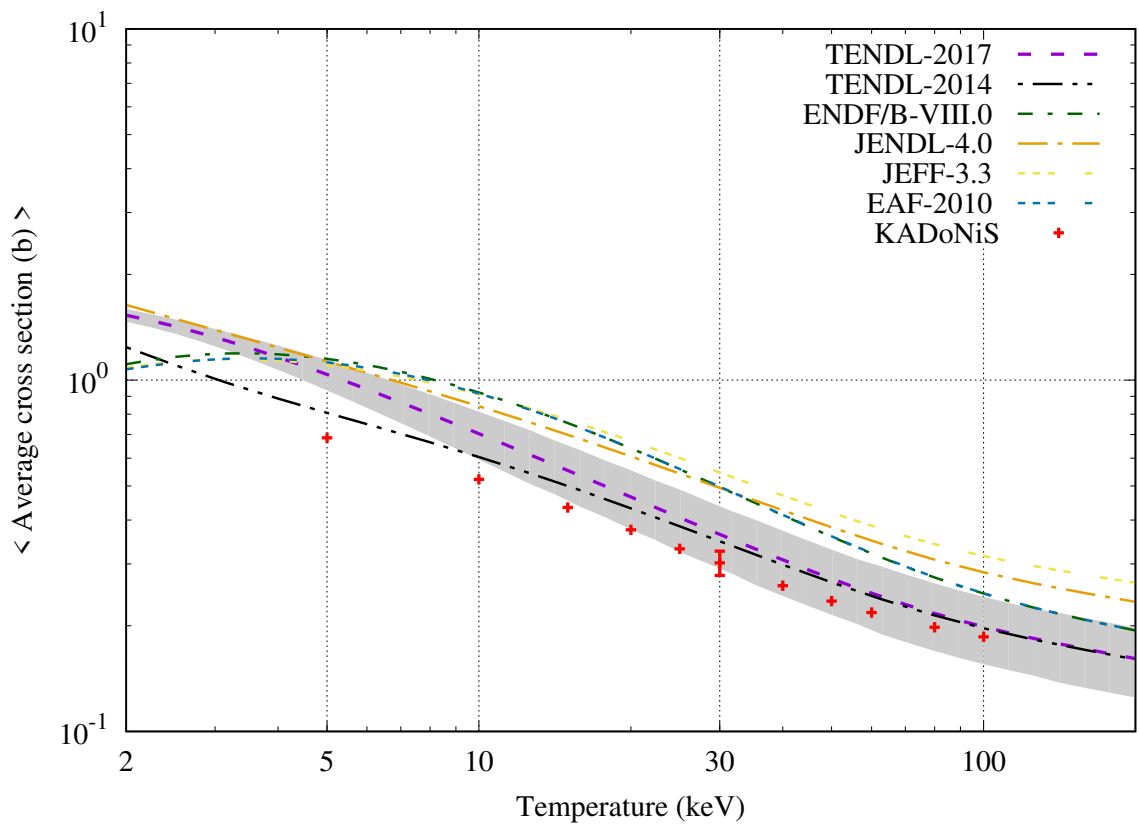
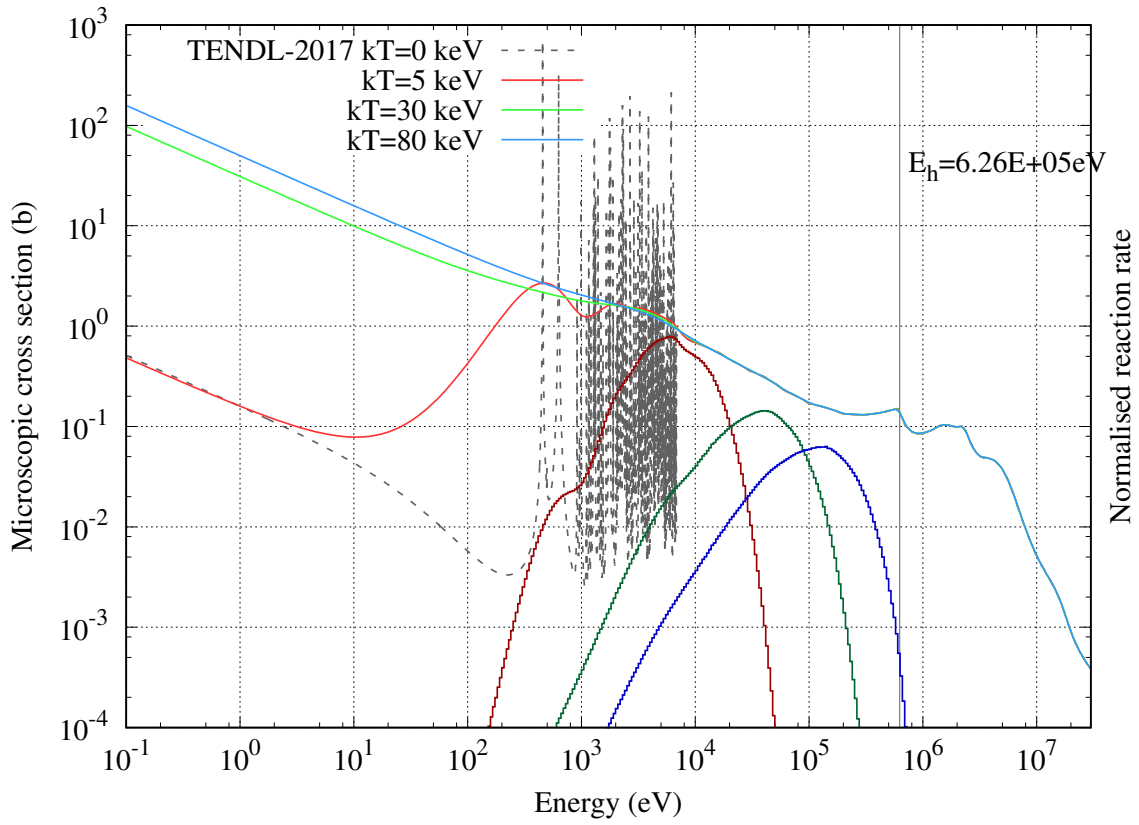
$^{109}\text{Ag}_{47}$ [Stable]



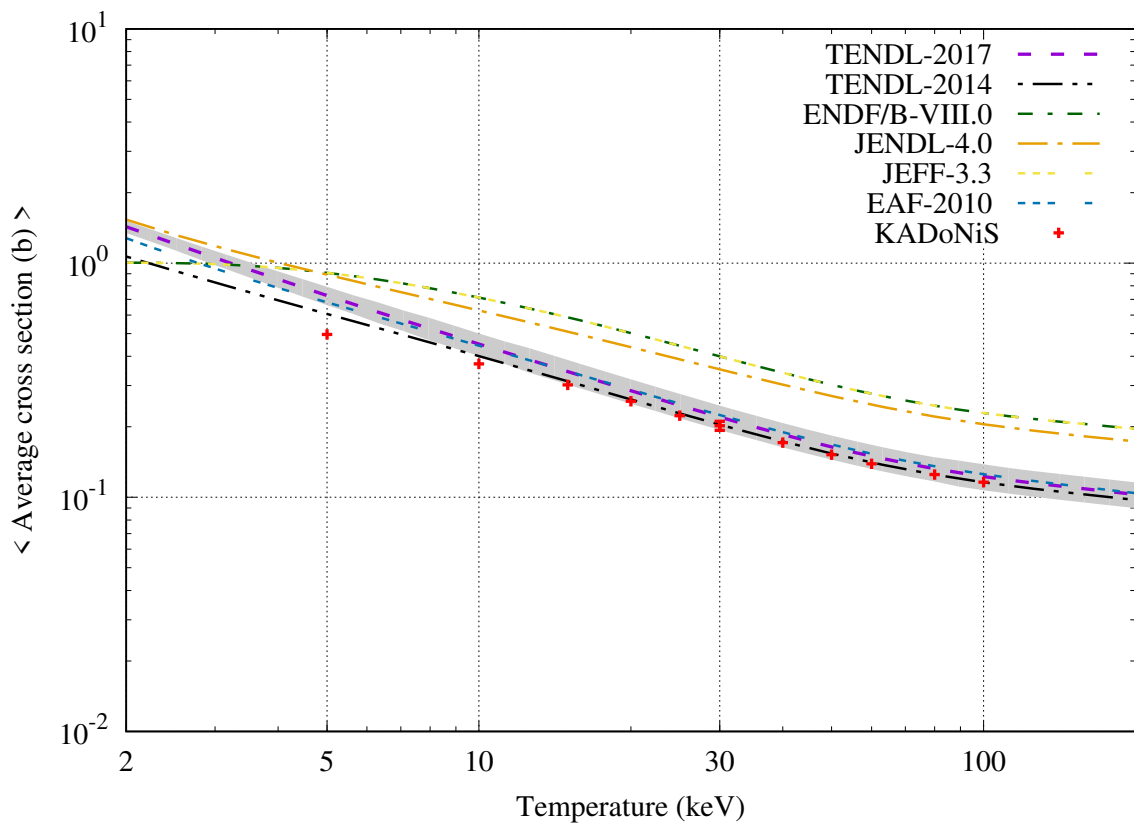
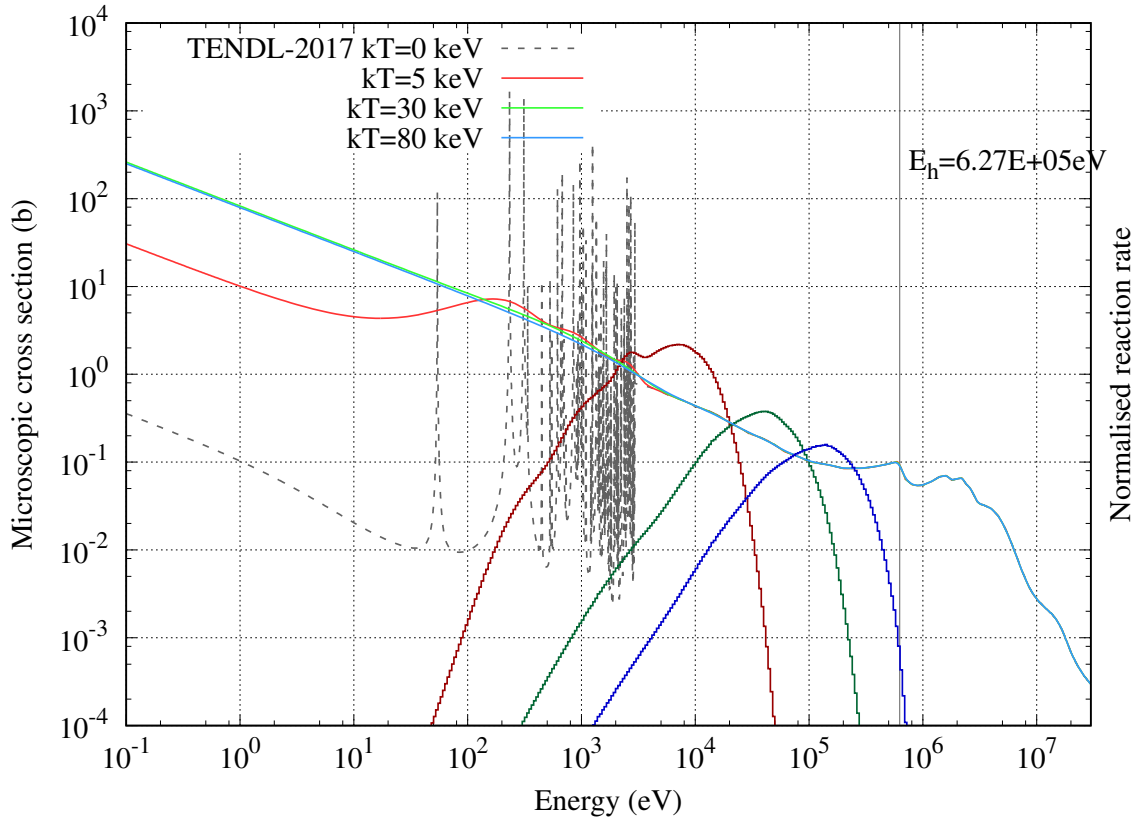
$^{110}\text{Ag}_{47}$ [$T_{1/2} = 24.56$ seconds] (KADoNiS=SMC)



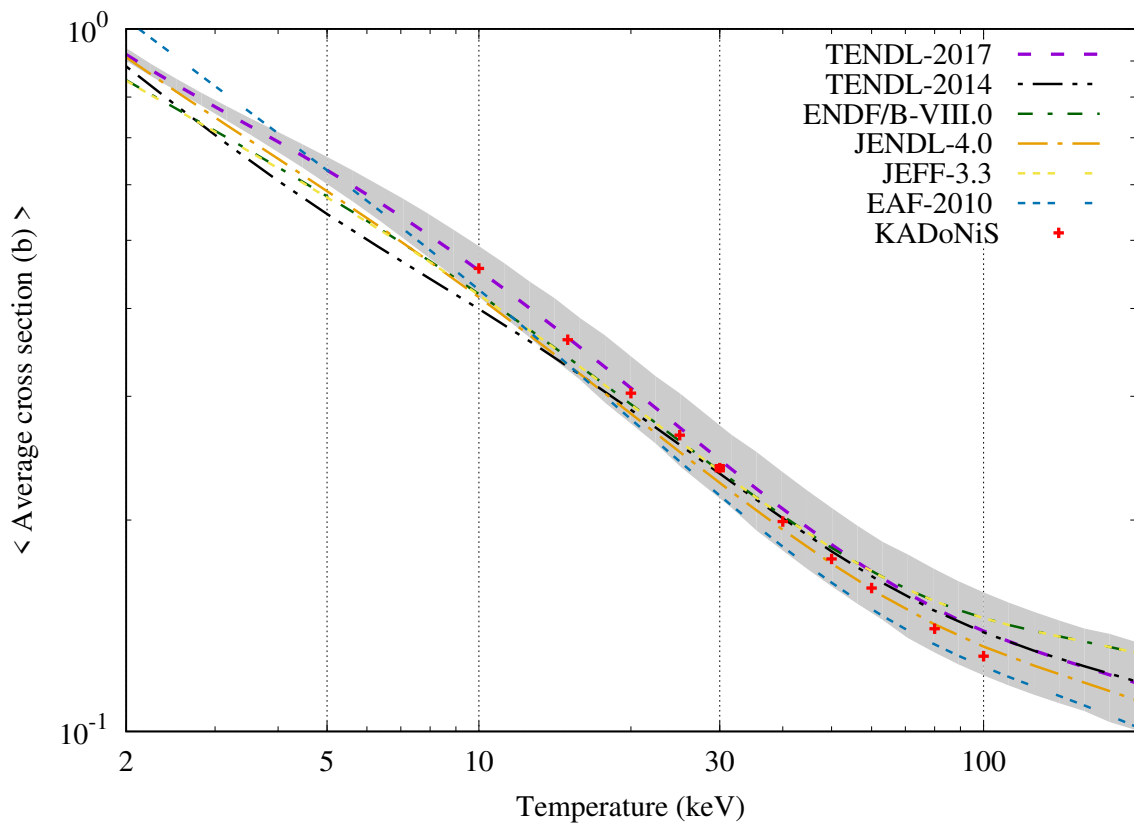
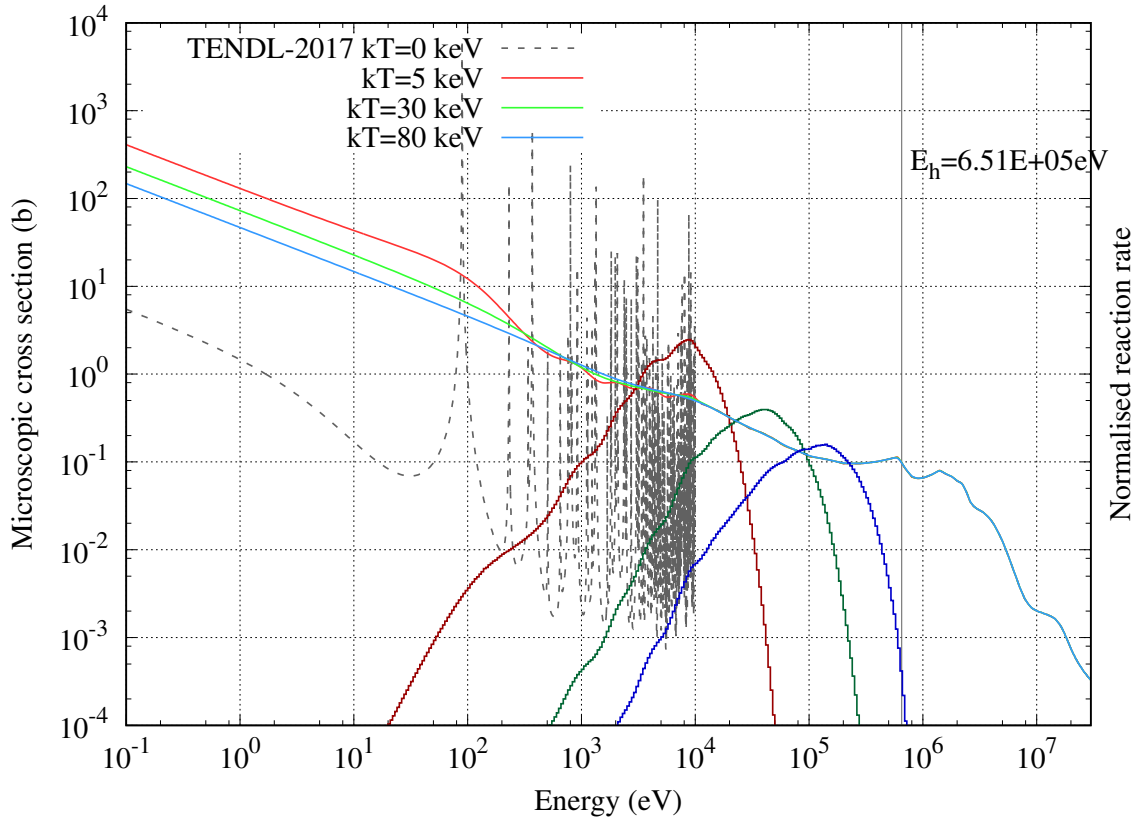
$^{106}\text{Cd}_{48}$ [$T_{1/2} = 6.60 \times 10^{18}$ years]



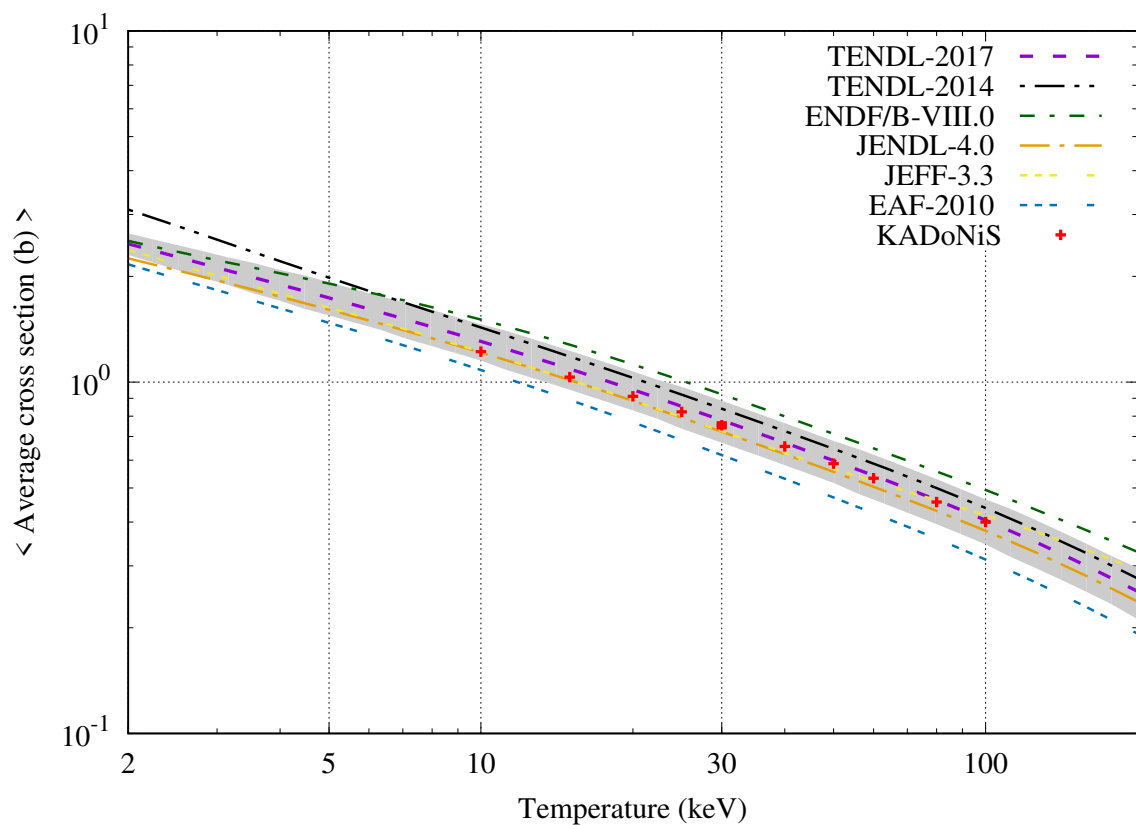
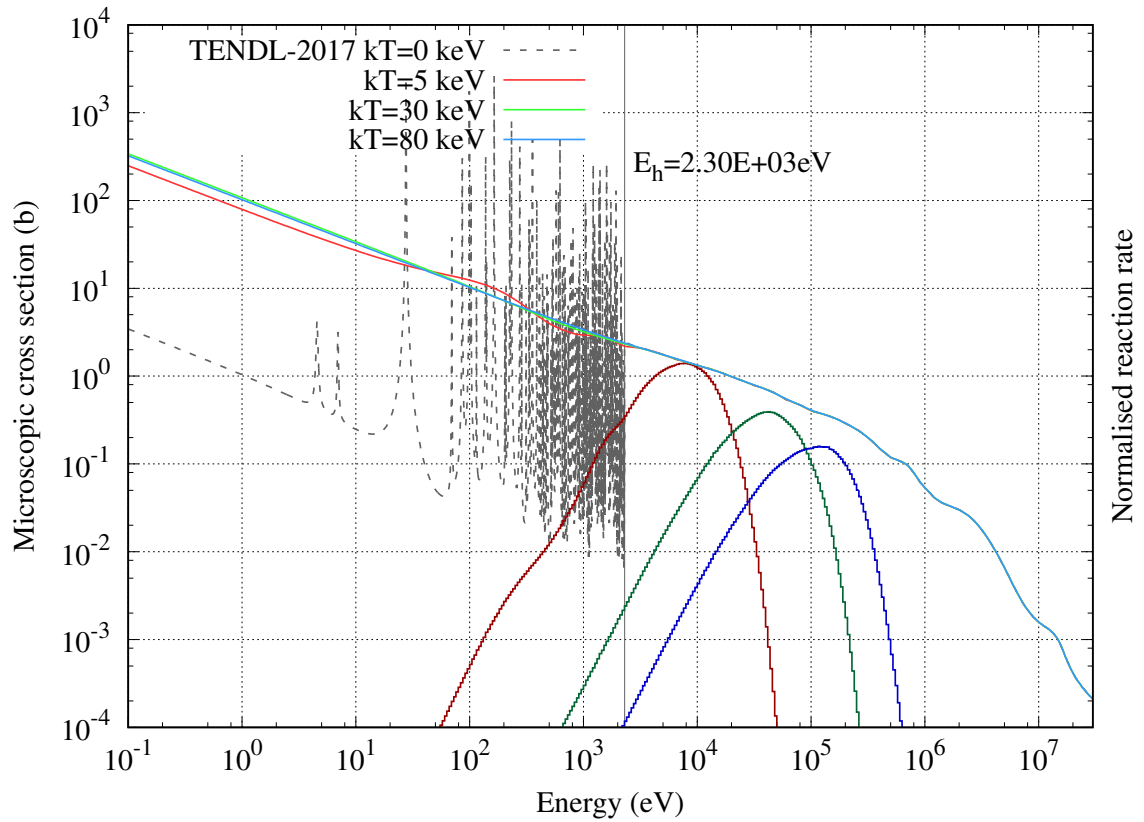
$^{108}\text{Cd}_{48}$ [$T_{1/2} = 4.10 \times 10^{17}$ years]



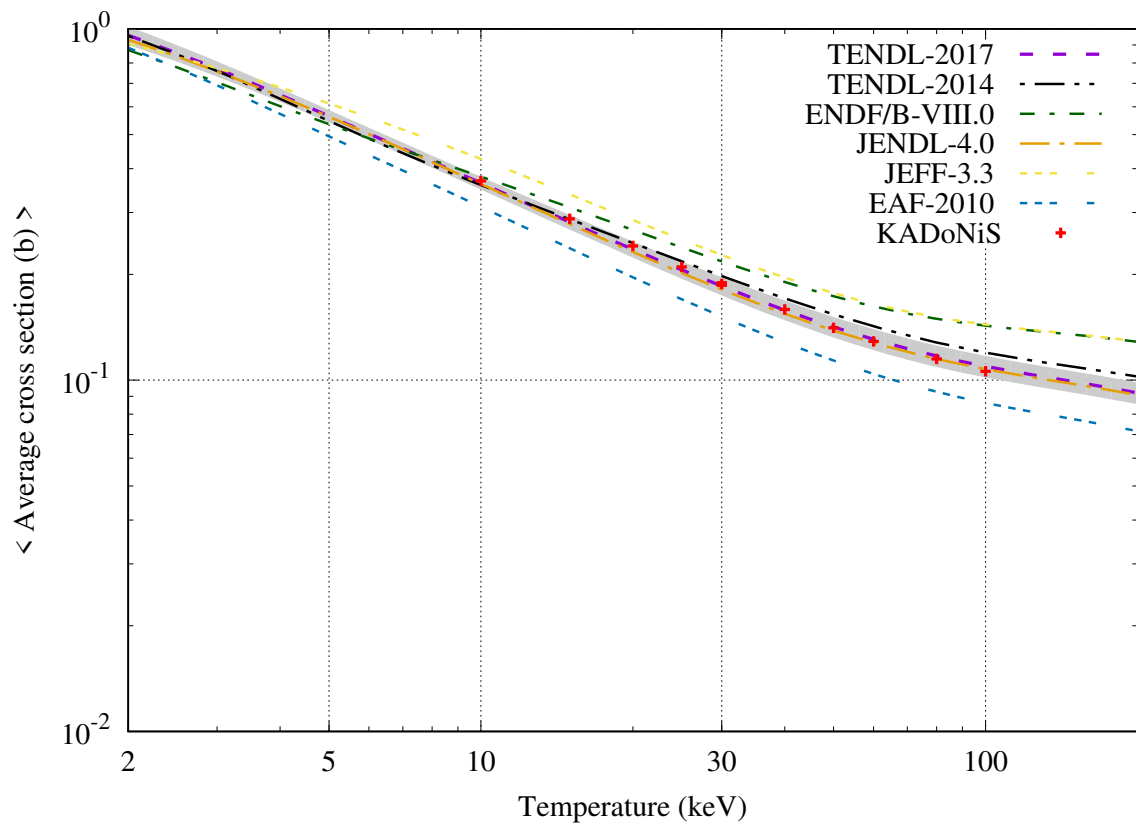
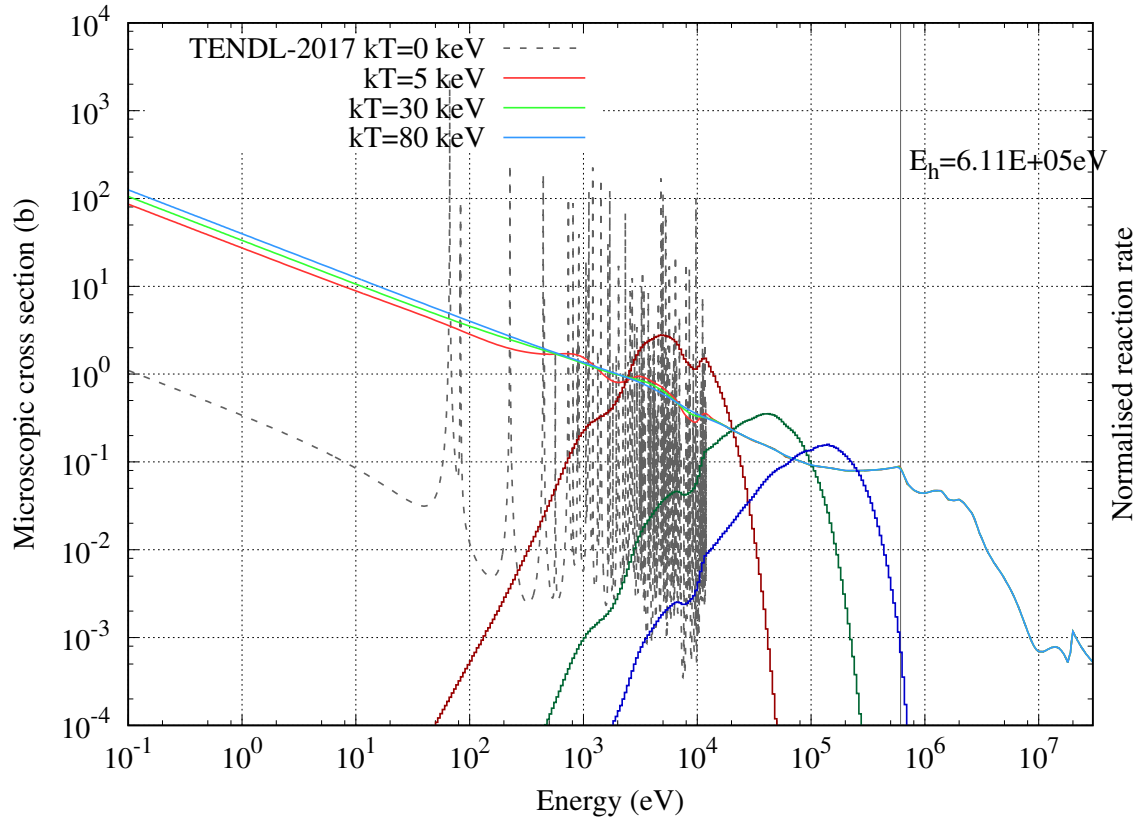
$^{110}\text{Cd}_{48}$ [Stable]



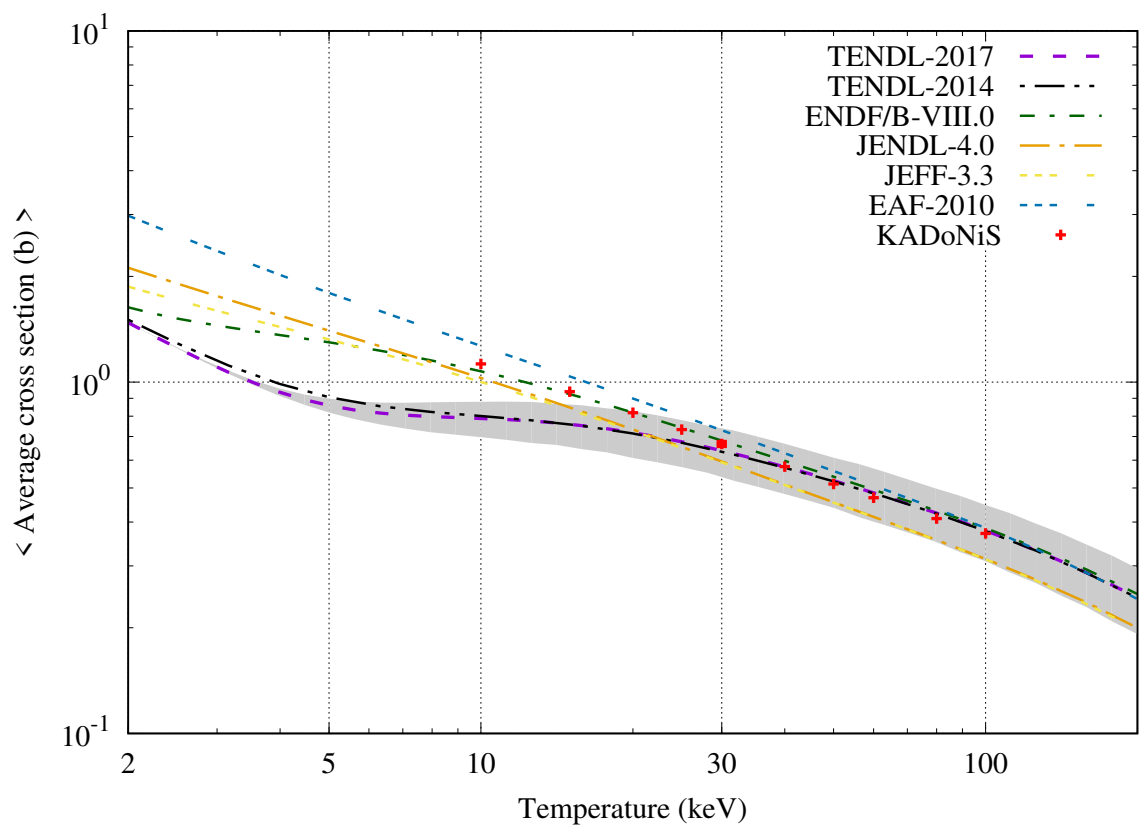
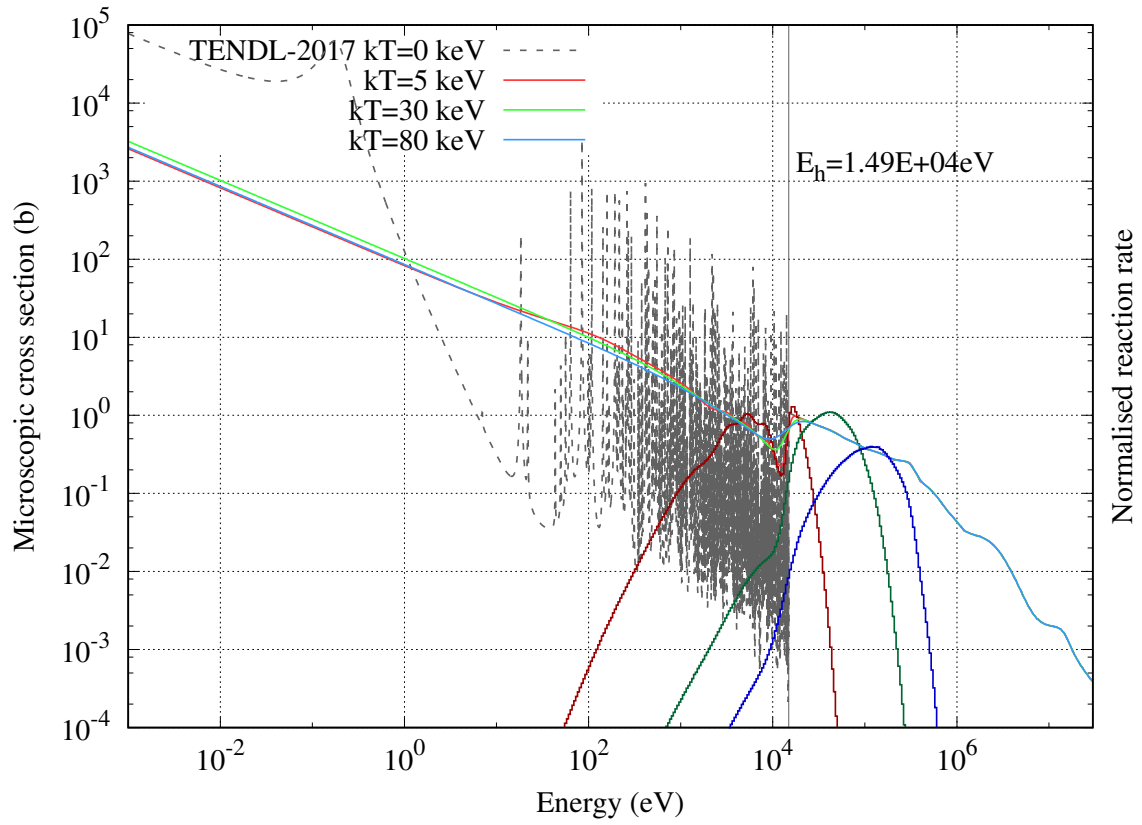
$^{111}\text{Cd}_{48}$ [Stable]



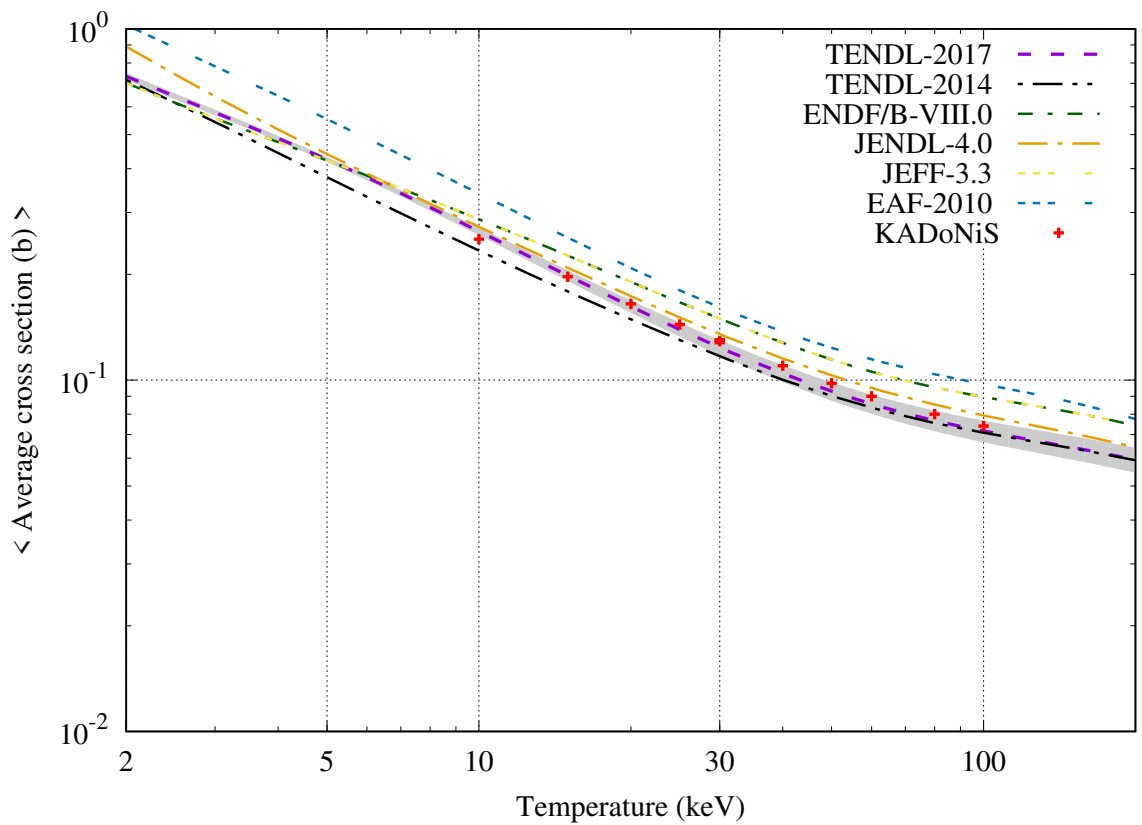
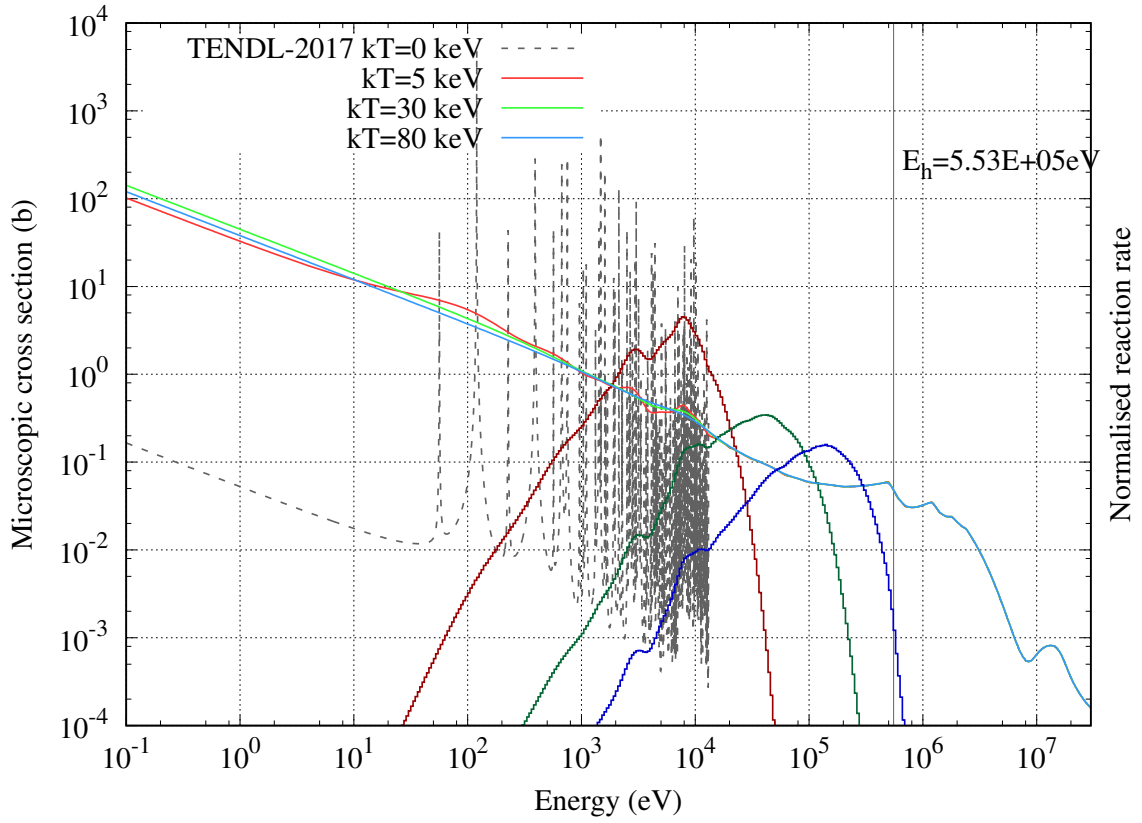
$^{112}\text{Cd}_{48}$ [Stable]



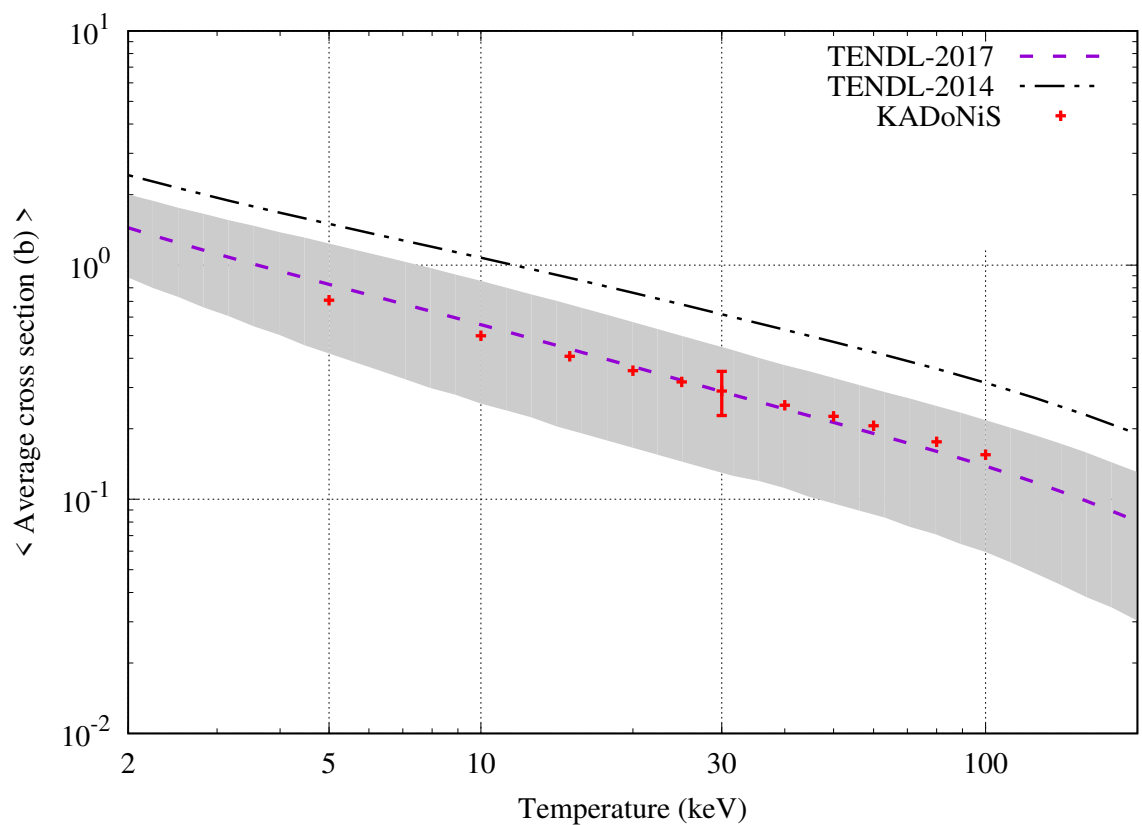
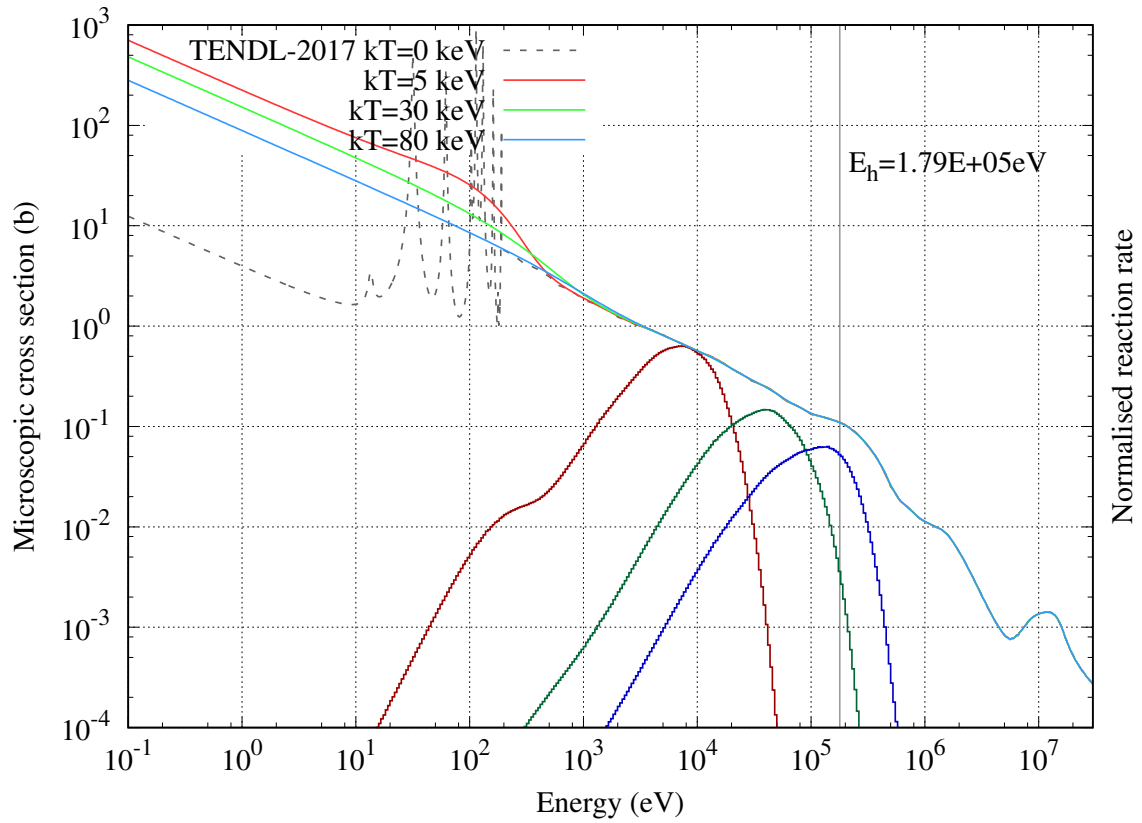
$^{113}\text{Cd}_{48}$ [$T_{1/2} = 7.80 \times 10^{15}$ years]



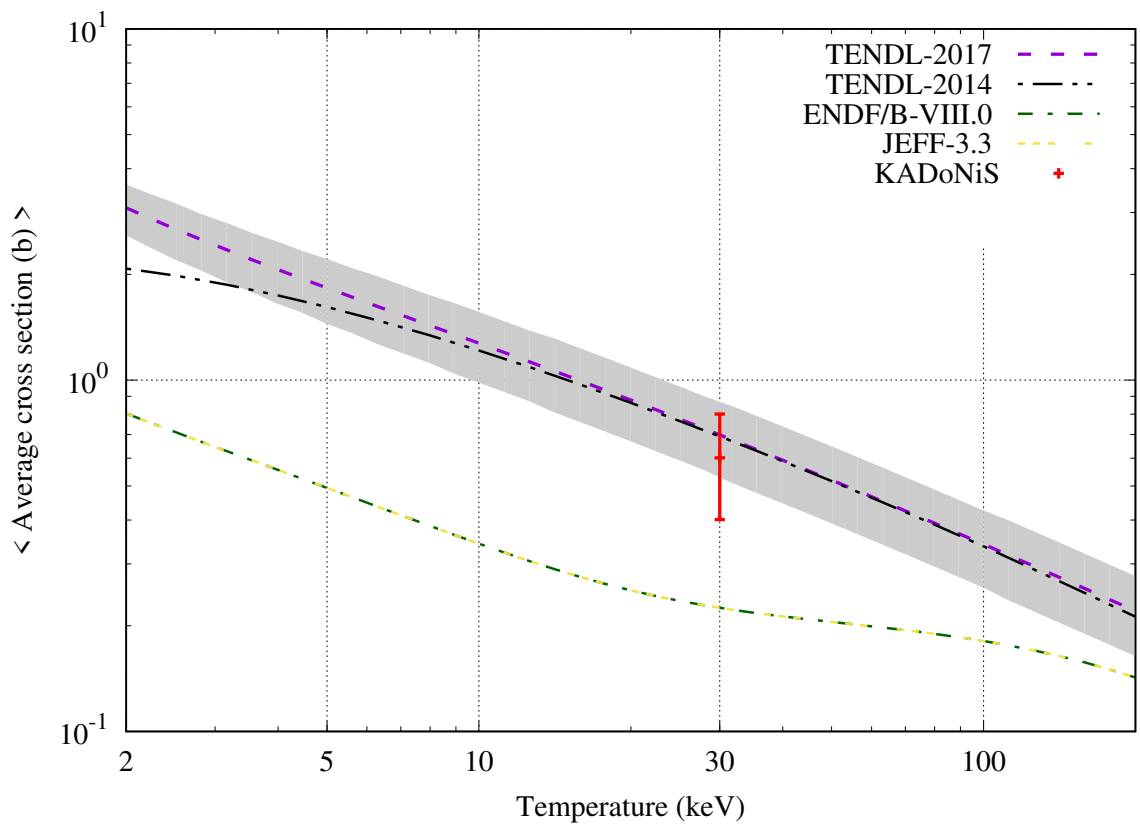
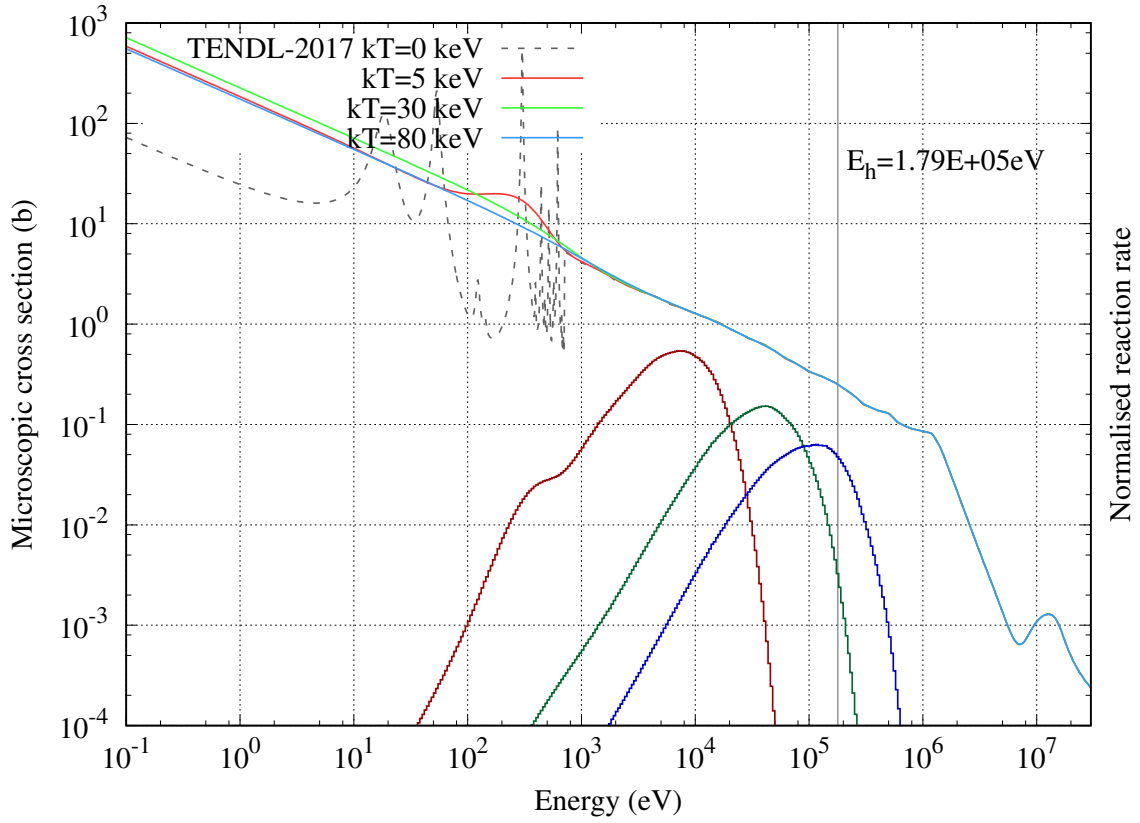
$^{114}\text{Cd}_{48}$ [$T_{1/2} = 6.00 \times 10^{17}$ years]



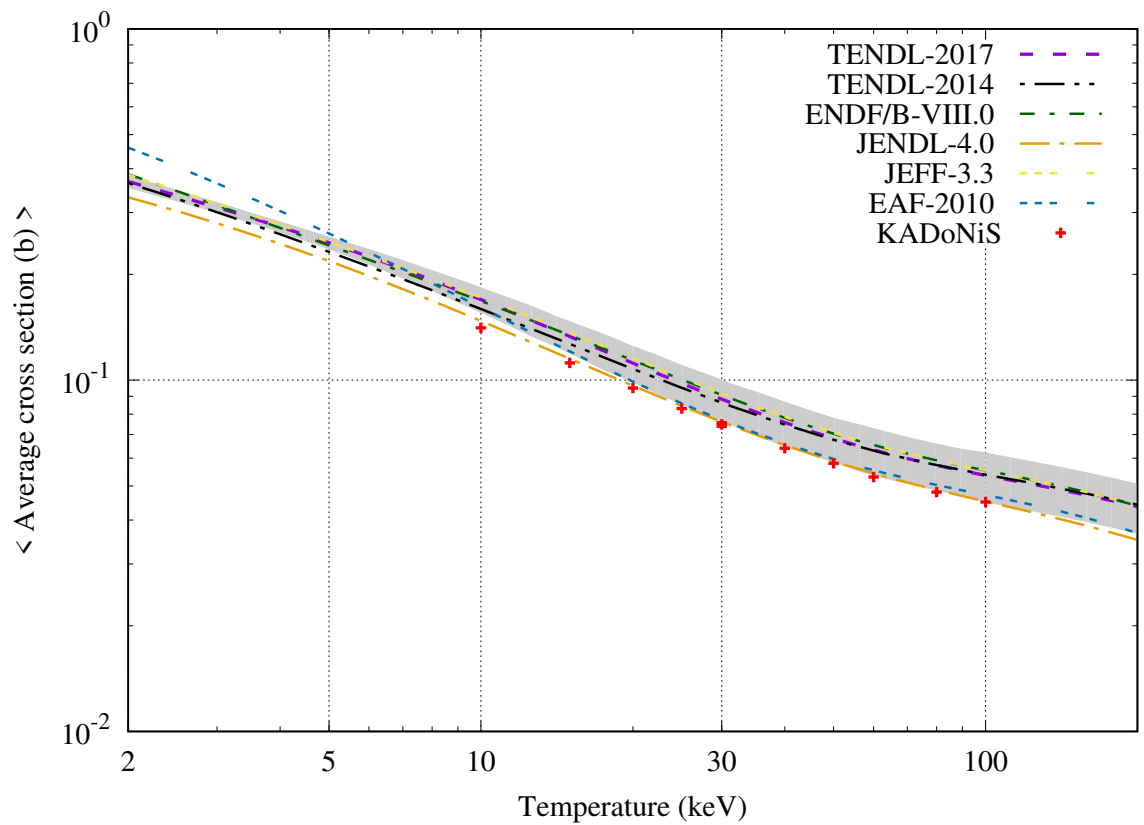
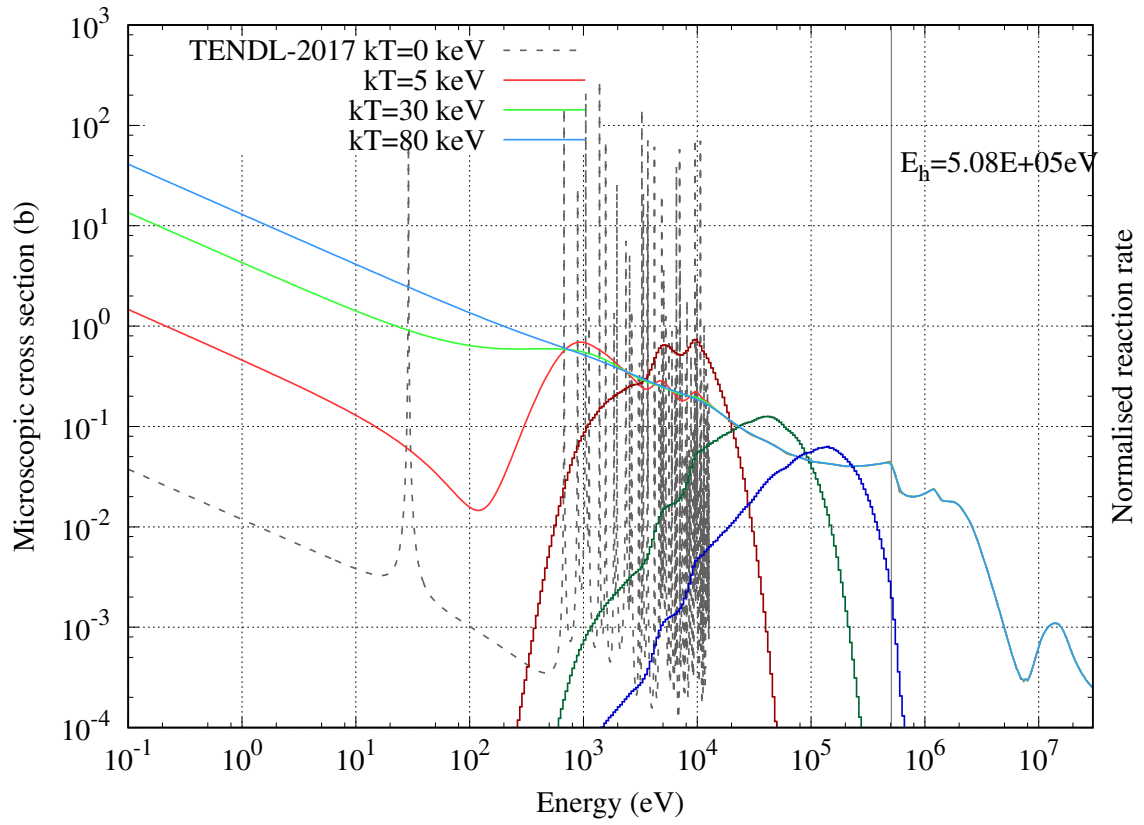
$^{115}\text{Cd}_{48}$ [$T_{1/2} = 2.23$ days] (KADoNiS=SMC)



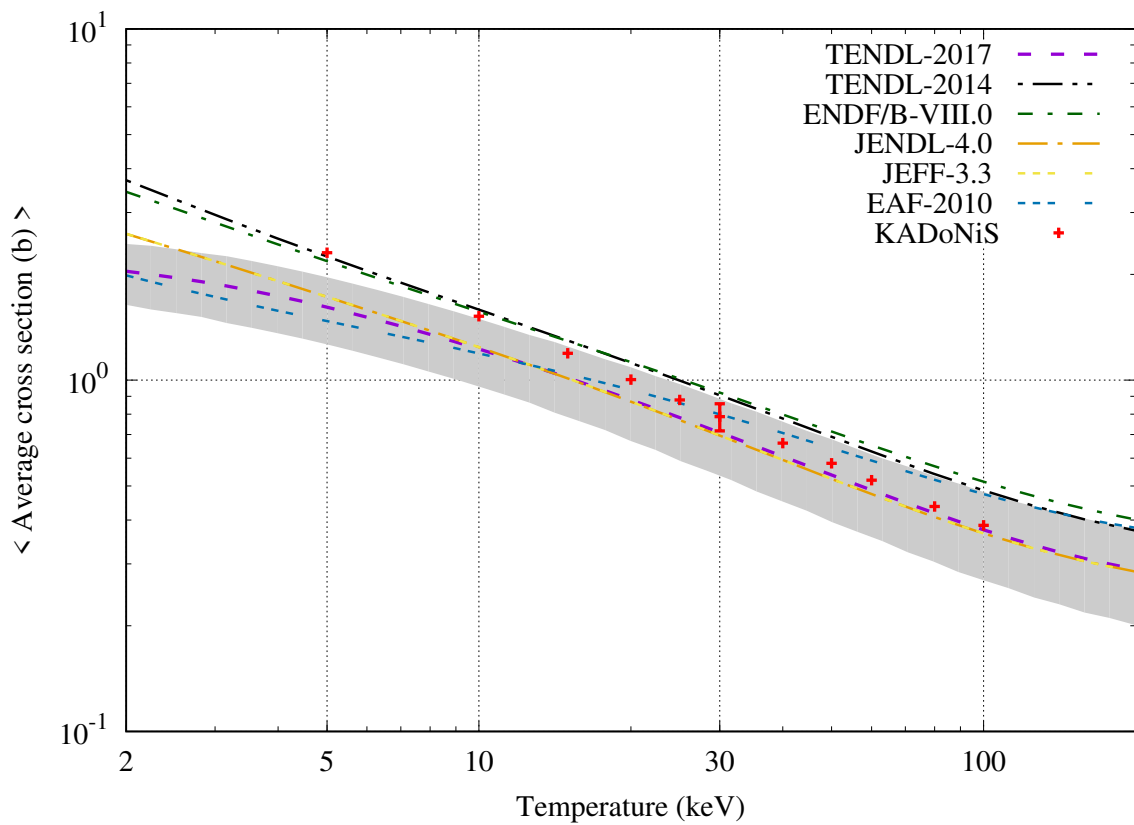
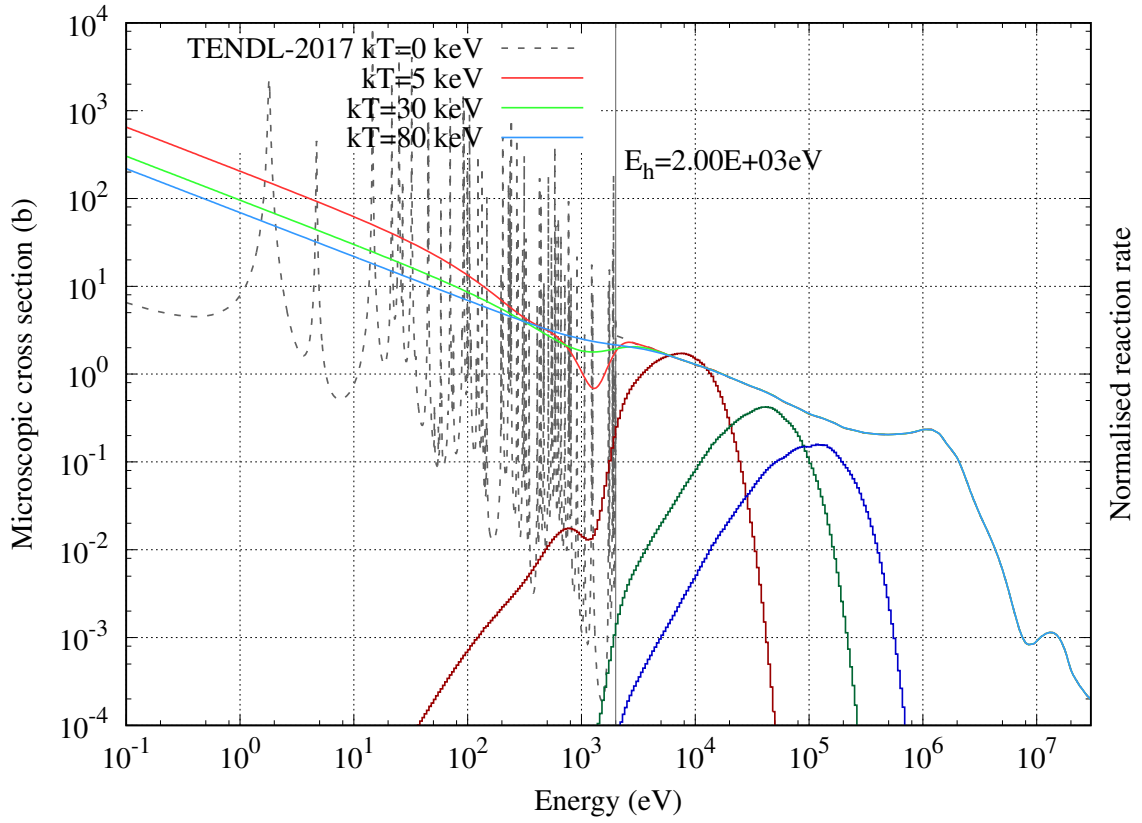
$^{115m}\text{Cd}_{48}$ [$T_{1/2} = 44.45$ days] (KADoNiS=SMC)



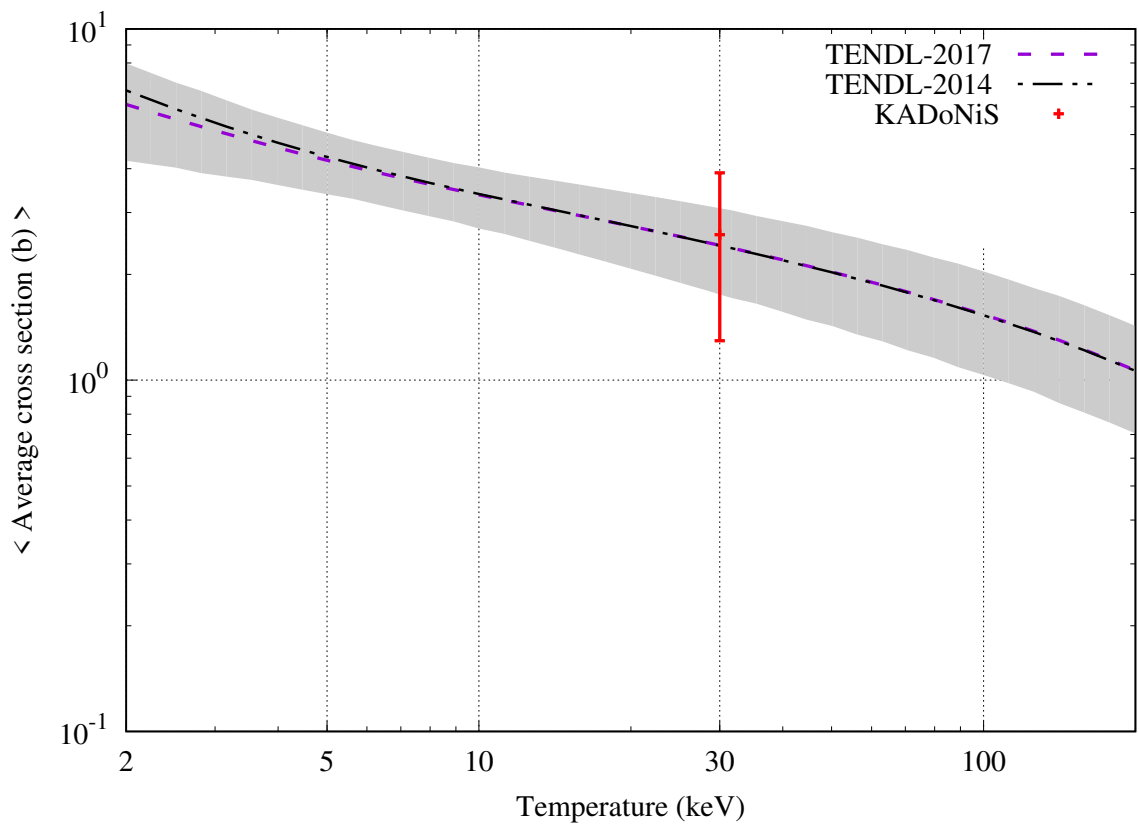
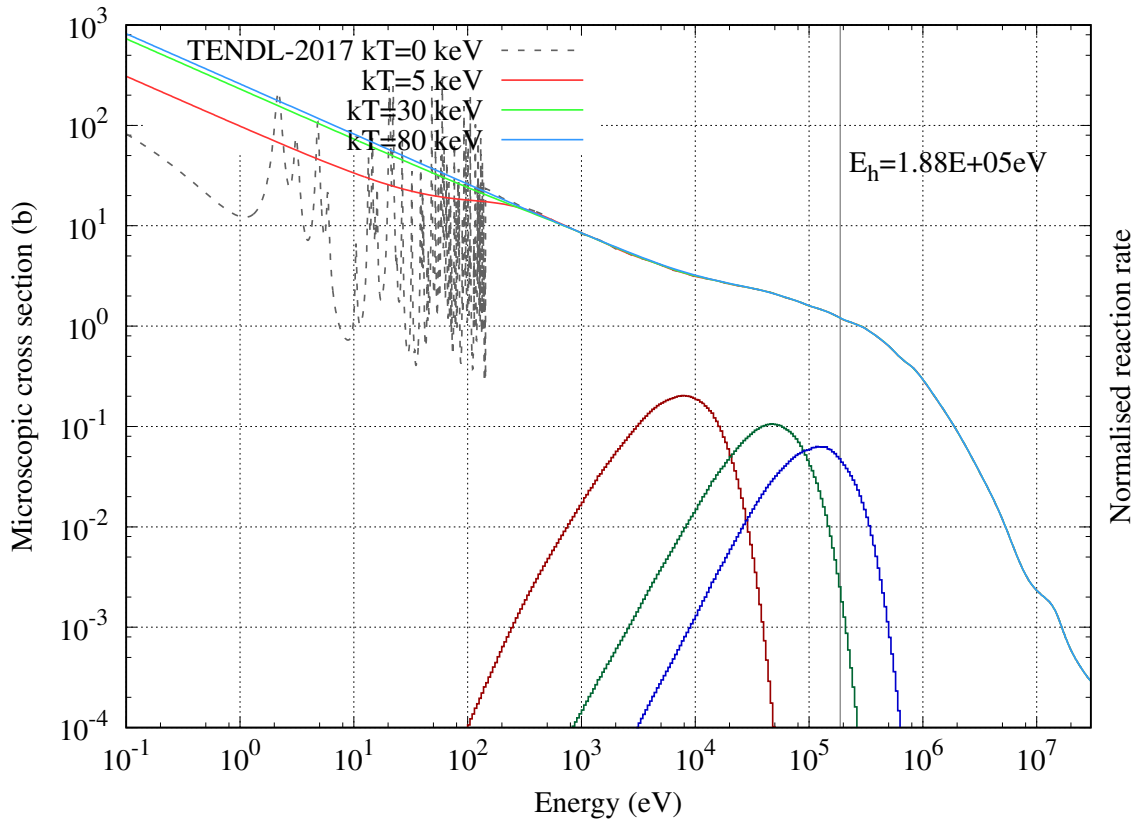
$^{116}\text{Cd}_{48}$ [$T_{1/2} = 3.40 \times 10^{19}$ years]



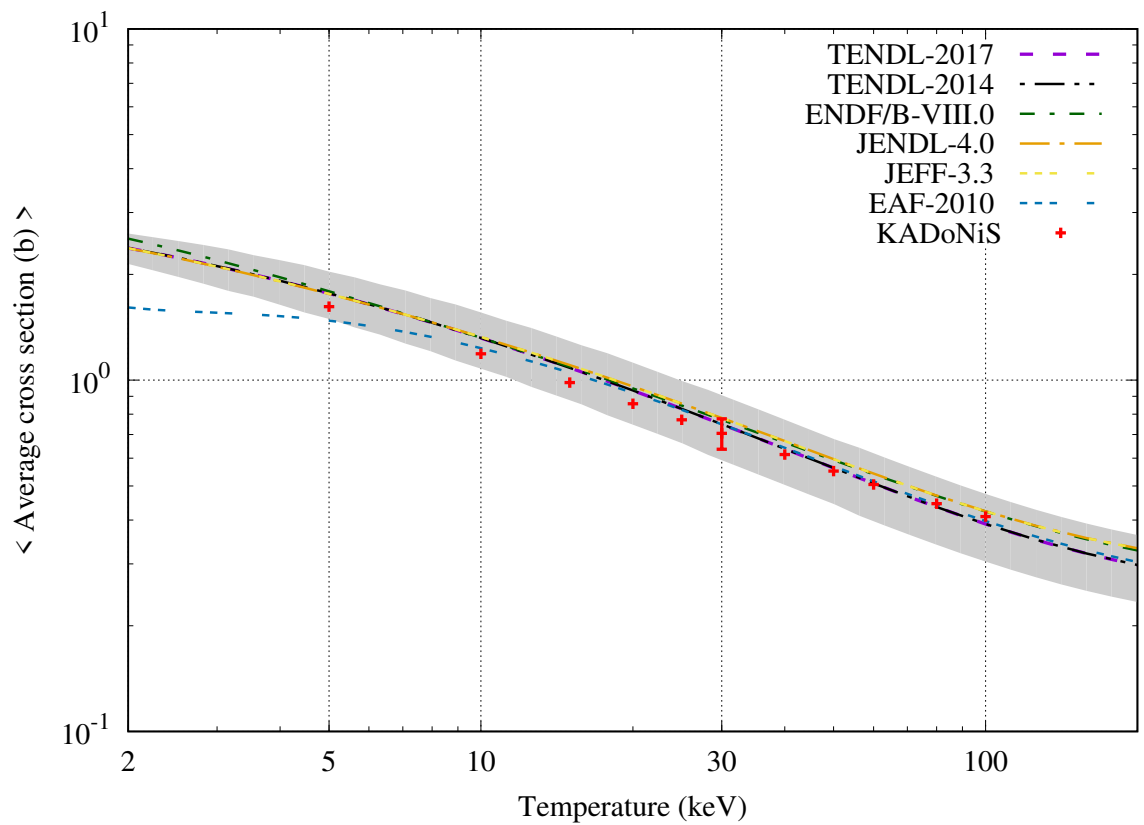
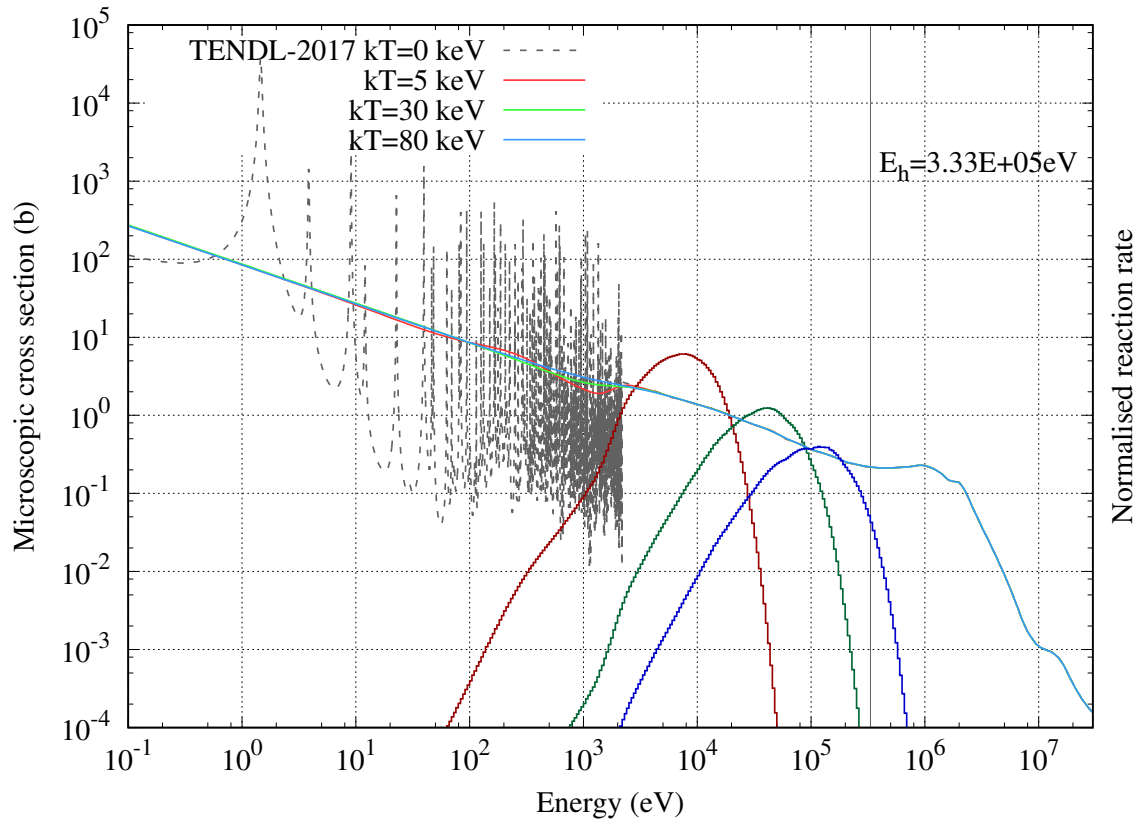
$^{113}\text{In}_{49}$ [Stable]



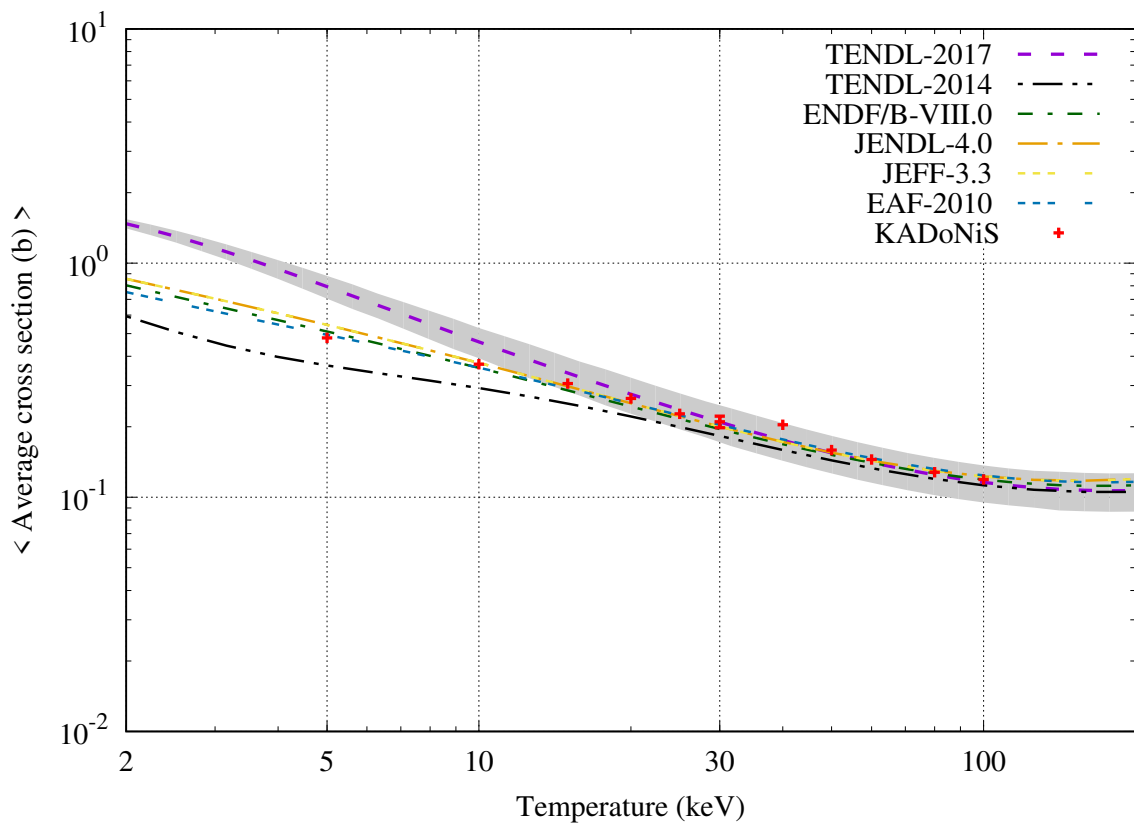
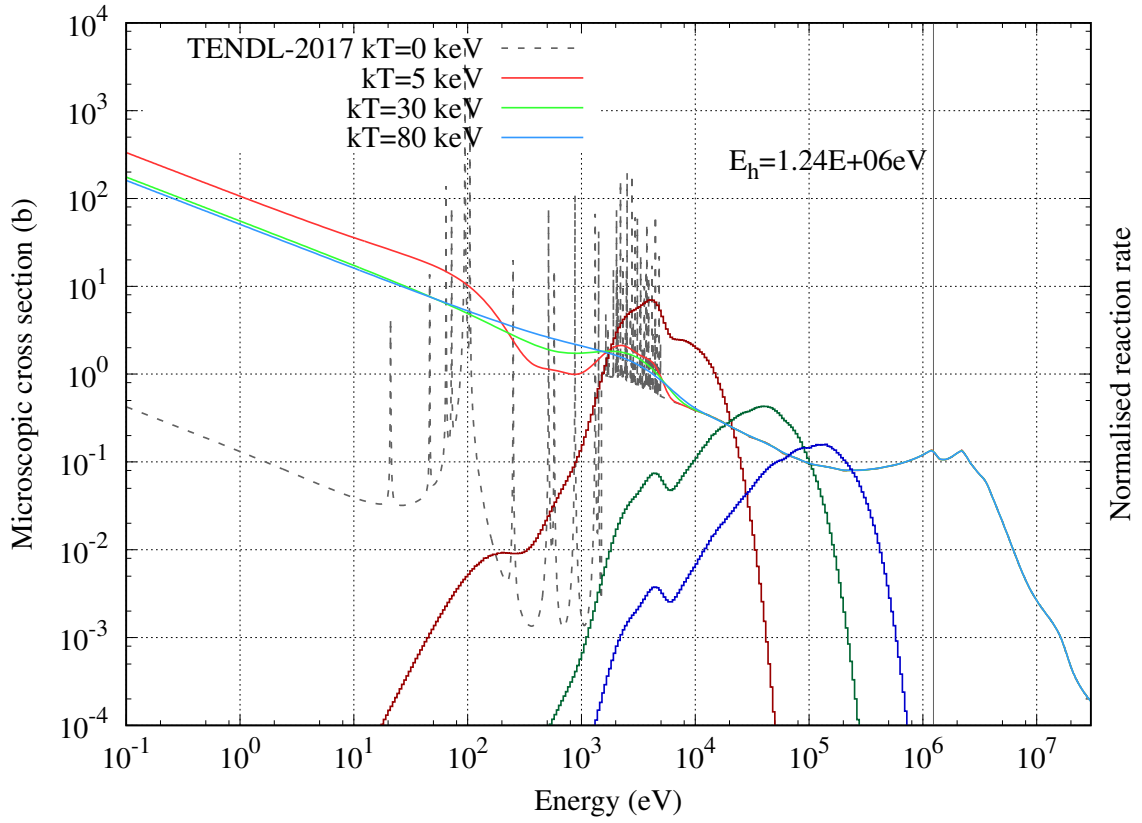
$^{114m}\text{In}_{49}$ [$T_{1/2} = 50.00$ days]



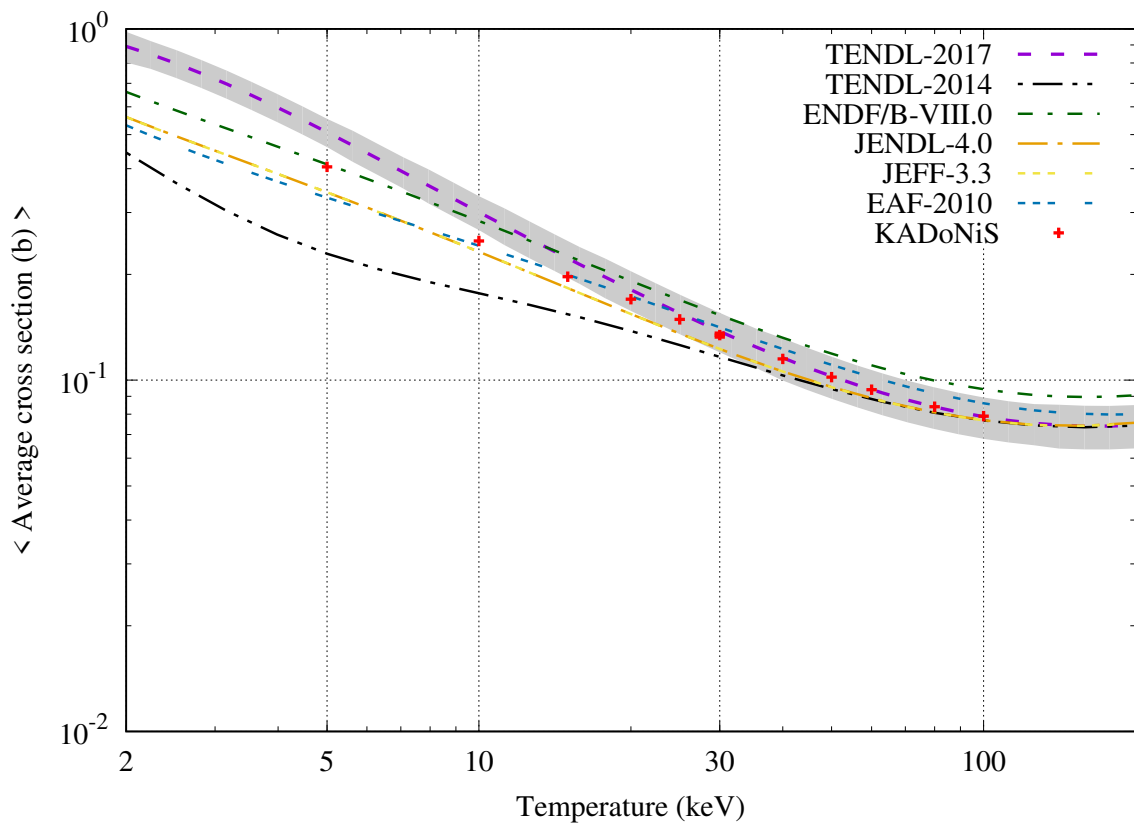
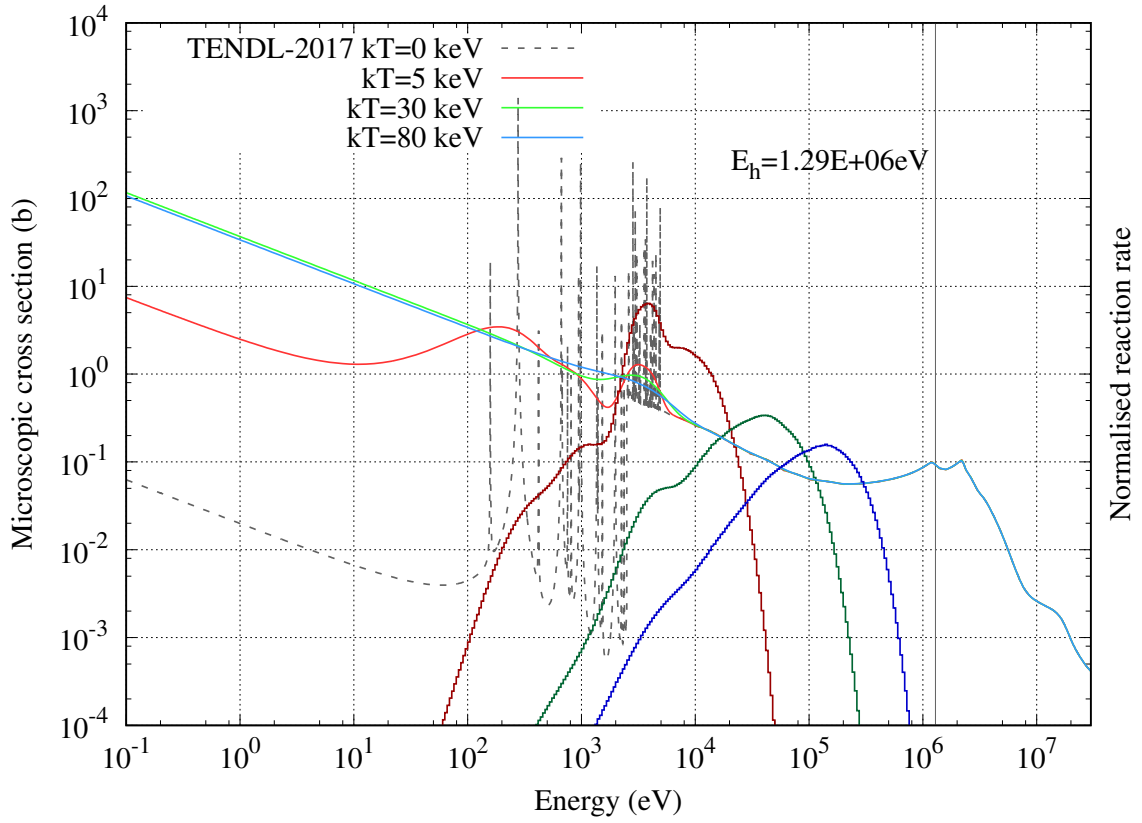
$^{115}\text{In}_{49}$ [$T_{1/2} = 4.41 \times 10^{14}$ years]



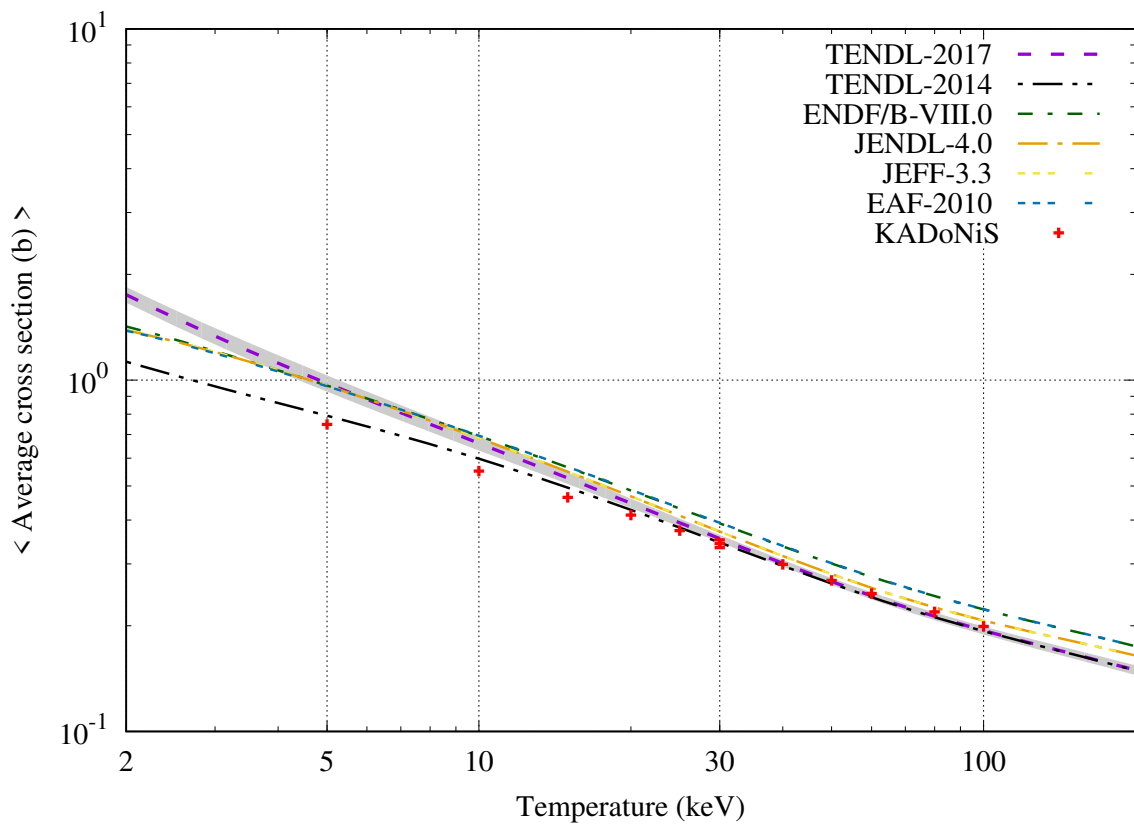
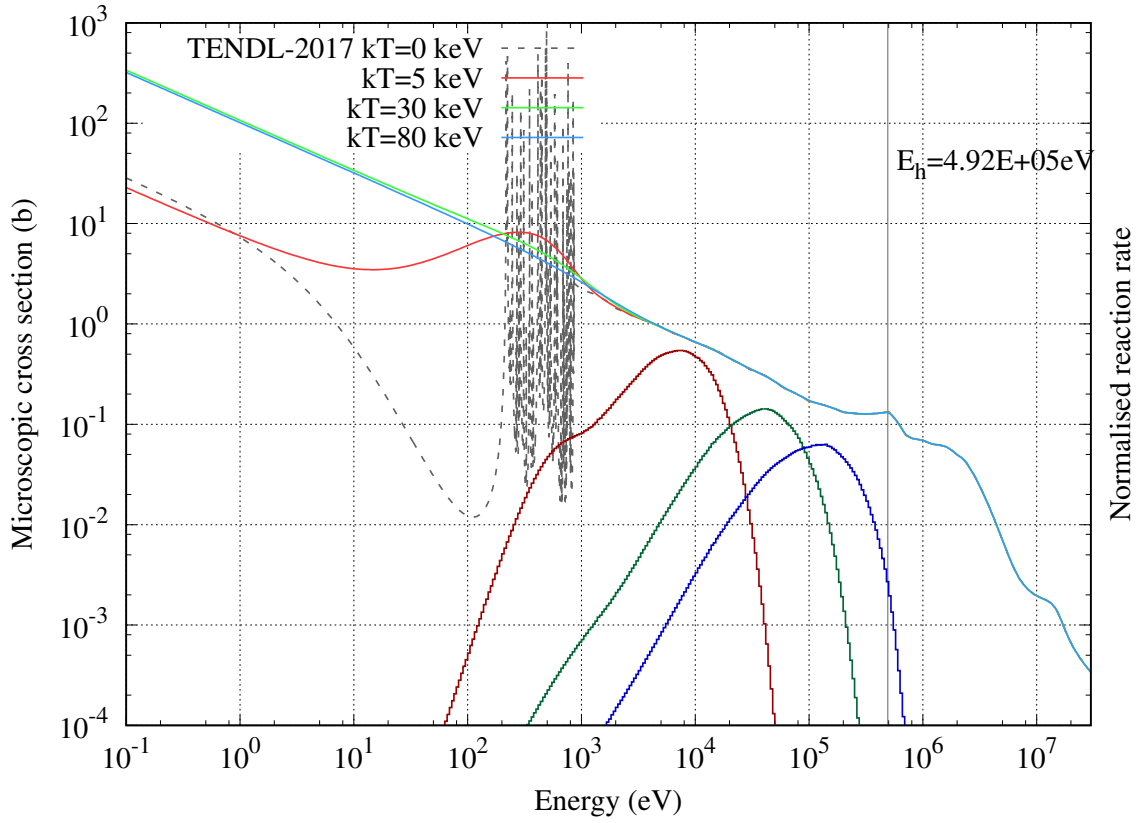
$^{112}\text{Sn}_{50}$ [Stable]



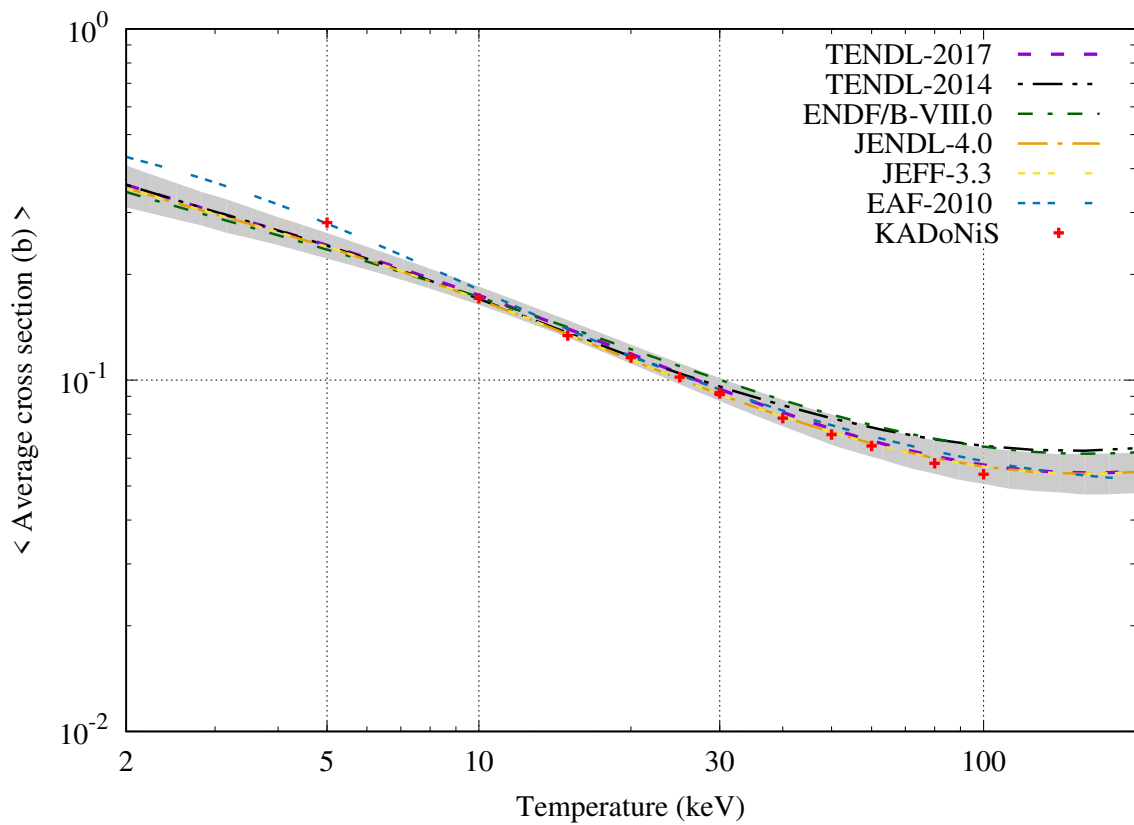
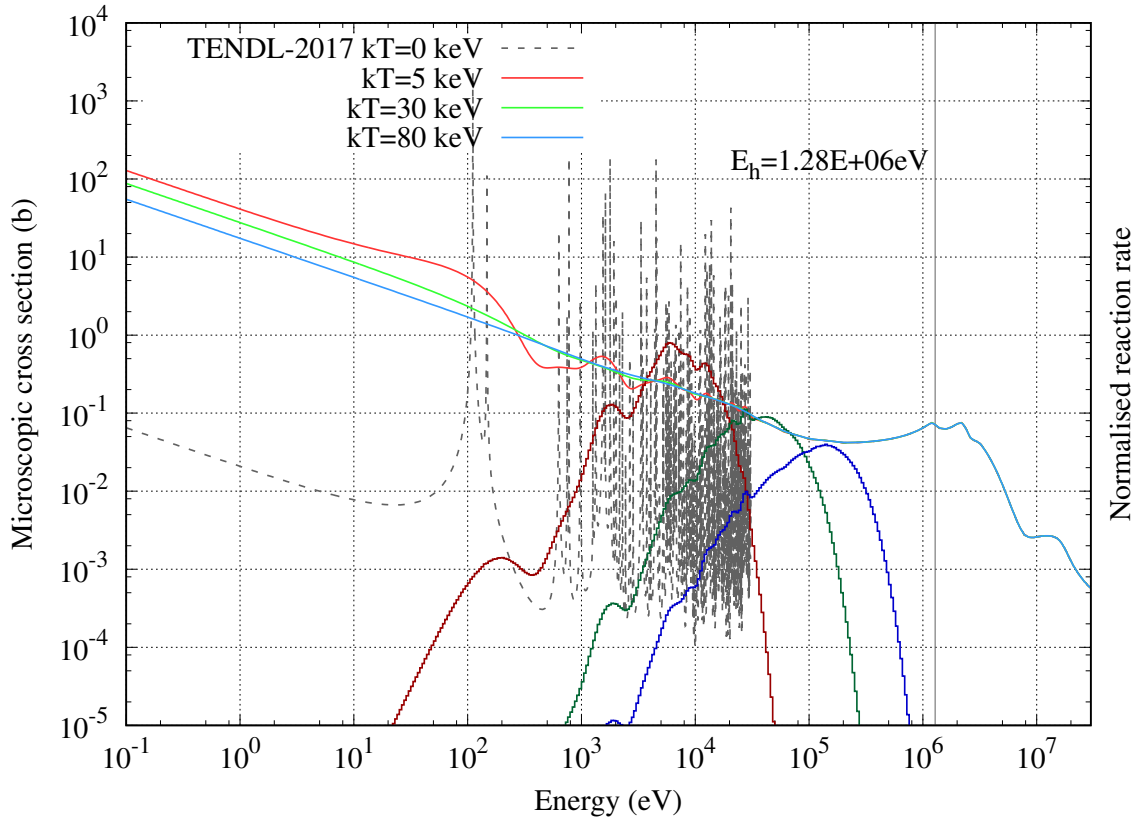
$^{114}\text{Sn}_{50}$ [Stable]



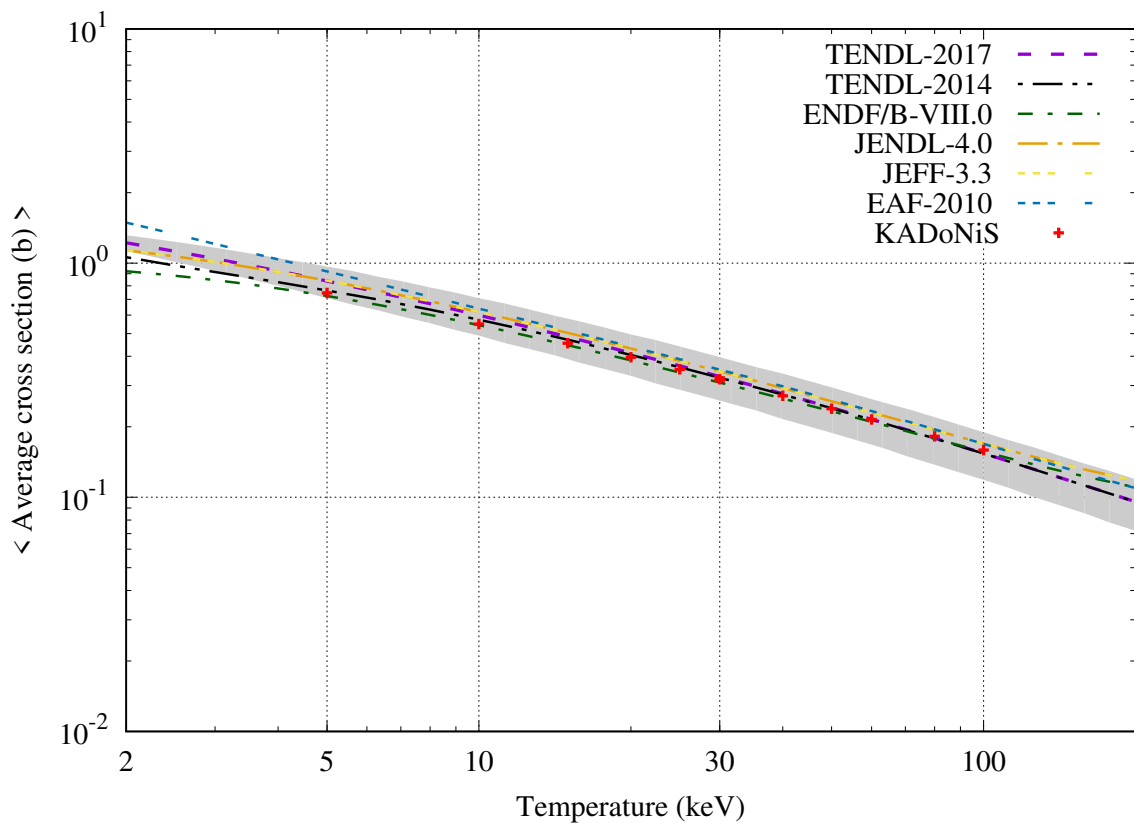
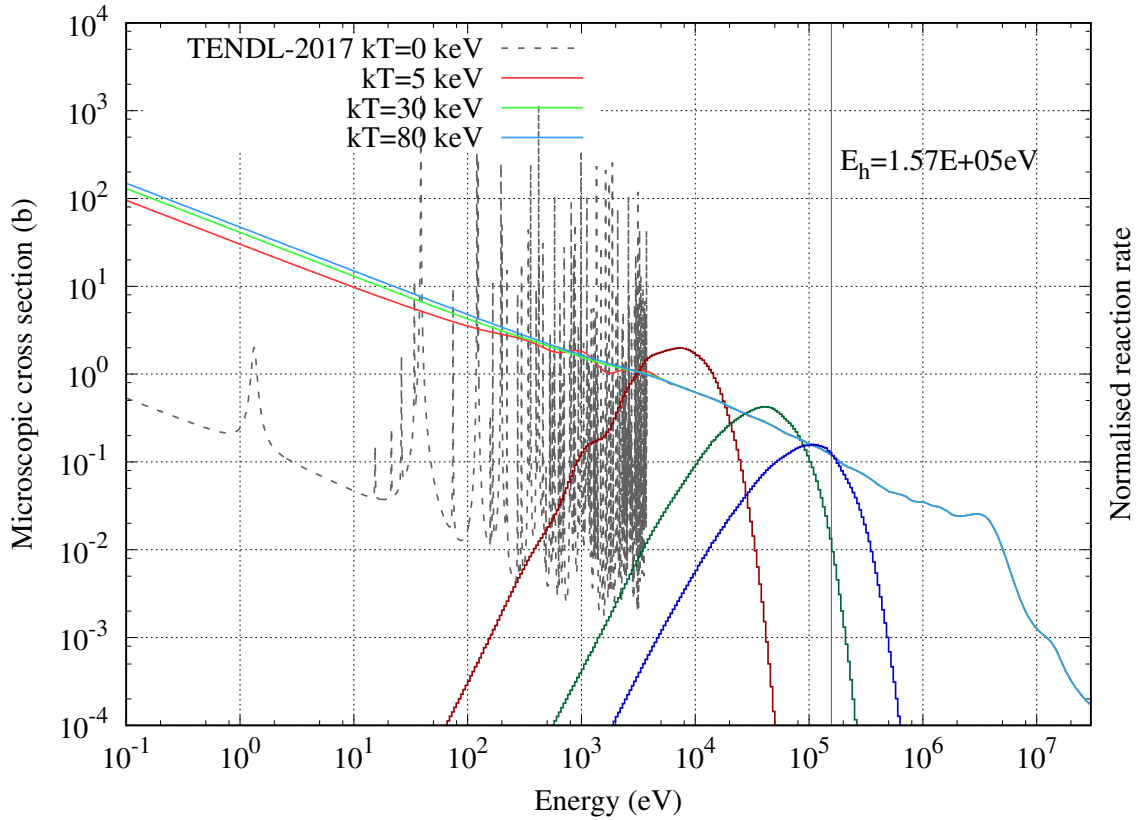
$^{115}\text{Sn}_{50}$ [Stable]



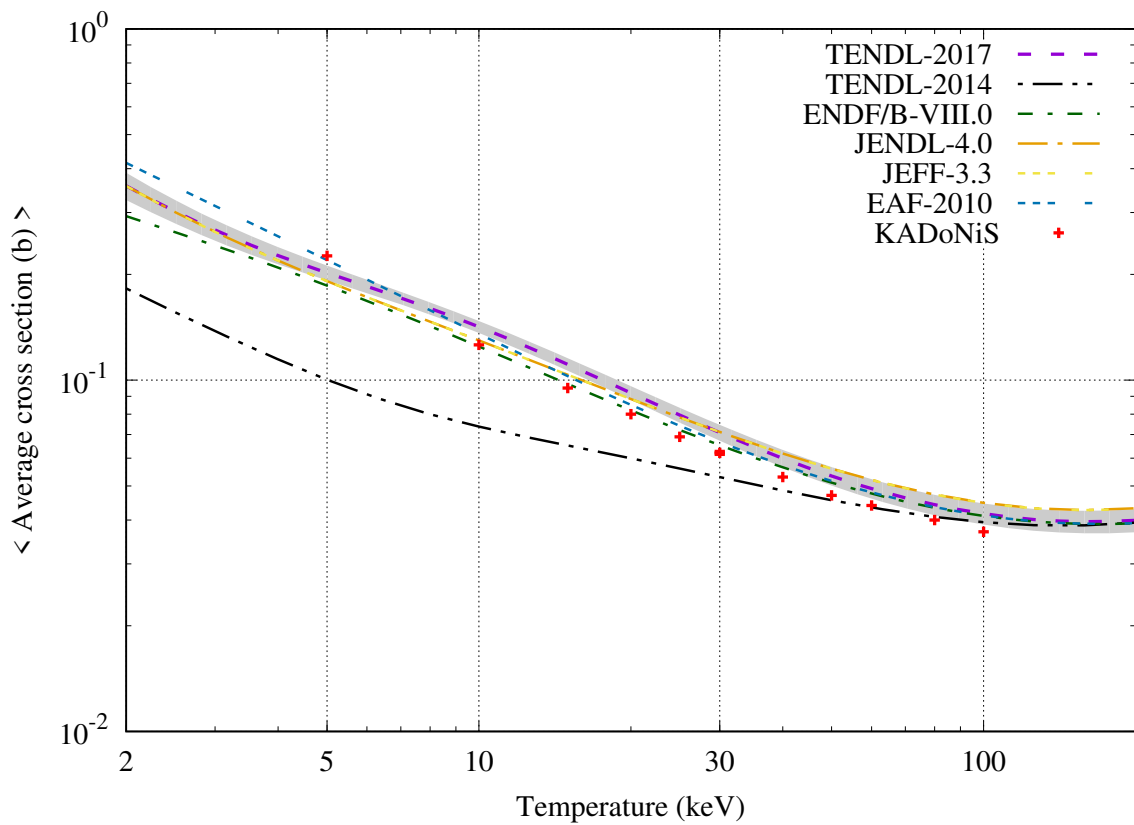
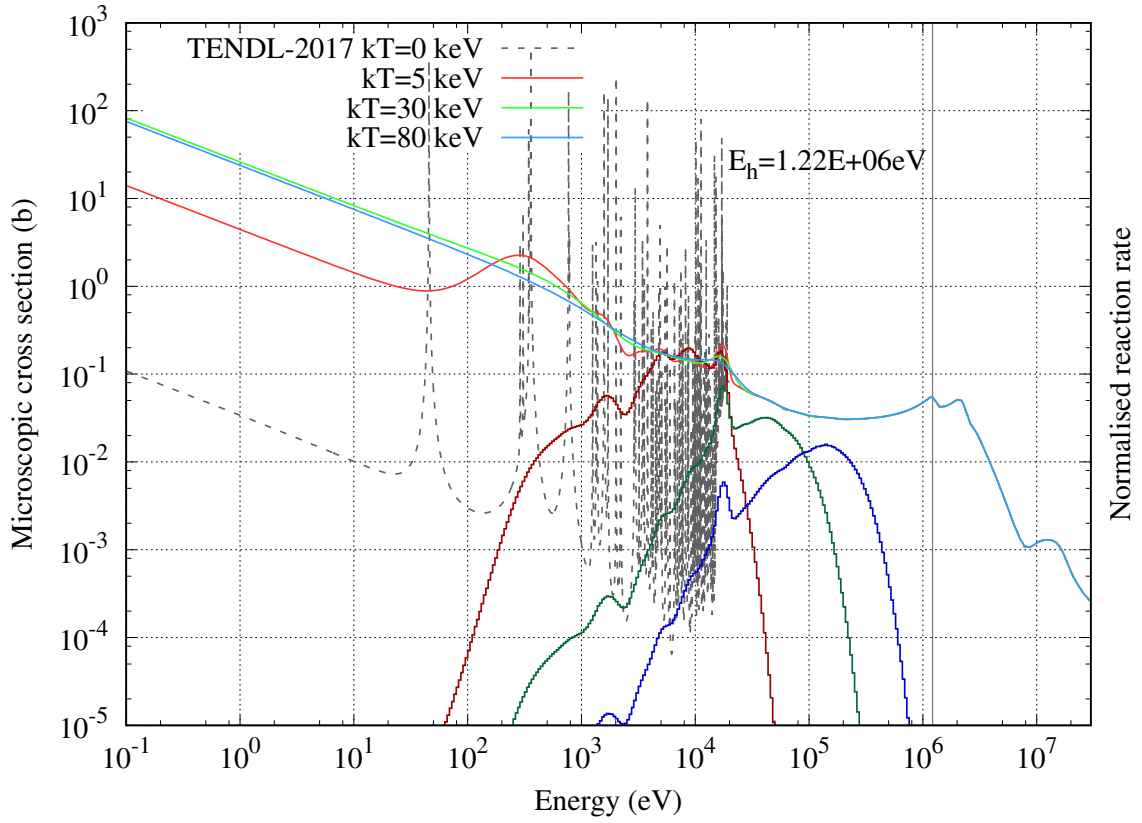
$^{116}\text{Sn}_{50}$ [Stable]



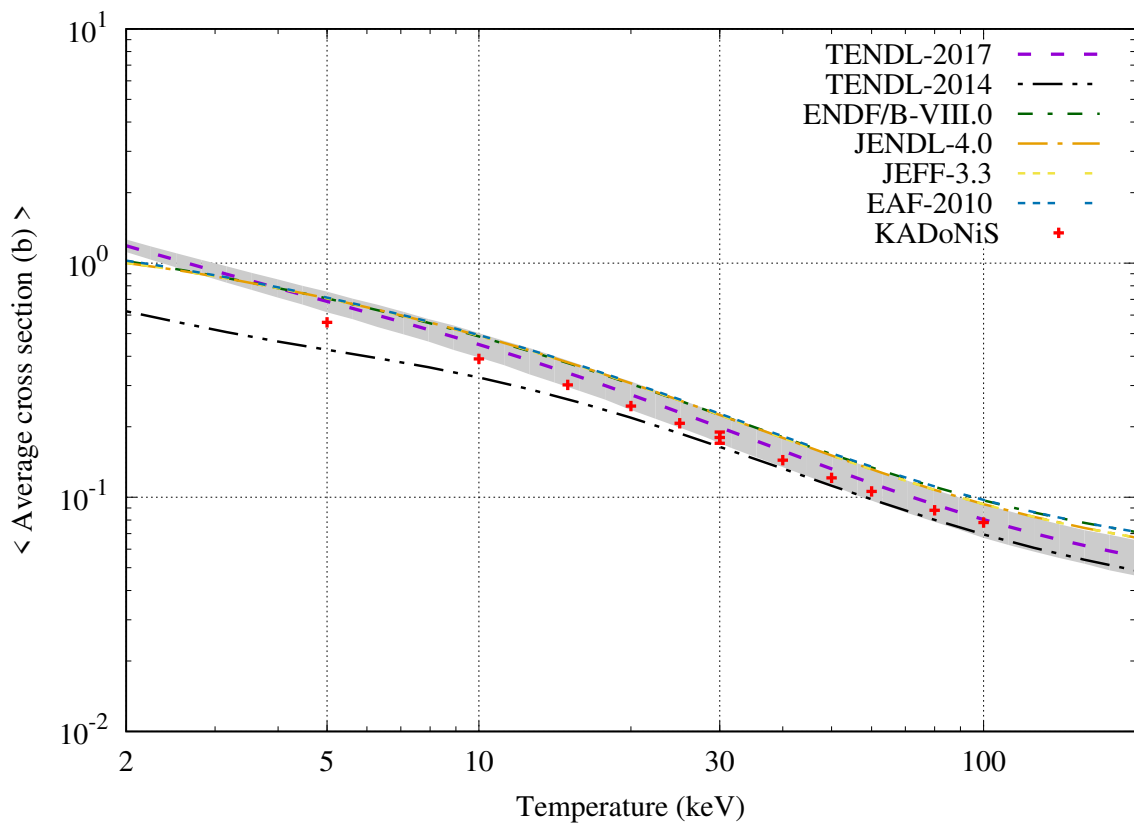
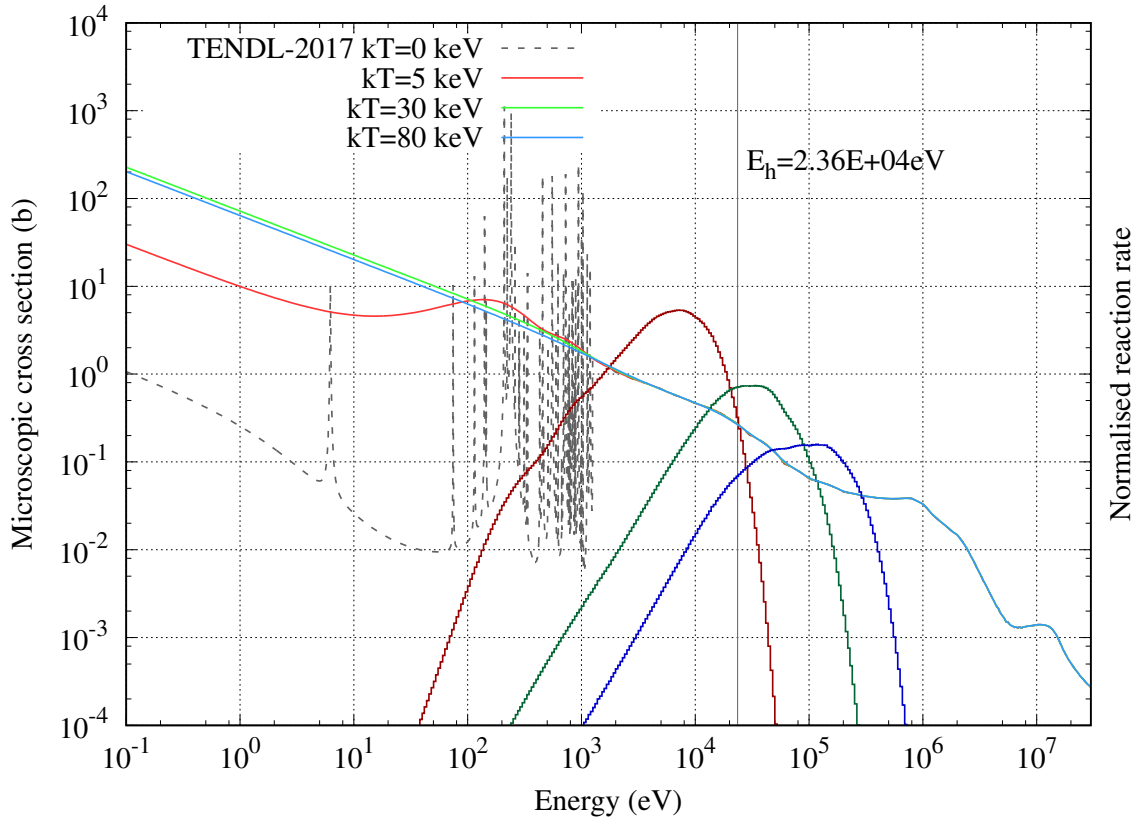
$^{117}\text{Sn}_{50}$ [Stable]



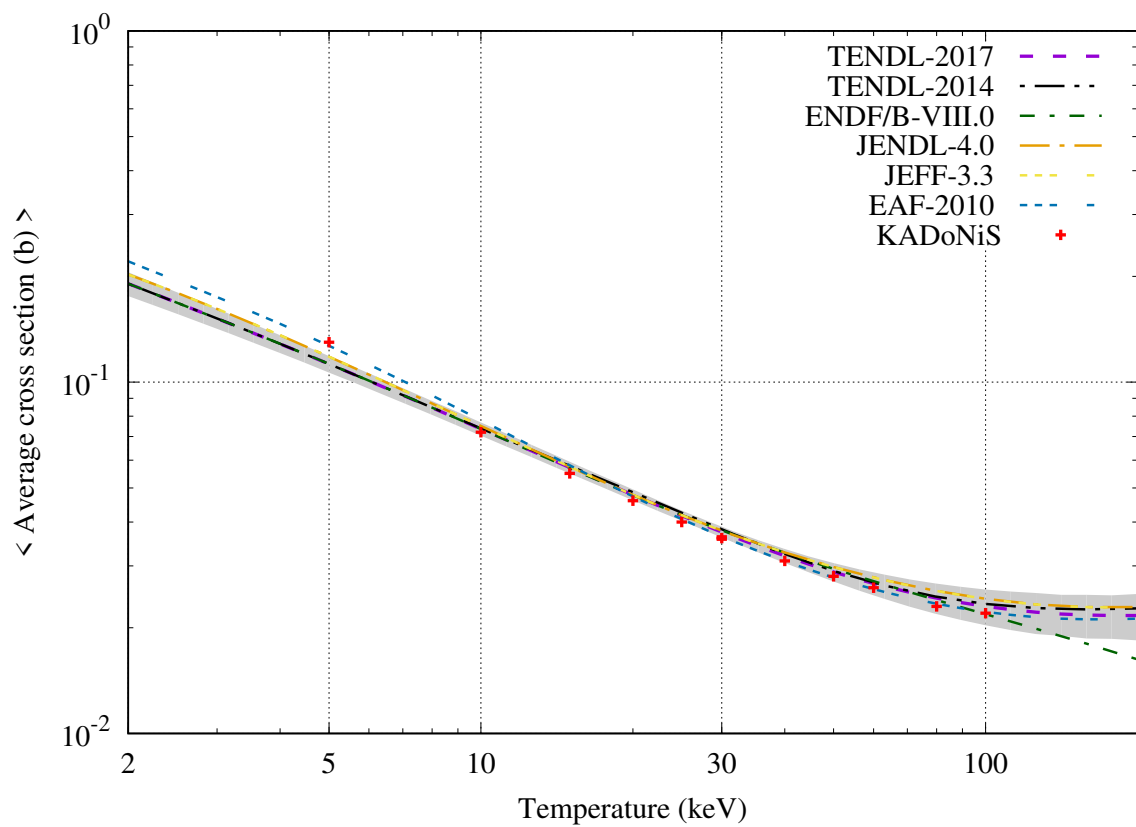
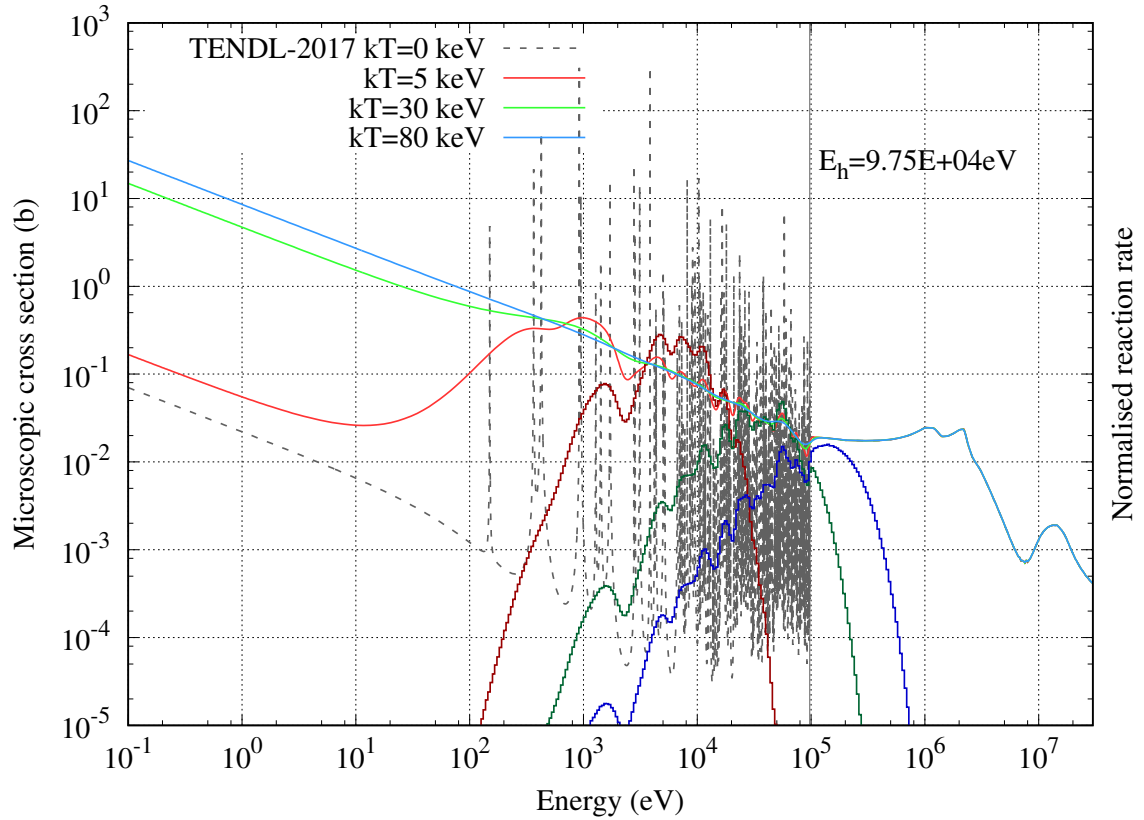
$^{118}\text{Sn}_{50}$ [Stable]



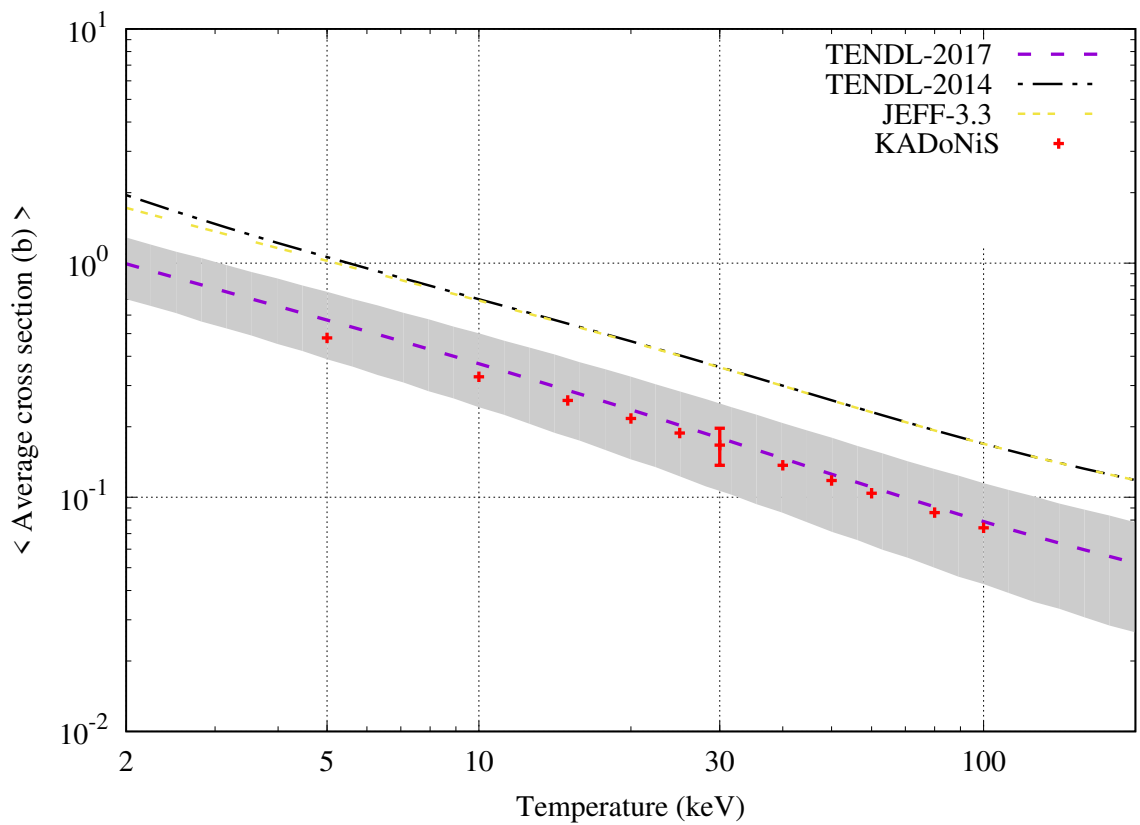
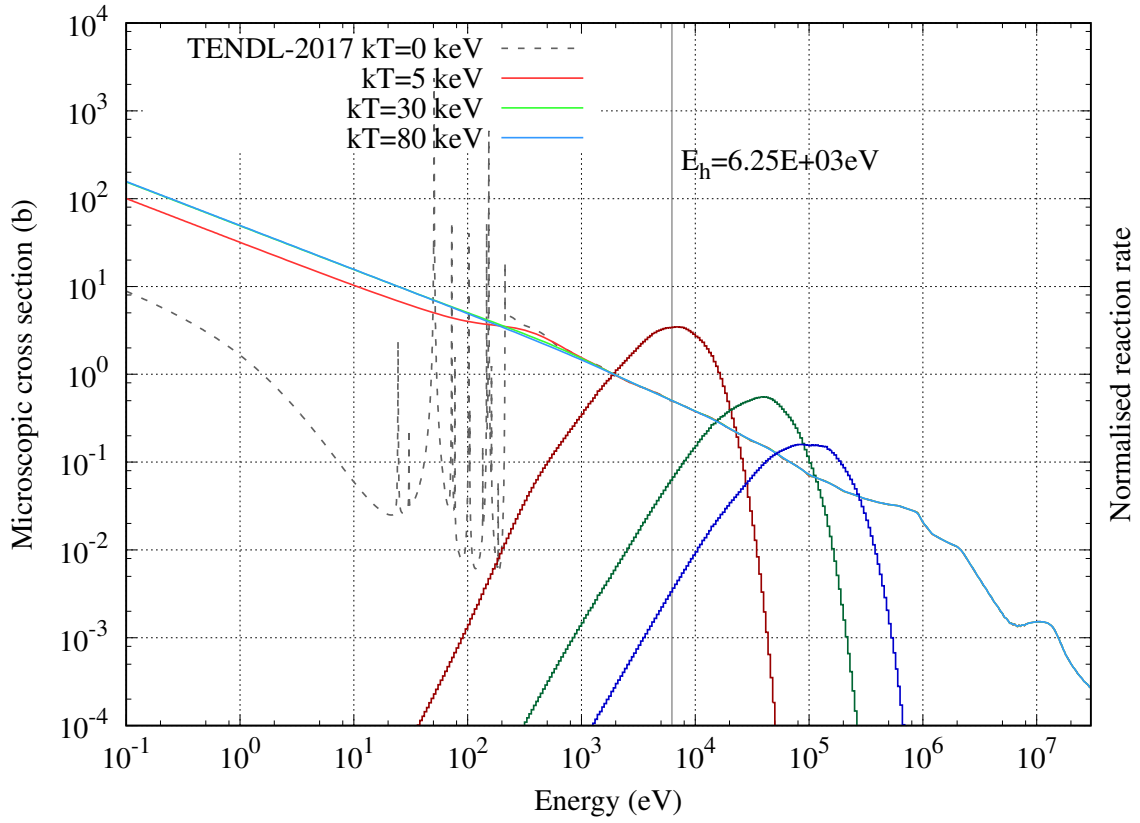
$^{119}\text{Sn}_{50}$ [Stable]



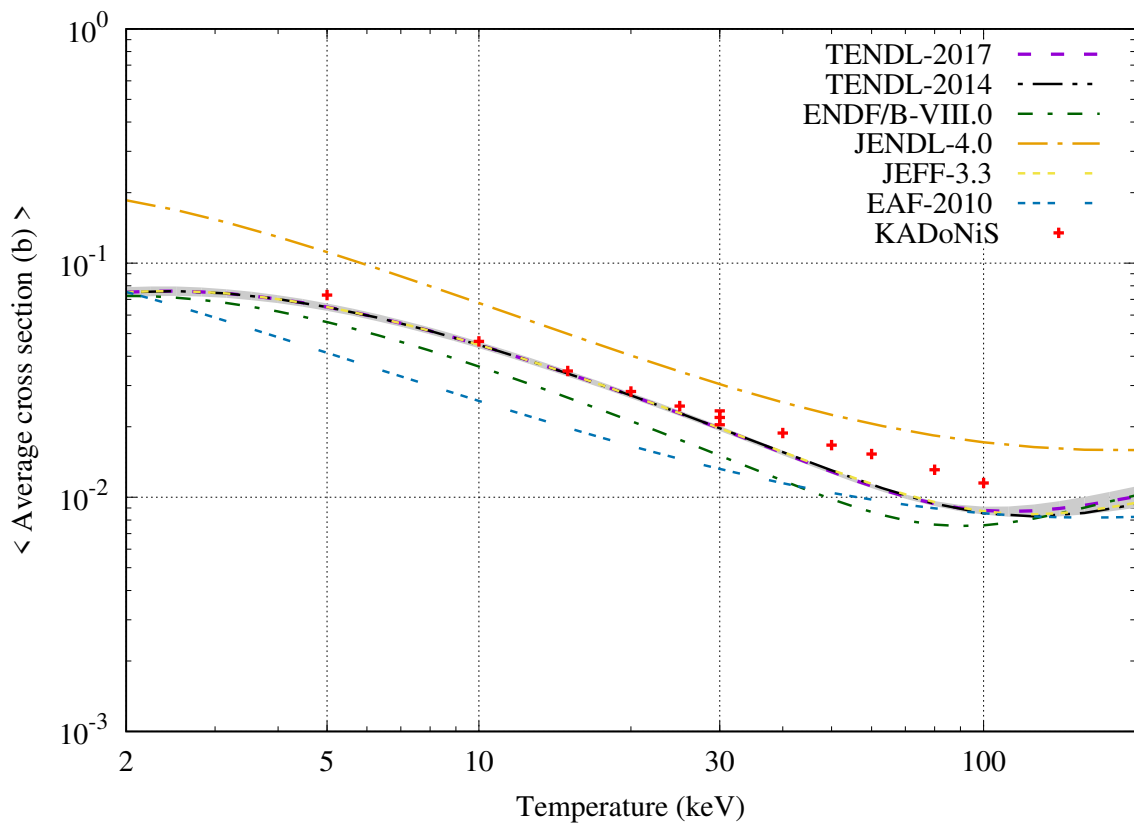
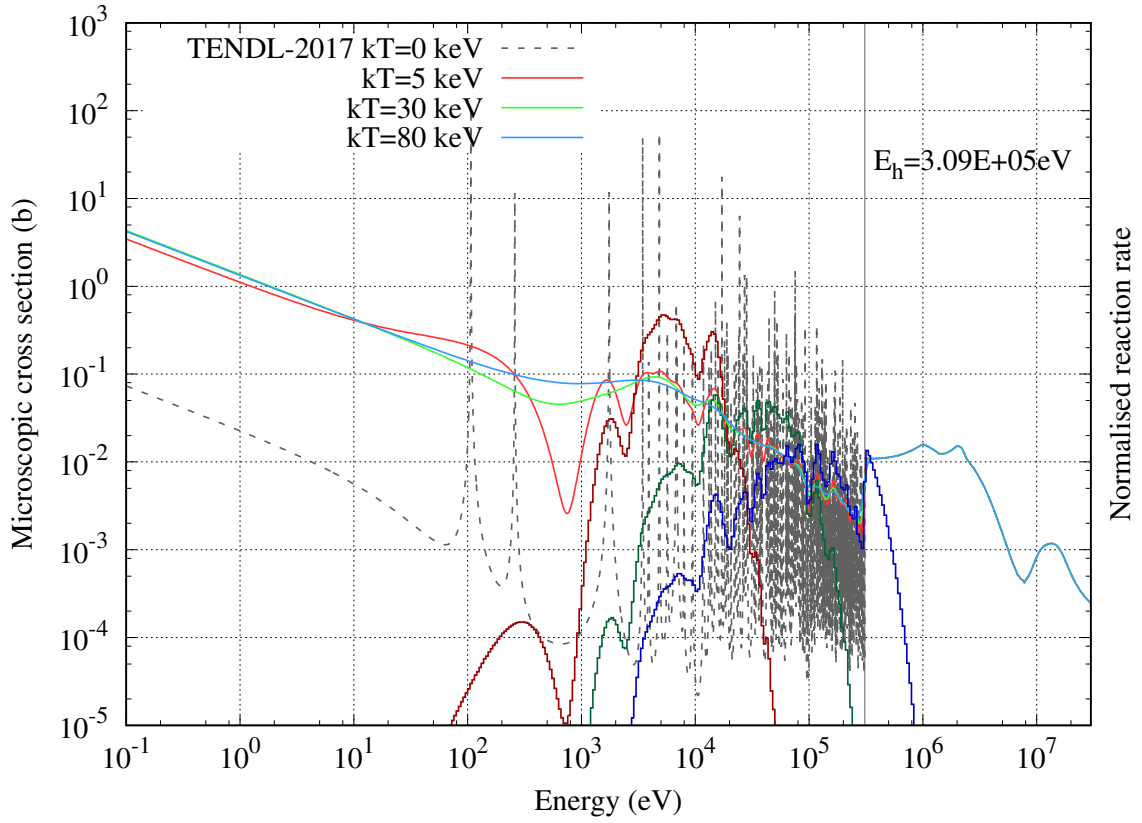
$^{120}\text{Sn}_{50}$ [Stable]



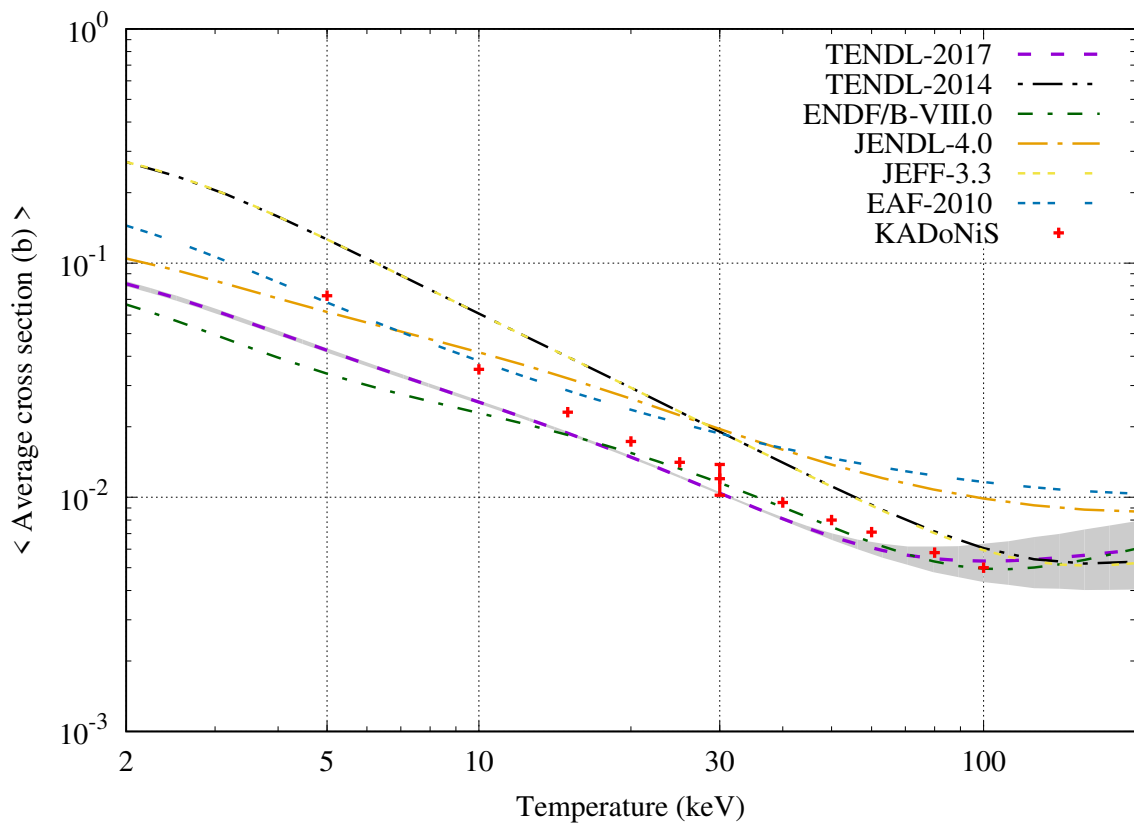
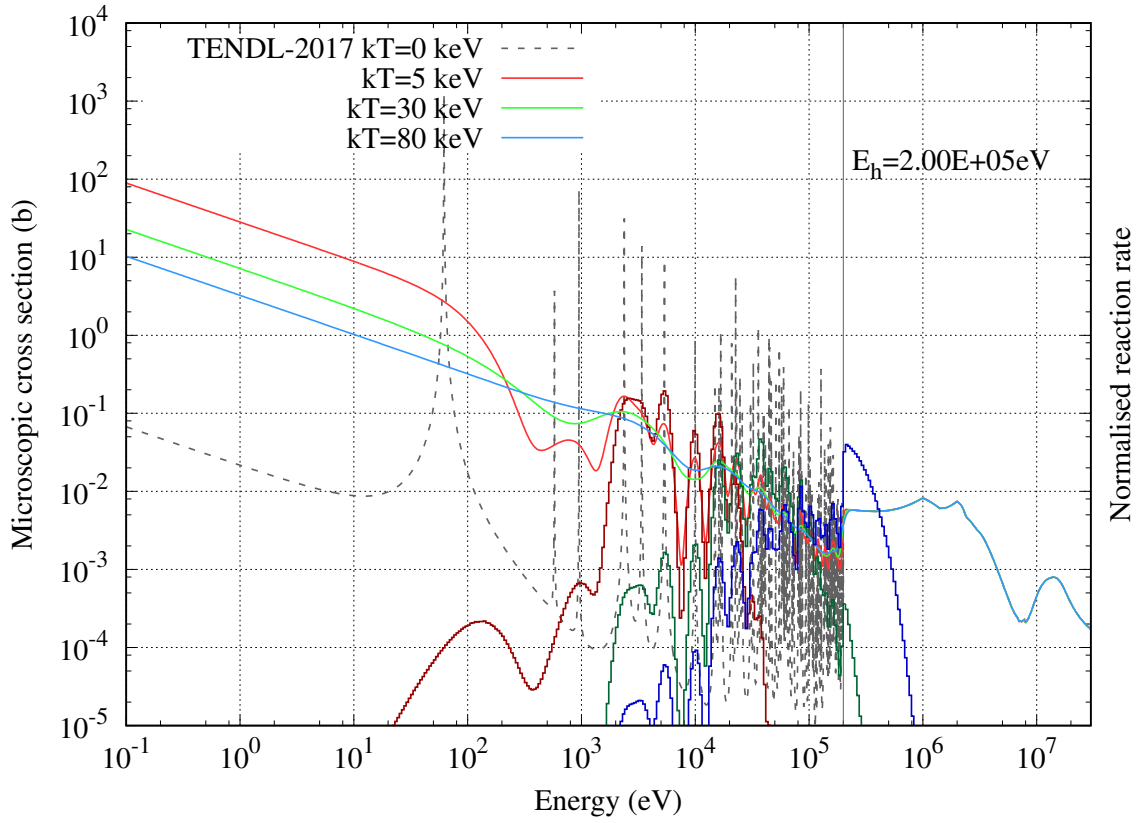
$^{121}\text{Sn}_{50}$ [$T_{1/2} = 1.12$ days] (KADoNiS=SMC)



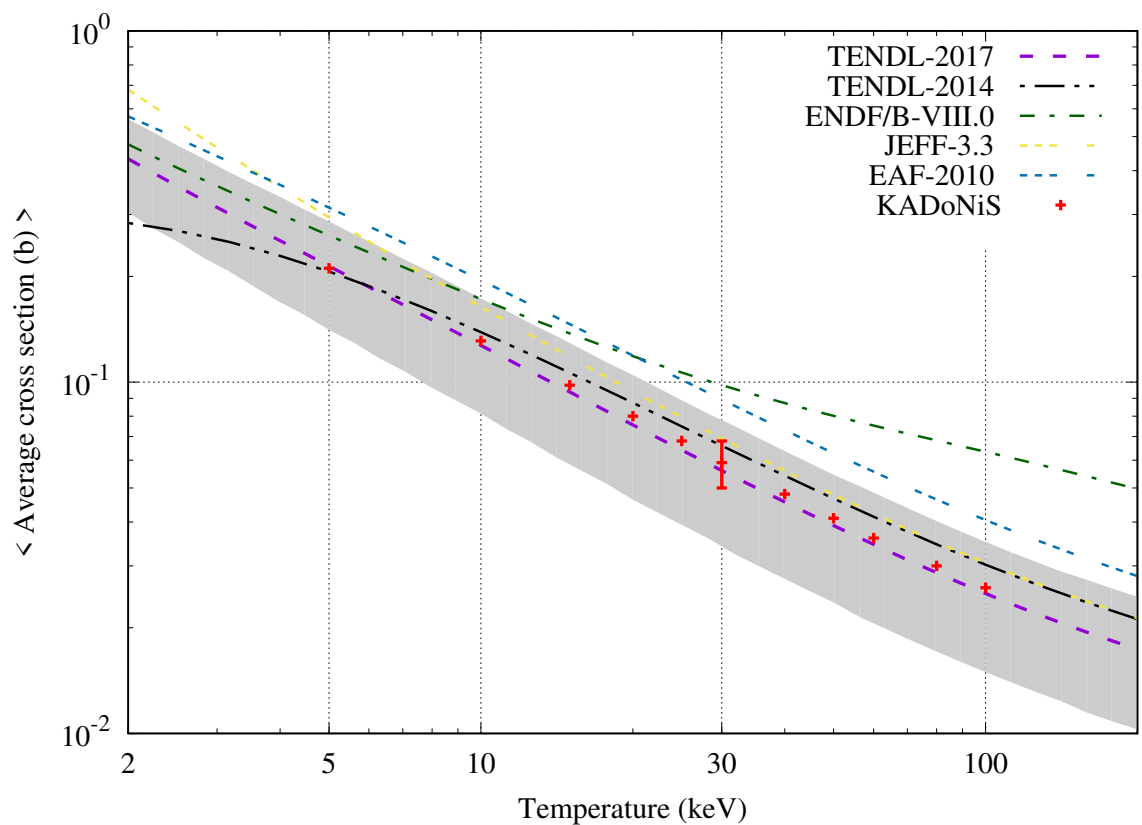
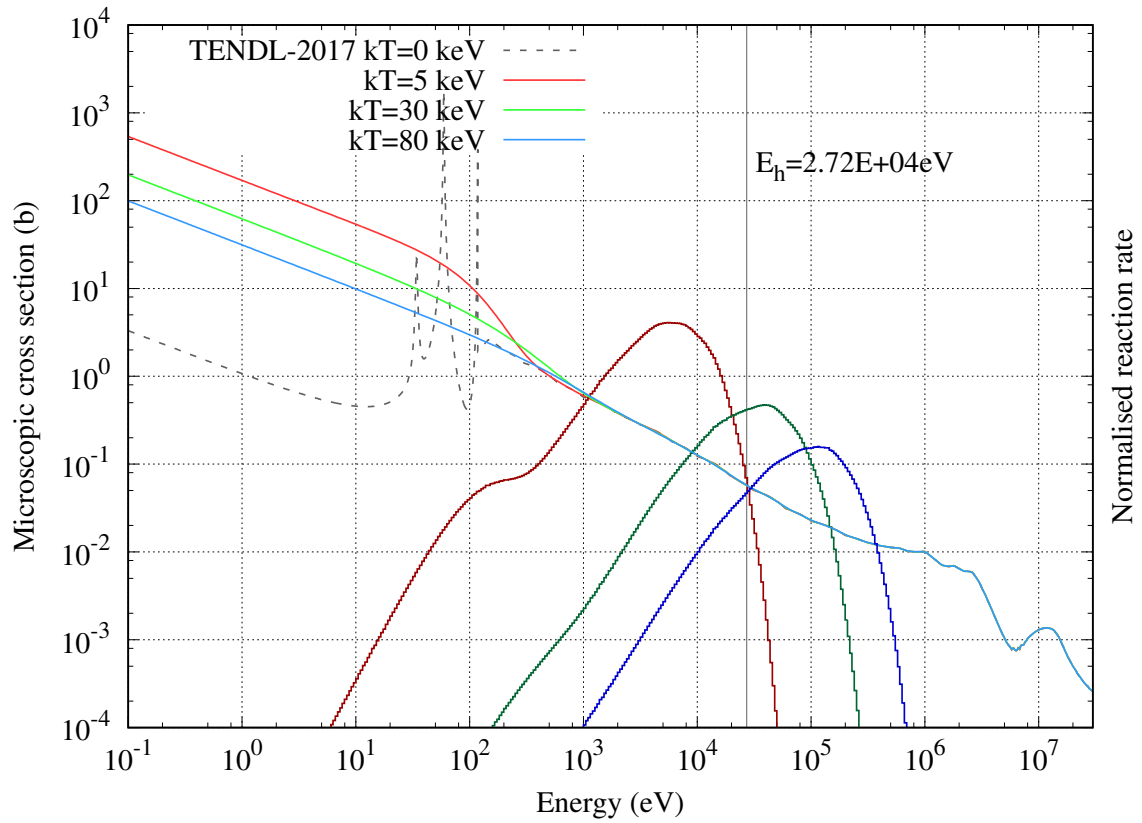
$^{122}\text{Sn}_{50}$ [Stable]



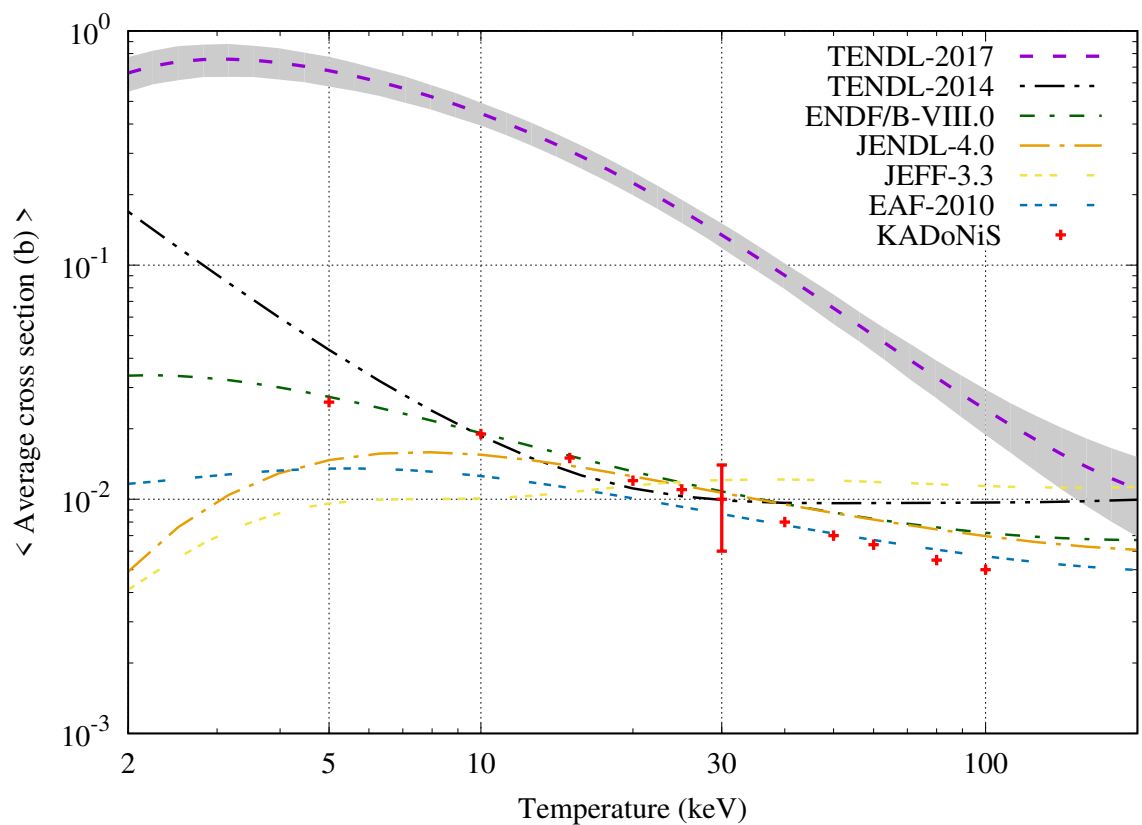
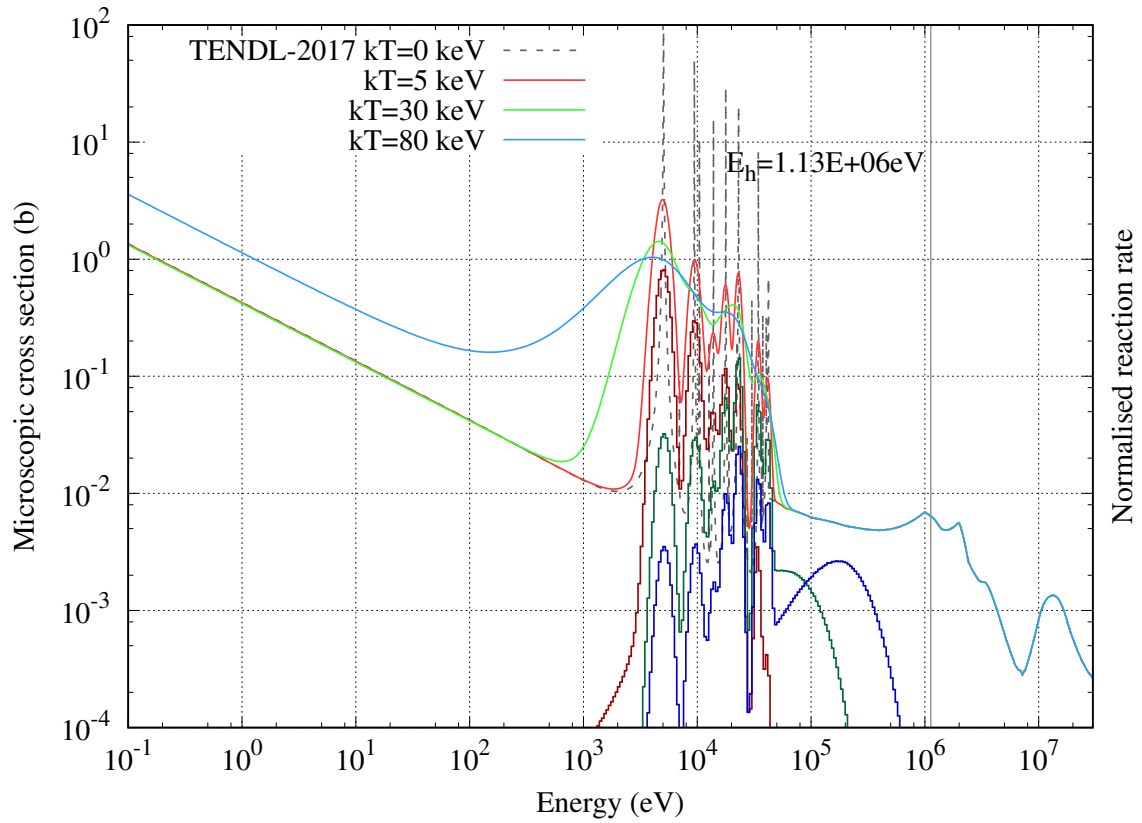
$^{124}\text{Sn}_{50}$ [$T_{1/2} = 1.00 \times 10^{17}$ years]



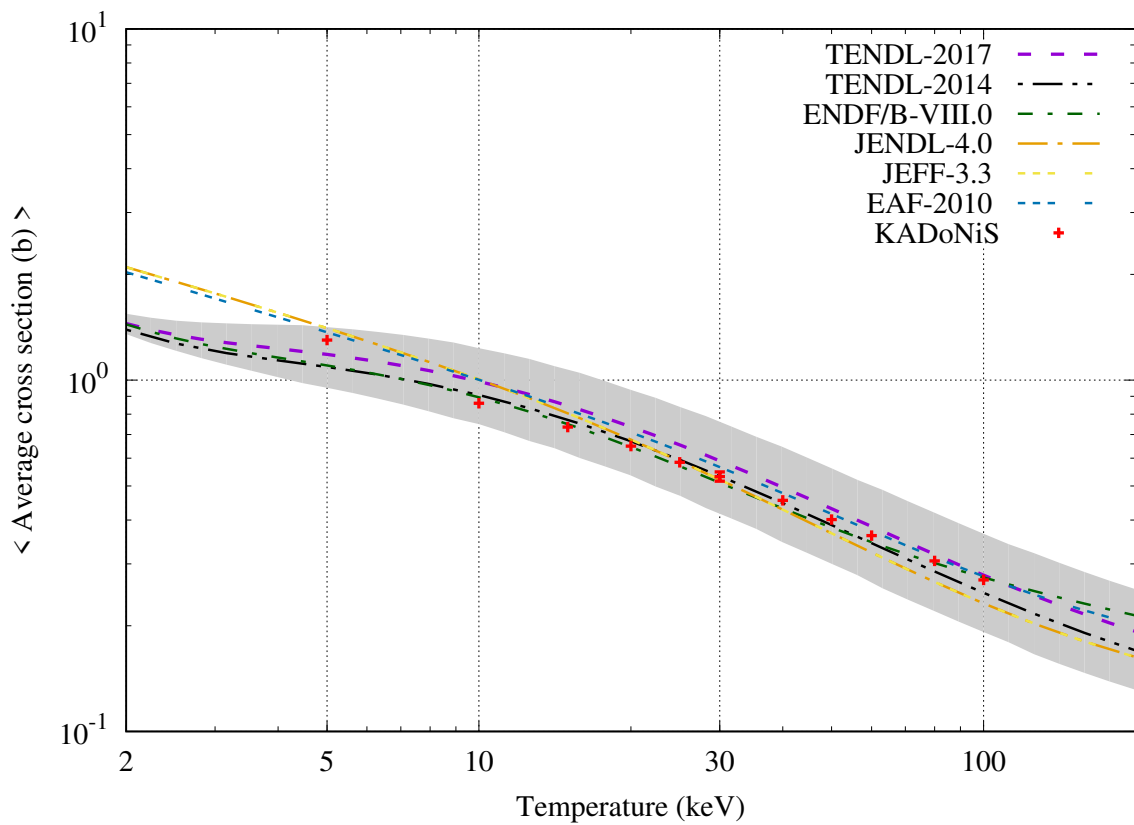
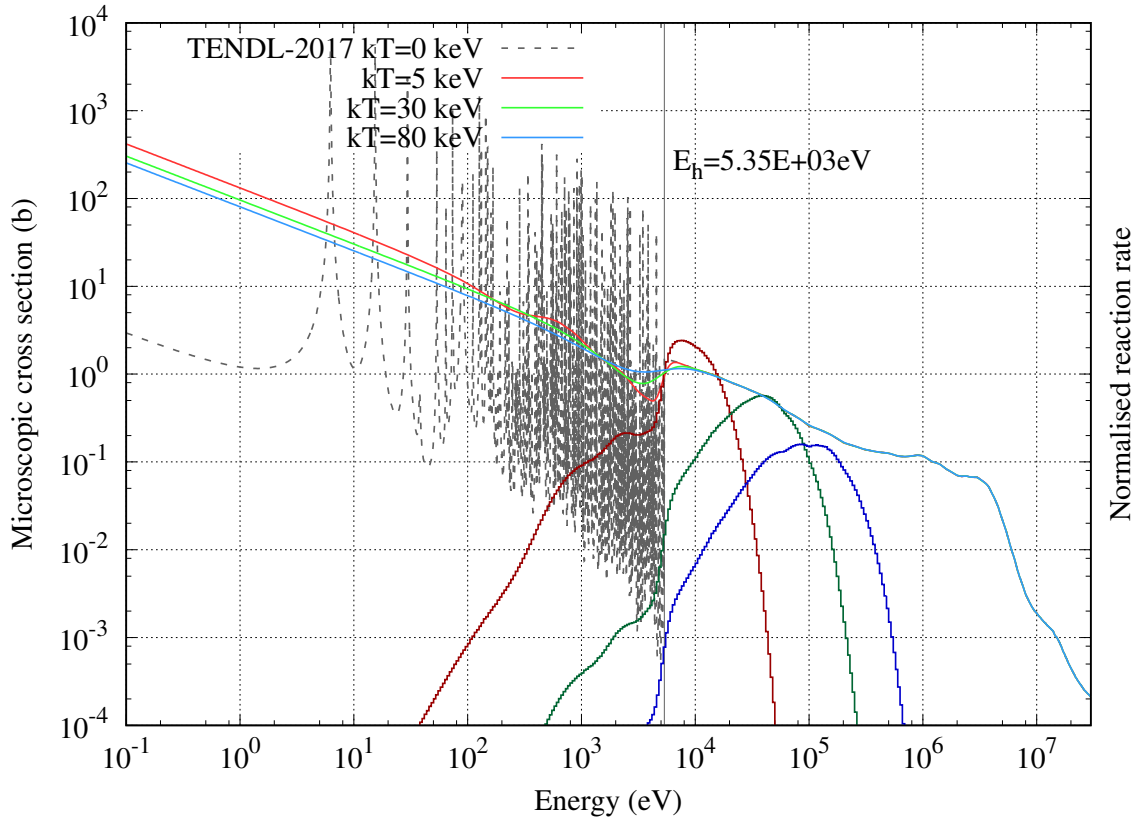
$^{125}\text{Sn}_{50}$ [$T_{1/2} = 9.64$ days] (KADoNiS=SMC)



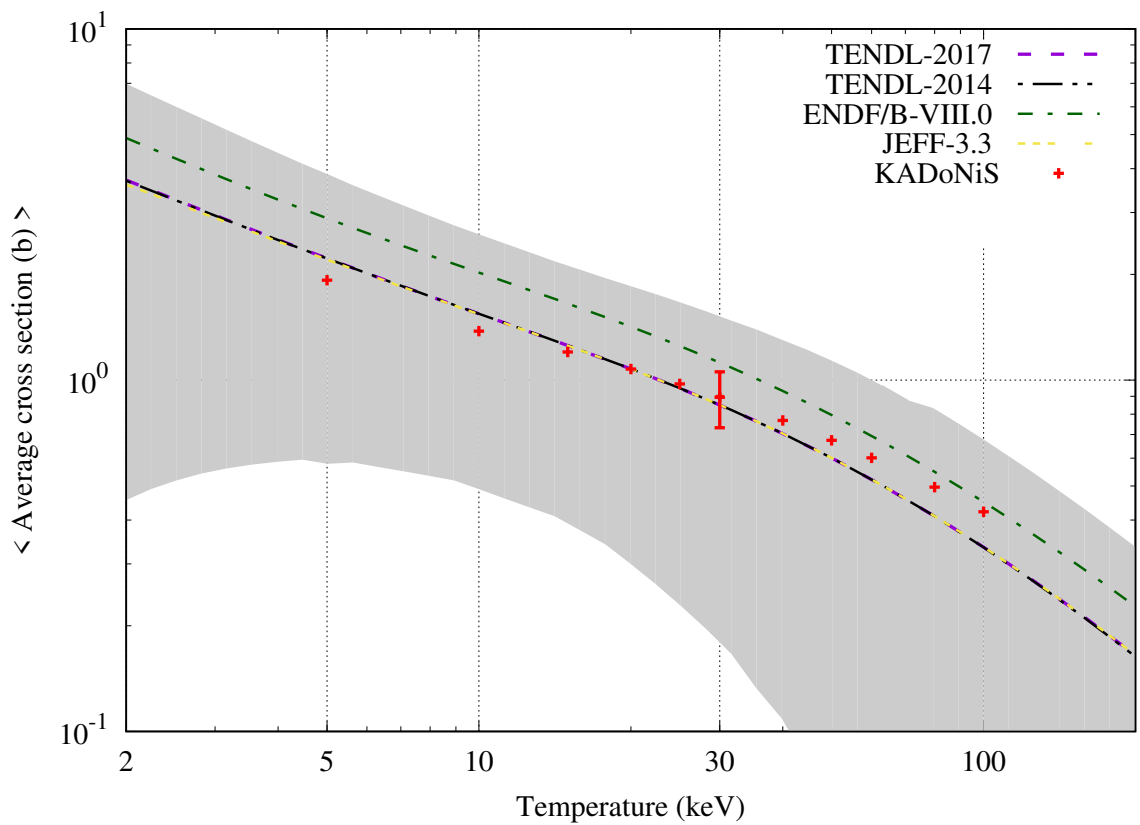
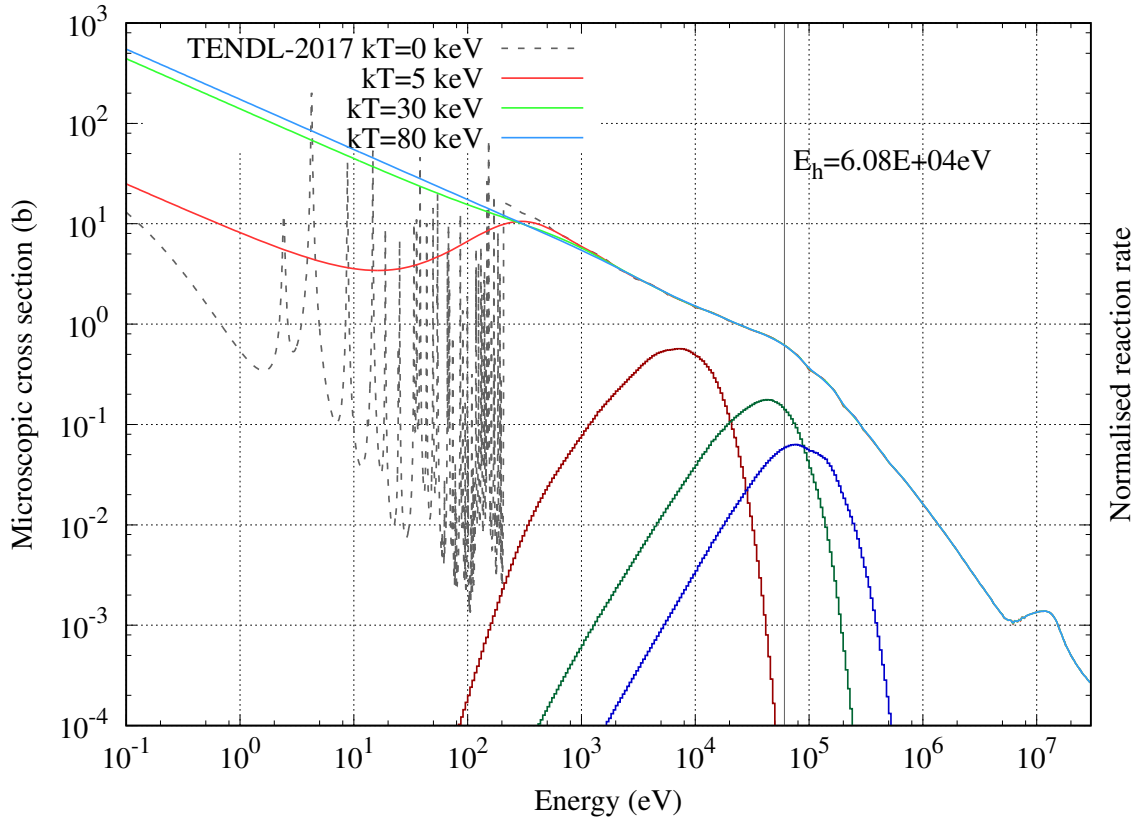
$^{126}\text{Sn}_{50}$ [$T_{1/2} = 2.30 \times 10^5$ years] (KADoNiS=SMC)



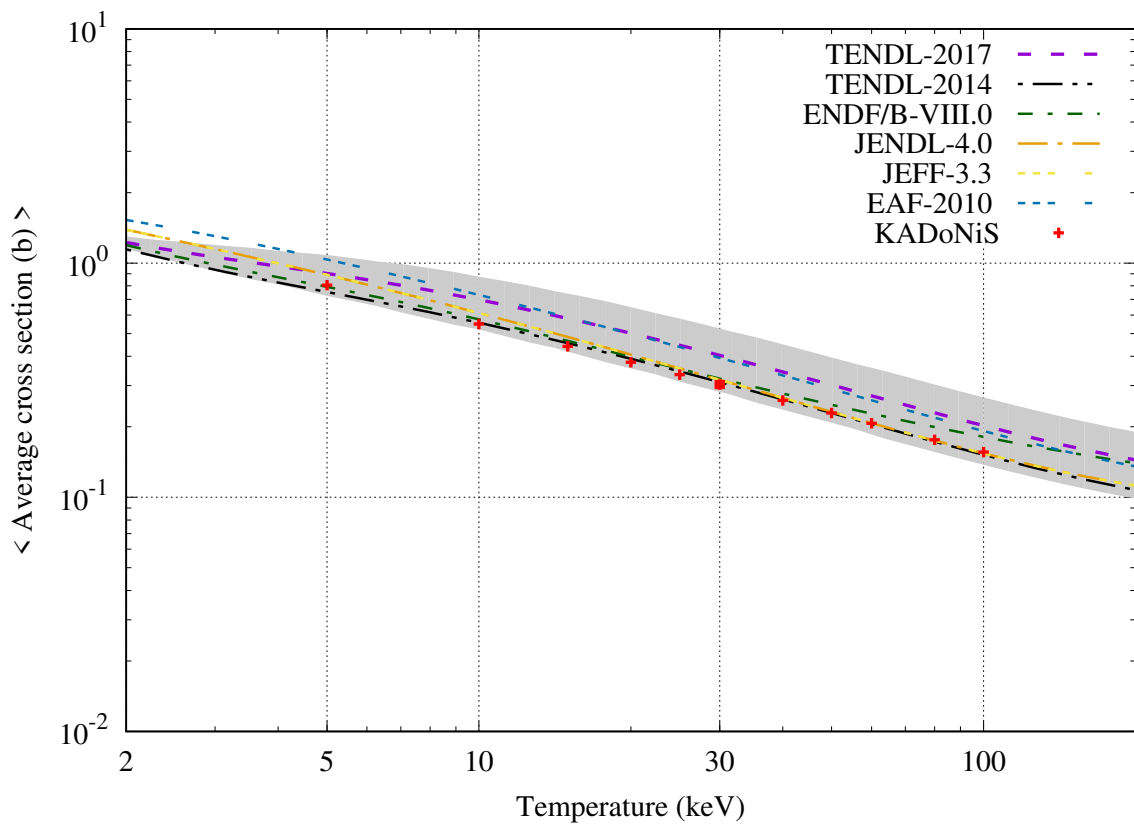
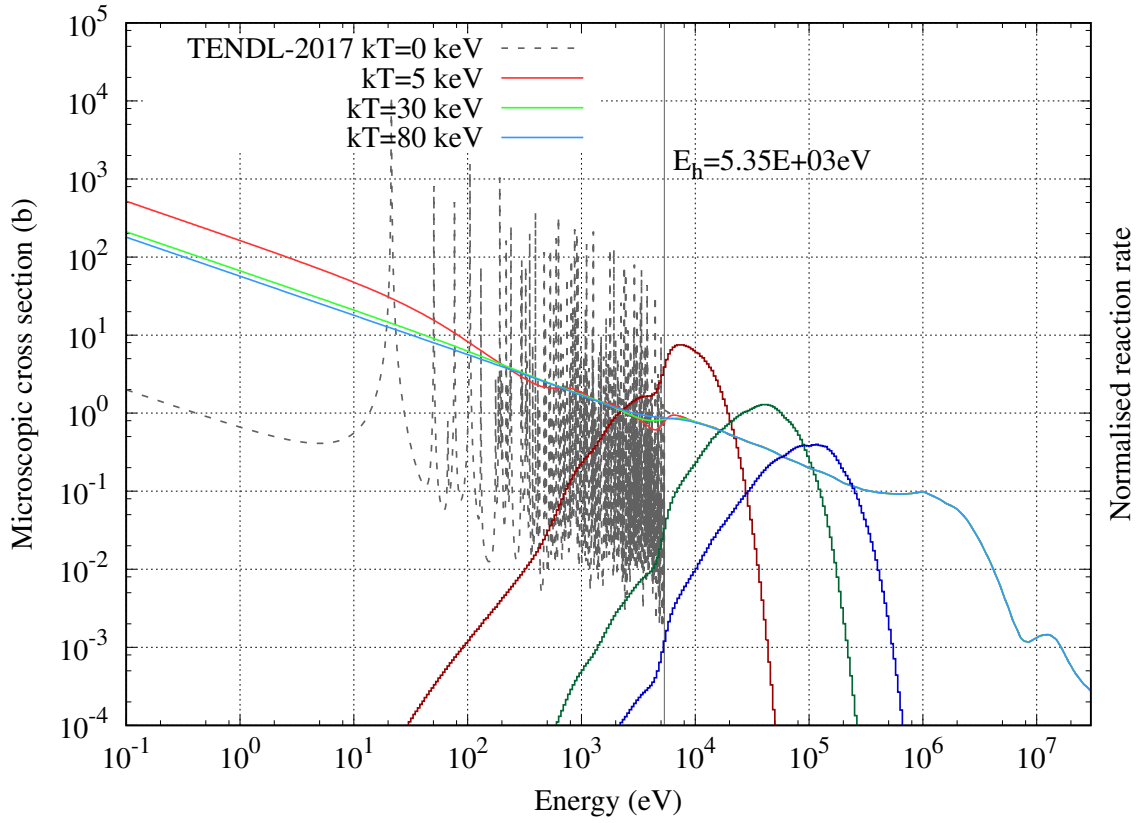
$^{121}\text{Sb}_{51}$ [Stable]



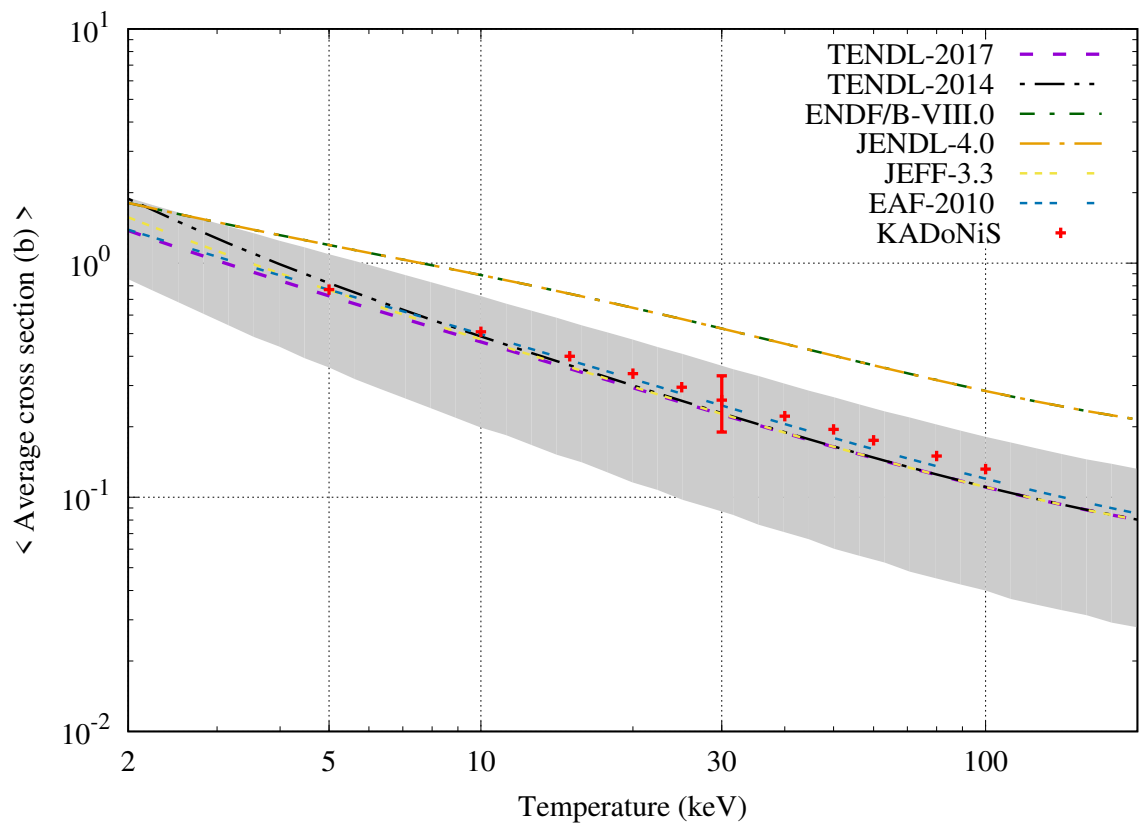
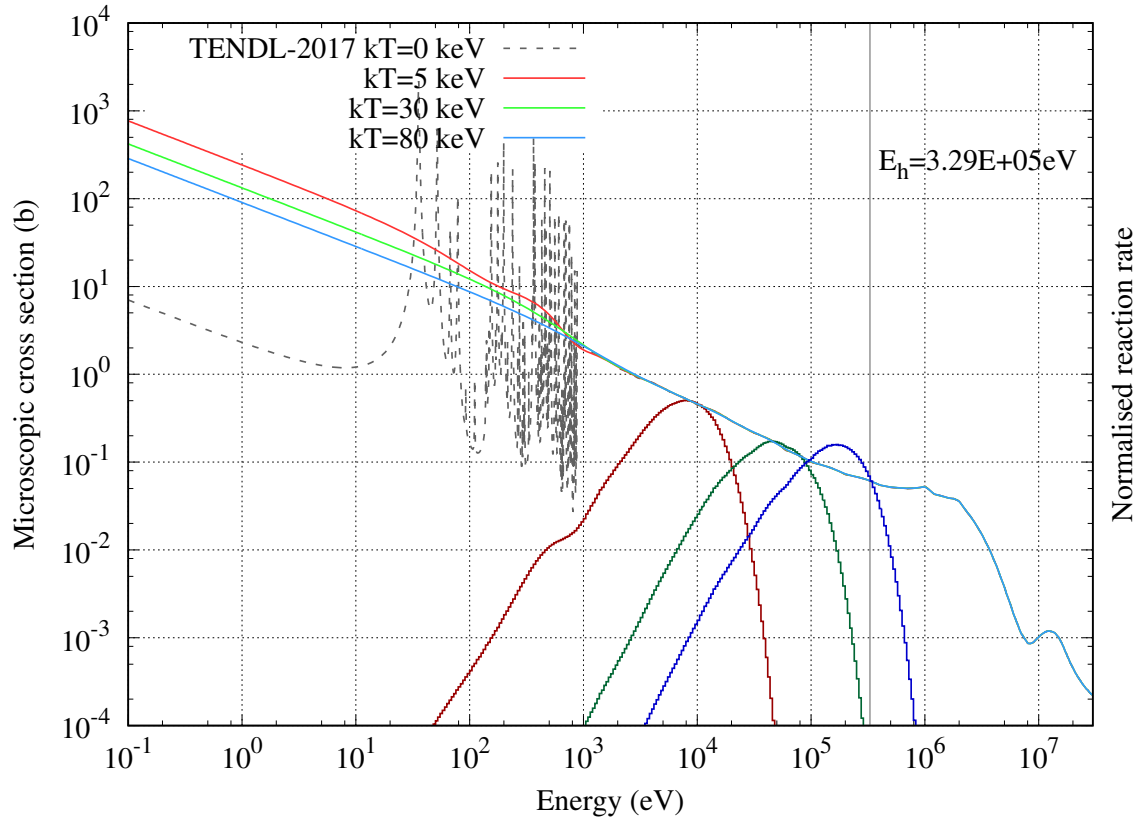
$^{122}\text{Sb}_{51}$ [$T_{1/2} = 2.70$ days] (KADoNiS=SMC)



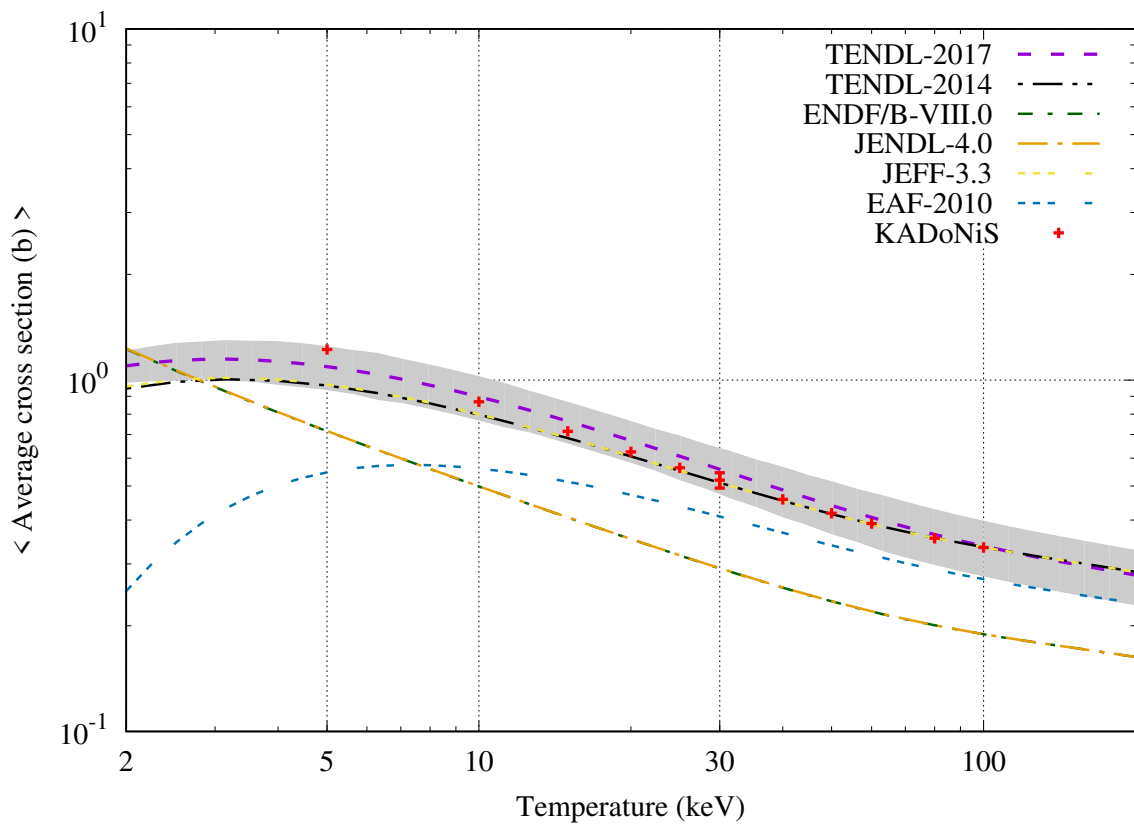
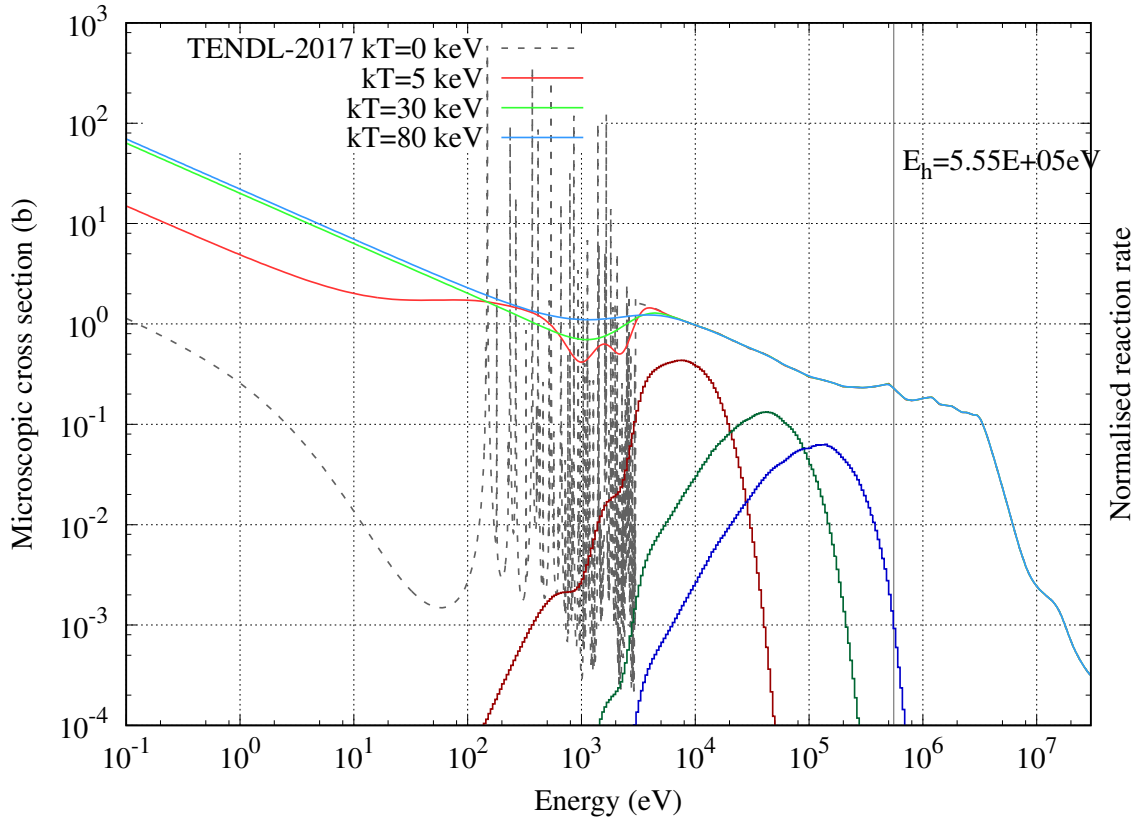
$^{123}\text{Sb}_{51}$ [Stable]



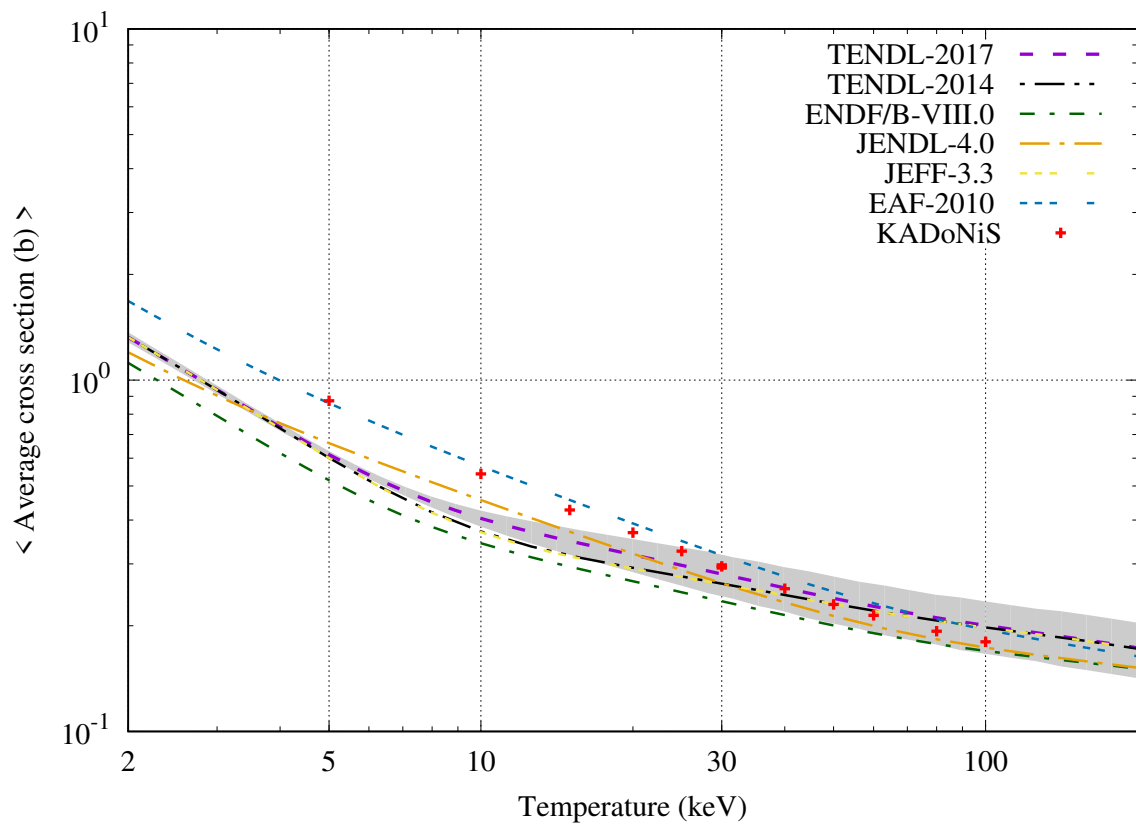
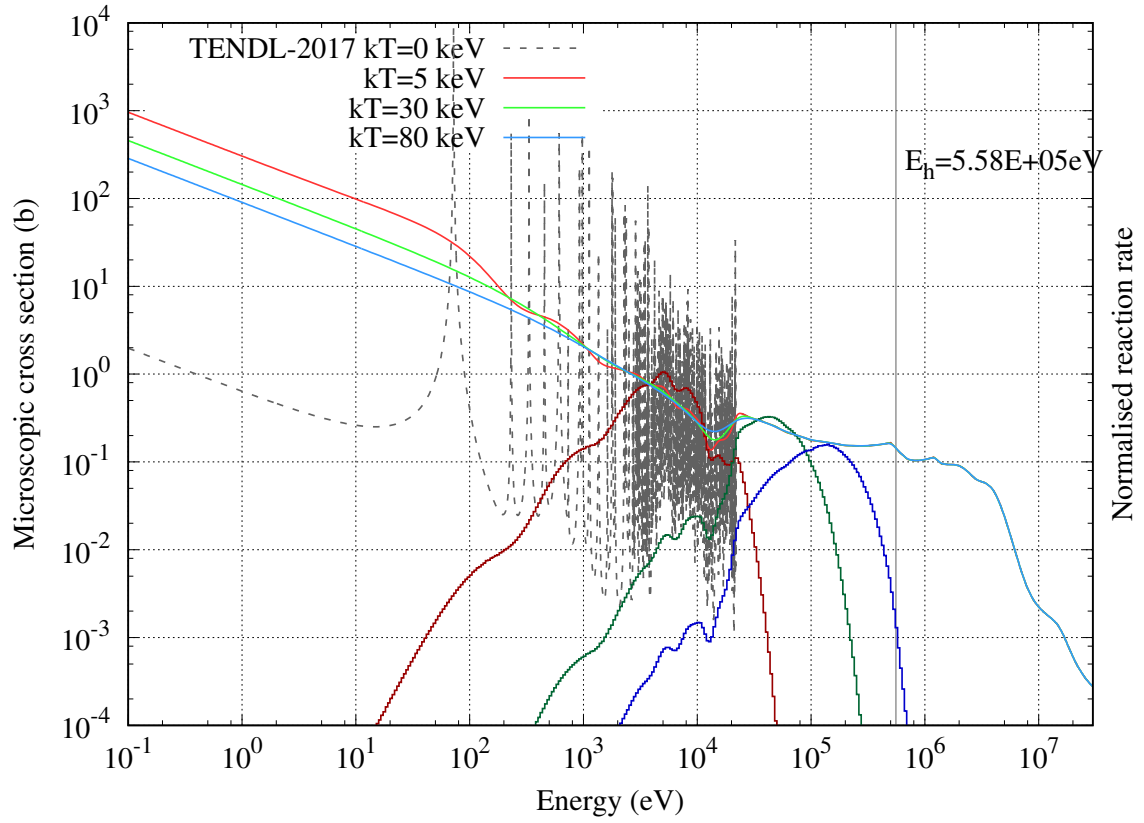
$^{125}\text{Sb}_{51}$ [$T_{1/2} = 2.76$ years] (KADoNiS=SMC)



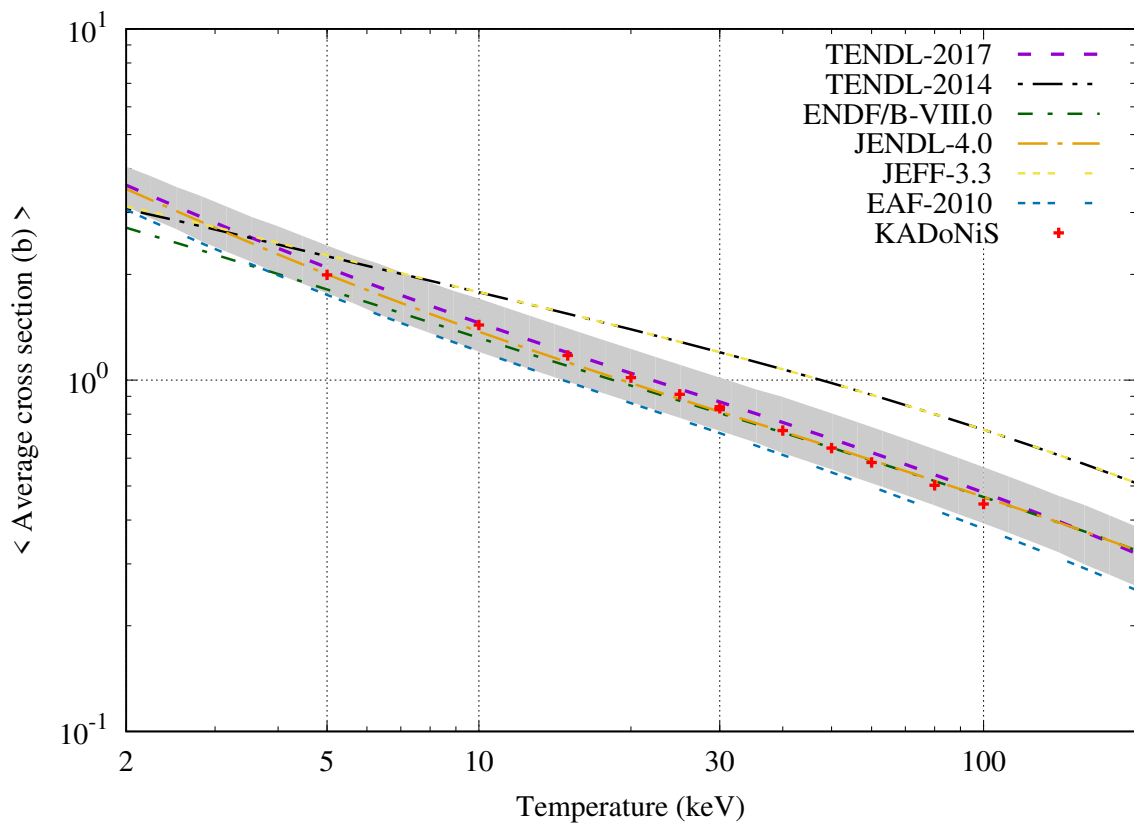
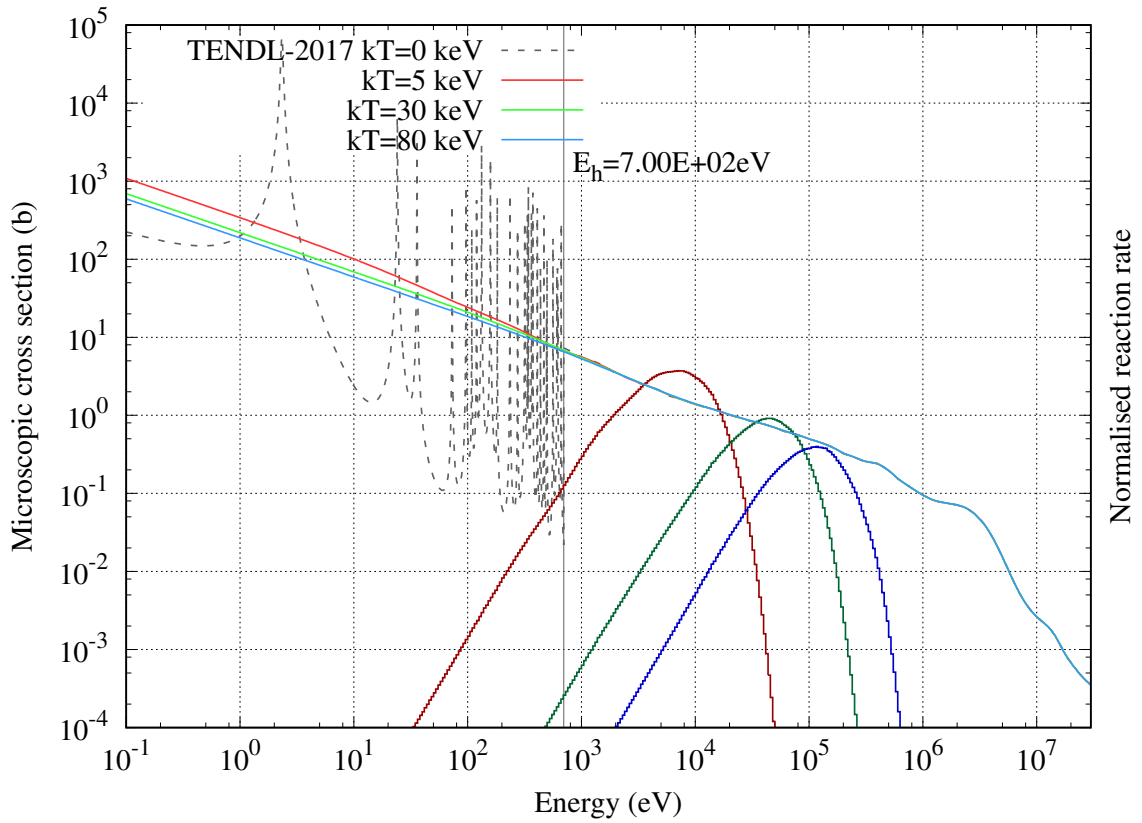
$^{120}\text{Te}_{52}$ [Stable]



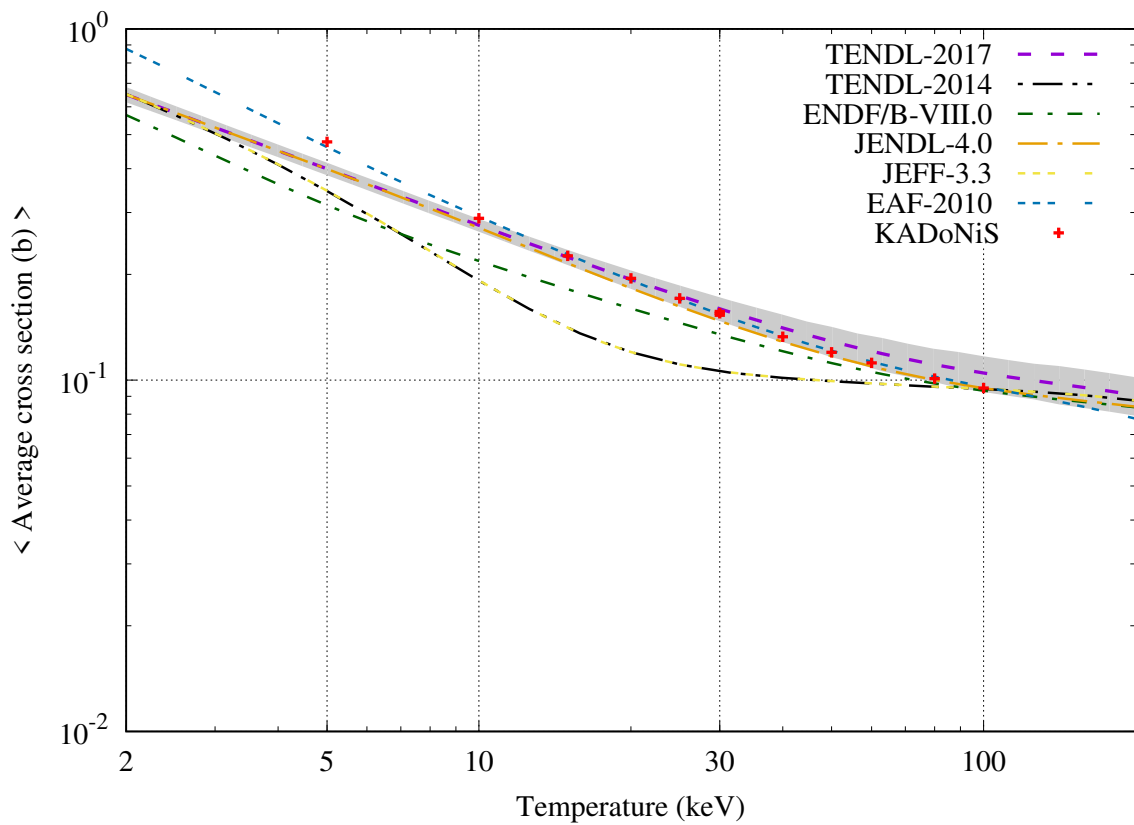
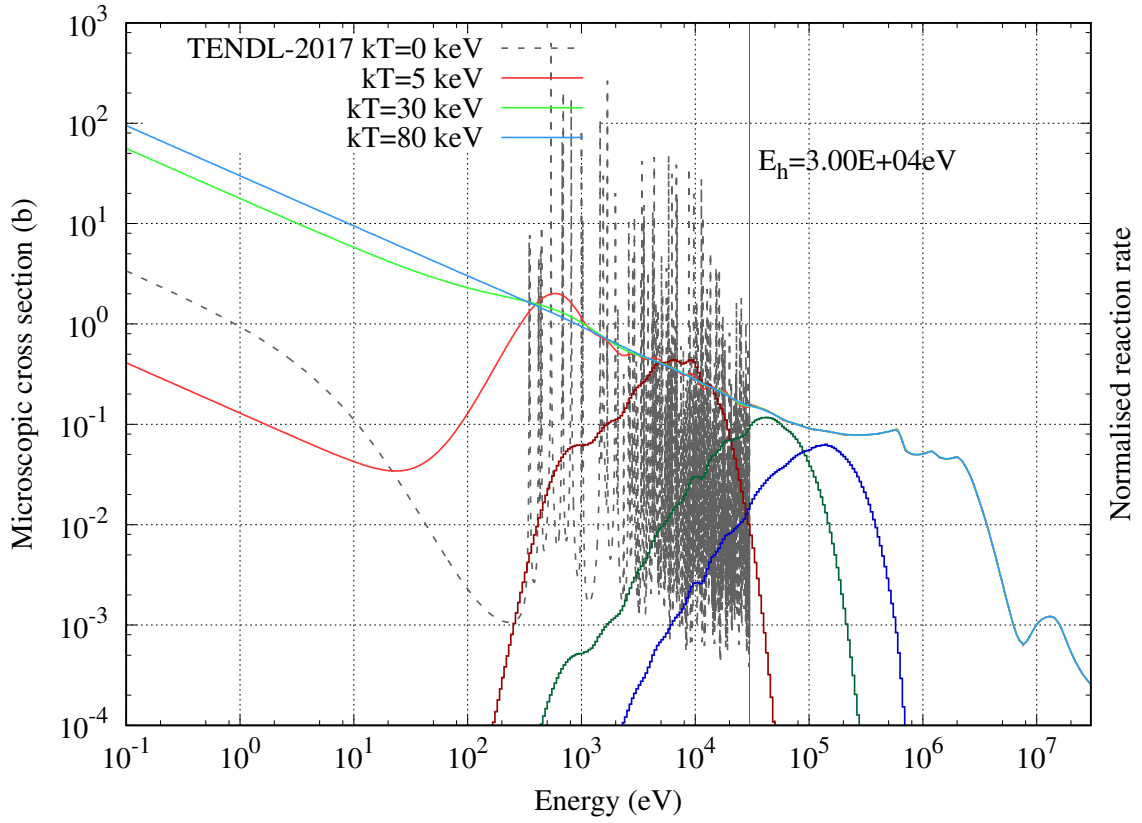
$^{122}\text{Te}_{52}$ [Stable]



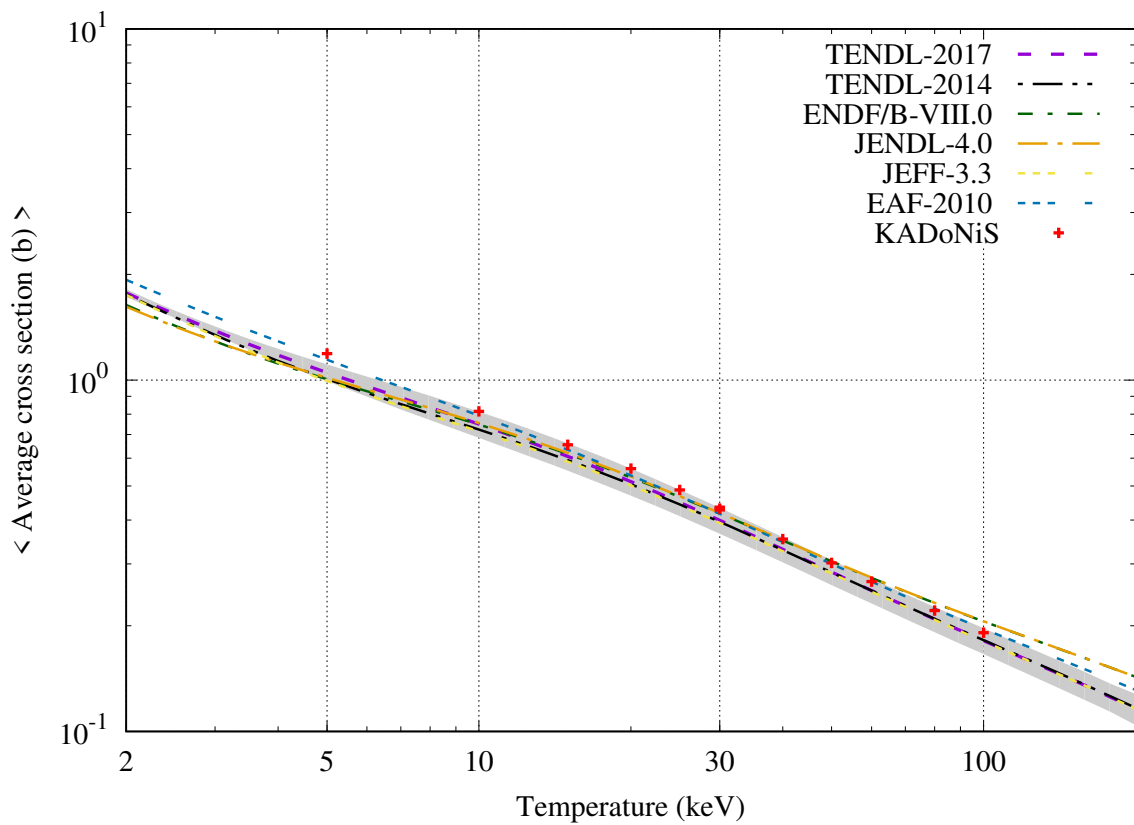
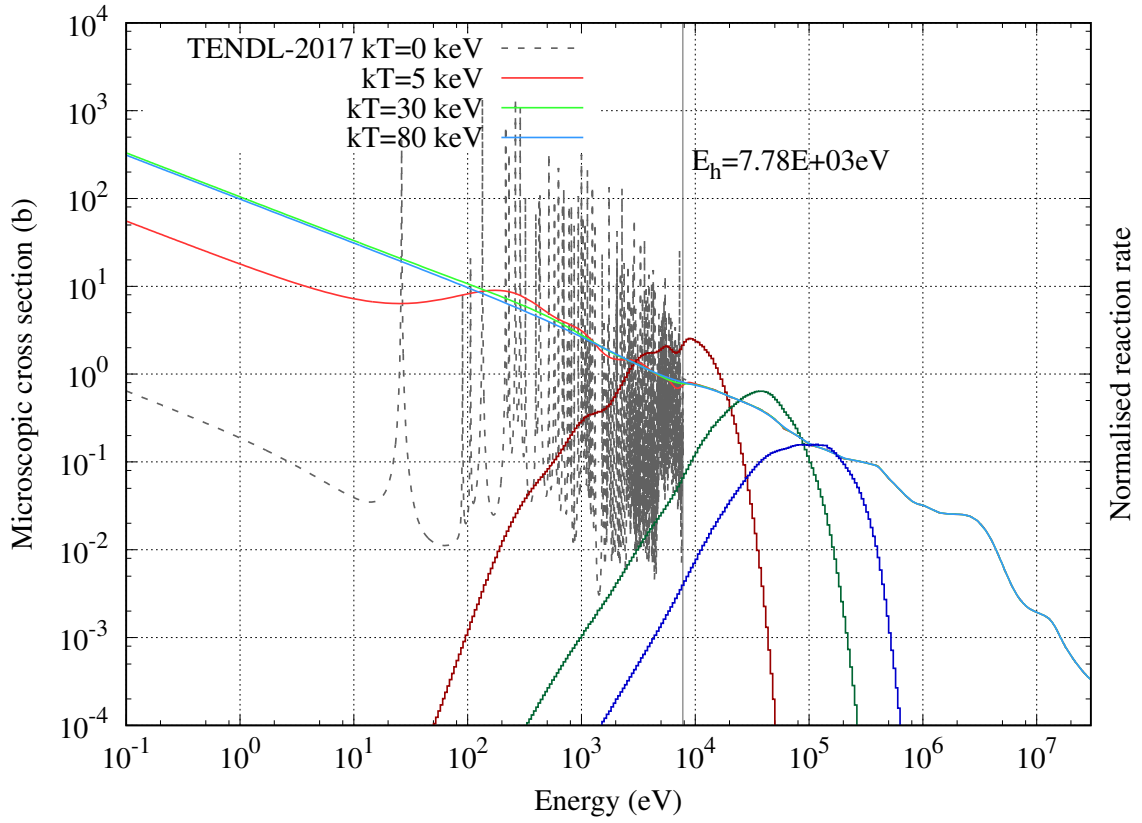
$^{123}\text{Te}_{52}$ [$T_{1/2} = 9.20 \times 10^{16}$ years]



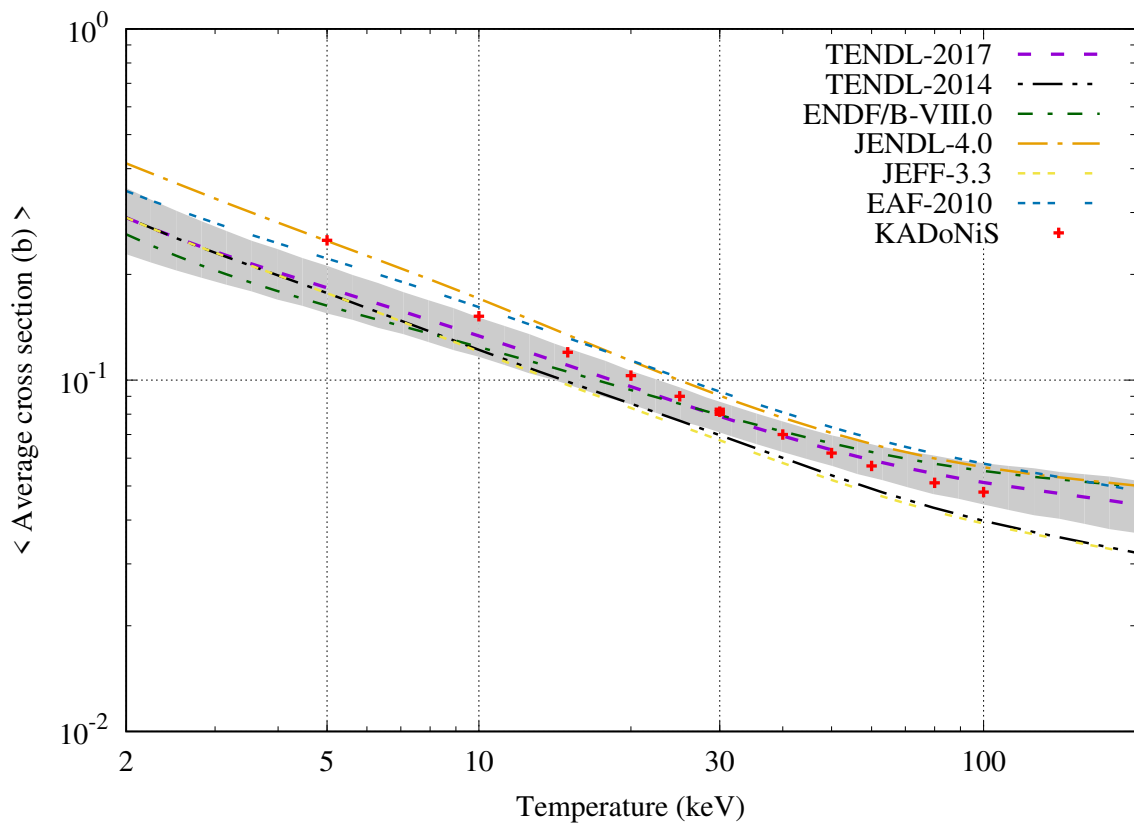
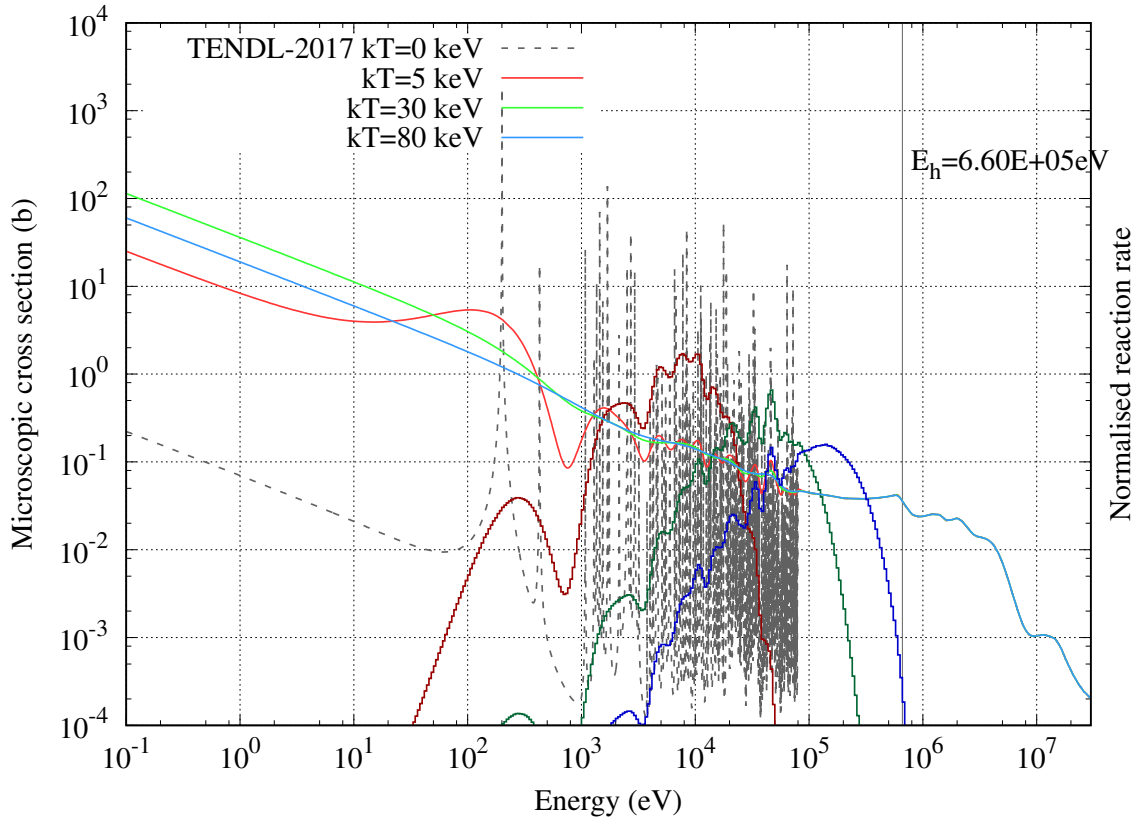
$^{124}\text{Te}_{52}$ [Stable]



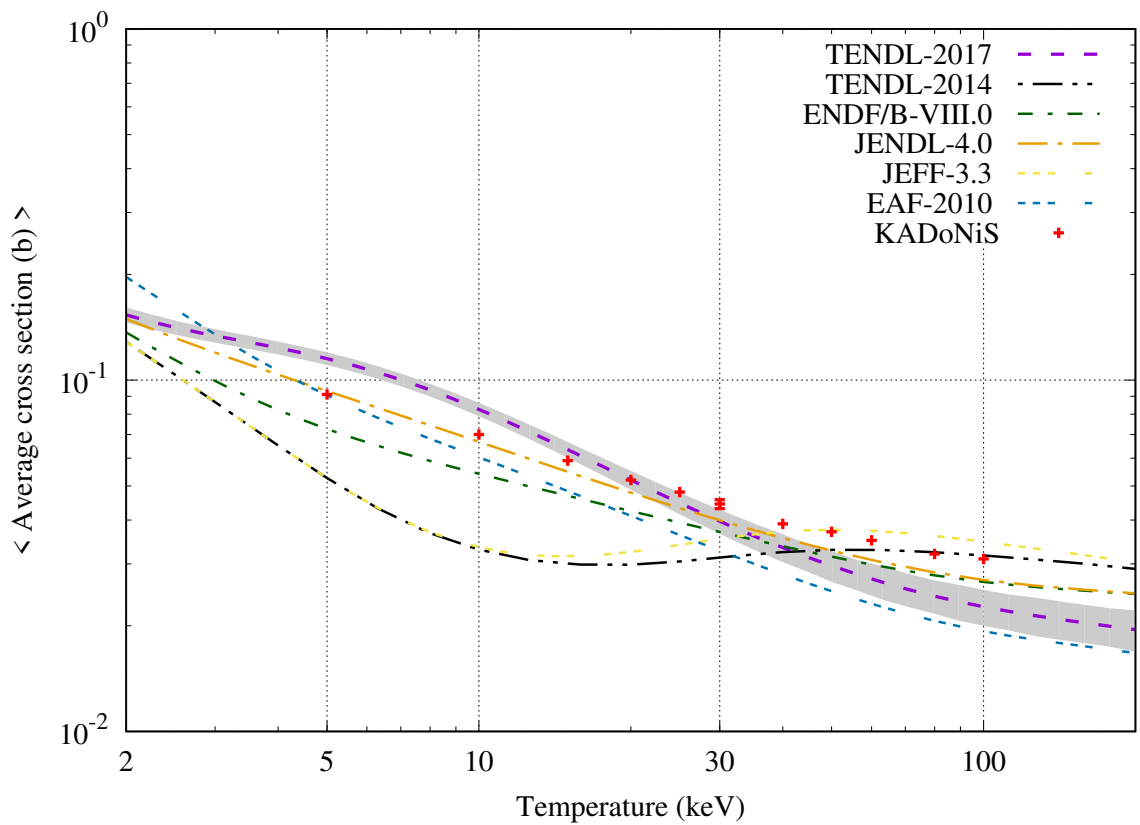
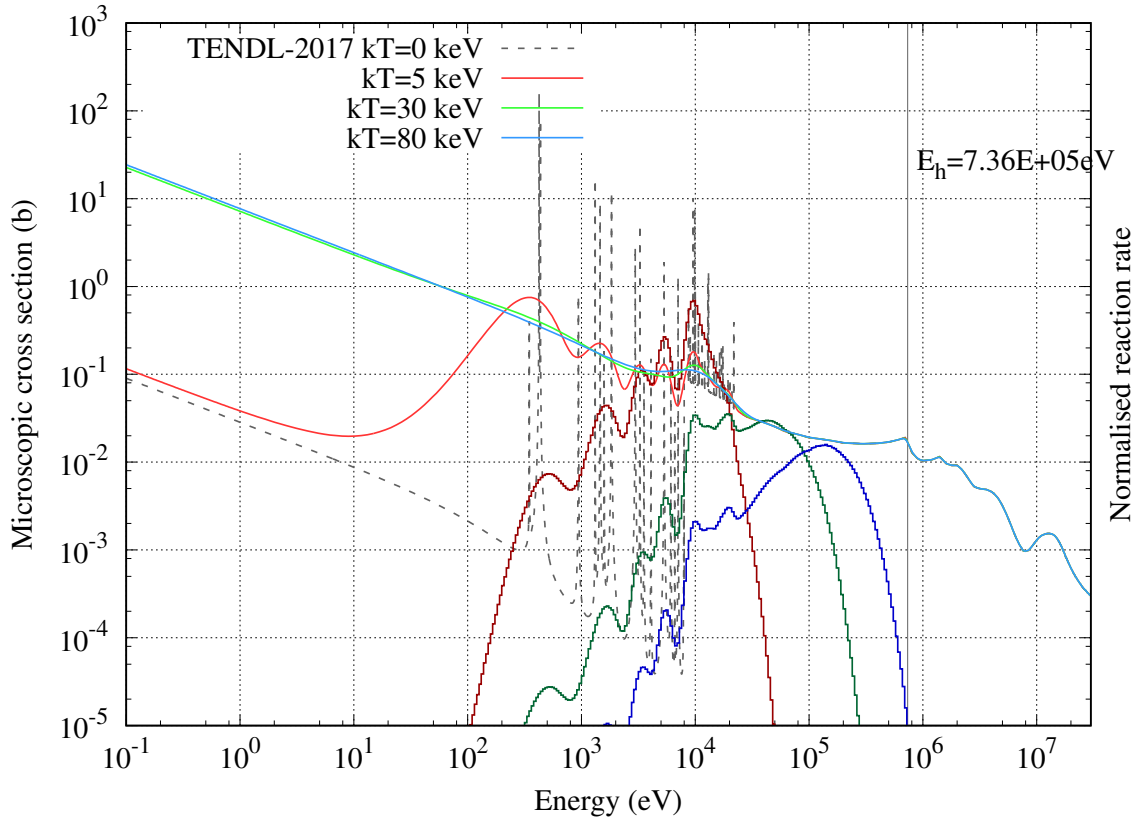
$^{125}\text{Te}_{52}$ [Stable]



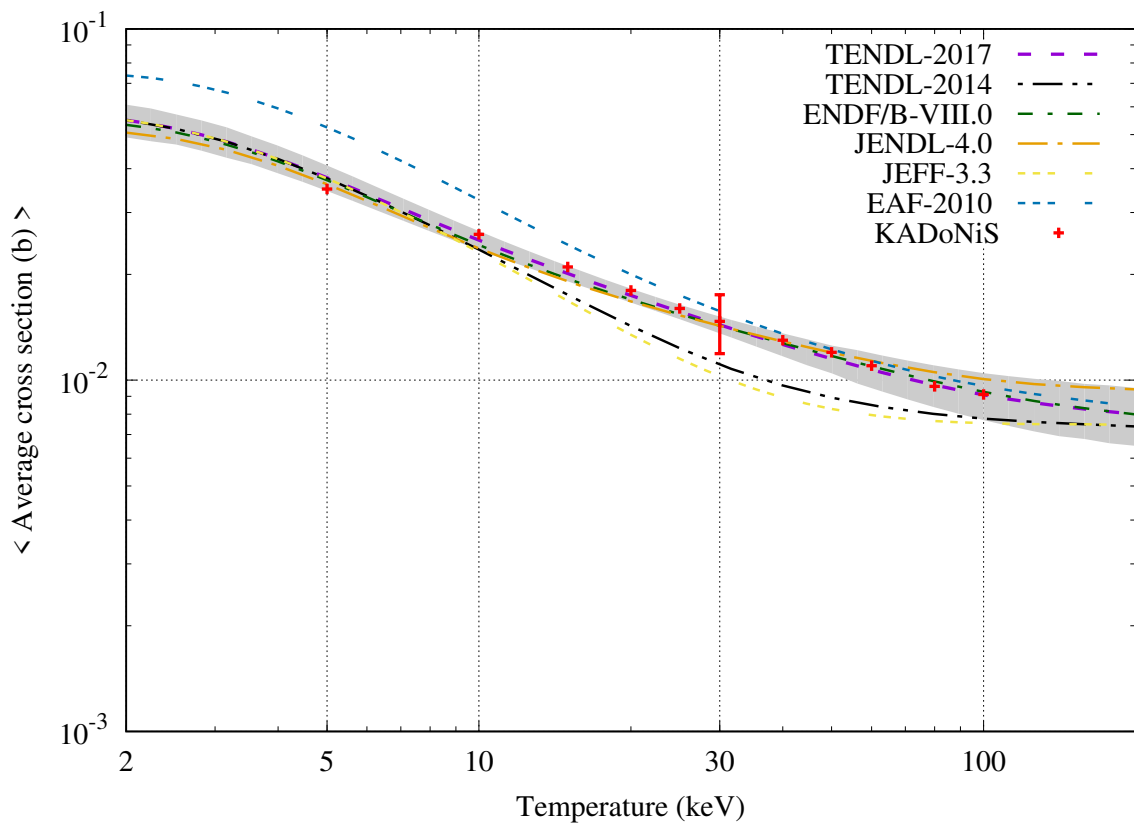
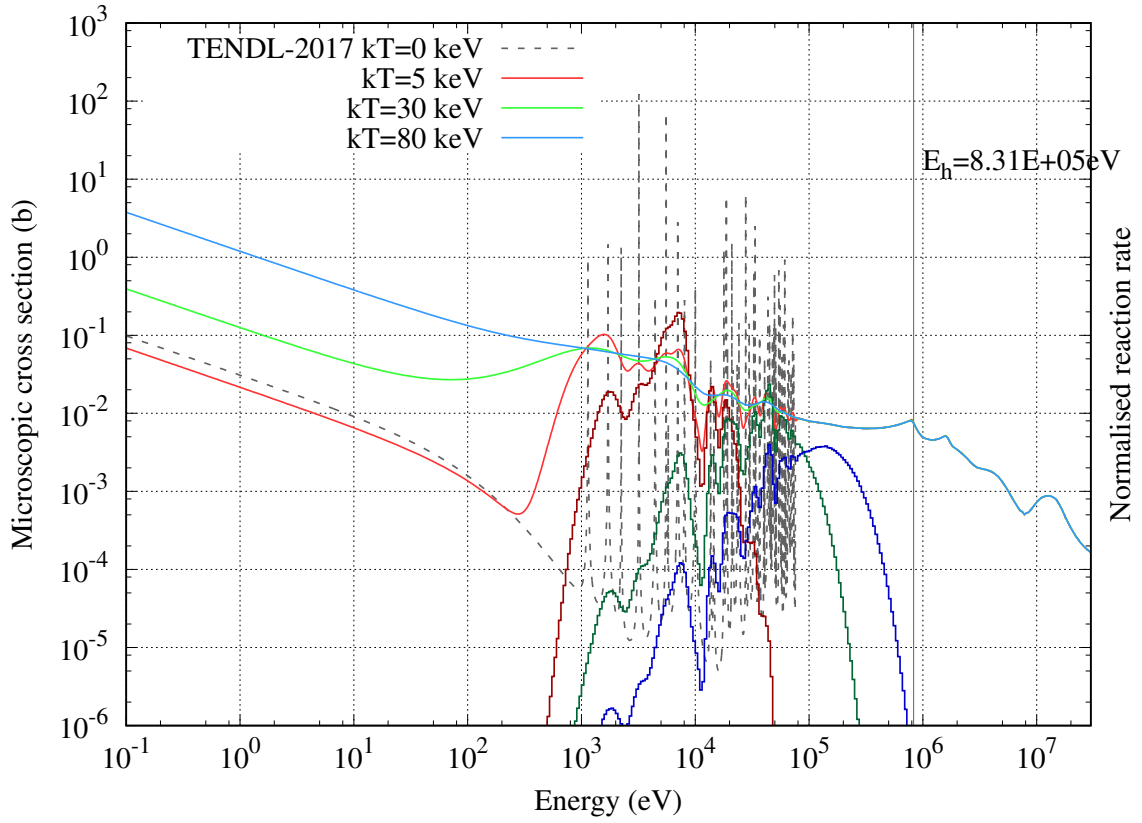
$^{126}\text{Te}_{52}$ [Stable]



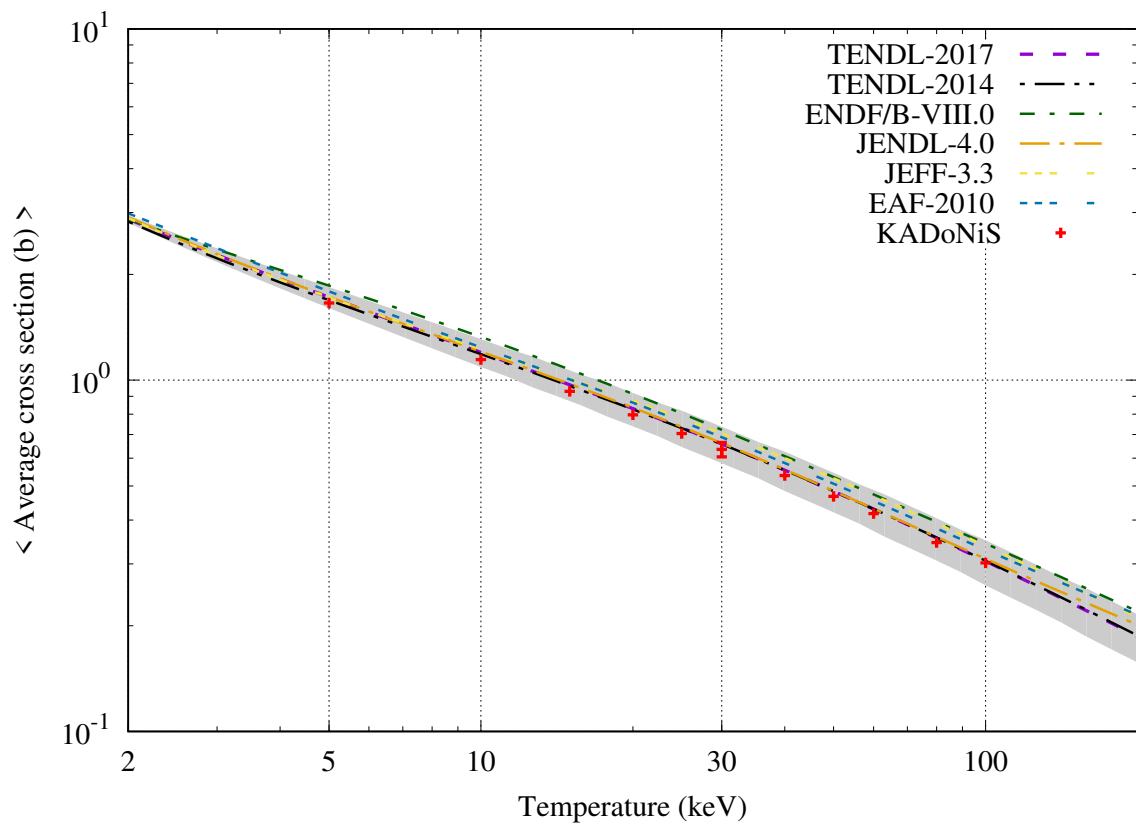
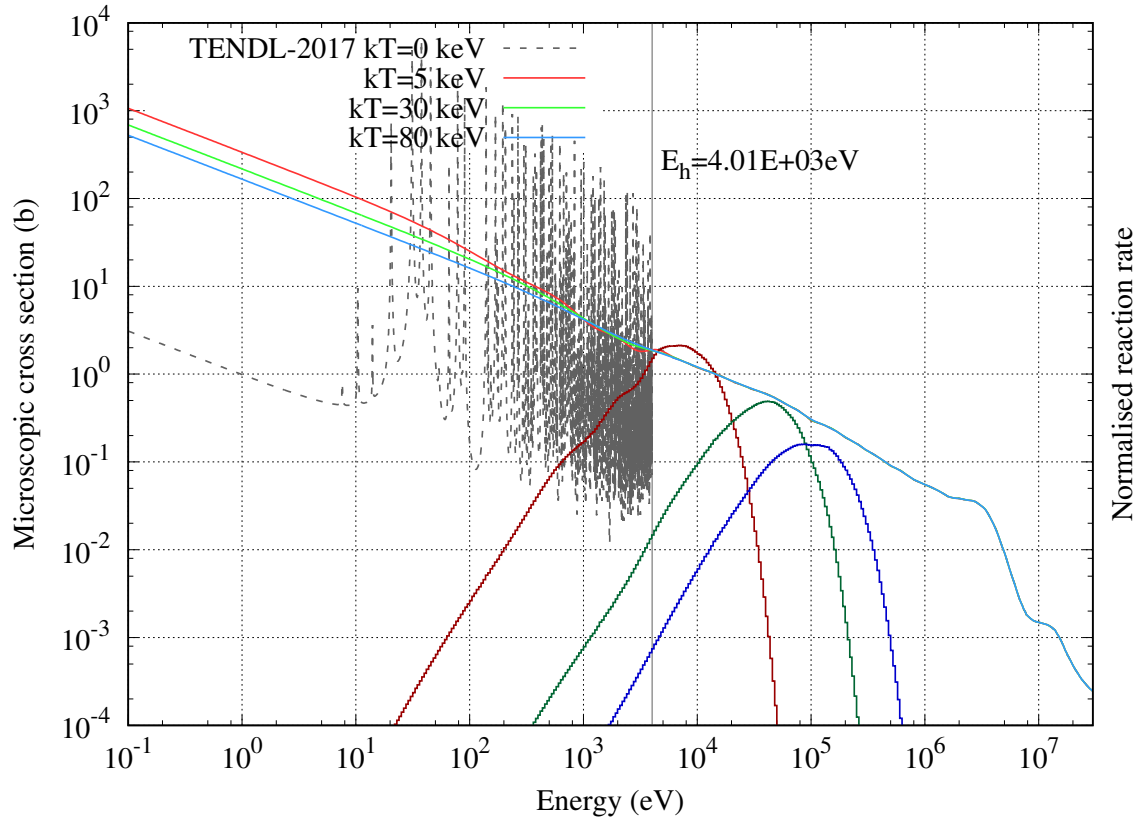
$^{128}\text{Te}_{52}$ [$T_{1/2} = 2.20 \times 10^{24}$ years]



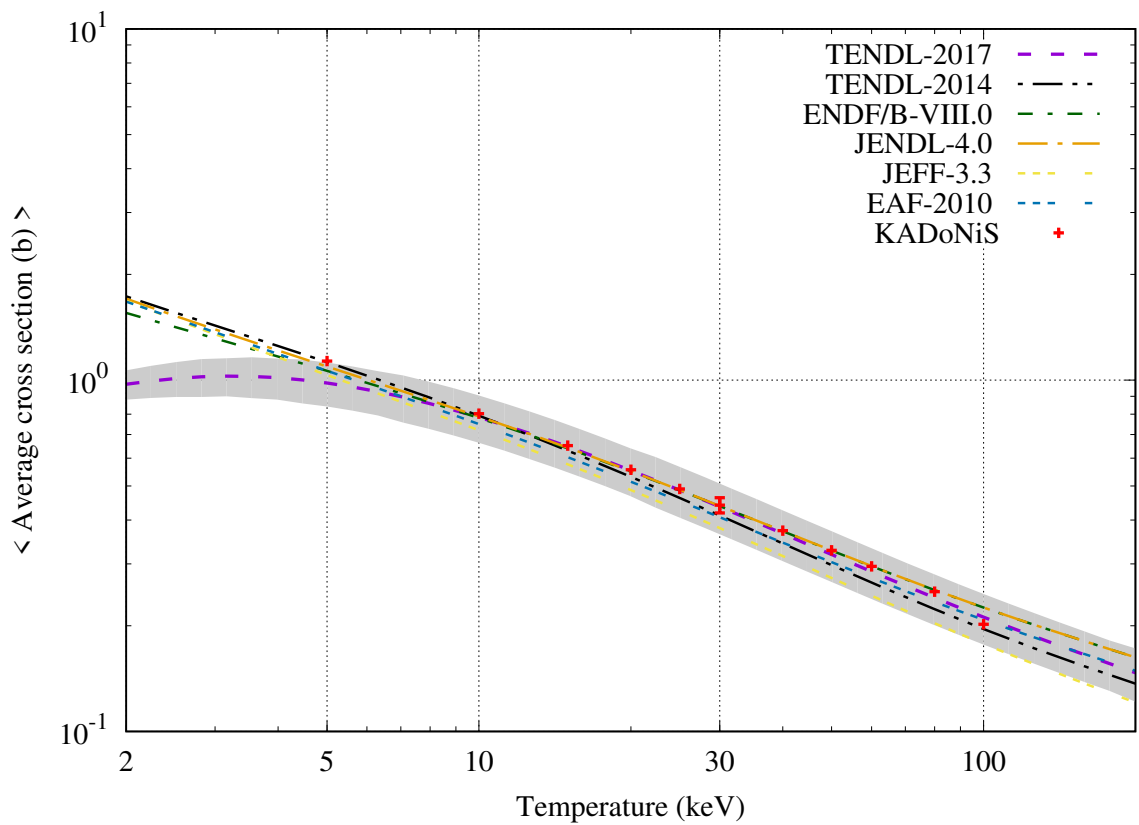
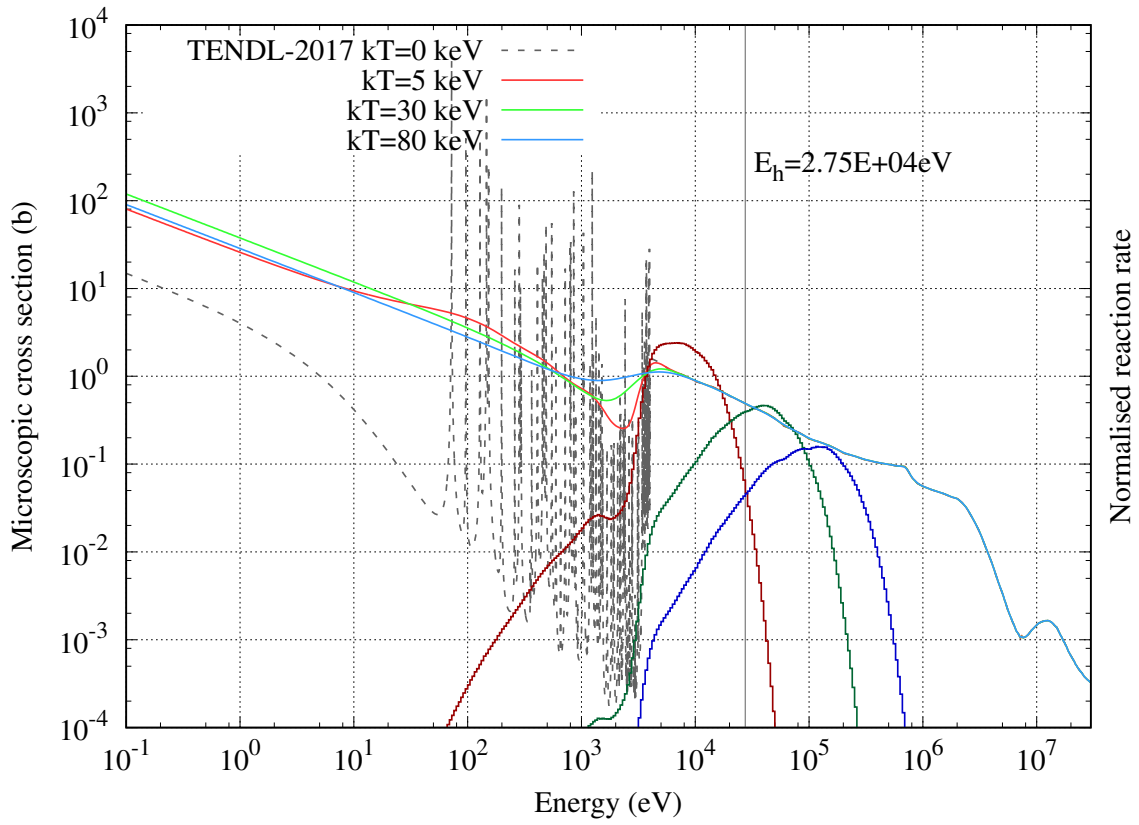
$^{130}\text{Te}_{52}$ [$T_{1/2} = 7.90 \times 10^{23}$ years]



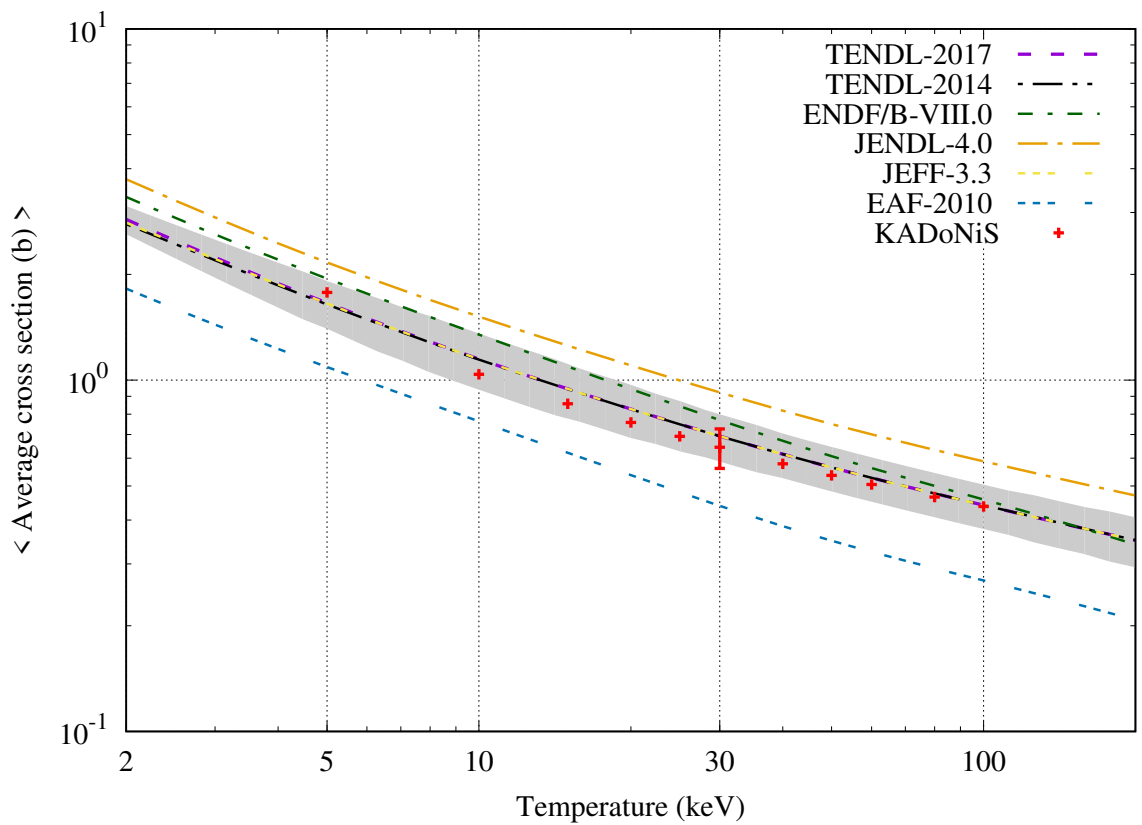
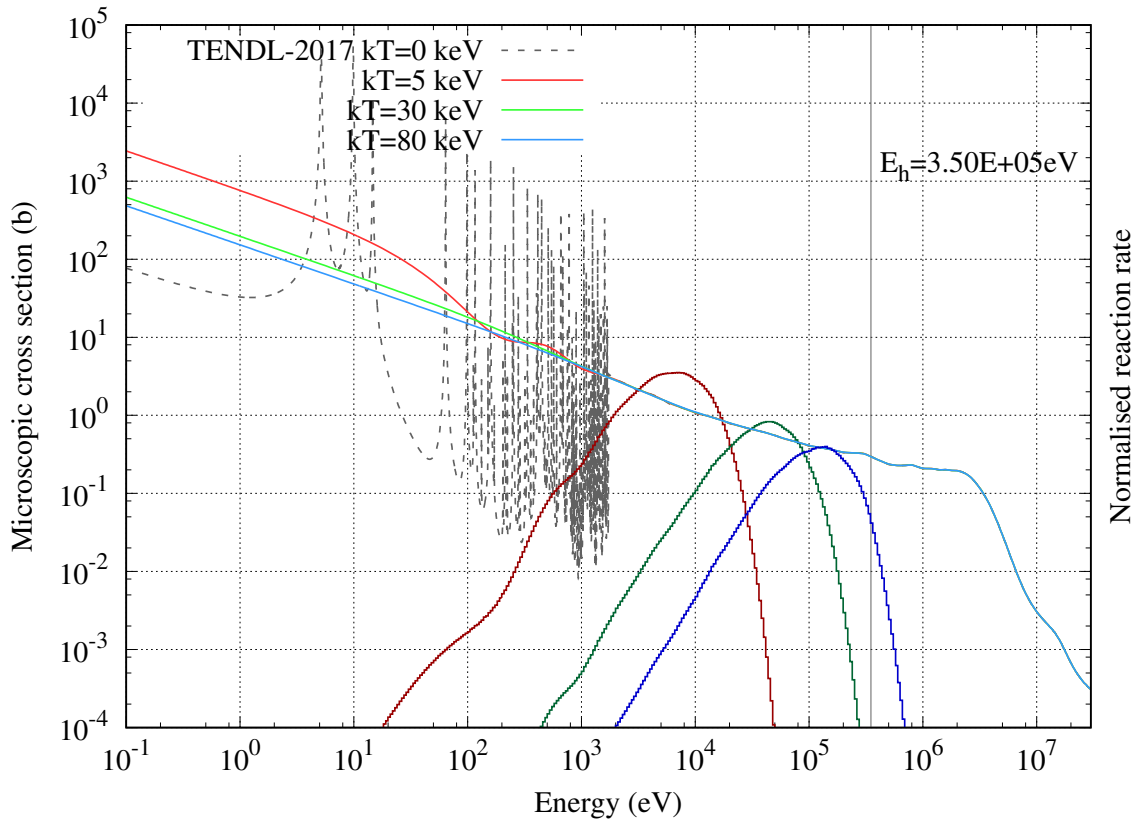
$^{127}\text{I}_{53}$ [Stable]



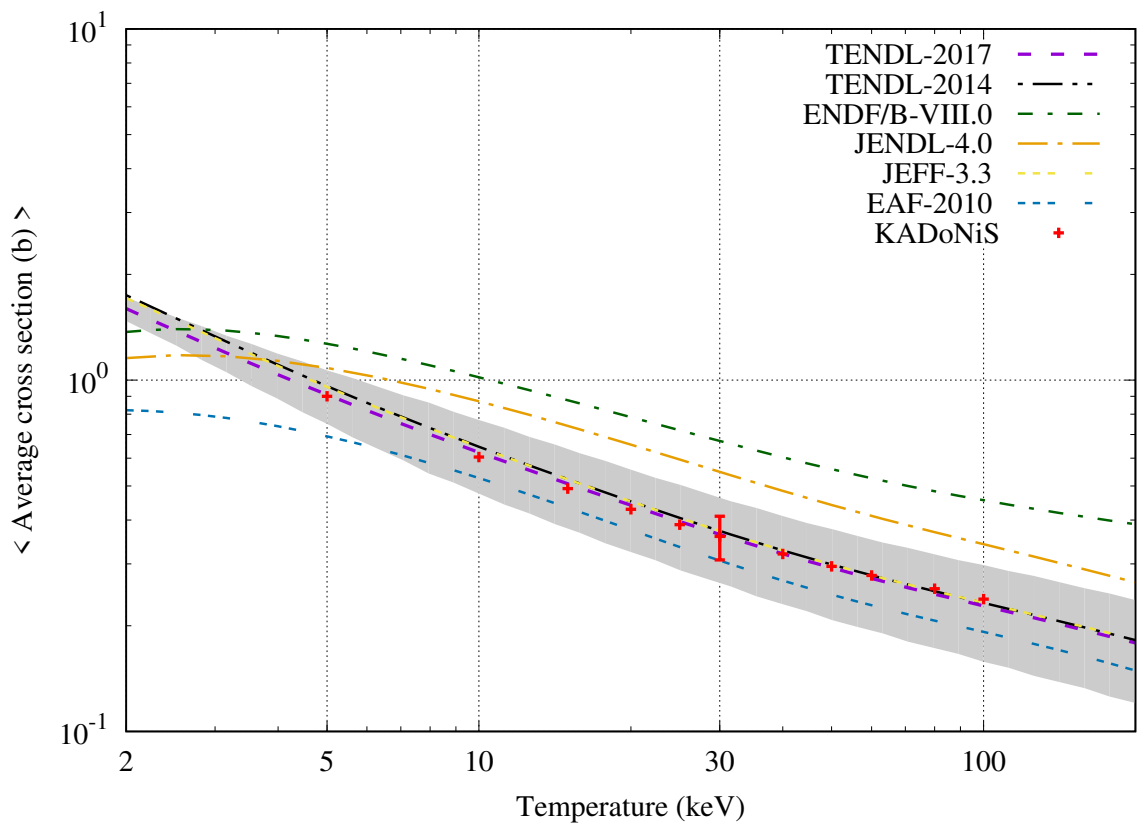
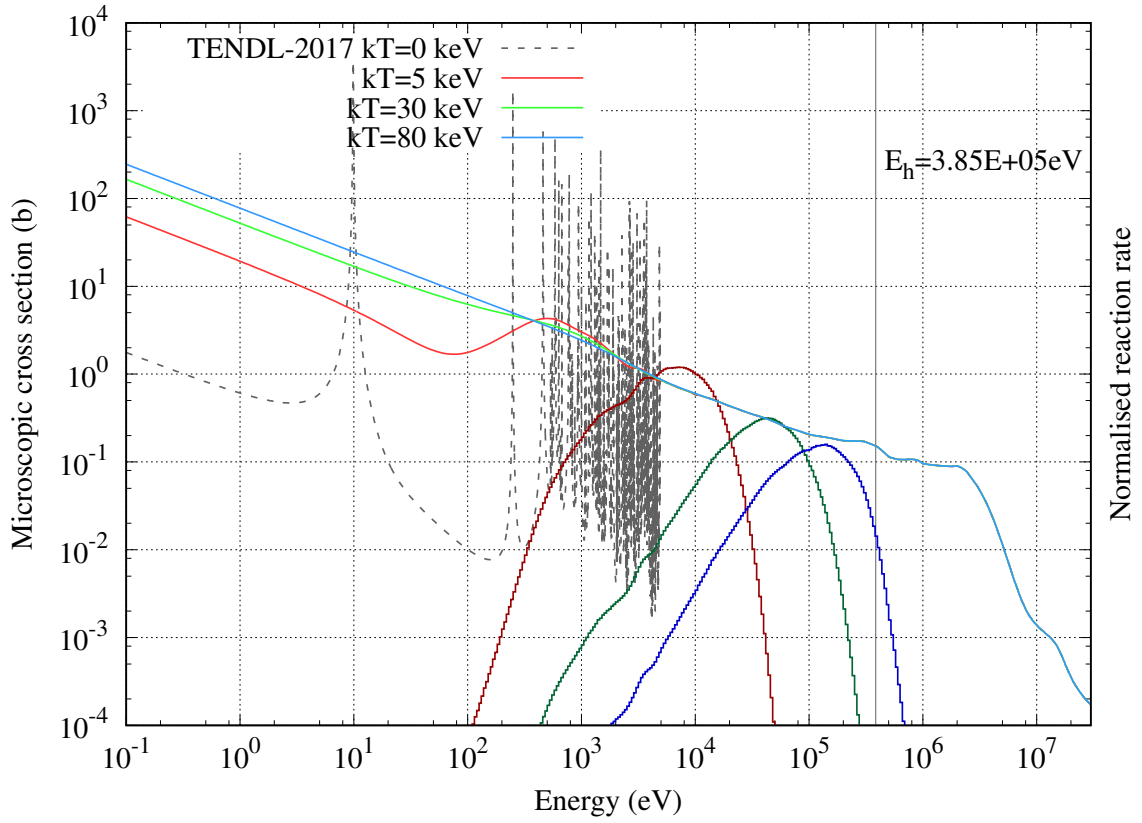
$^{129}\text{I}_{53}$ [$T_{1/2} = 1.61 \times 10^7$ years]



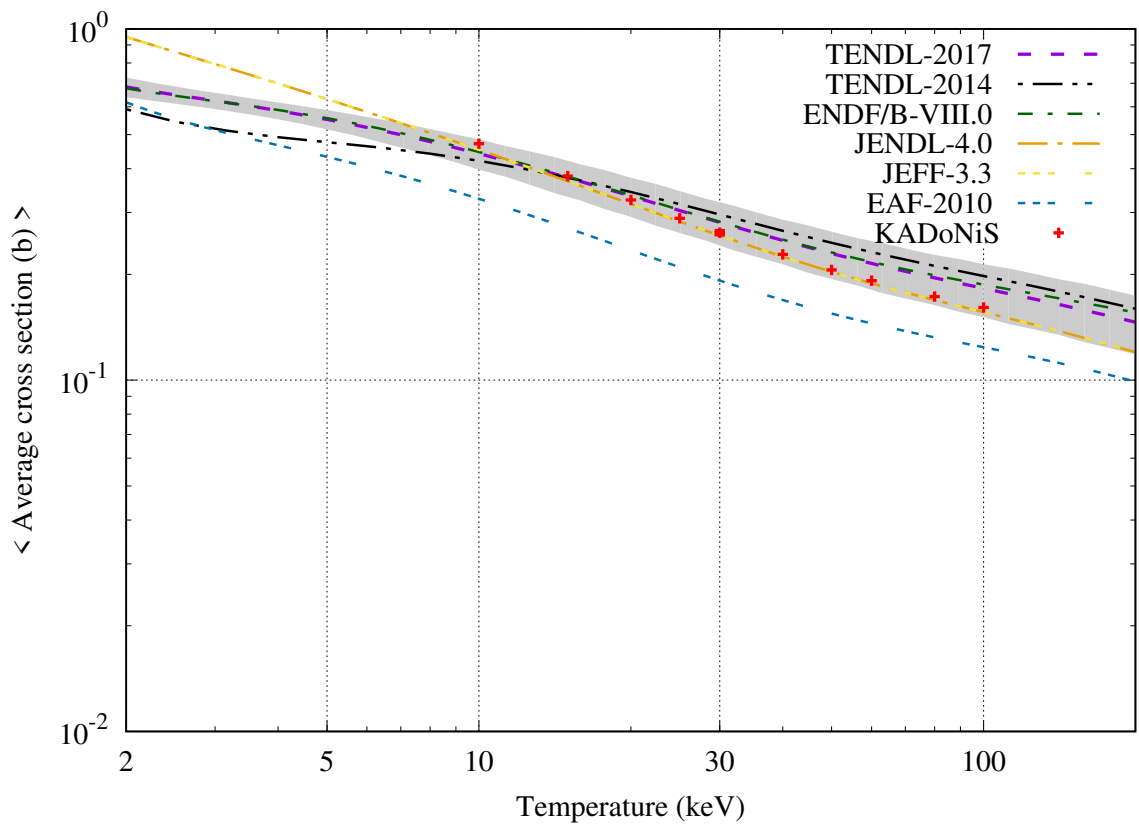
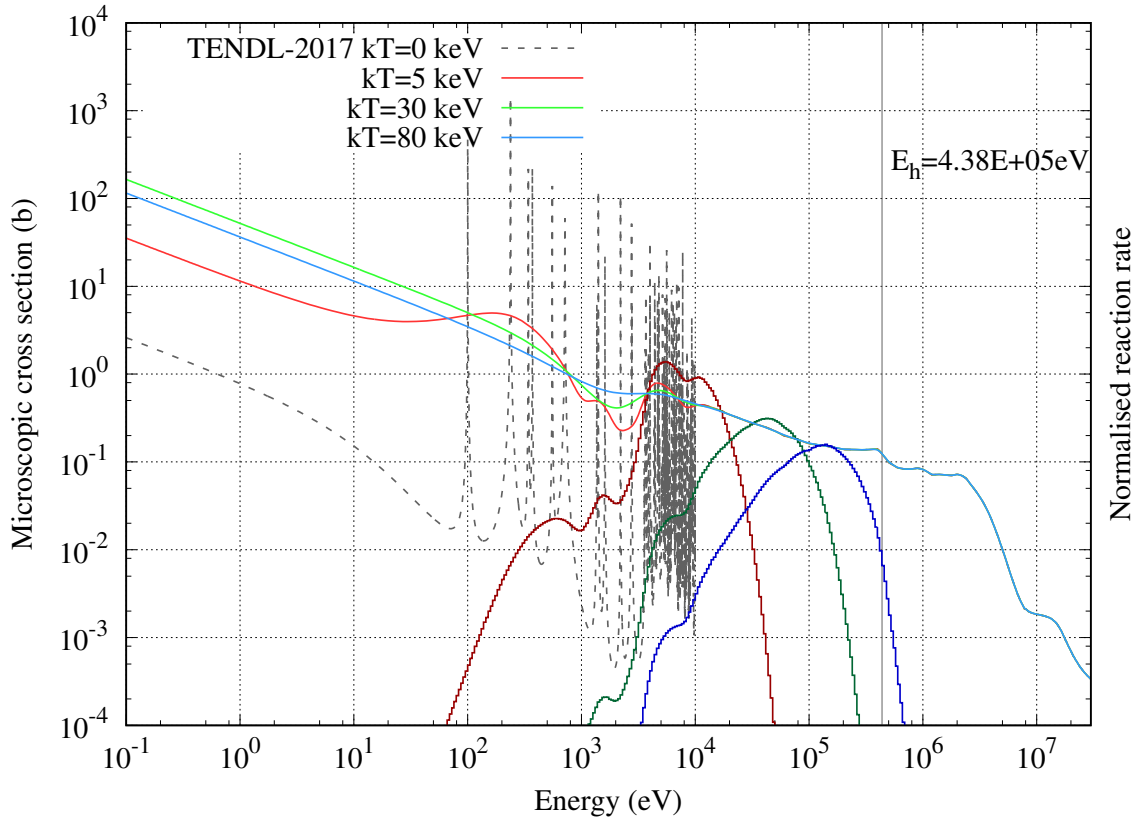
$^{124}\text{Xe}_{54}$ [$T_{1/2} = 2.00 \times 10^{14}$ years]



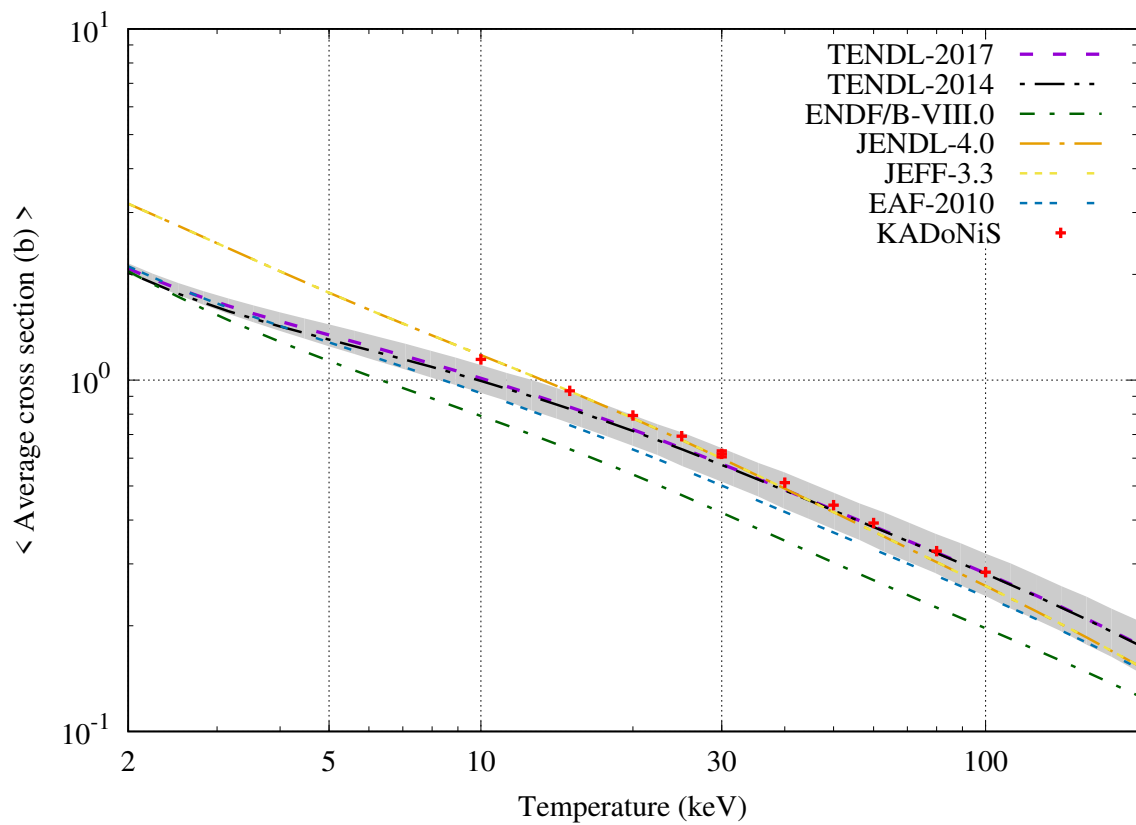
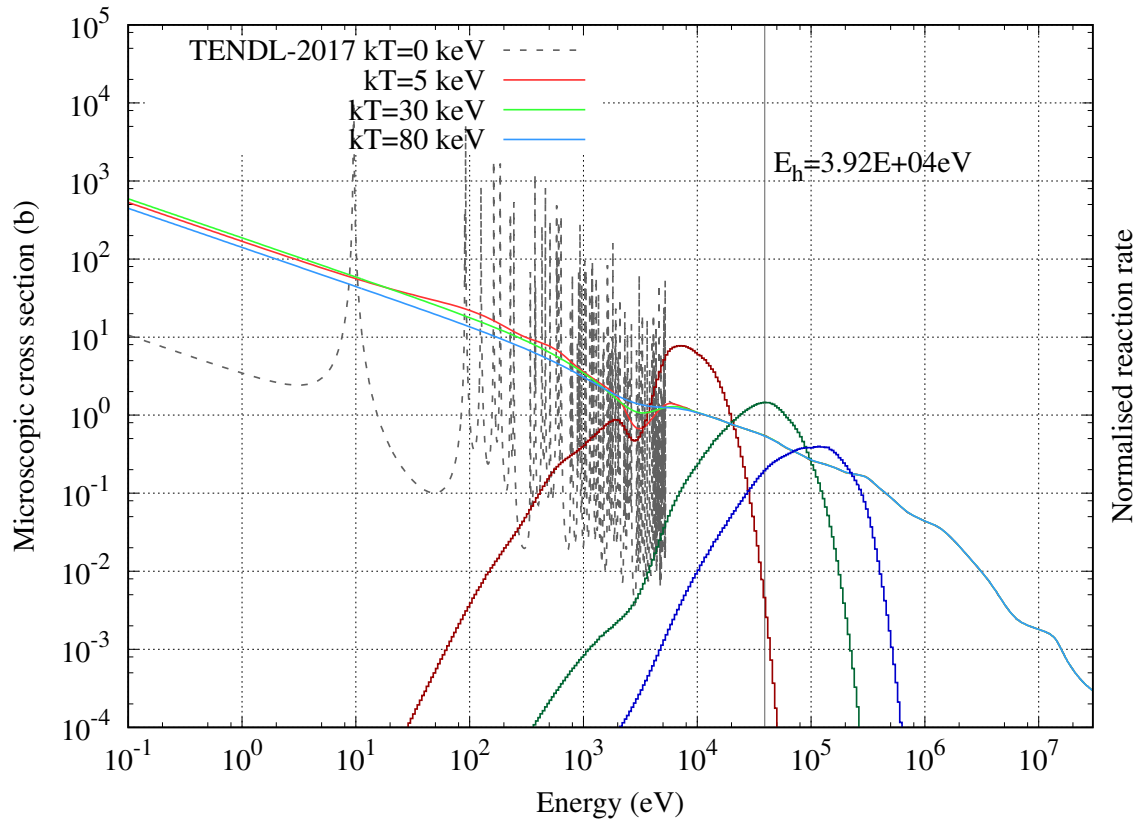
$^{126}\text{Xe}_{54}$ [Stable]



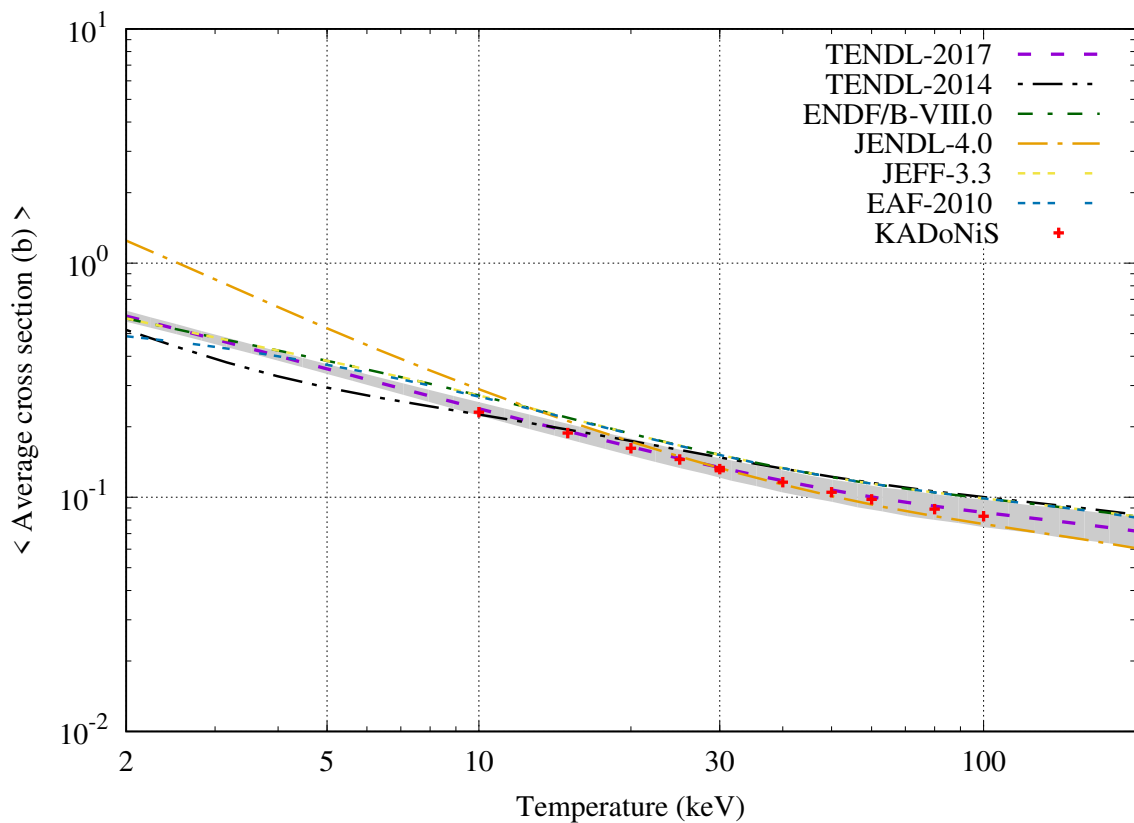
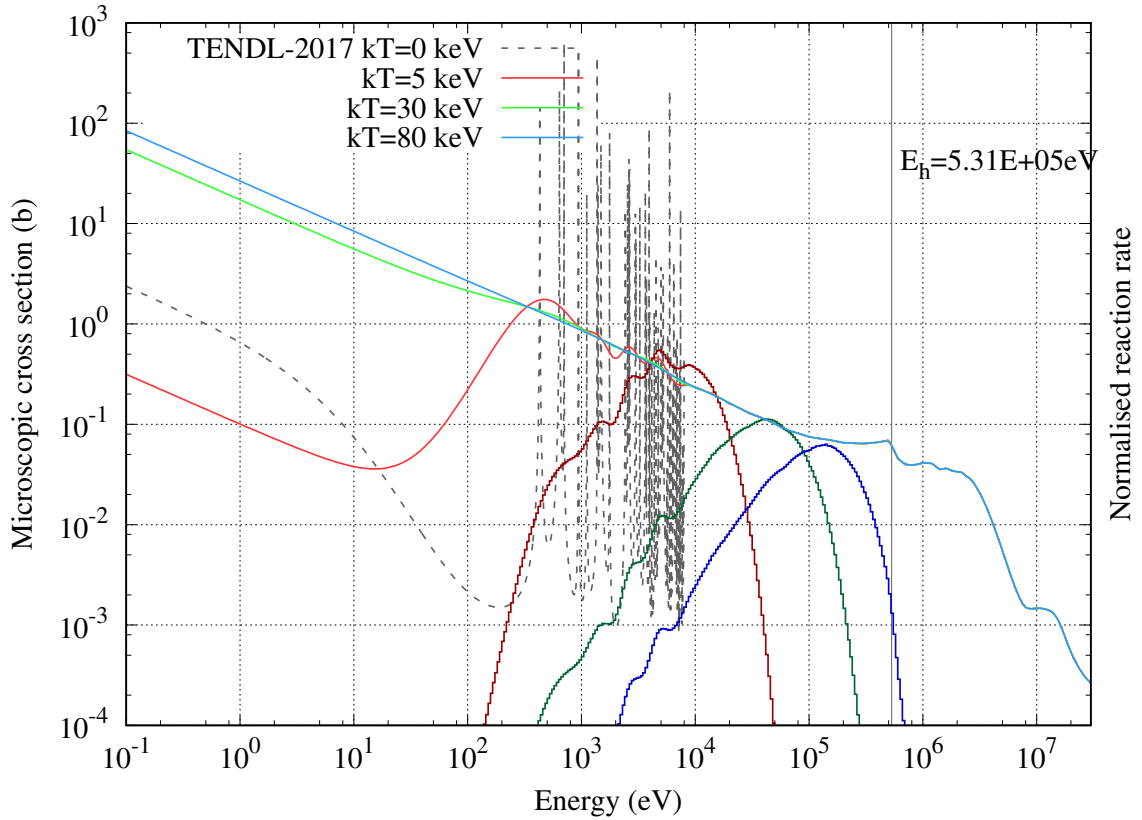
$^{128}\text{Xe}_{54}$ [Stable]



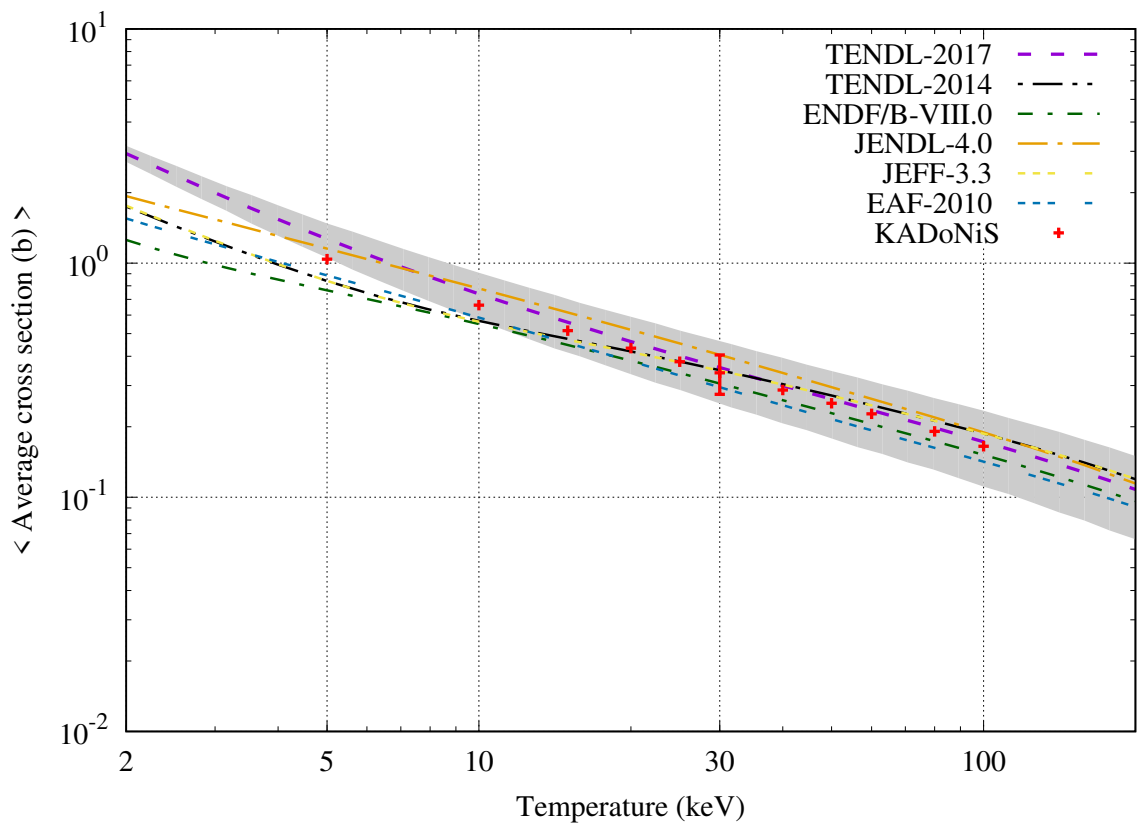
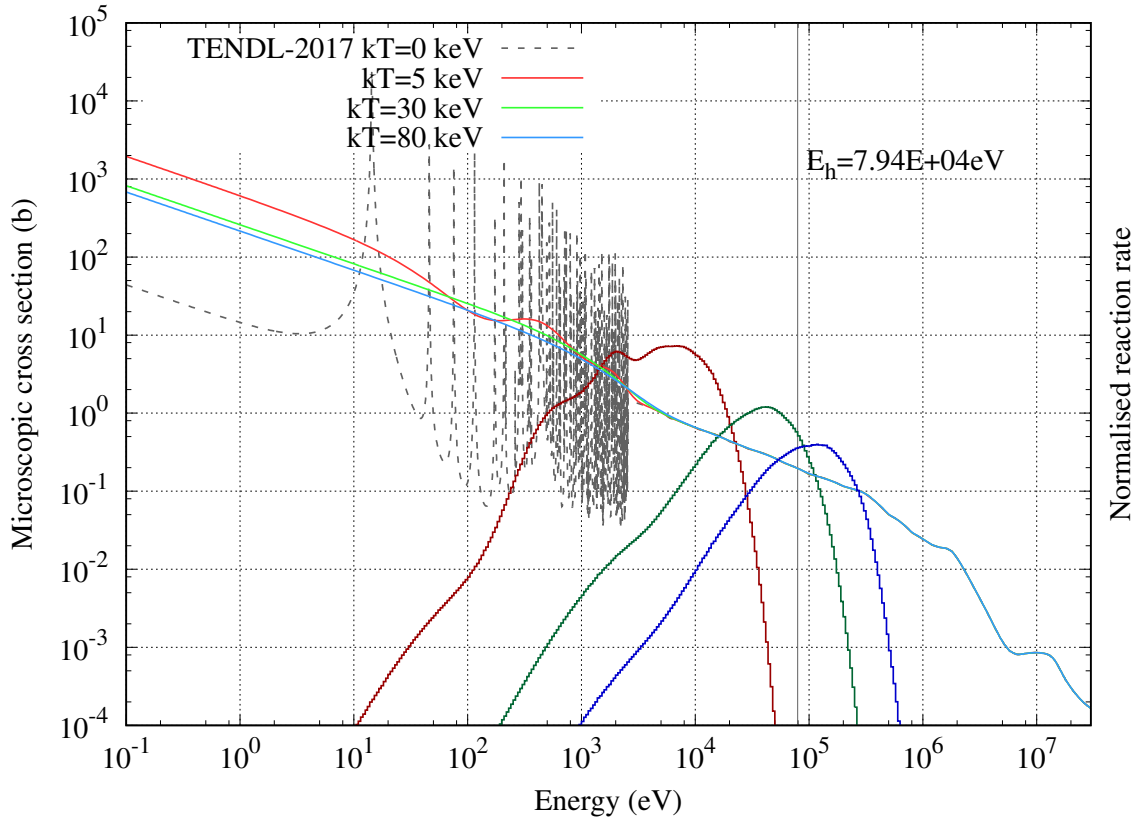
$^{129}\text{Xe}_{54}$ [Stable]



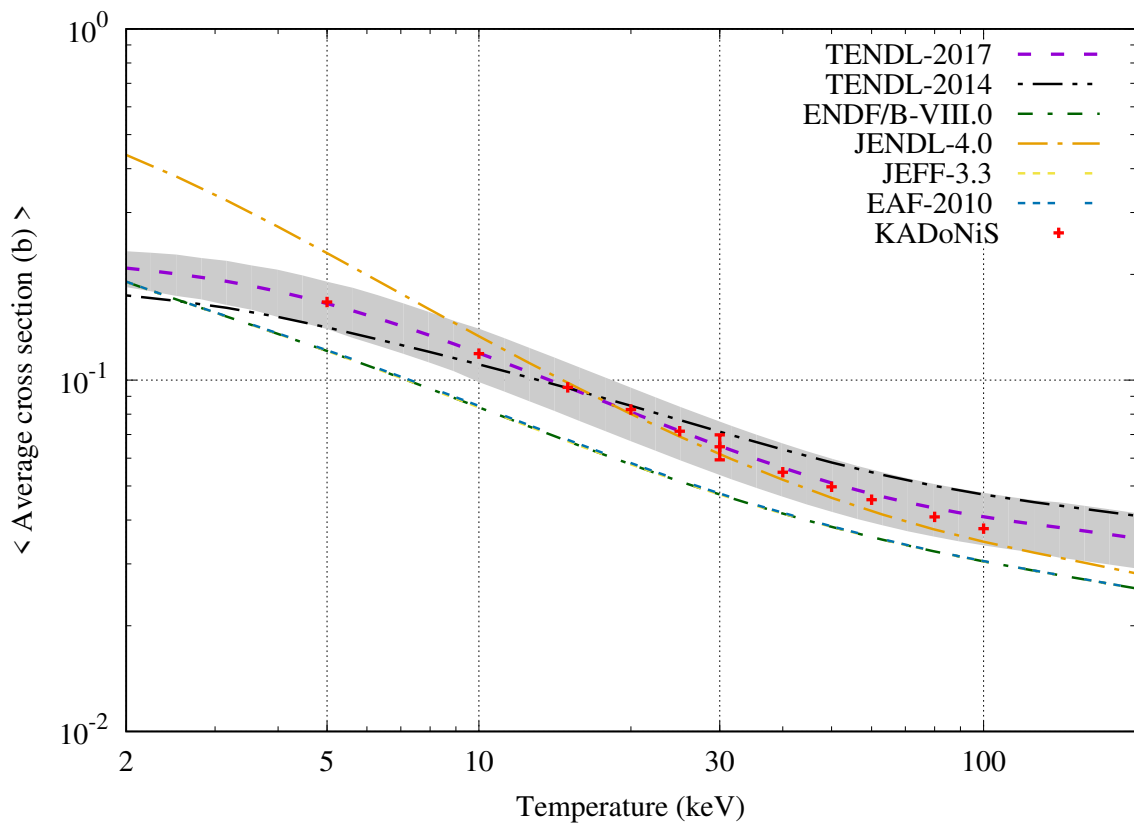
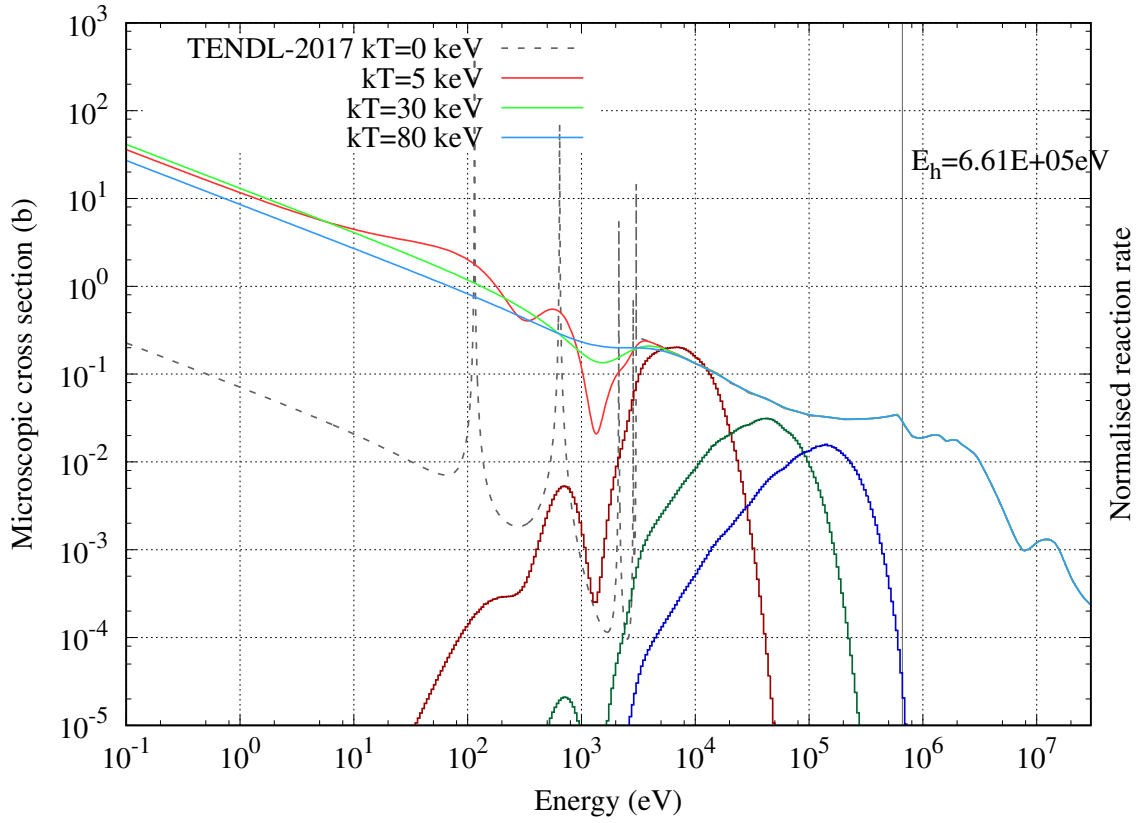
$^{130}\text{Xe}_{54}$ [Stable]



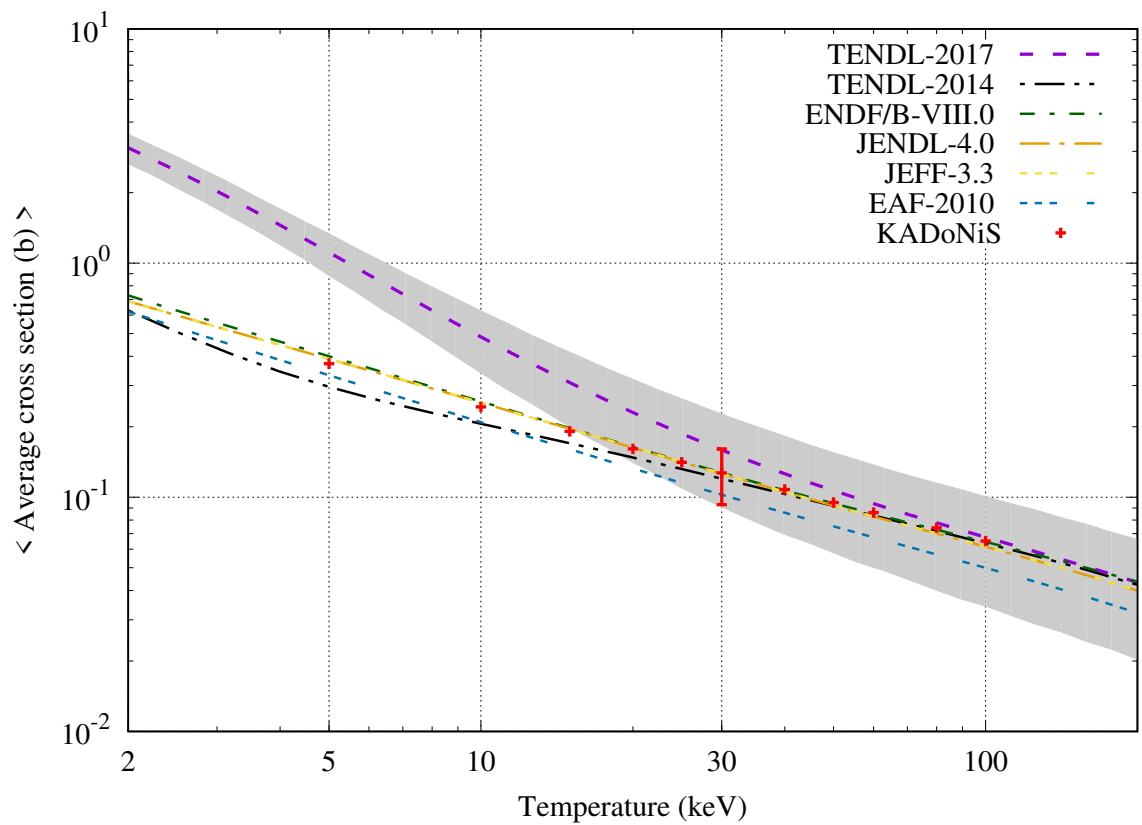
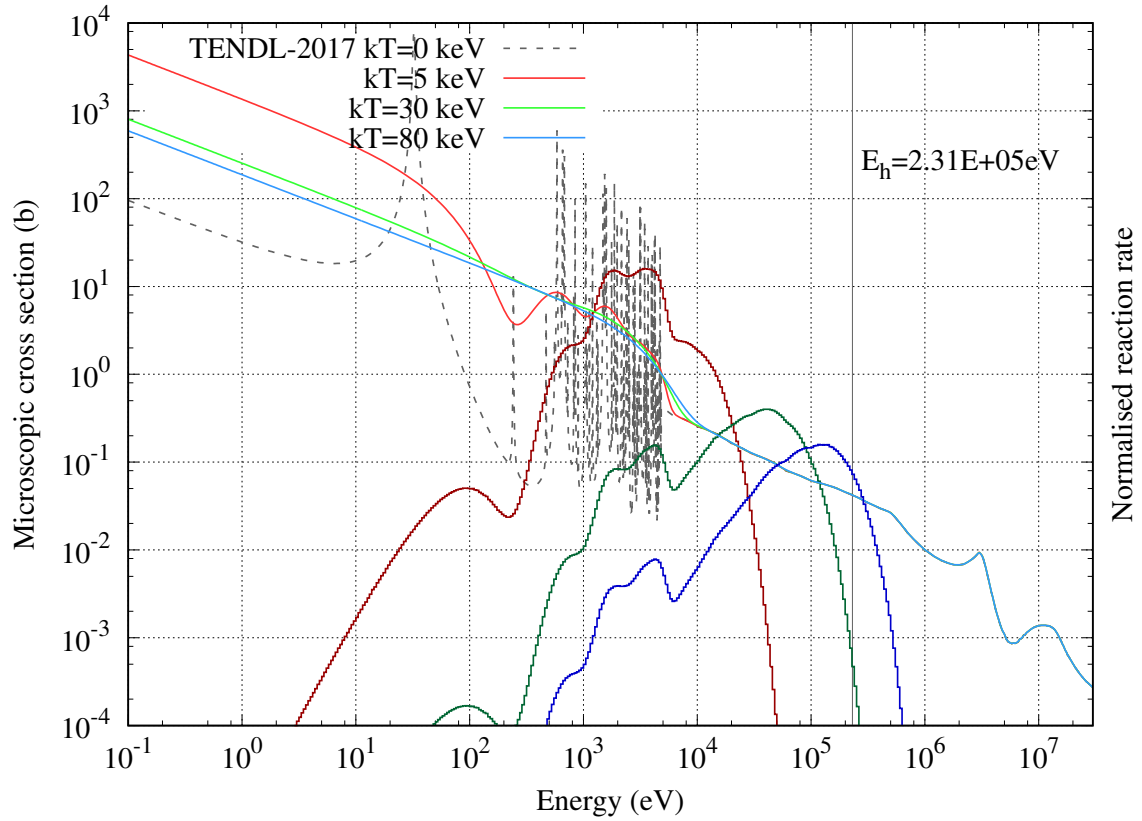
$^{131}\text{Xe}_{54}$ [Stable] (KADoNiS=SMC)



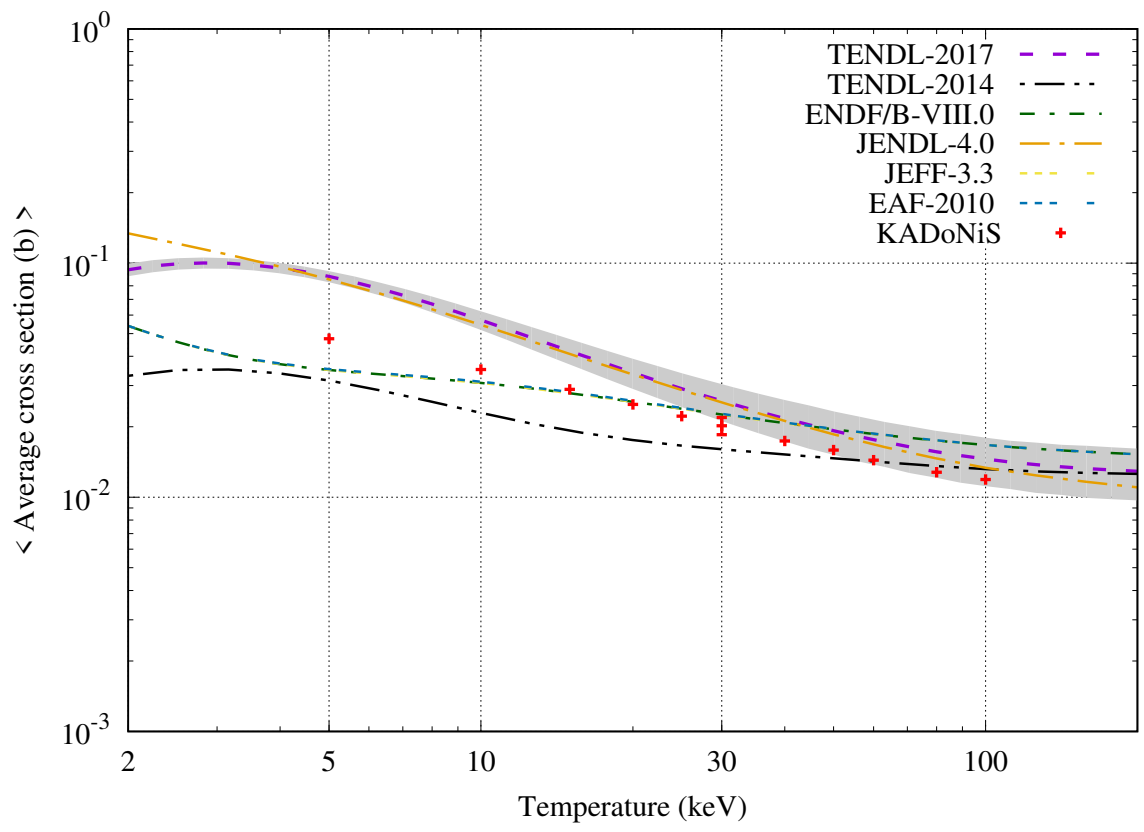
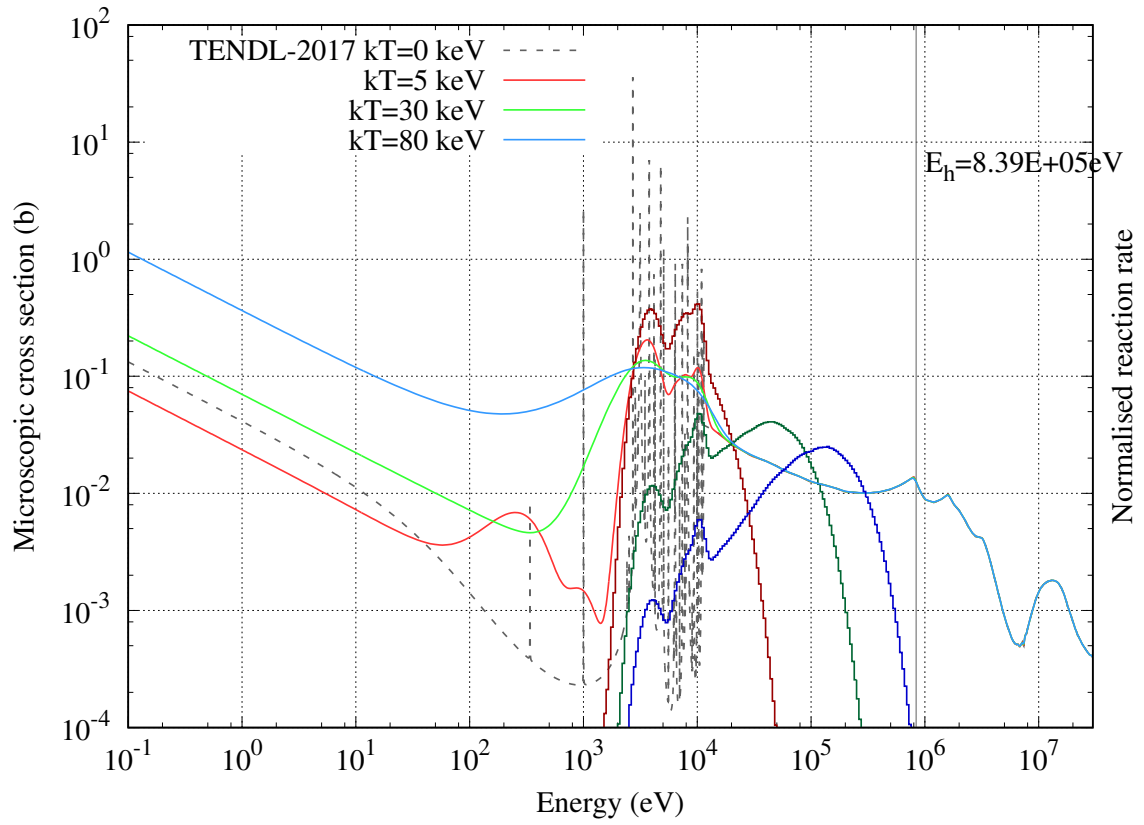
$^{132}\text{Xe}_{54}$ [Stable]



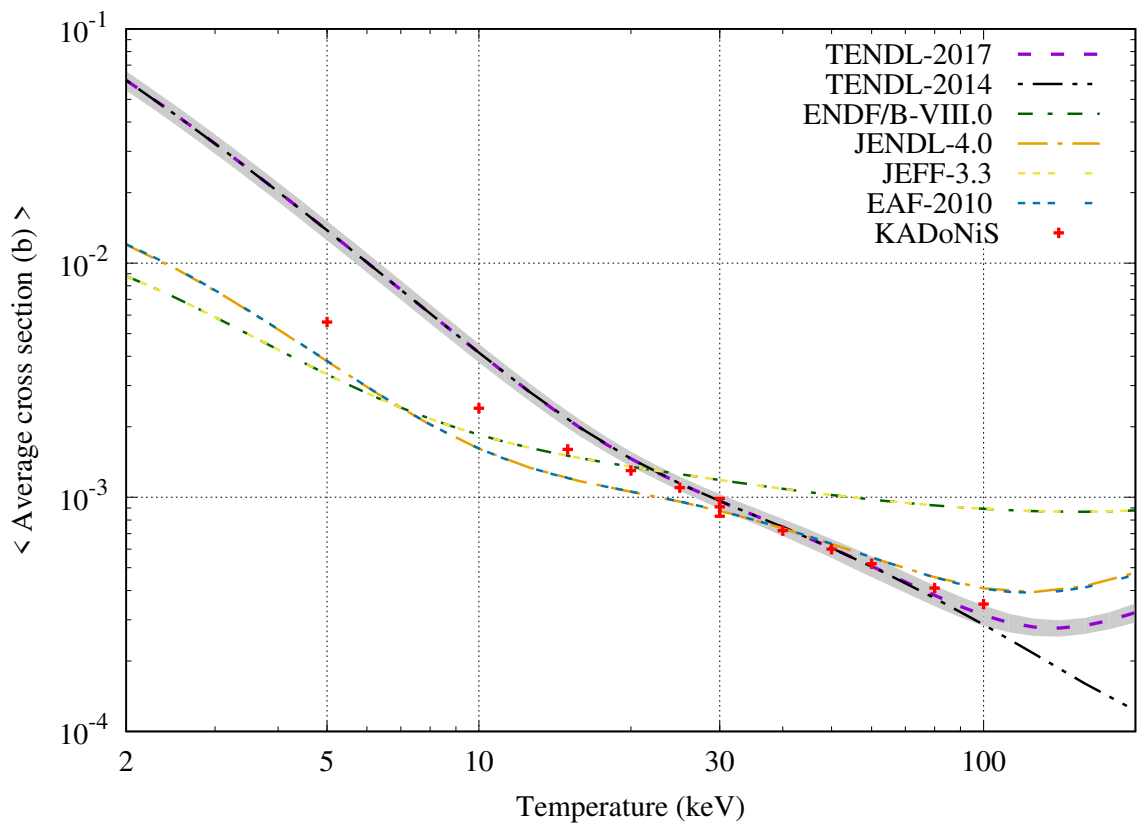
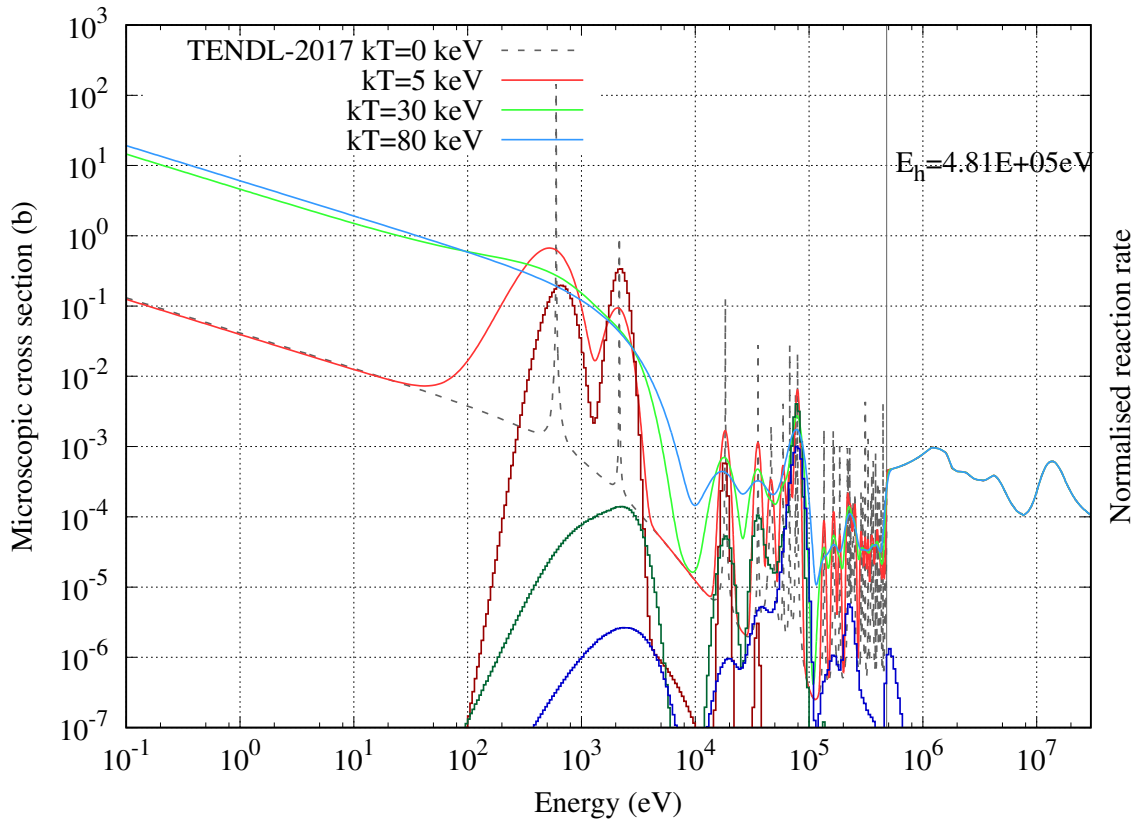
$^{133}\text{Xe}_{54}$ [$T_{1/2} = 5.24$ days] (KADoNiS=SMC)



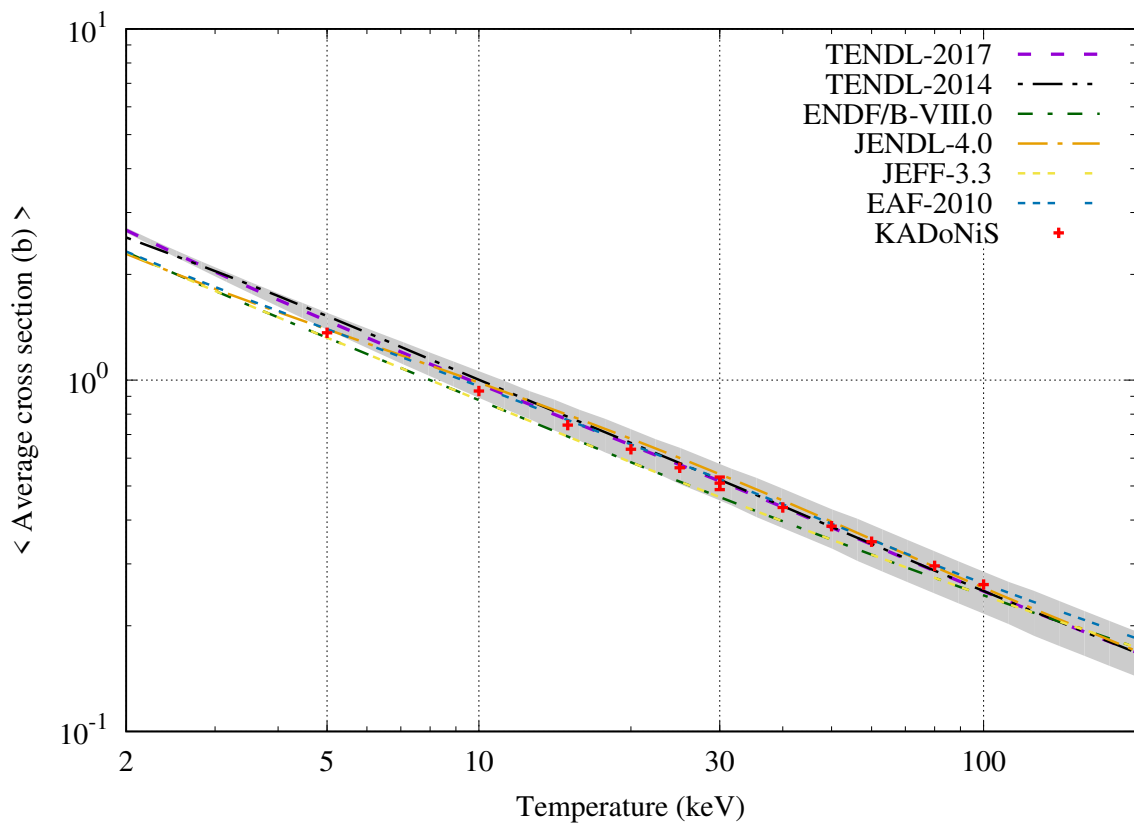
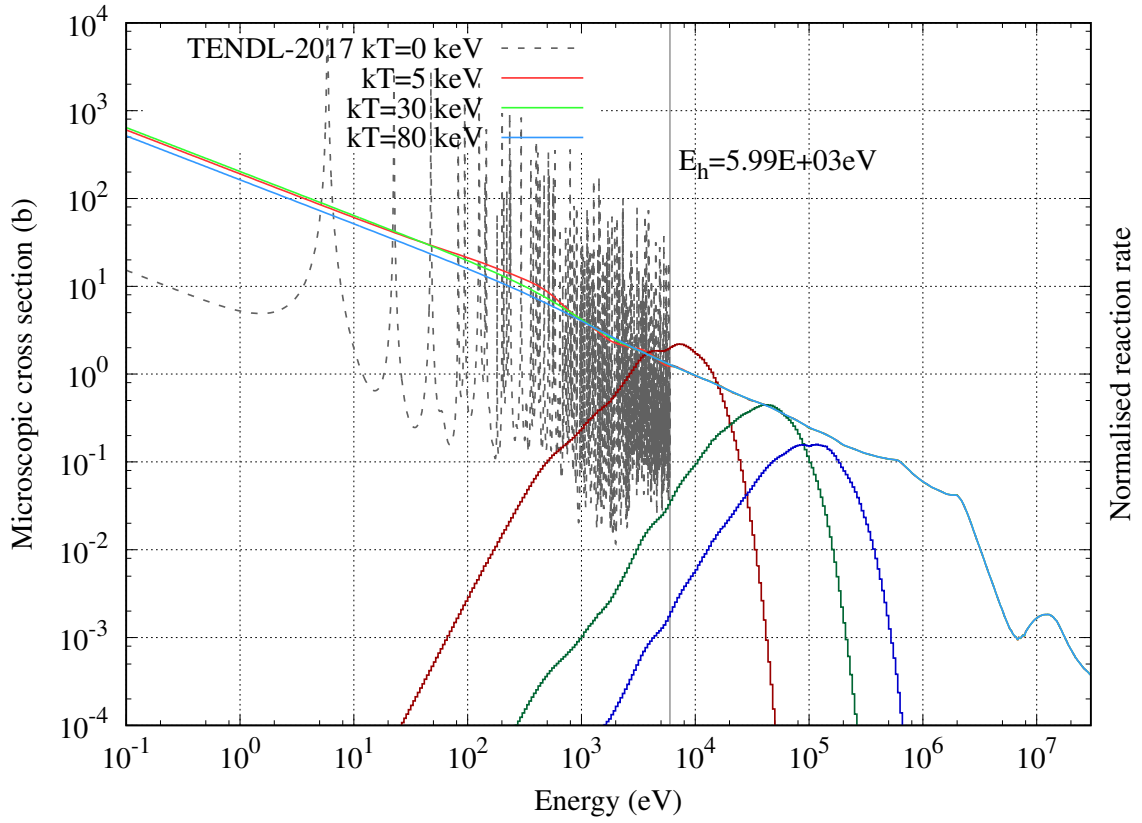
$^{134}\text{Xe}_{54}$ [$T_{1/2} = 1.10 \times 10^{16}$ years]



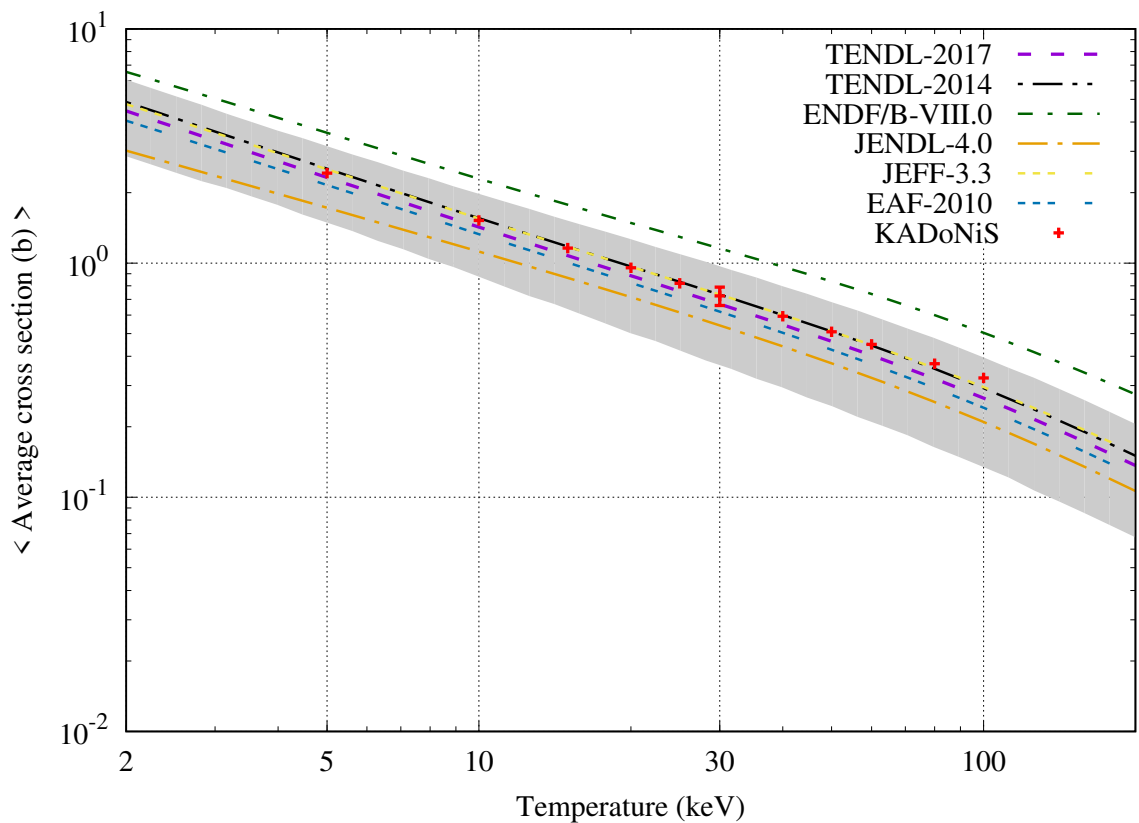
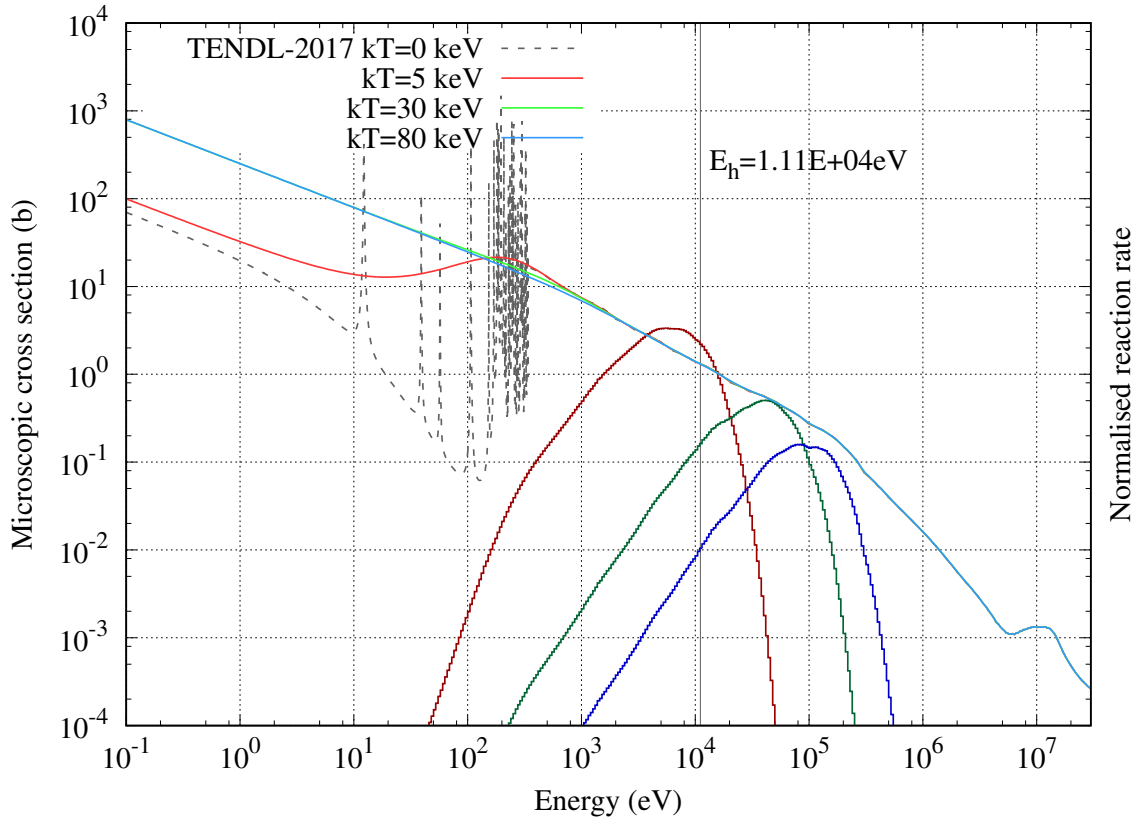
$^{136}\text{Xe}_{54}$ [$T_{1/2} = 2.10 \times 10^{20}$ years]



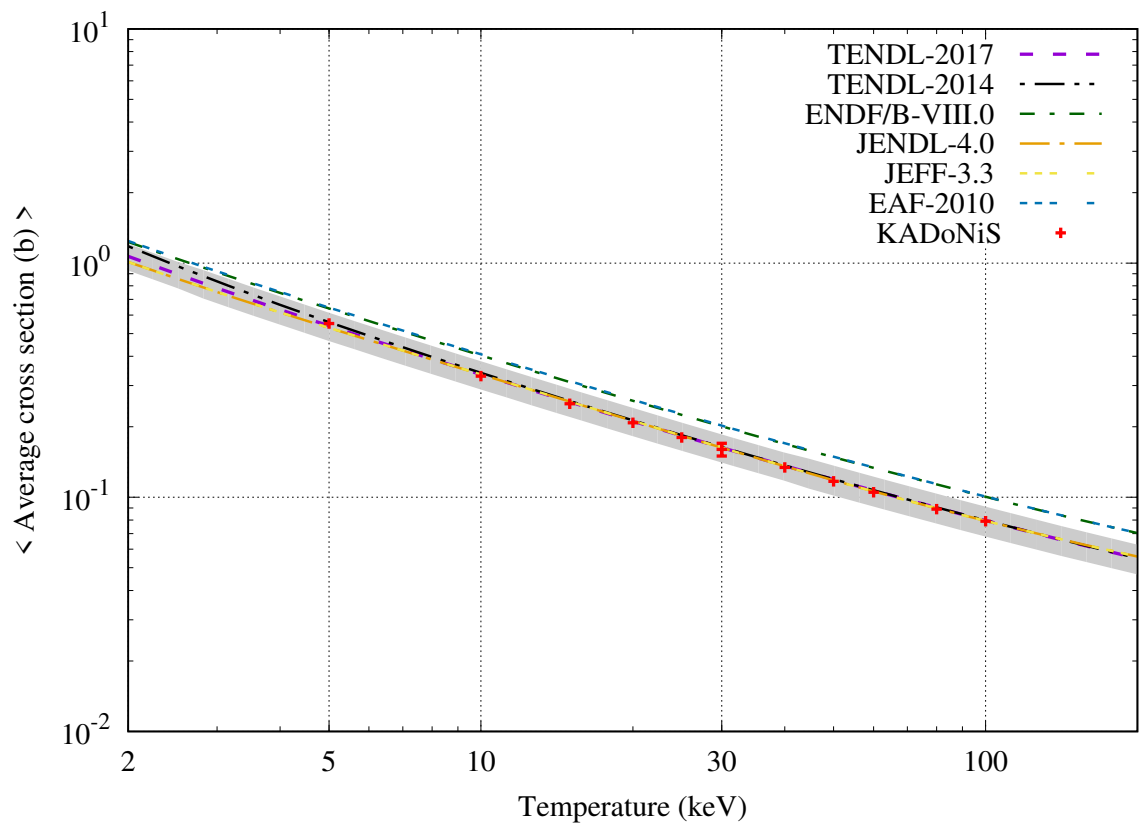
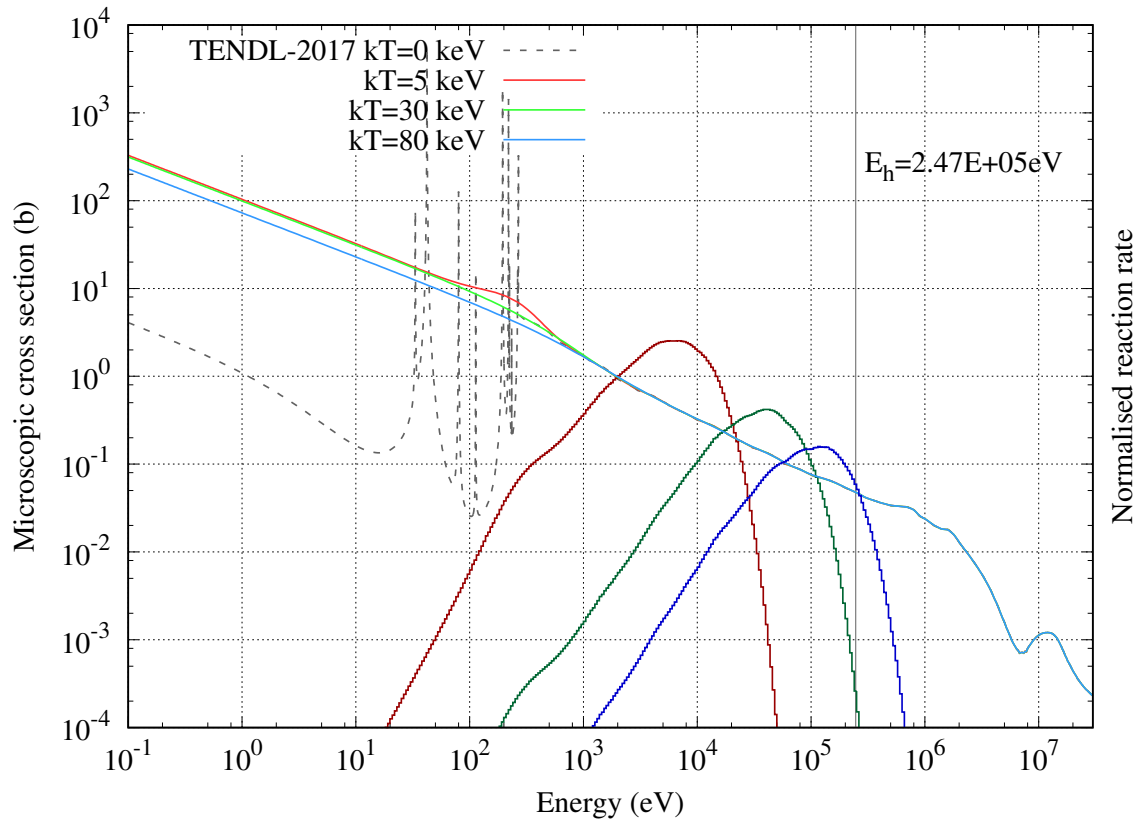
$^{133}\text{Cs}_{55}$ [Stable]



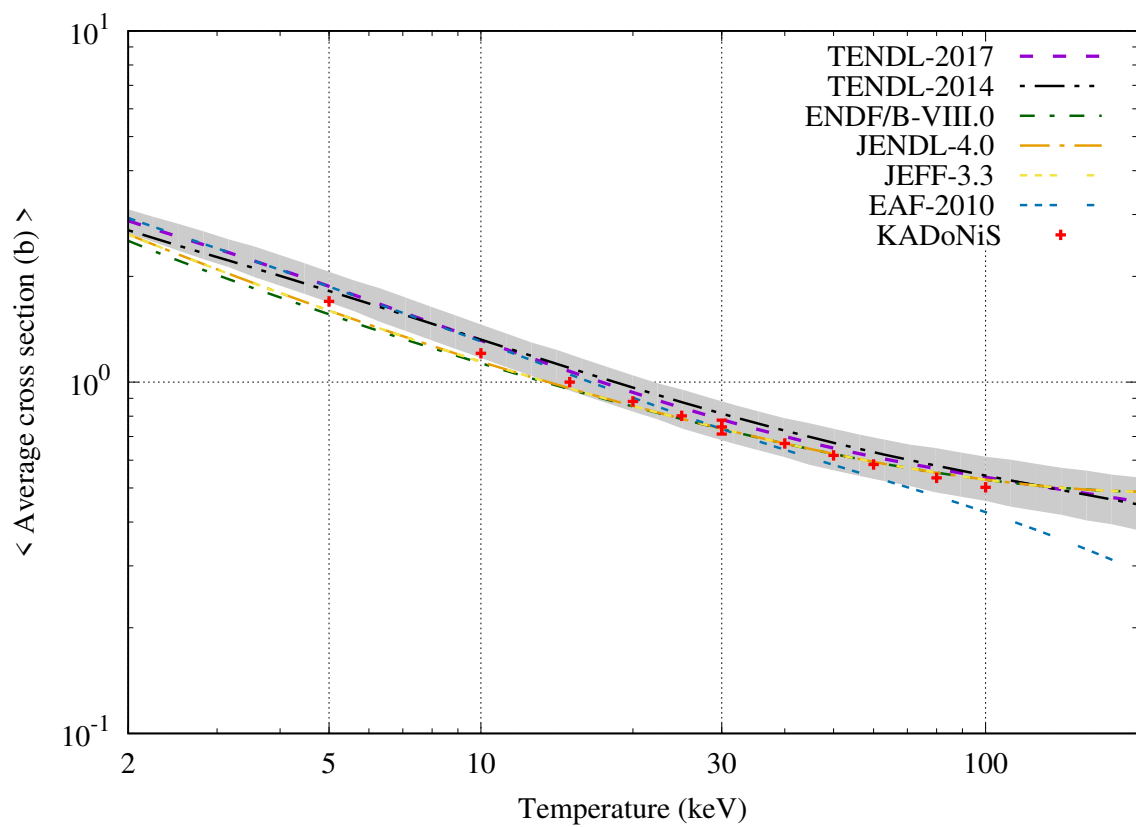
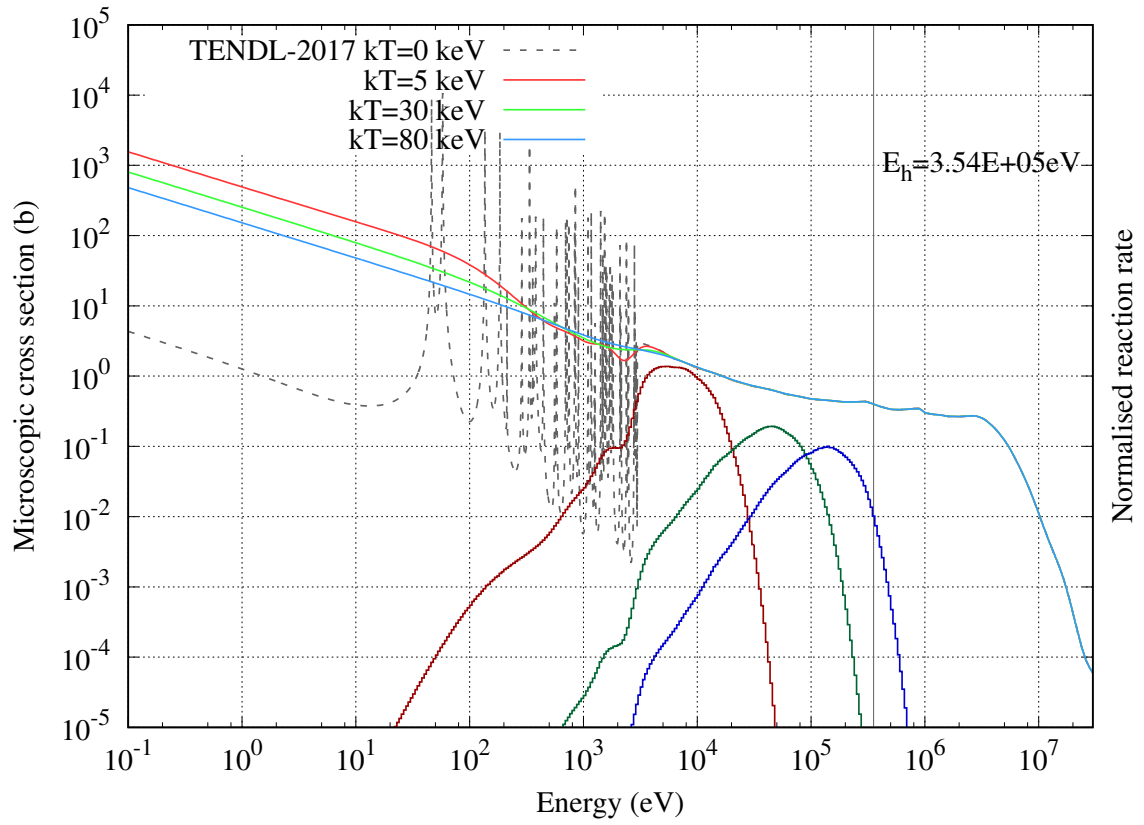
$^{134}\text{Cs}_{55}$ [$T_{1/2} = 2.07$ years] (KADoNiS=SMC)



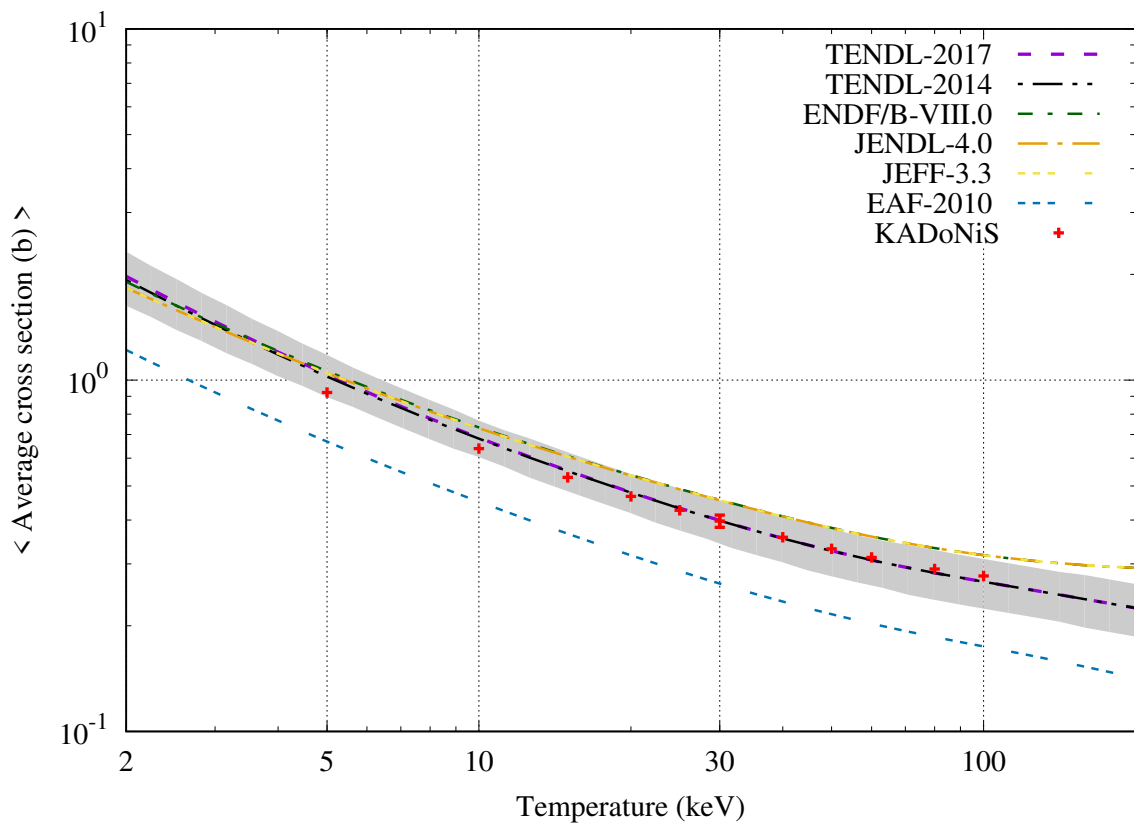
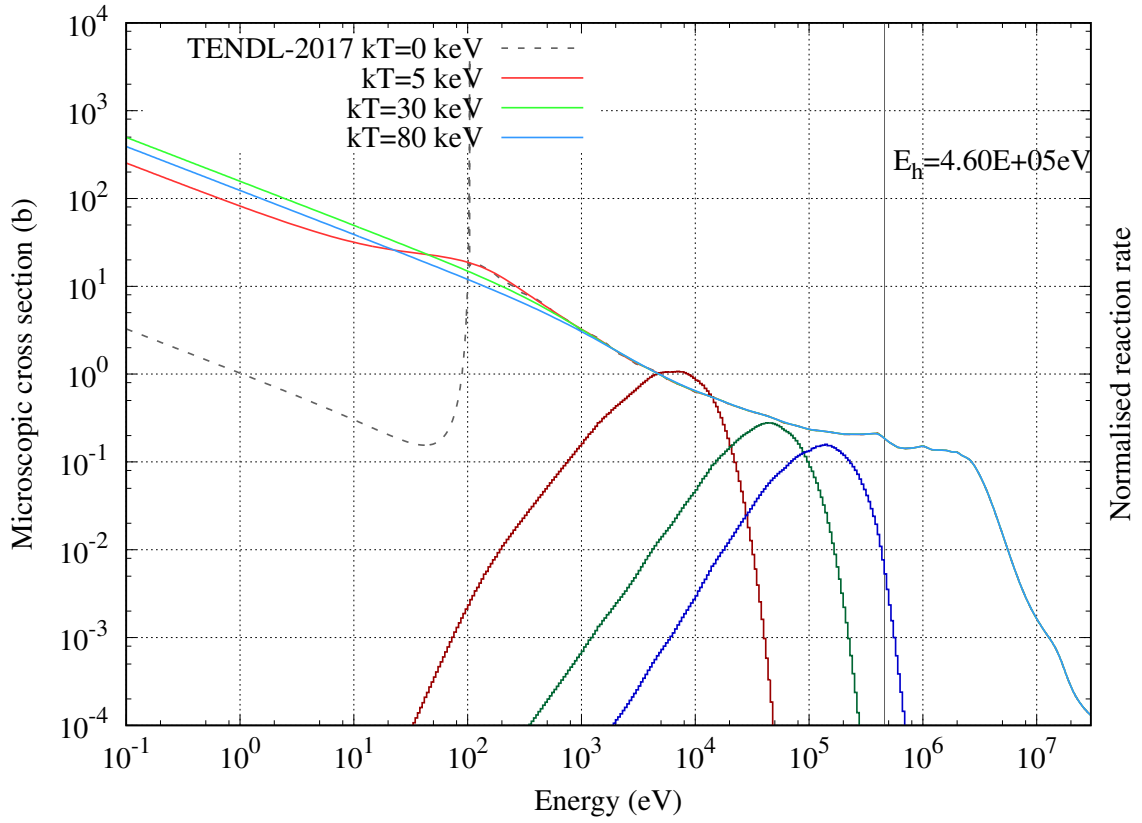
$^{135}\text{Cs}_{55}$ [$T_{1/2} = 2.30 \times 10^6$ years]



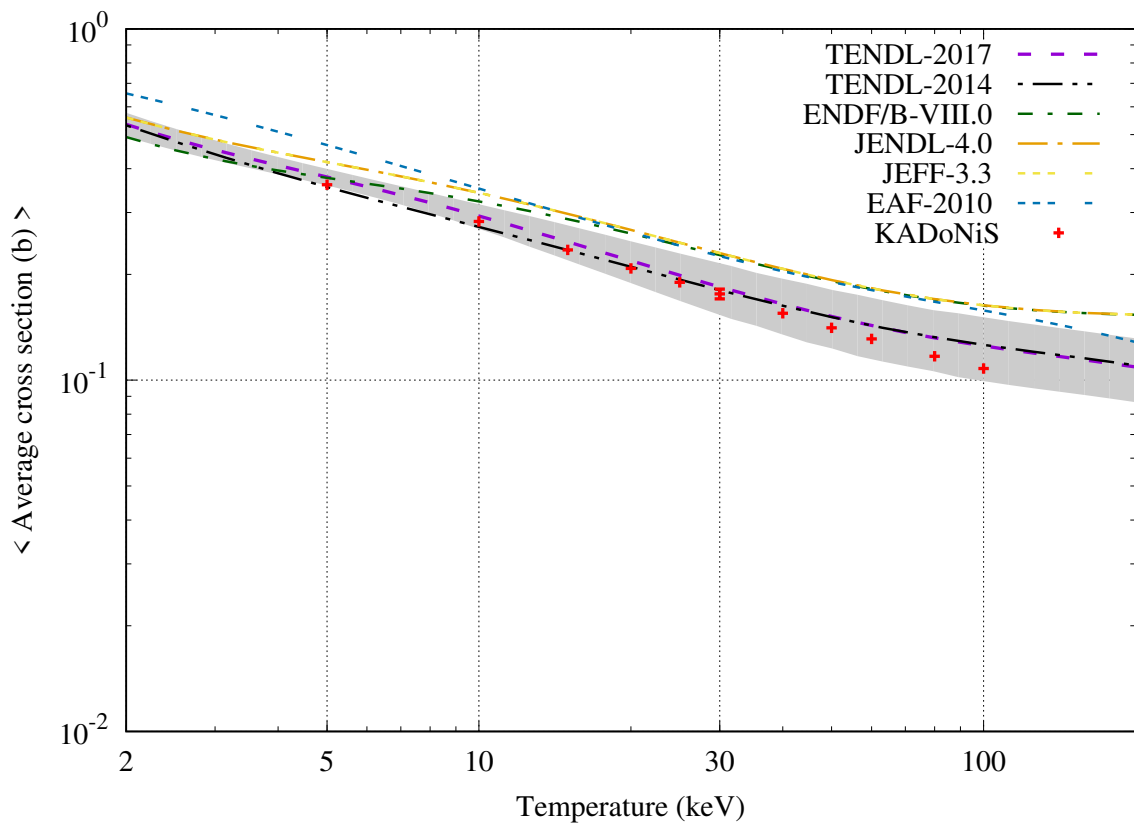
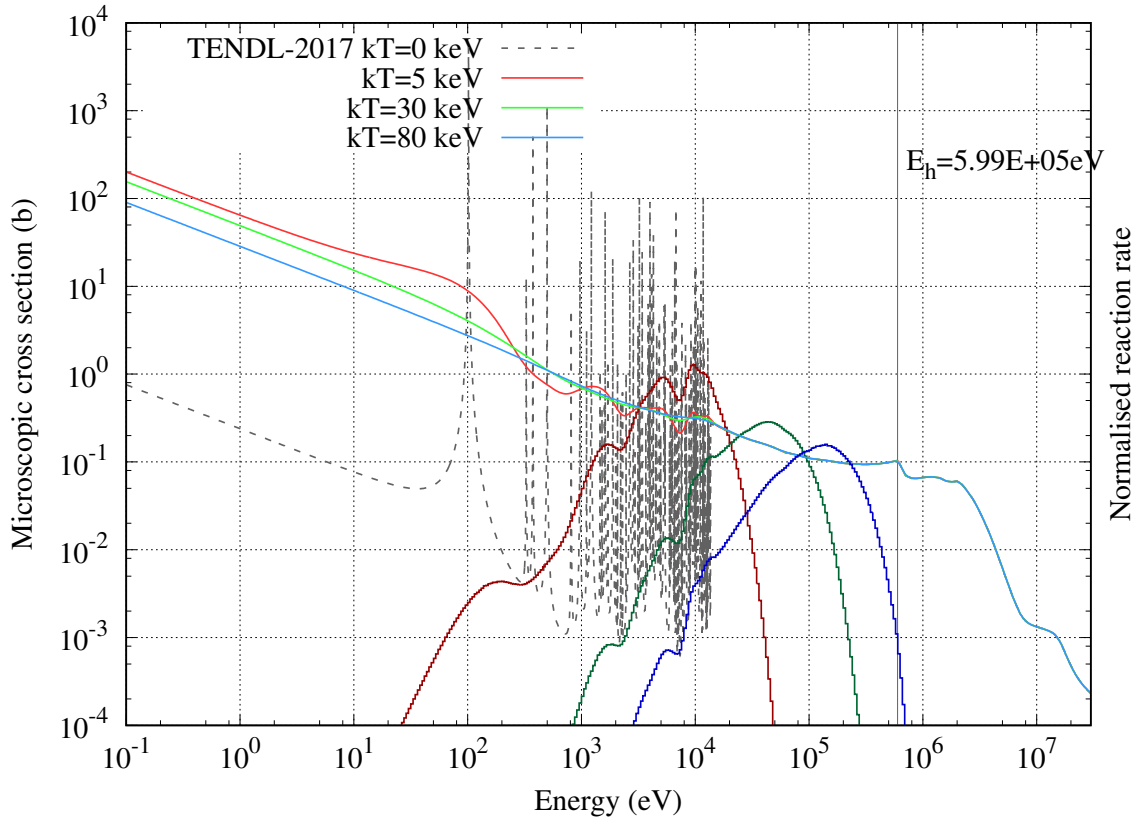
$^{130}\text{Ba}_{56}$ [Stable]



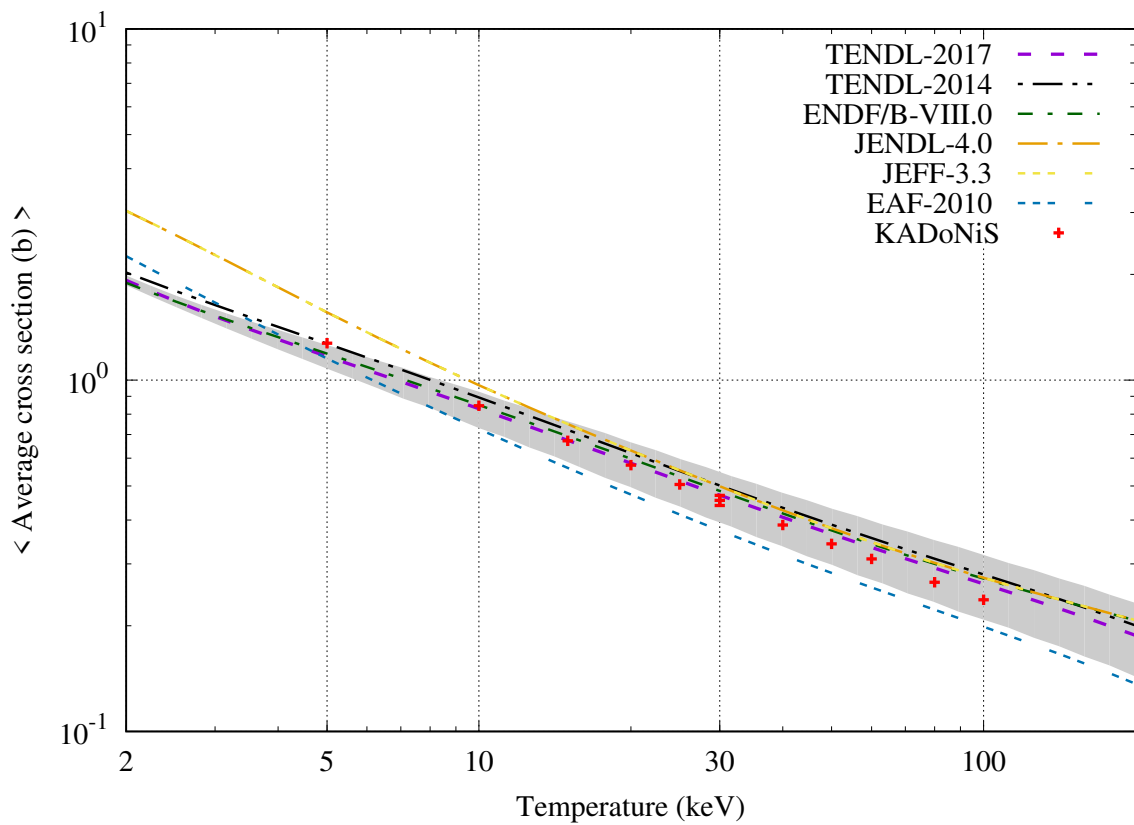
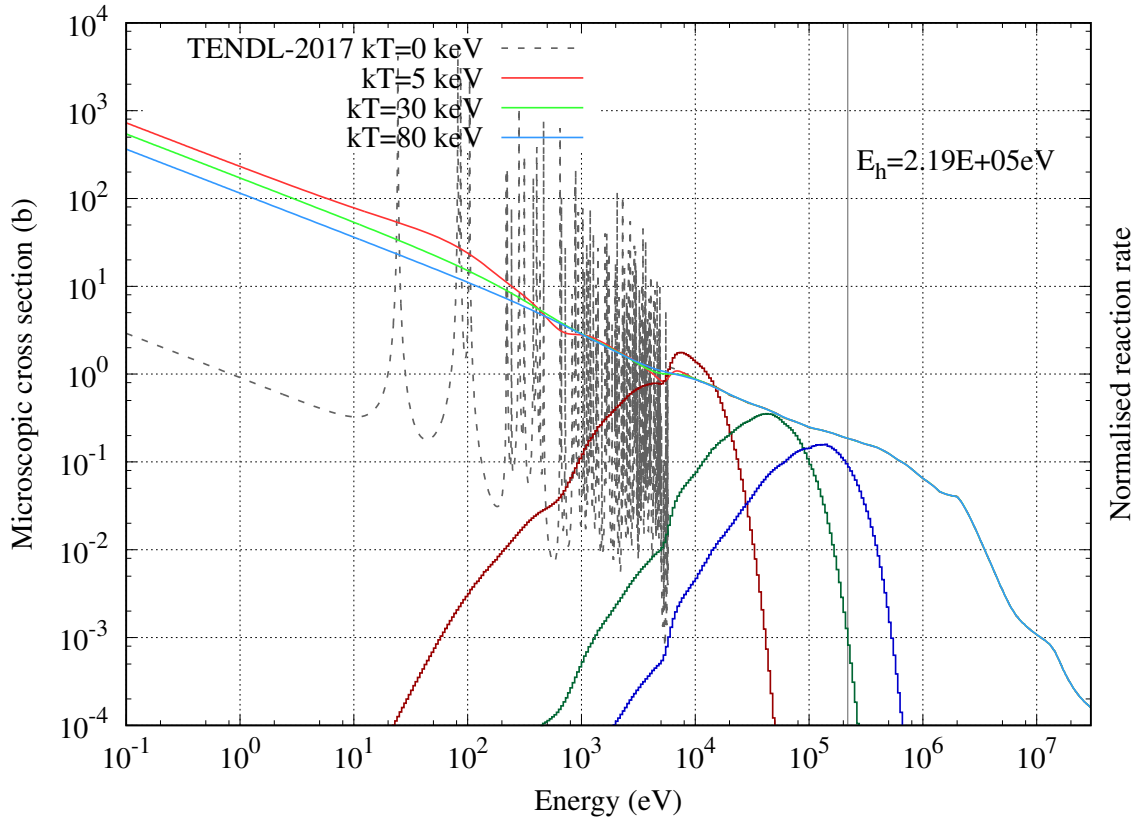
$^{132}\text{Ba}_{56}$ [Stable]



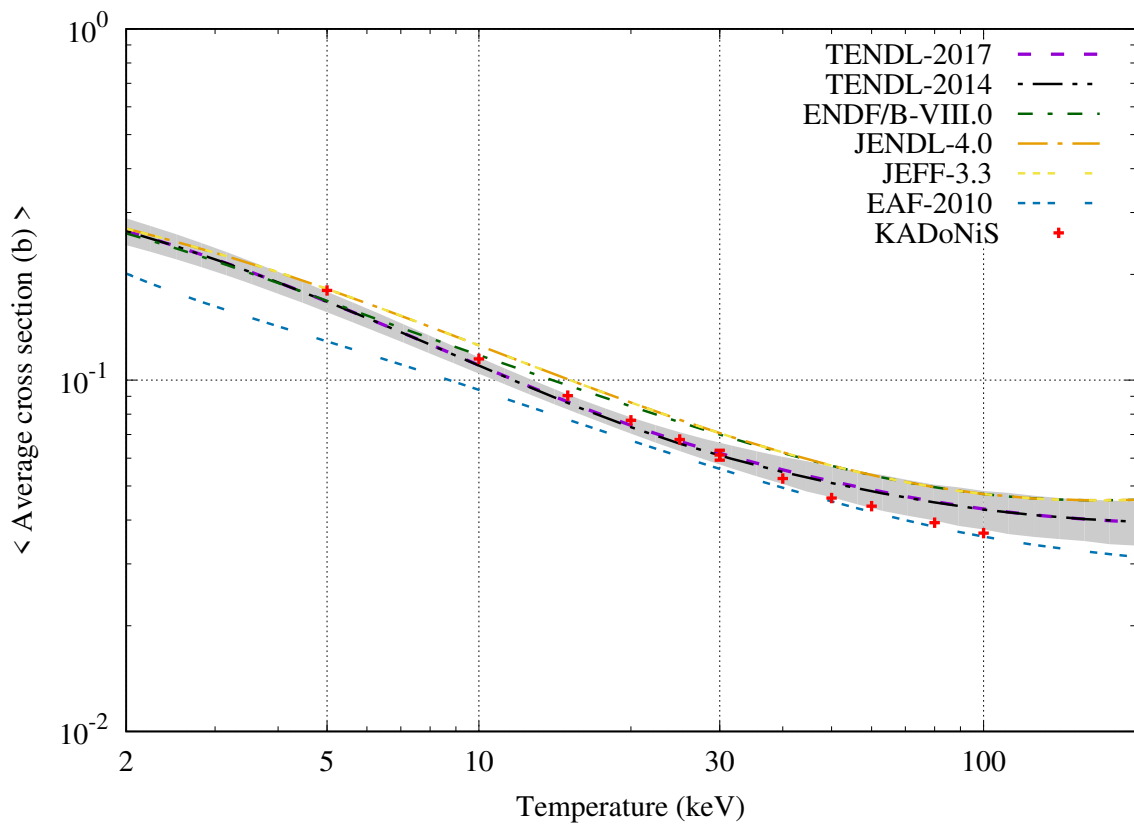
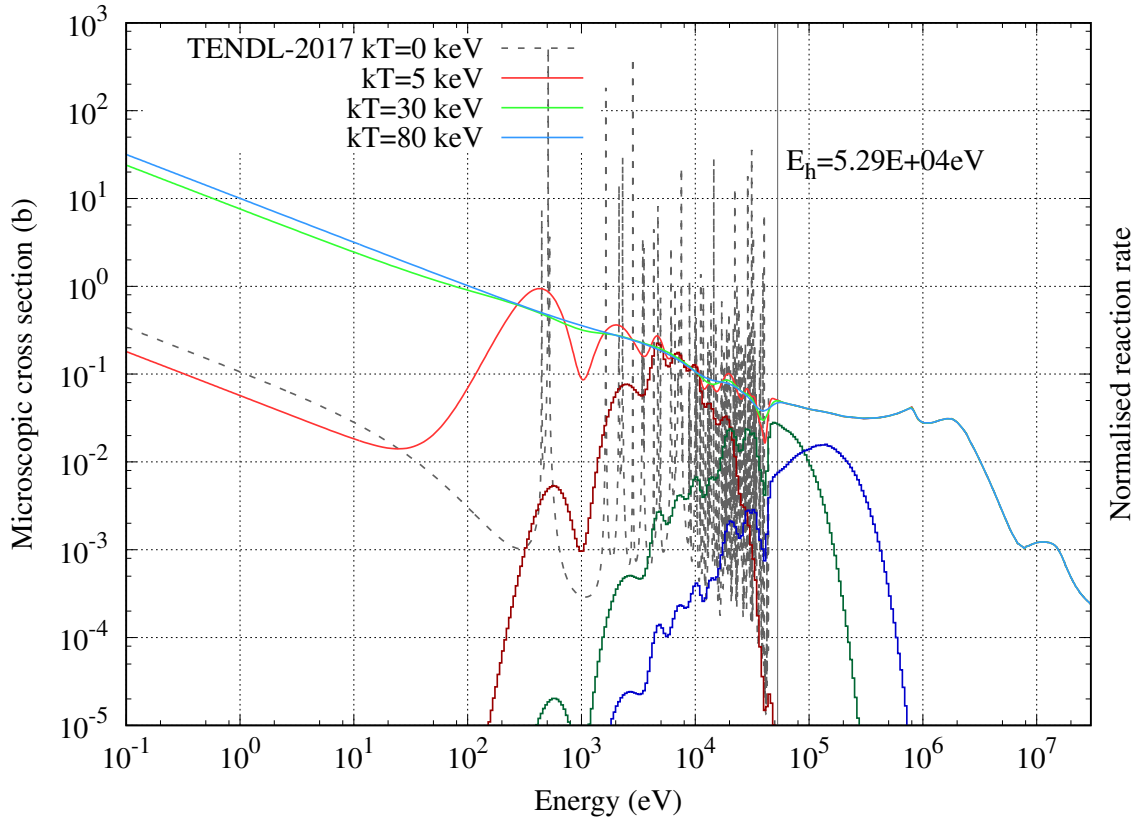
$^{134}\text{Ba}_{56}$ [Stable]



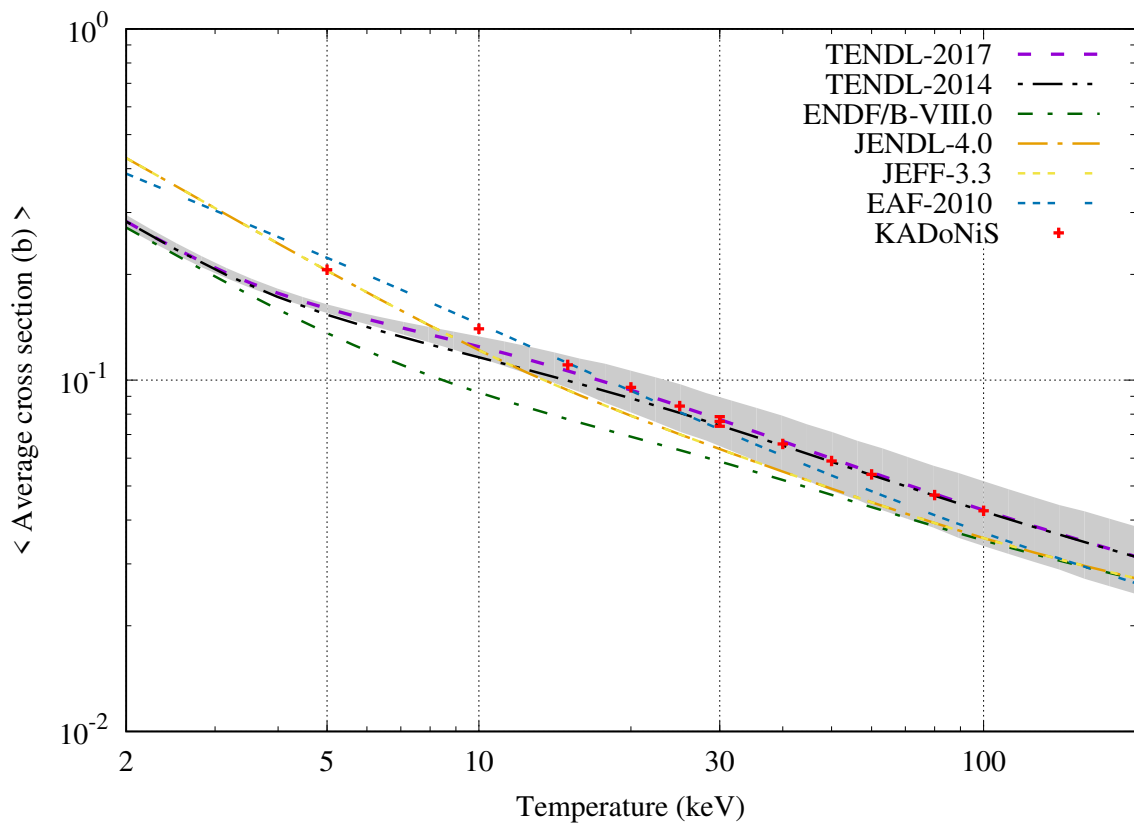
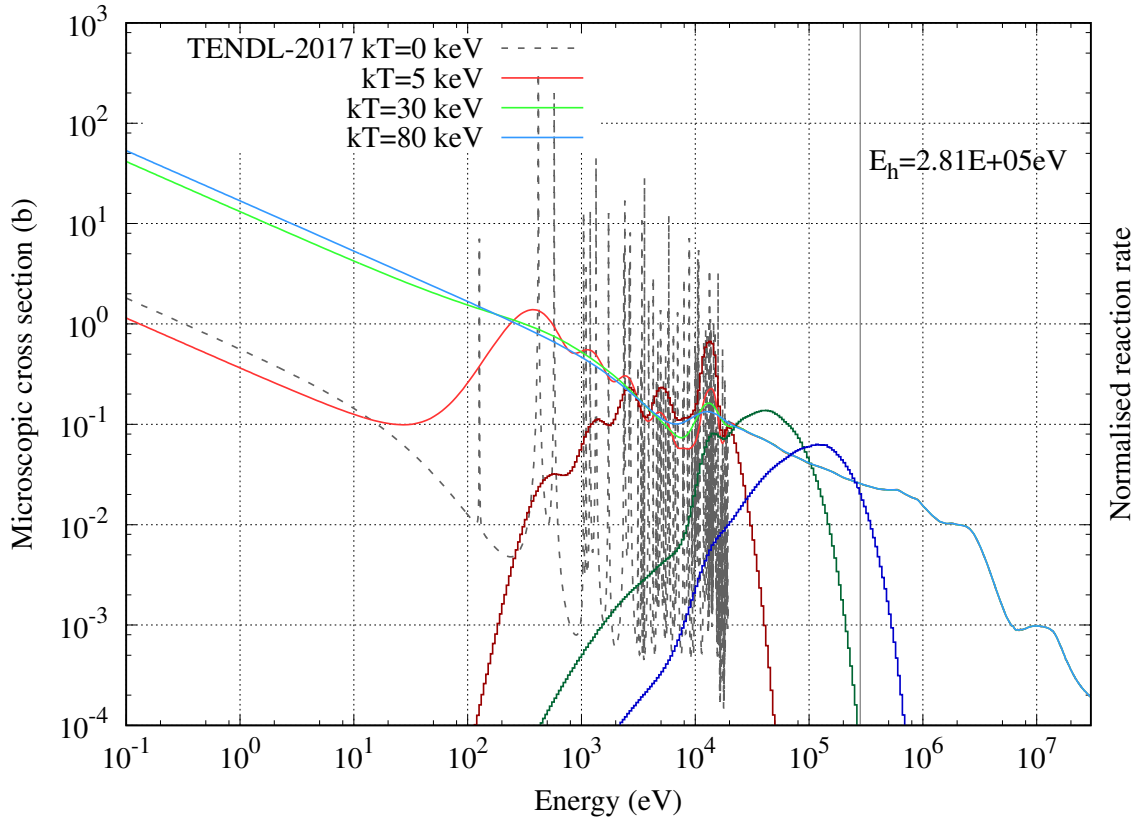
$^{135}\text{Ba}_{56}$ [Stable]



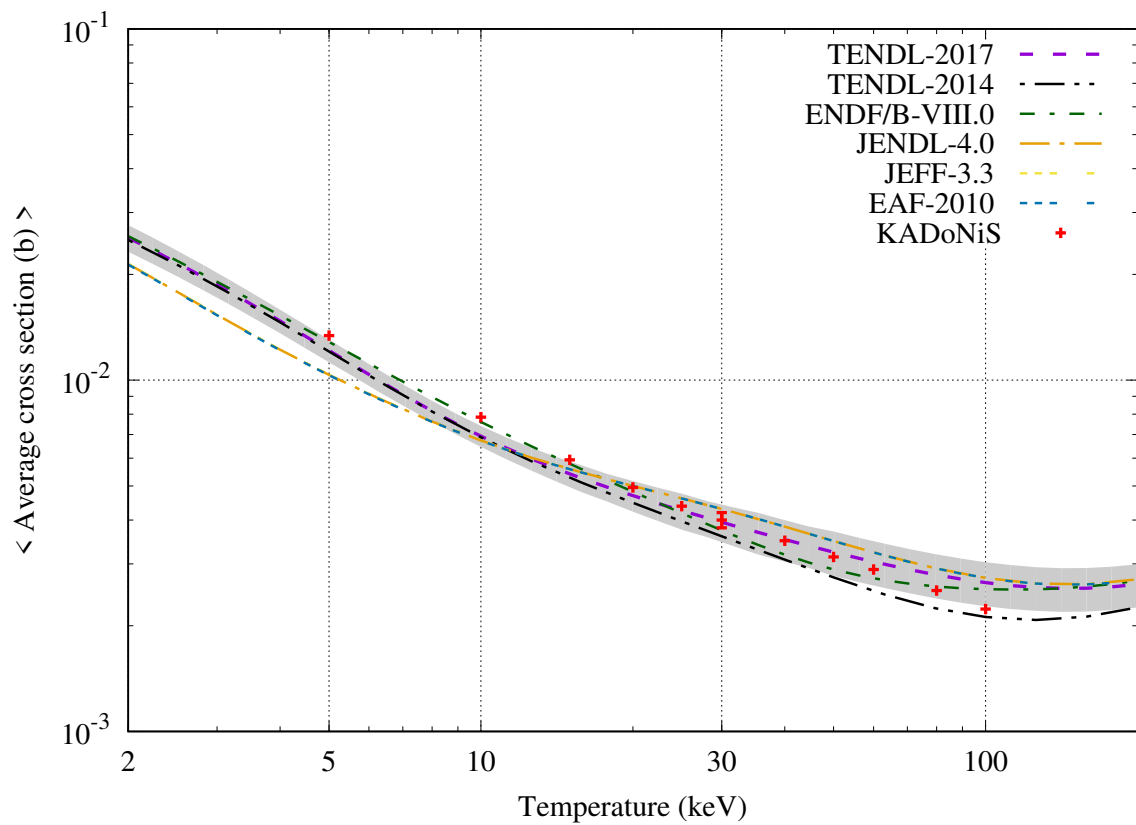
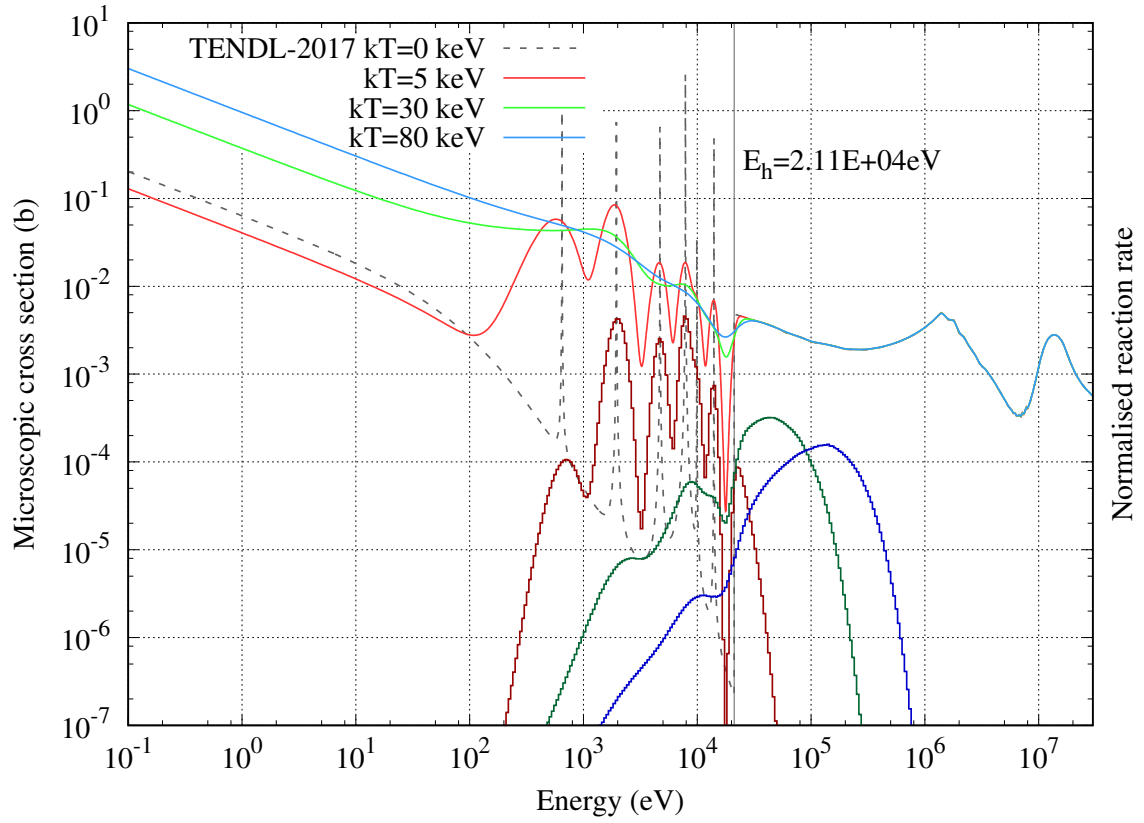
$^{136}\text{Ba}_{56}$ [Stable]



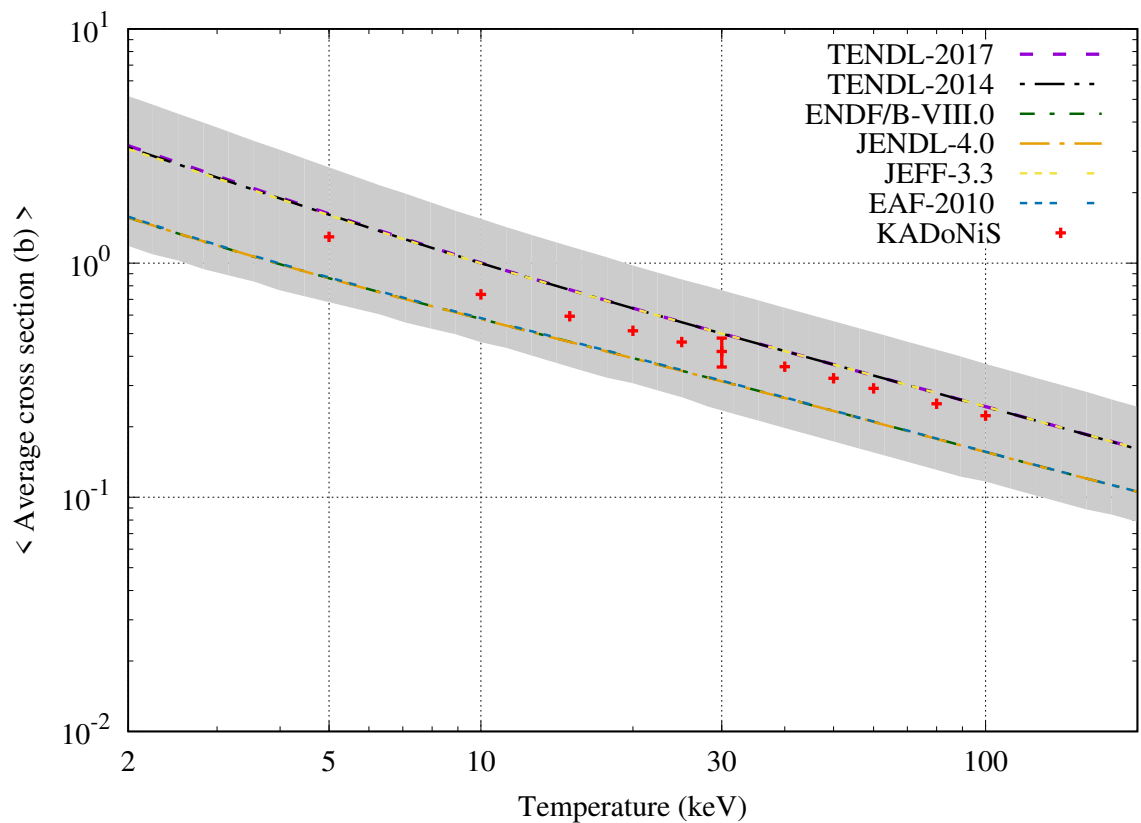
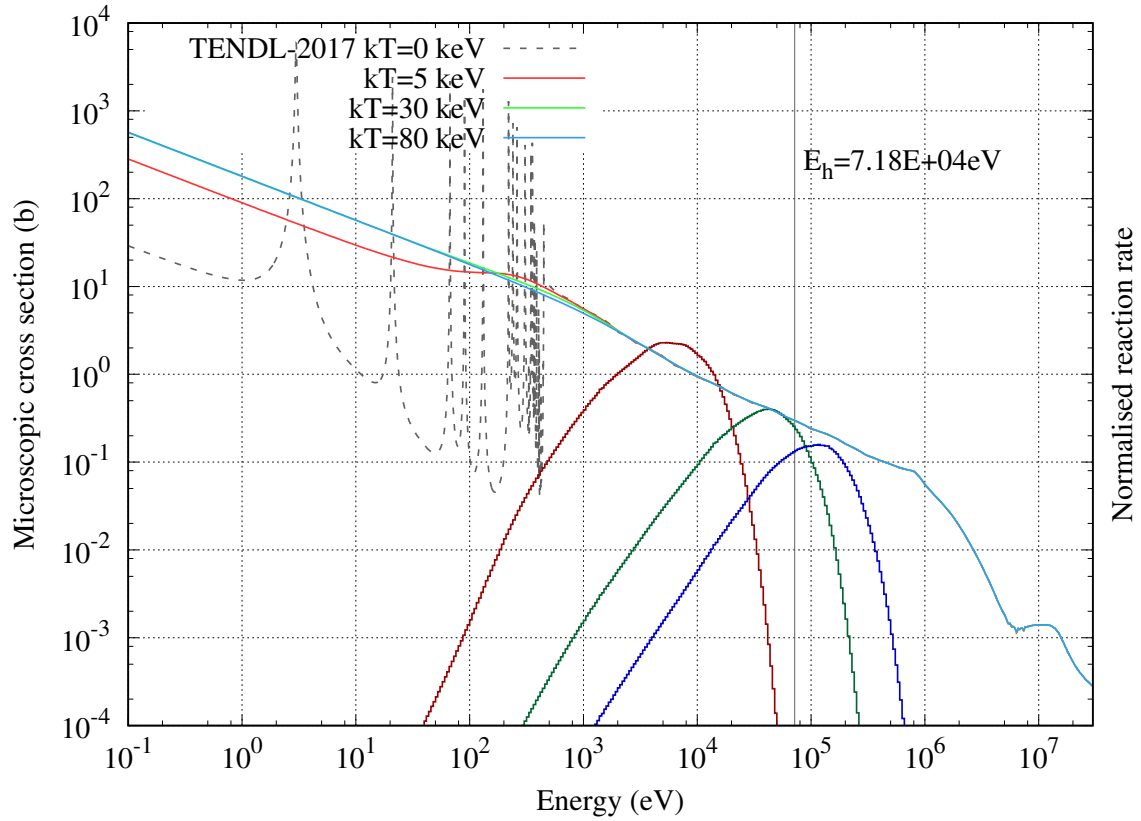
$^{137}\text{Ba}_{56}$ [Stable]



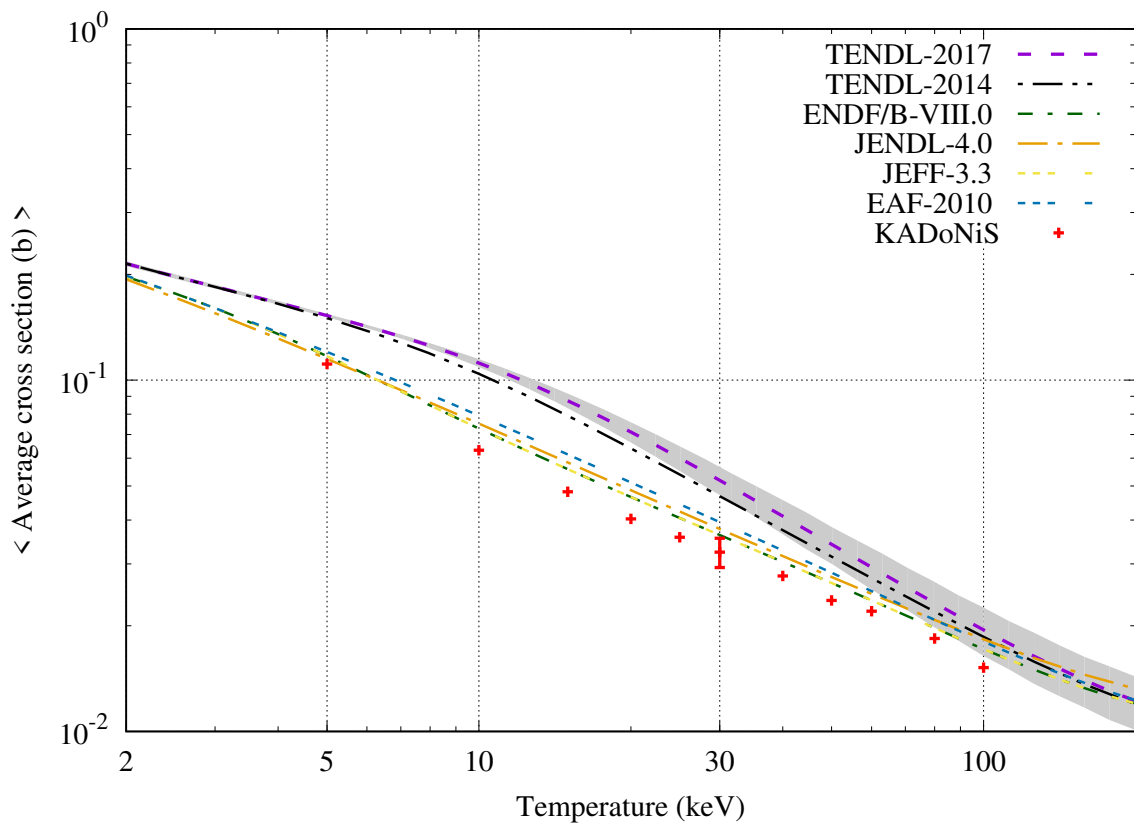
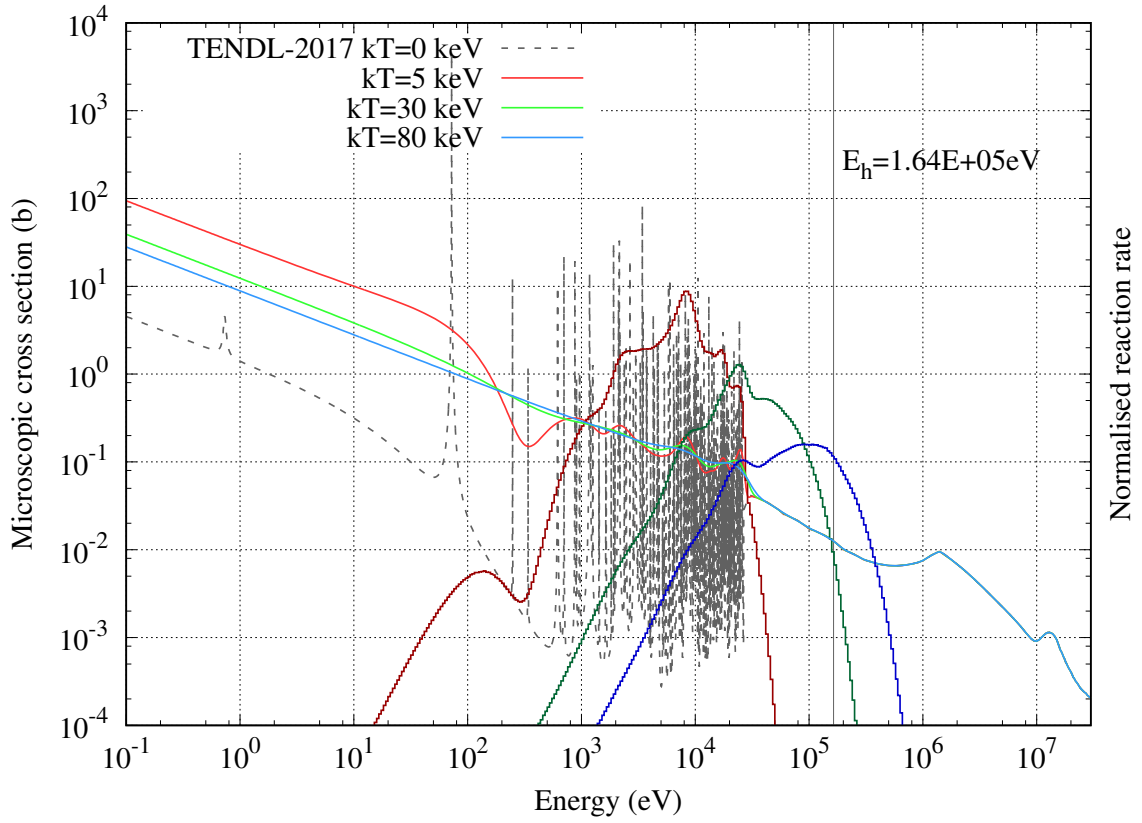
$^{138}\text{Ba}_{56}$ [Stable]



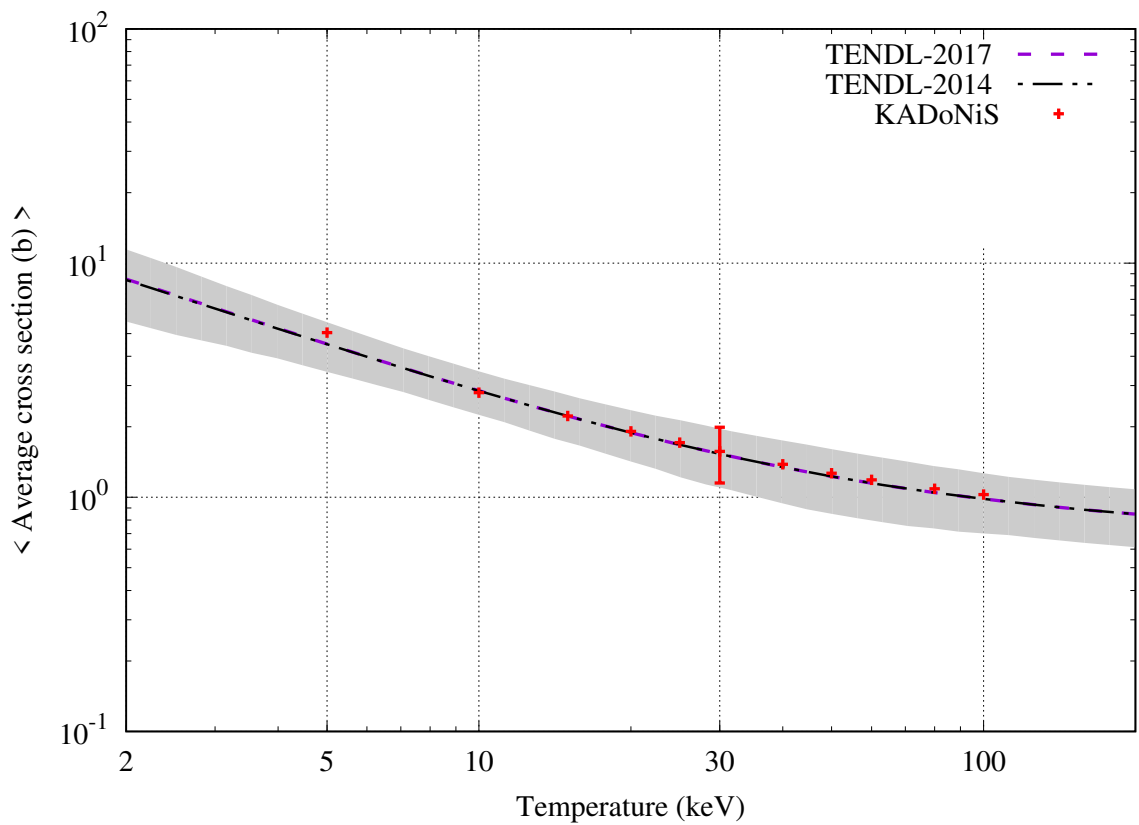
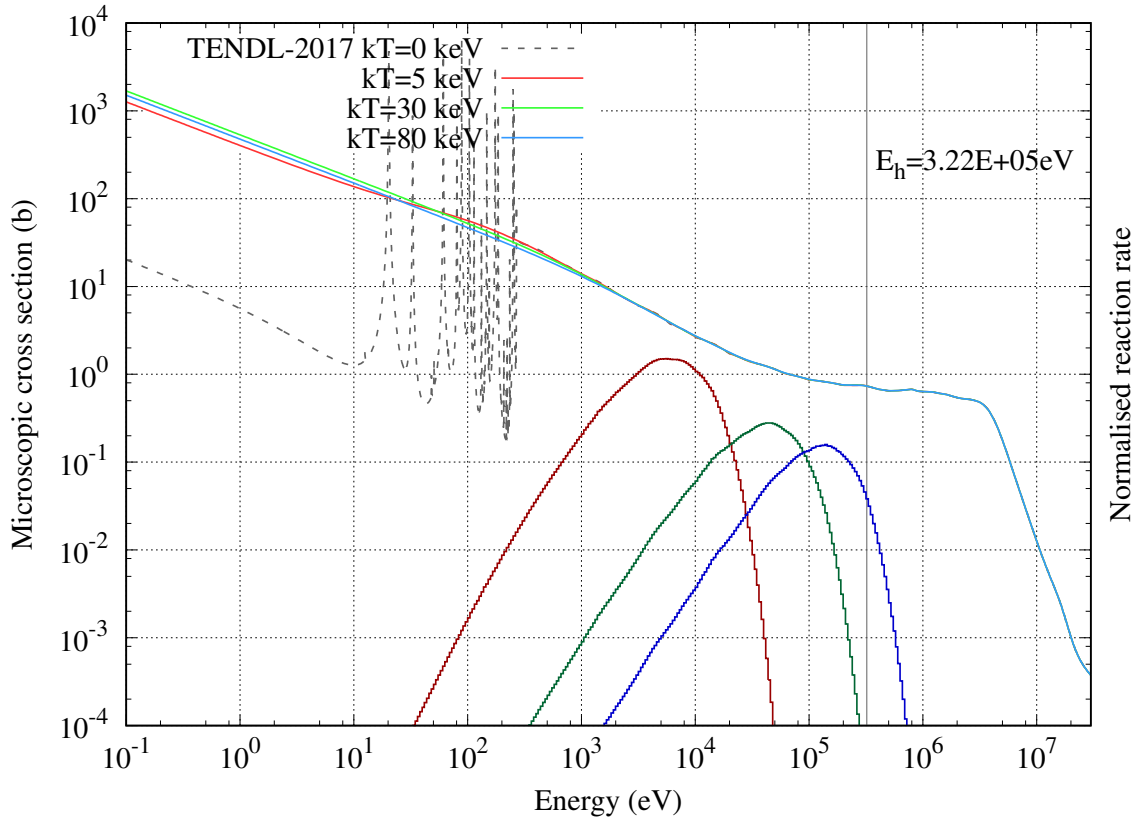
$^{138}\text{La}_{57}$ [$T_{1/2} = 1.02 \times 10^{11}$ years] (KADoNiS=SMC)



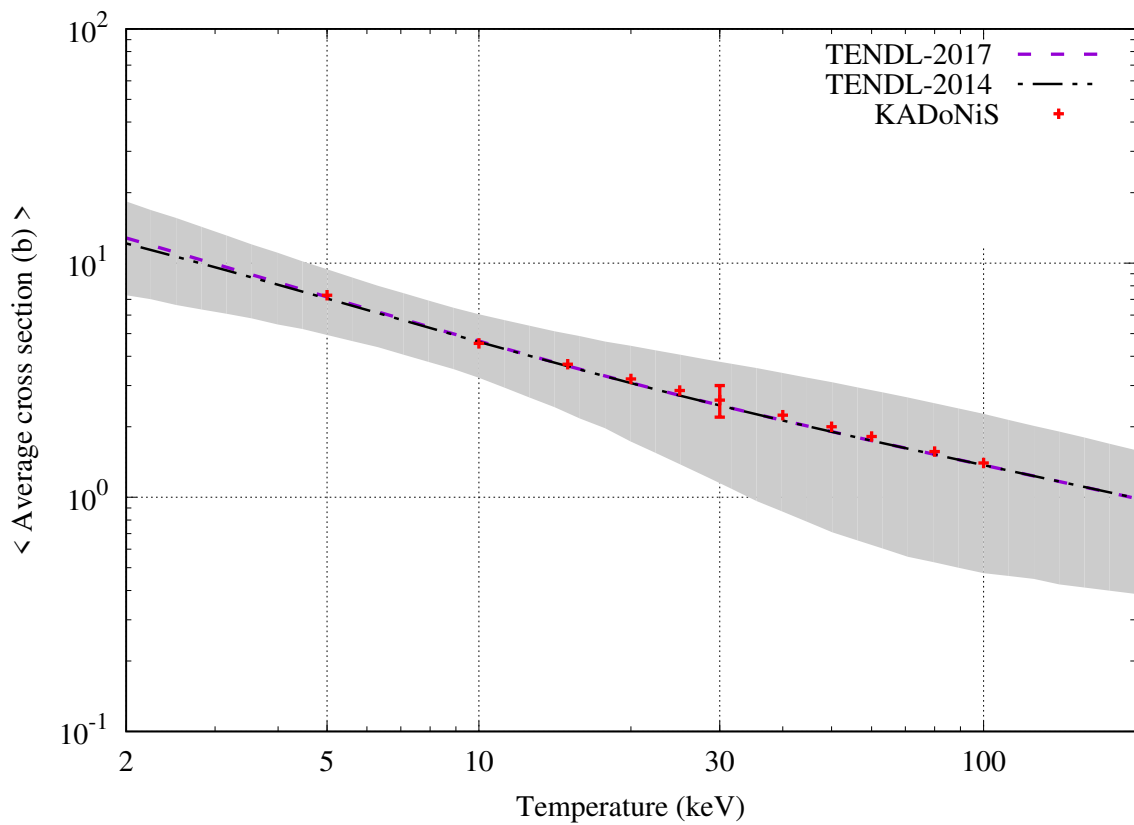
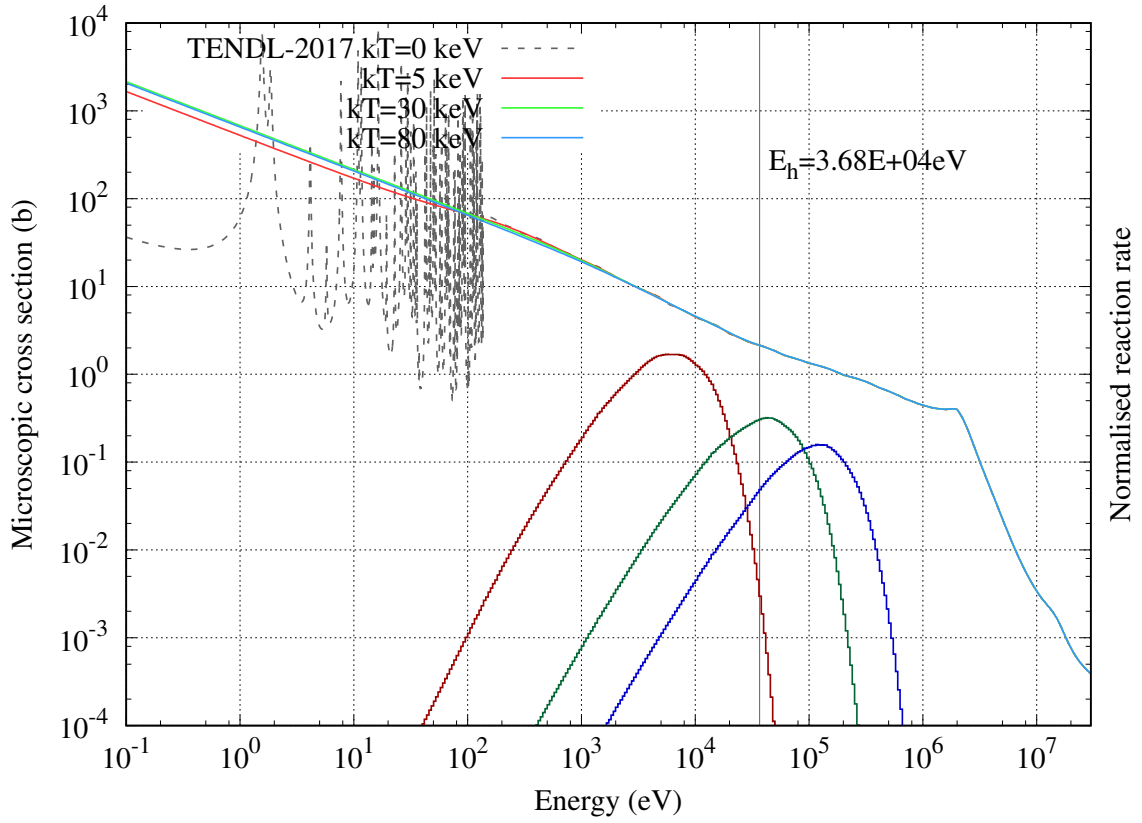
$^{139}\text{La}_{57}$ [Stable]



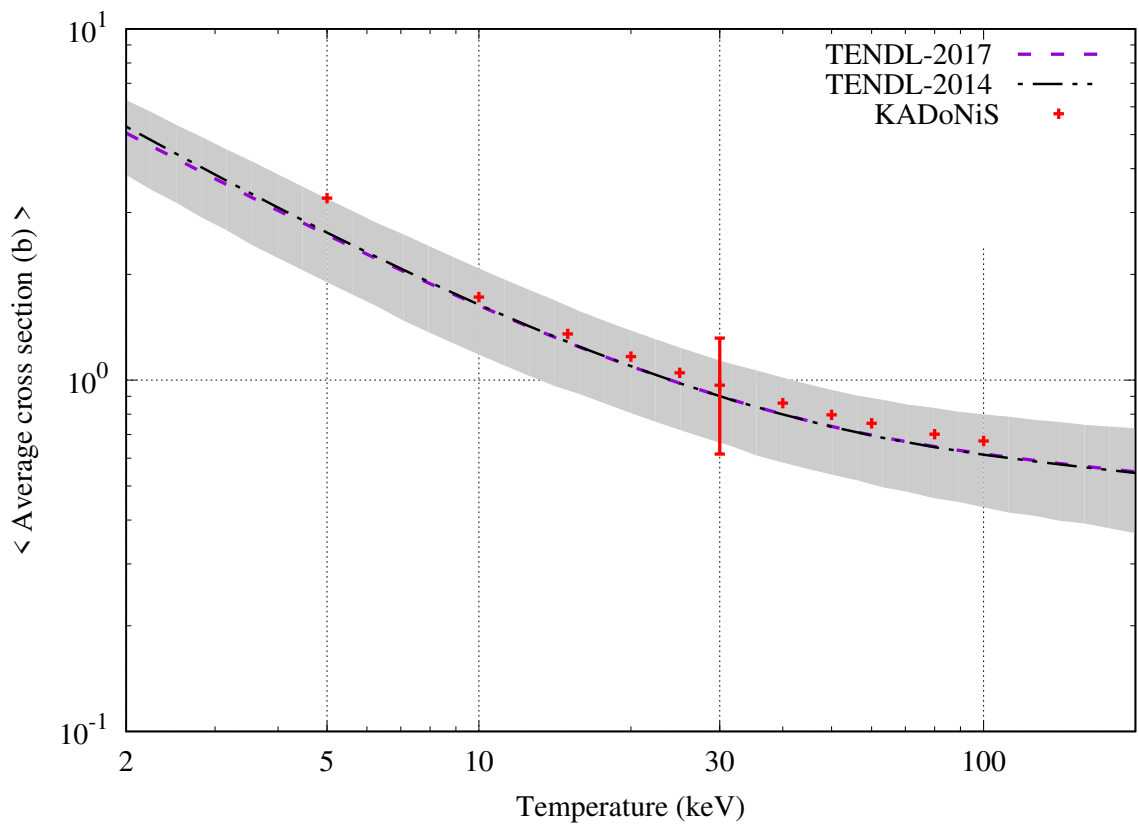
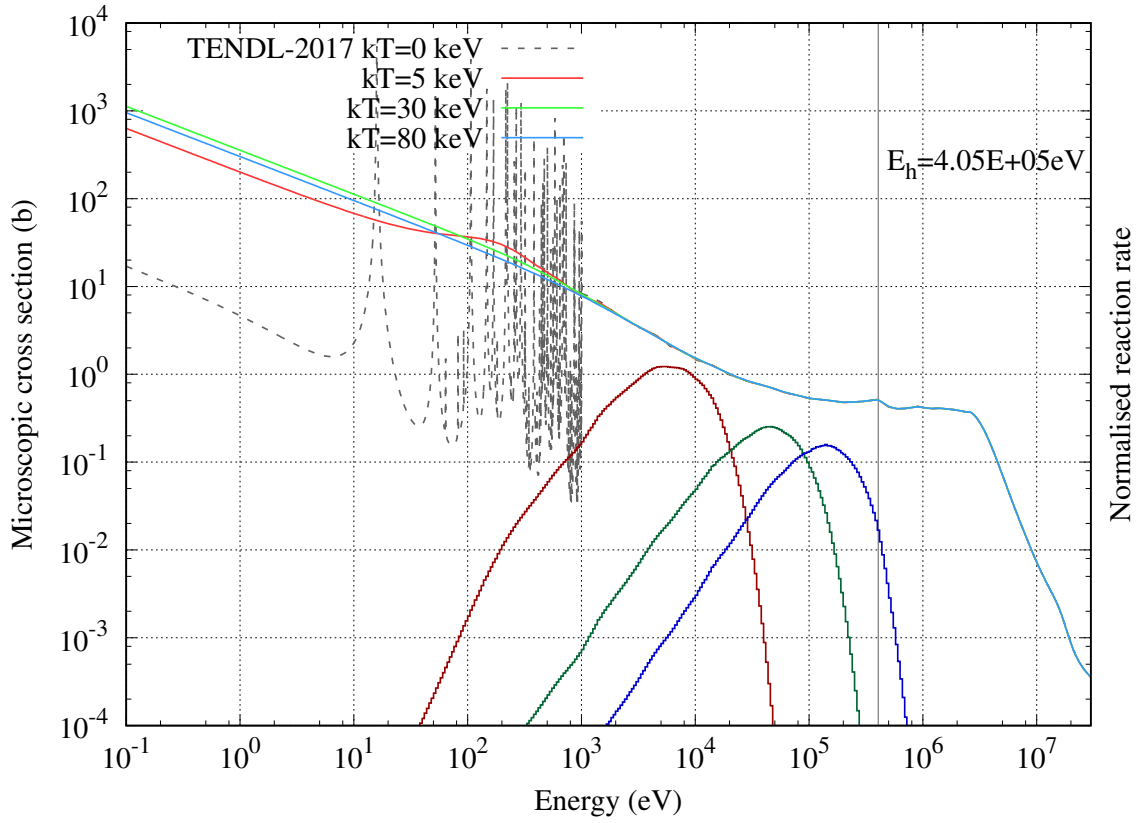
$^{132}\text{Ce}_{58}$ [$T_{1/2} = 3.51$ hours] (KADoNiS=SMC)



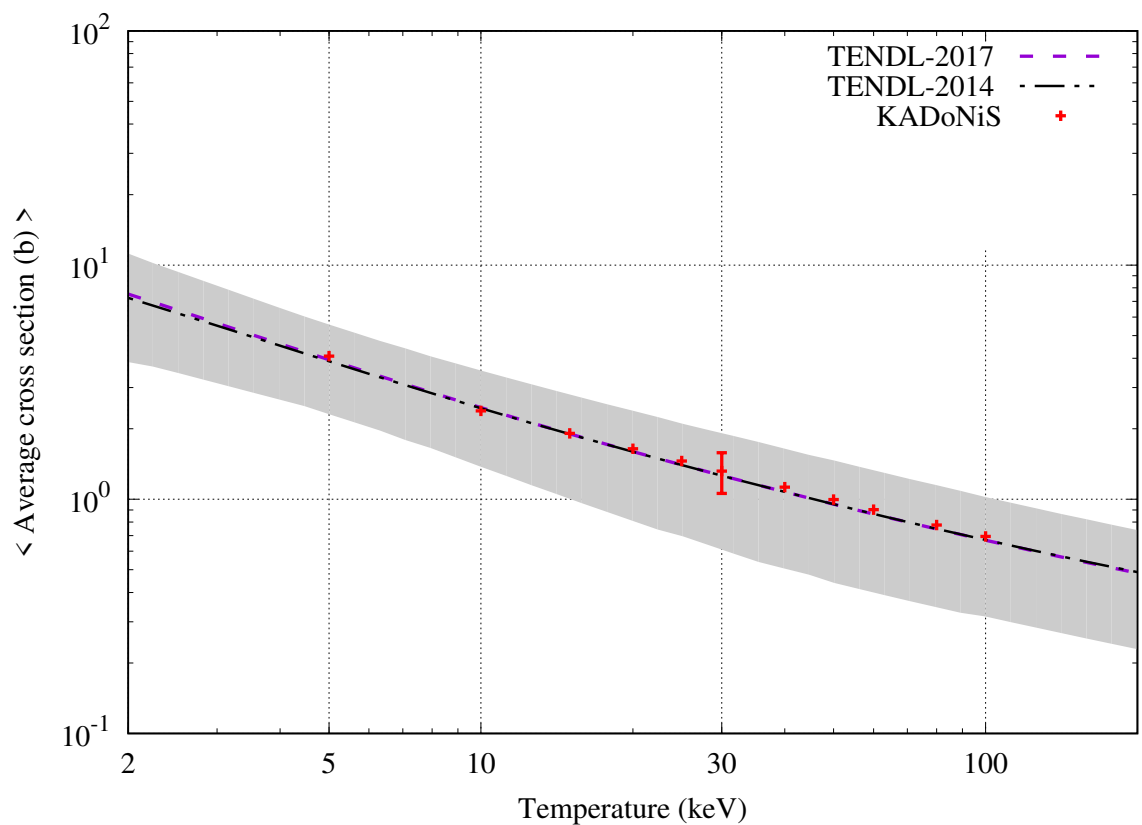
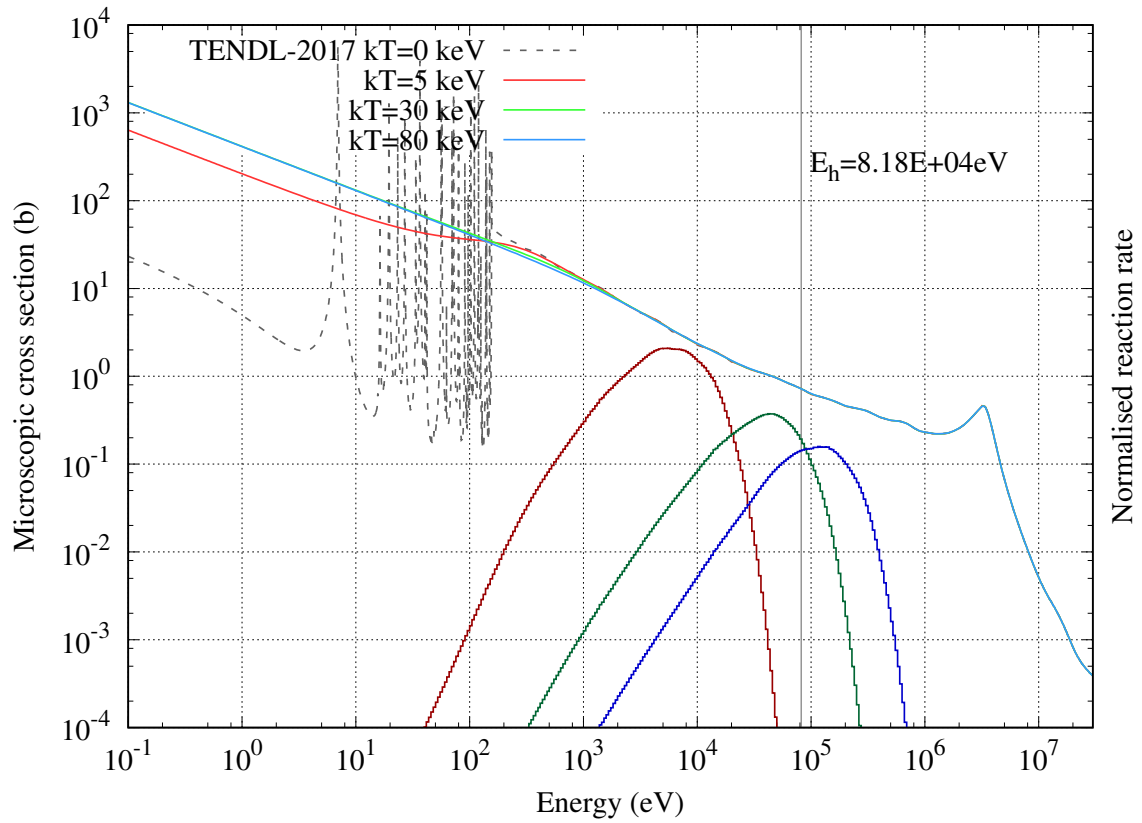
$^{133}\text{Ce}_{58}$ [$T_{1/2} = 1.62$ hours] (KADoNiS=SMC)



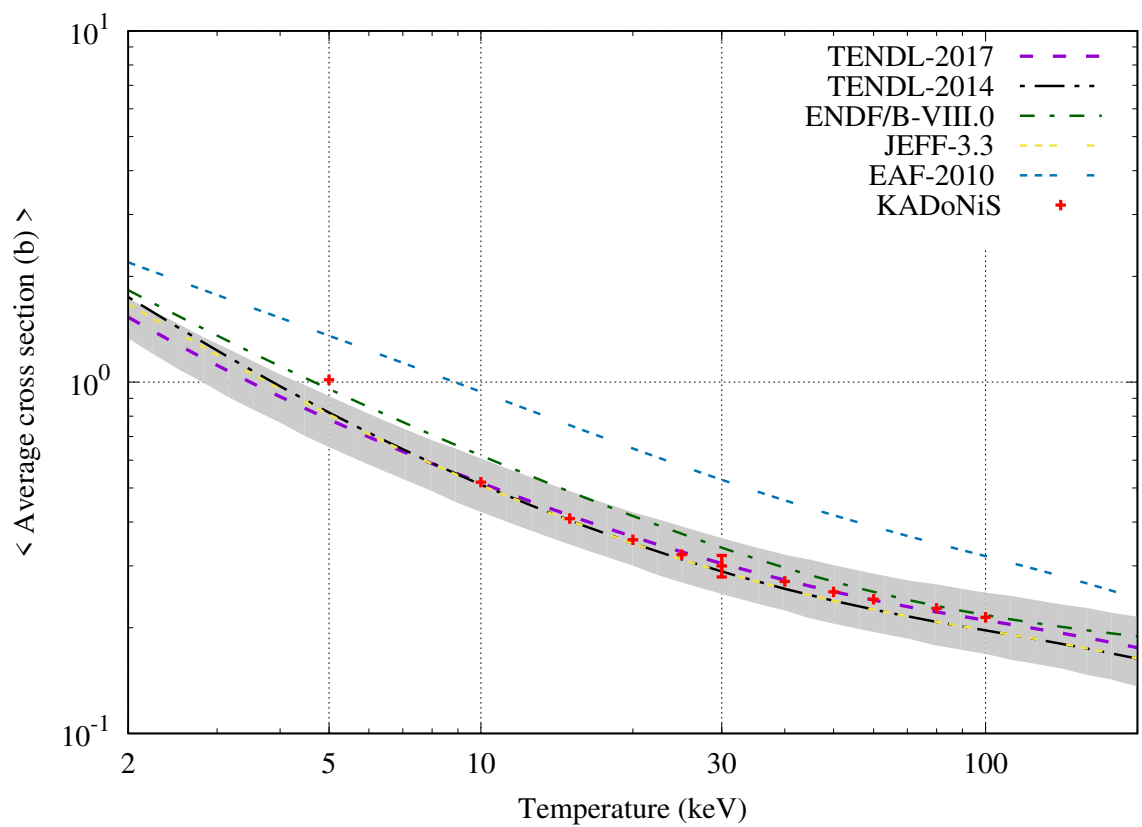
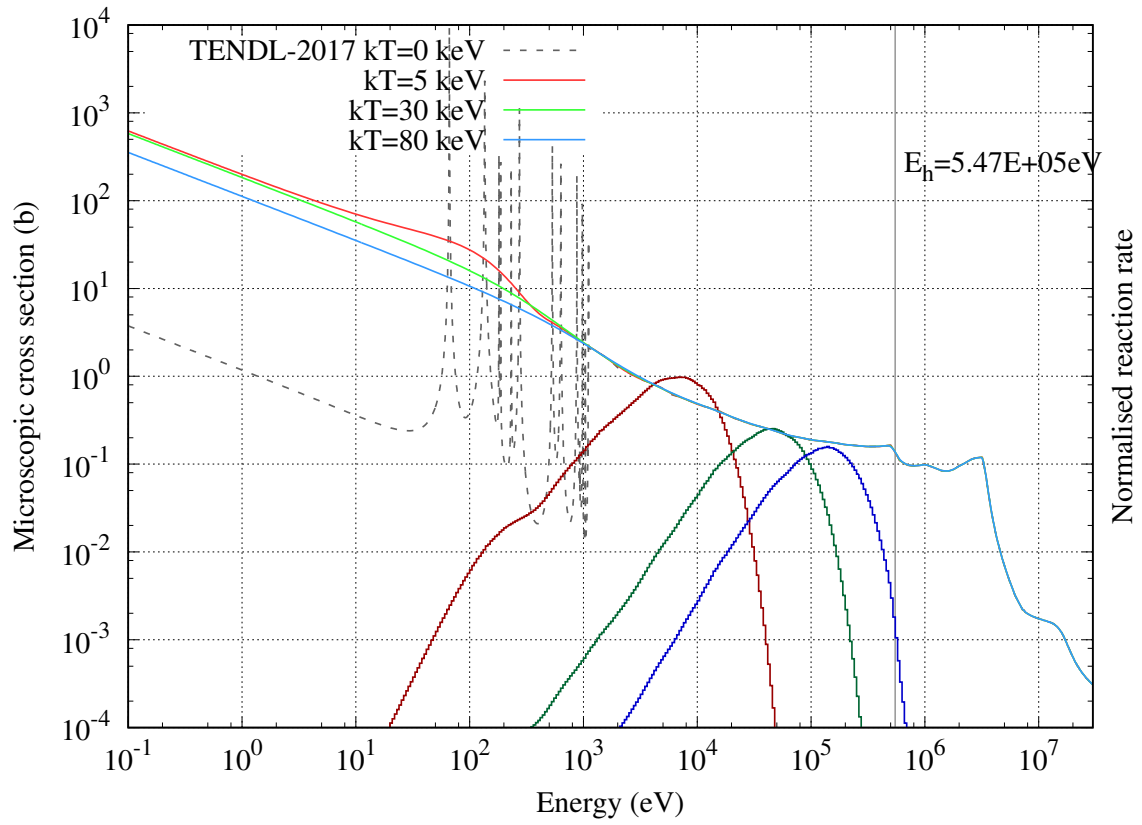
$^{134}\text{Ce}_{58}$ [$T_{1/2} = 3.16$ days] (KADoNiS=SMC)



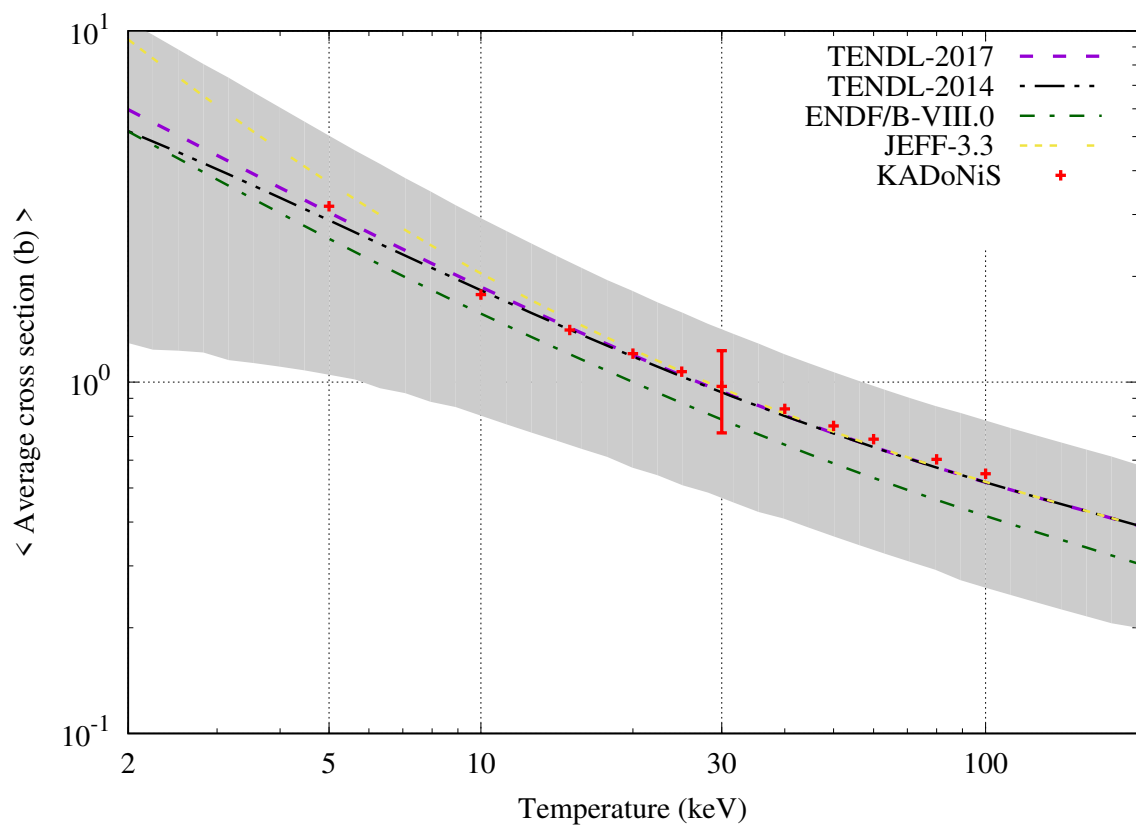
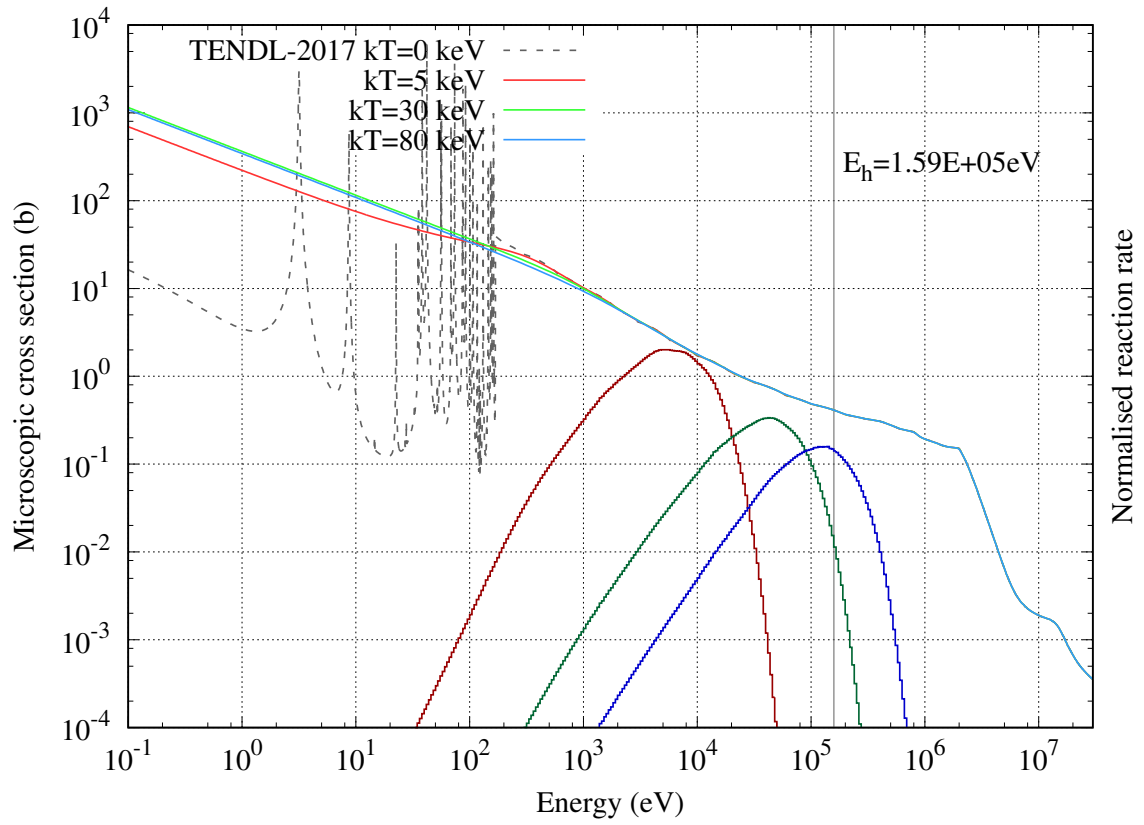
$^{135}\text{Ce}_{58}$ [$T_{1/2} = 17.70$ hours] (KADoNiS=SMC)



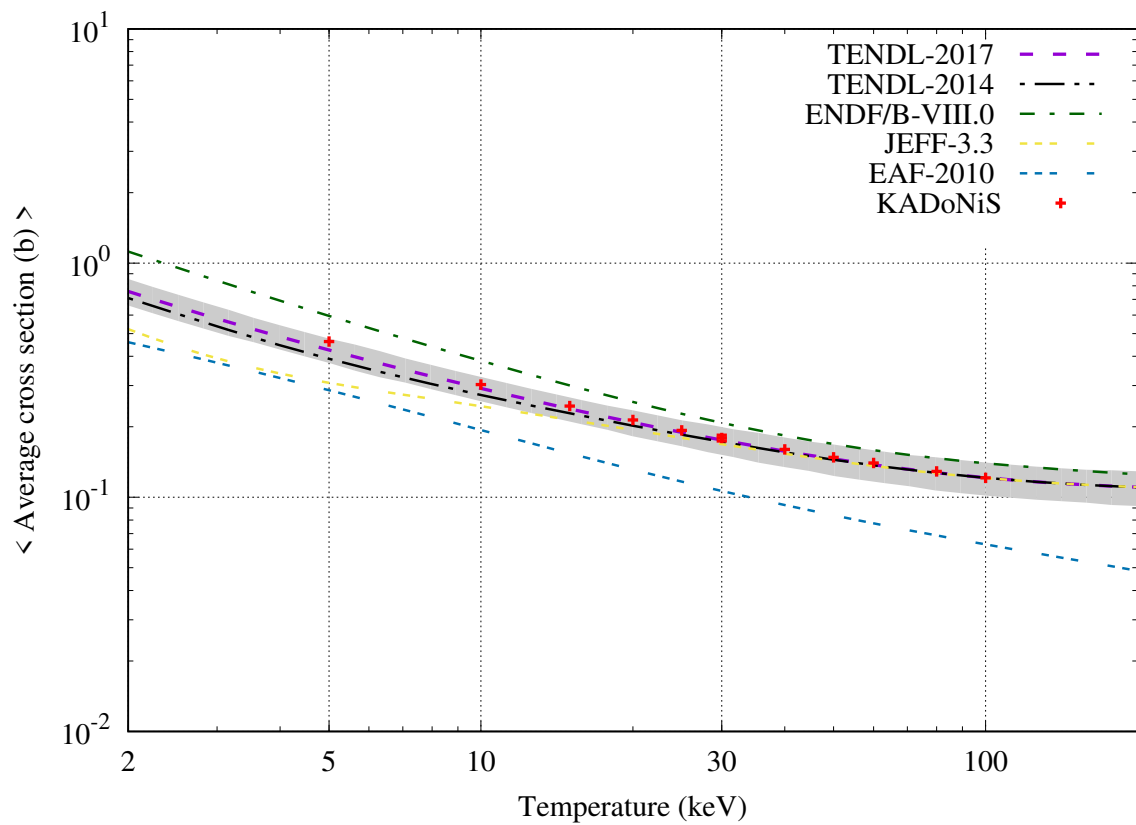
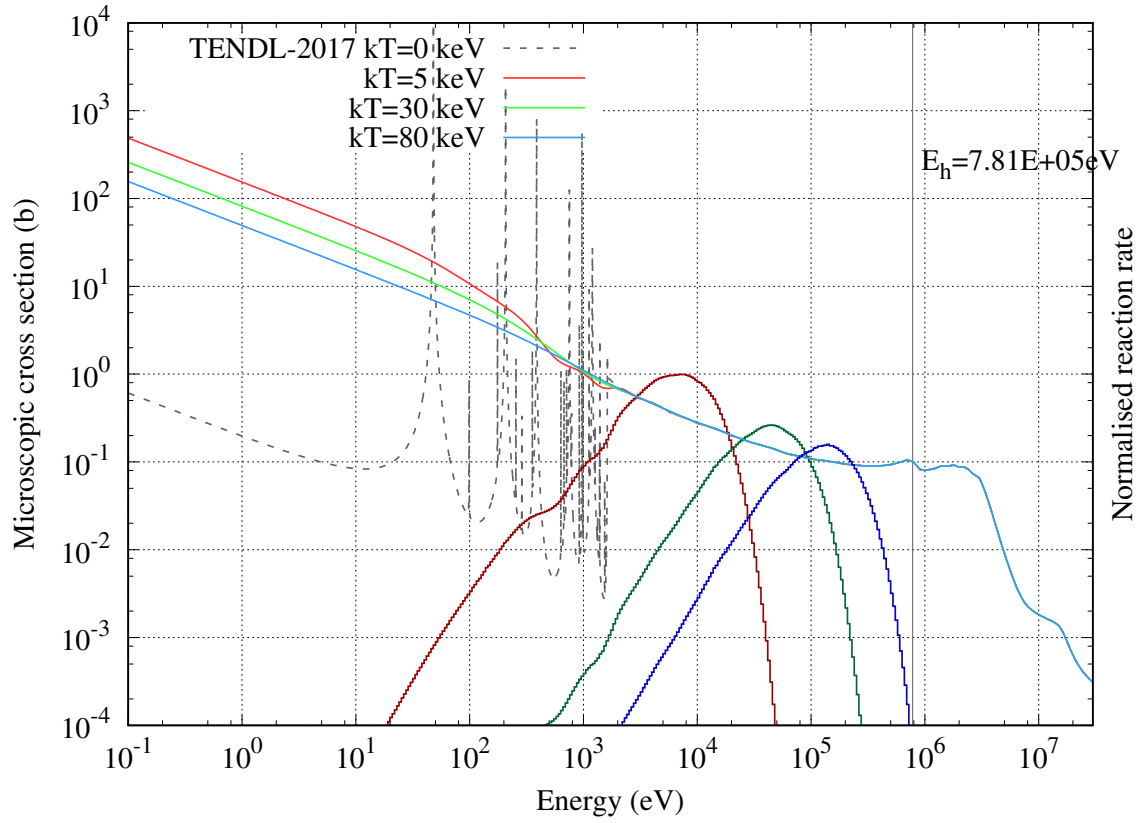
$^{136}\text{Ce}_{58}$ [$T_{1/2} = 7.00 \times 10^{13}$ years]



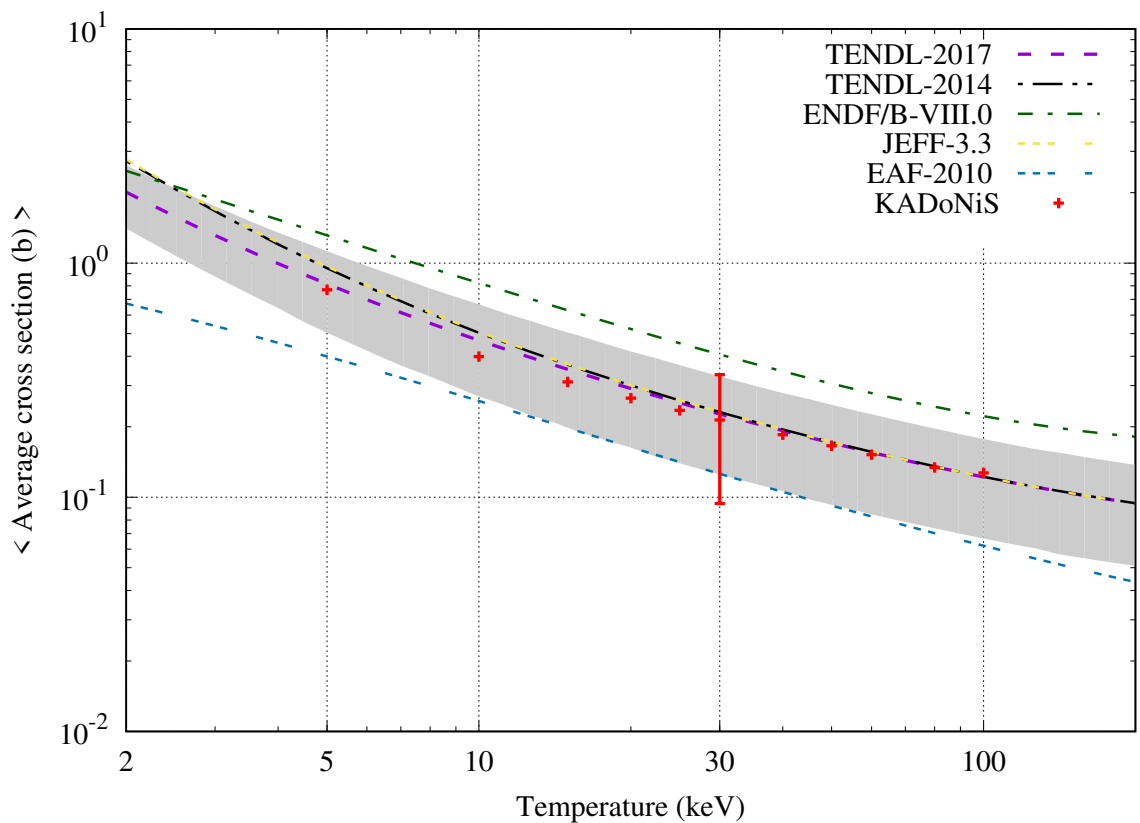
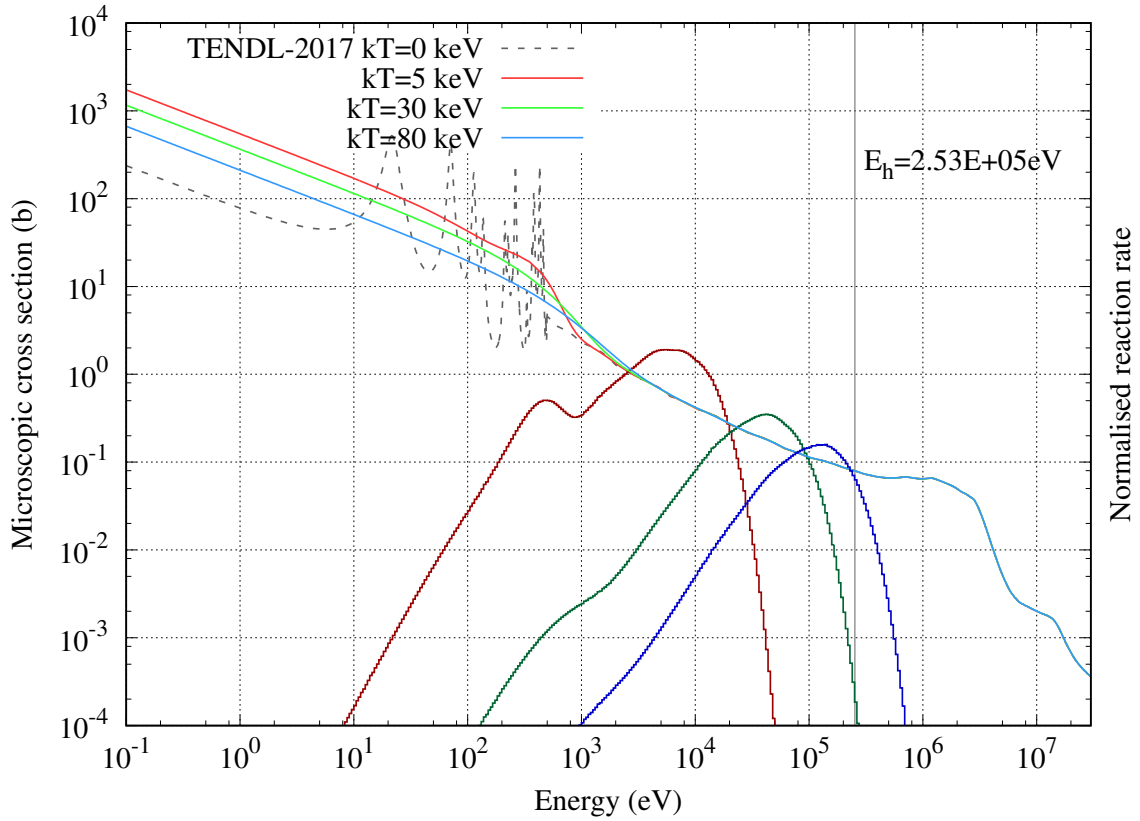
$^{137}\text{Ce}_{58}$ [$T_{1/2} = 9.00$ hours] (KADoNiS=SMC)



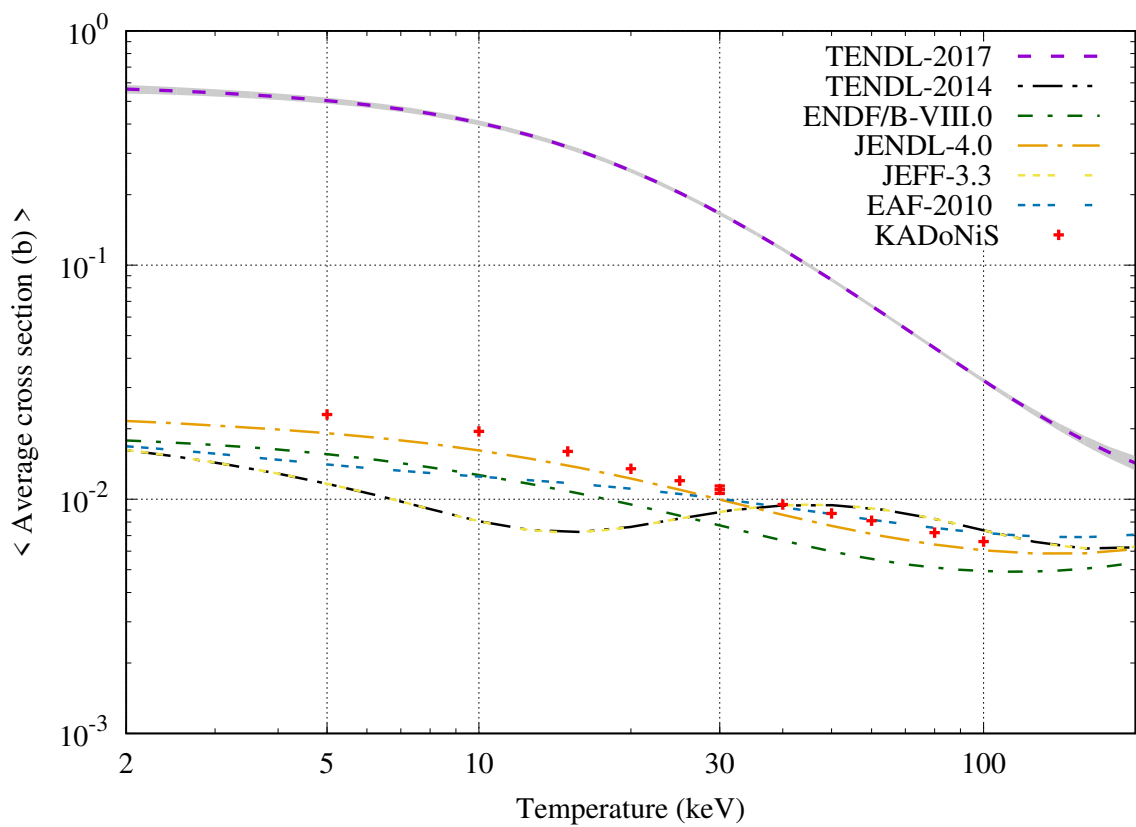
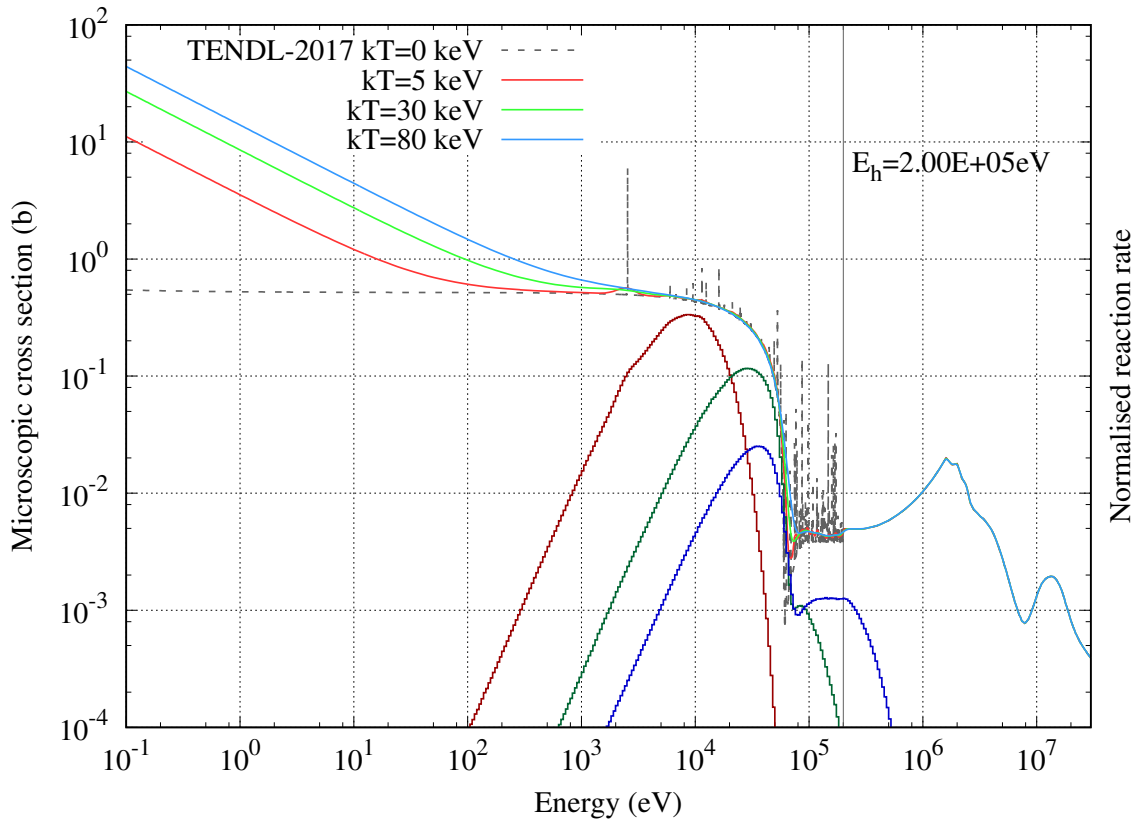
$^{138}\text{Ce}_{58}$ [Stable]



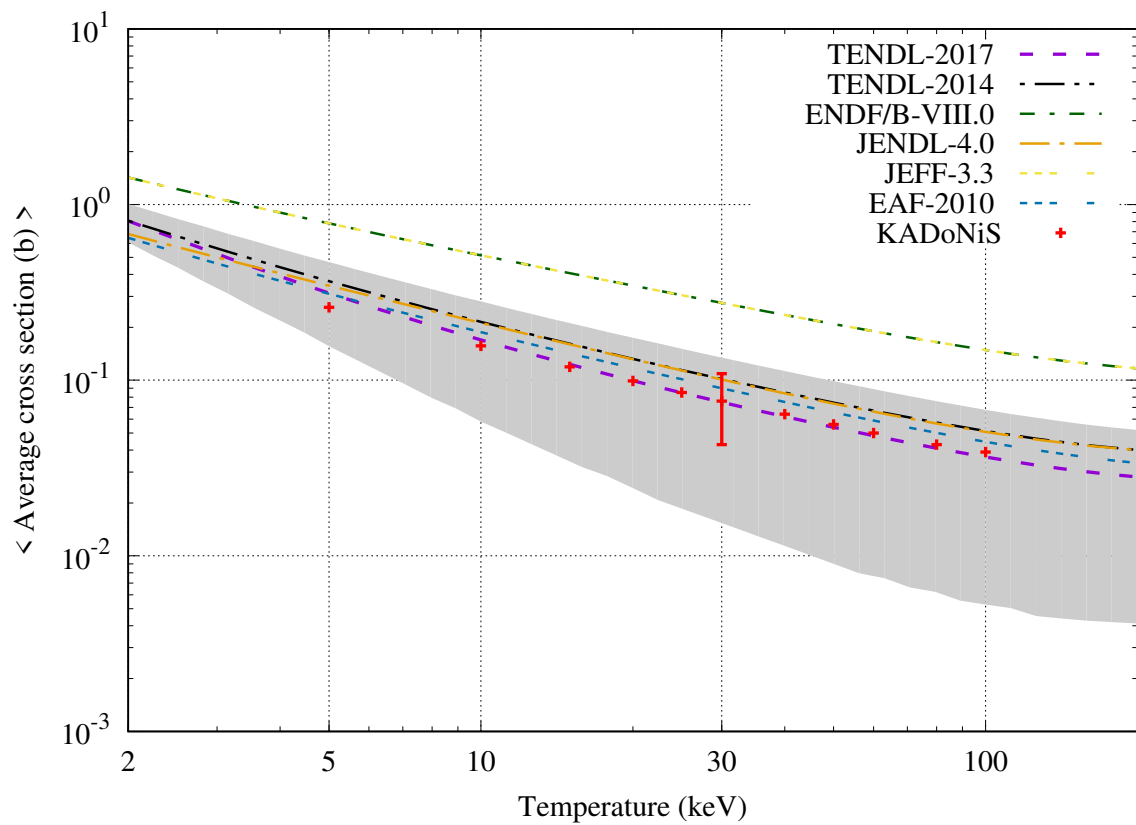
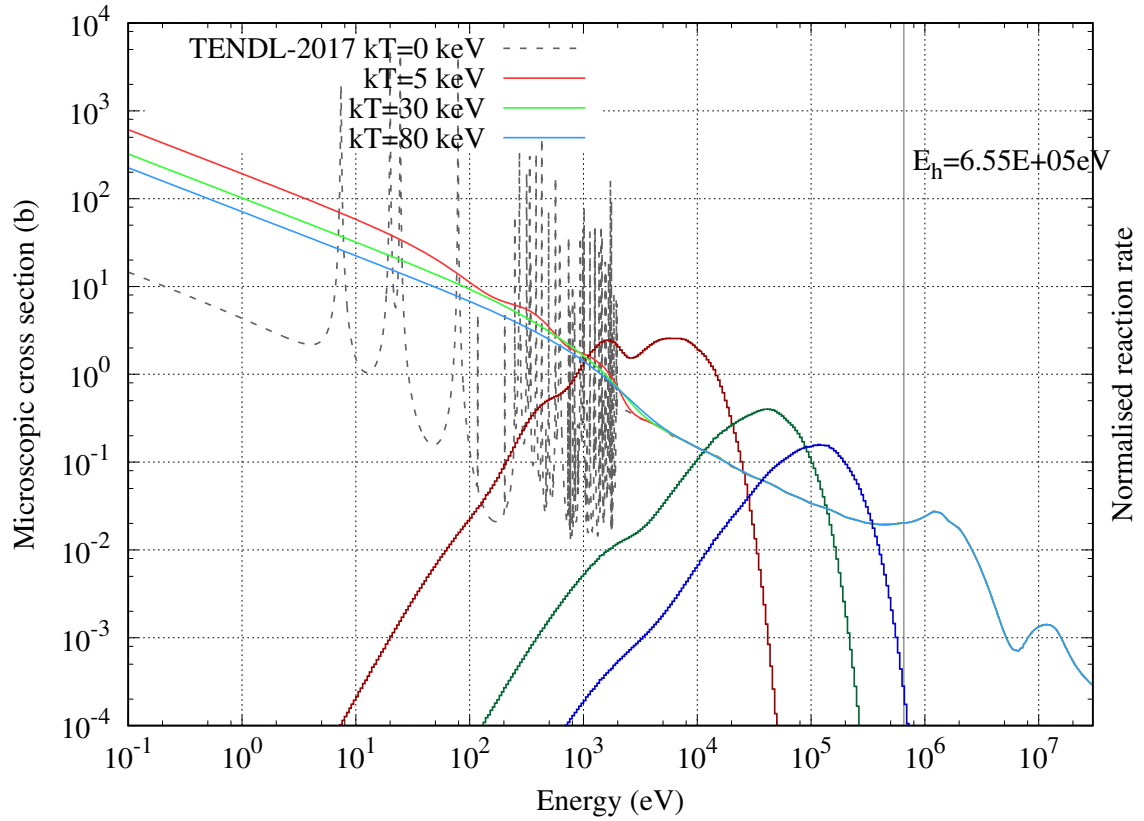
$^{139}\text{Ce}_{58}$ [$T_{1/2} = 137.64$ days] (KADoNiS=SMC)



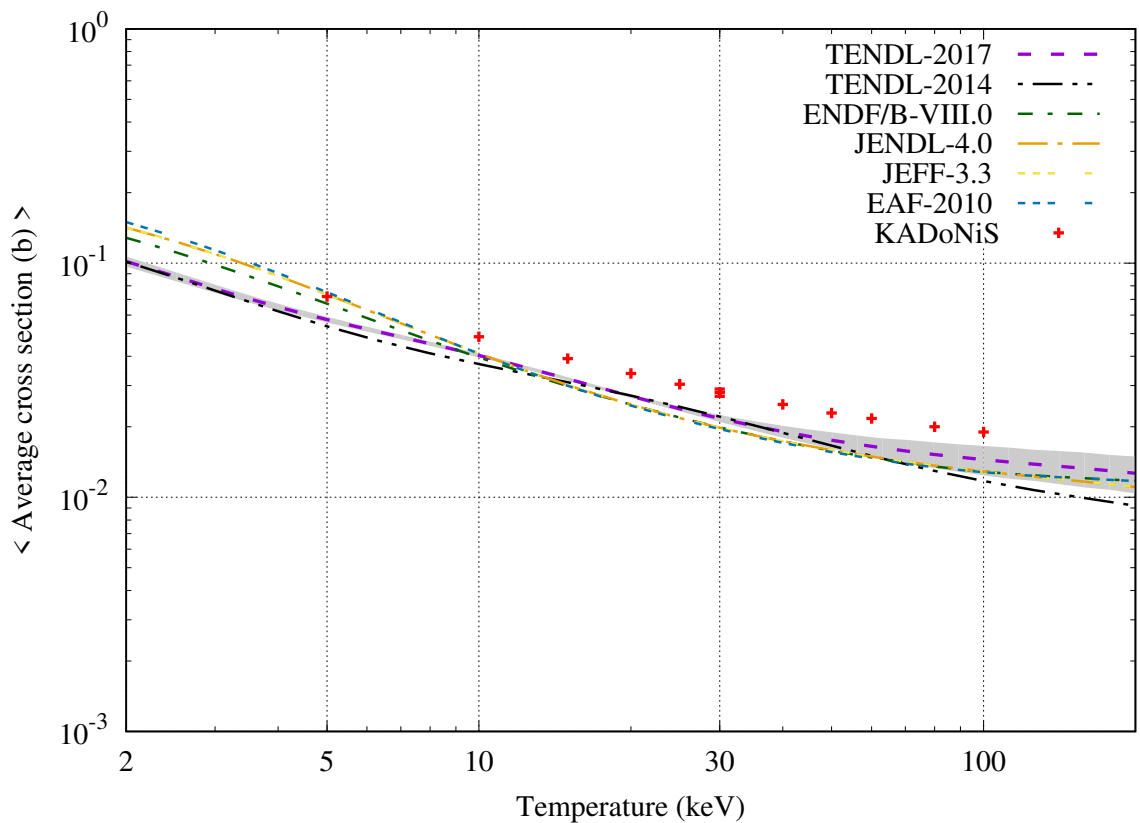
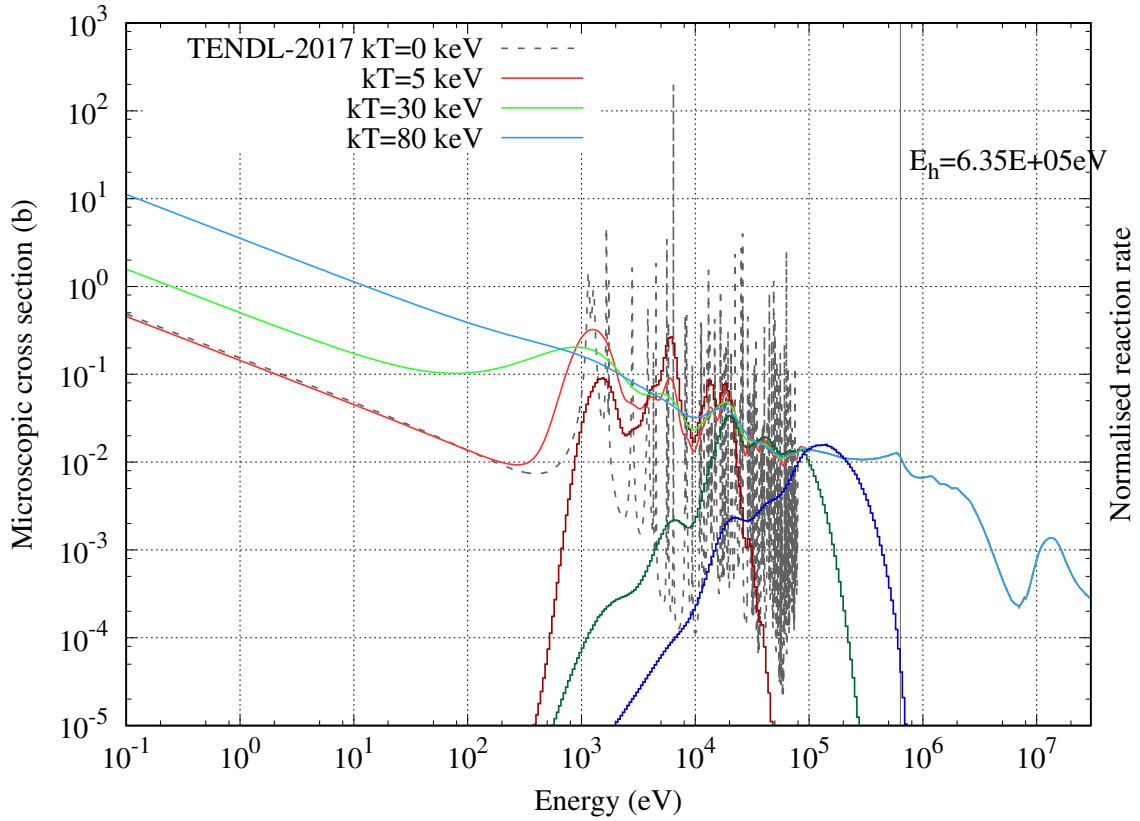
$^{140}\text{Ce}_{58}$ [Stable]



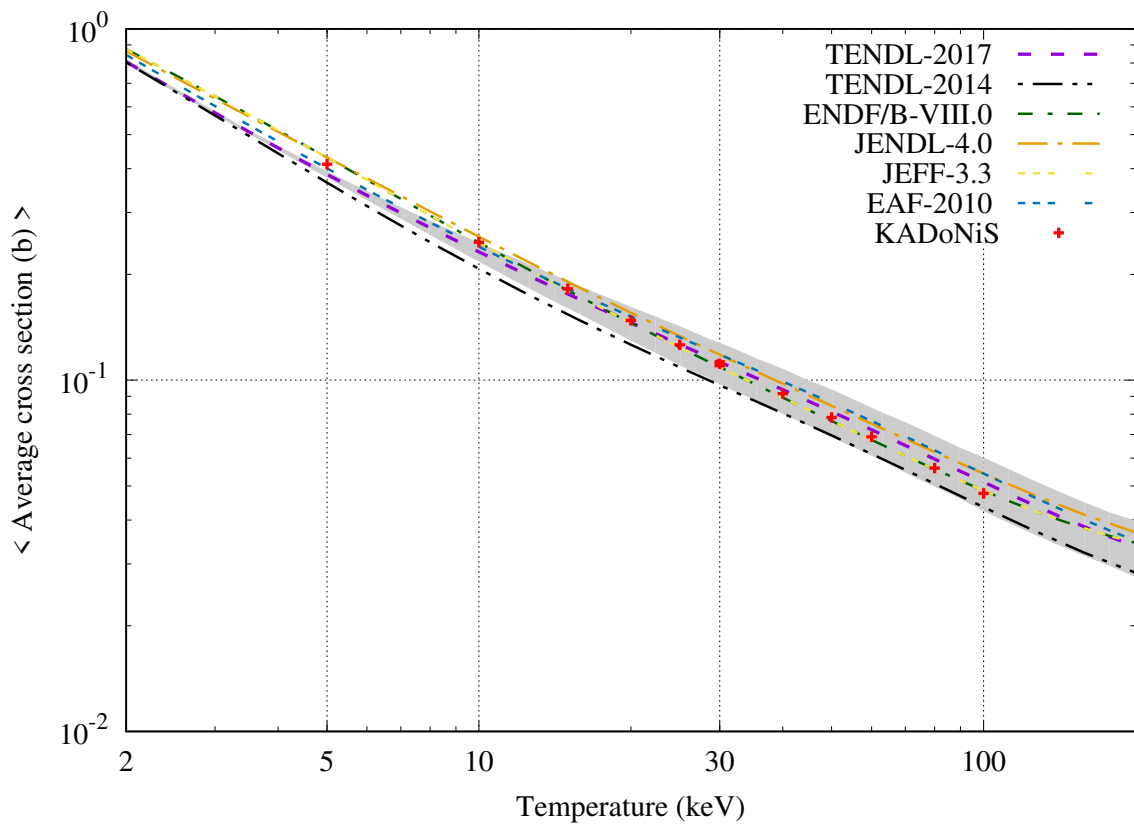
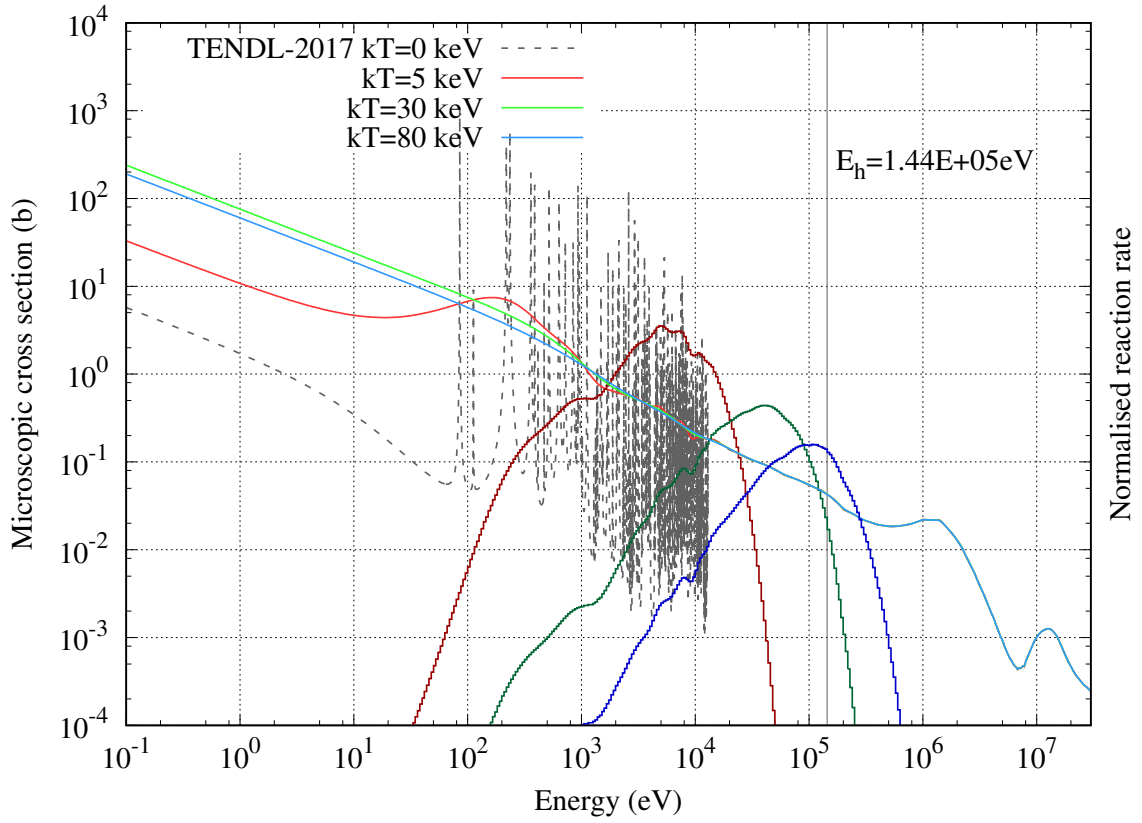
$^{141}\text{Ce}_{58}$ [$T_{1/2} = 32.50$ days] (KADoNiS=SMC)



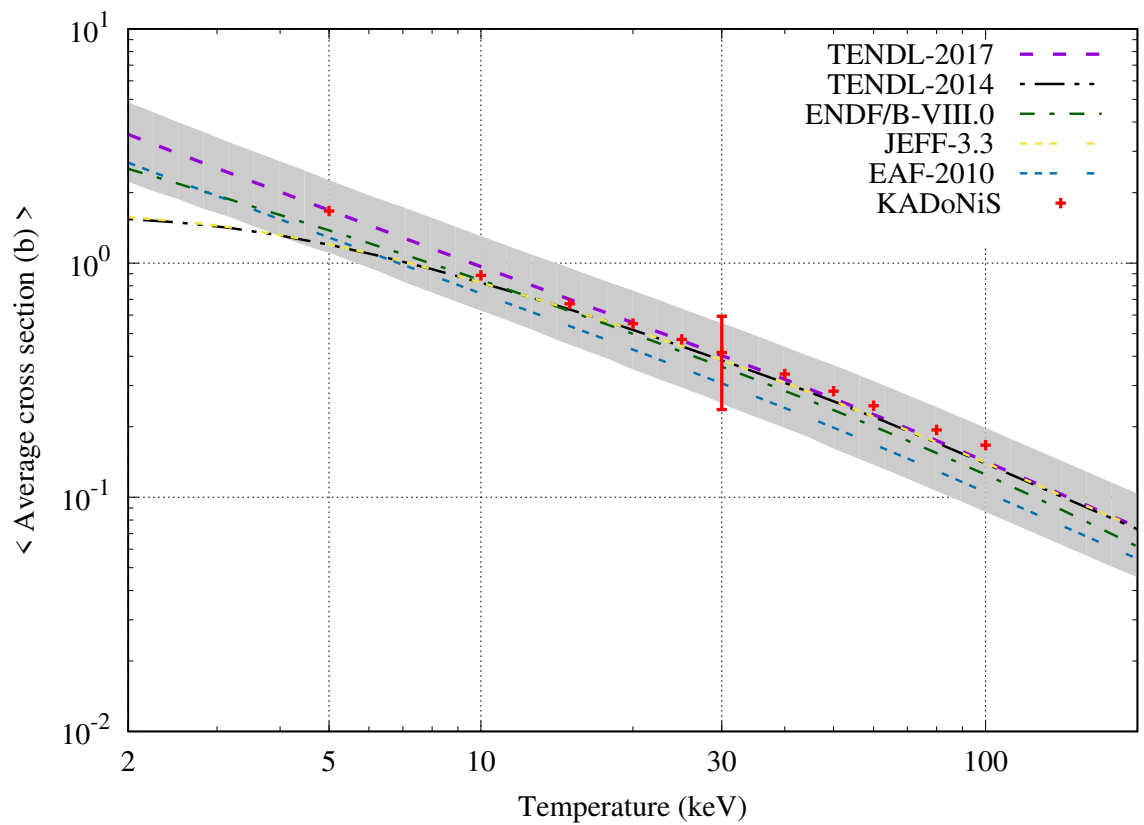
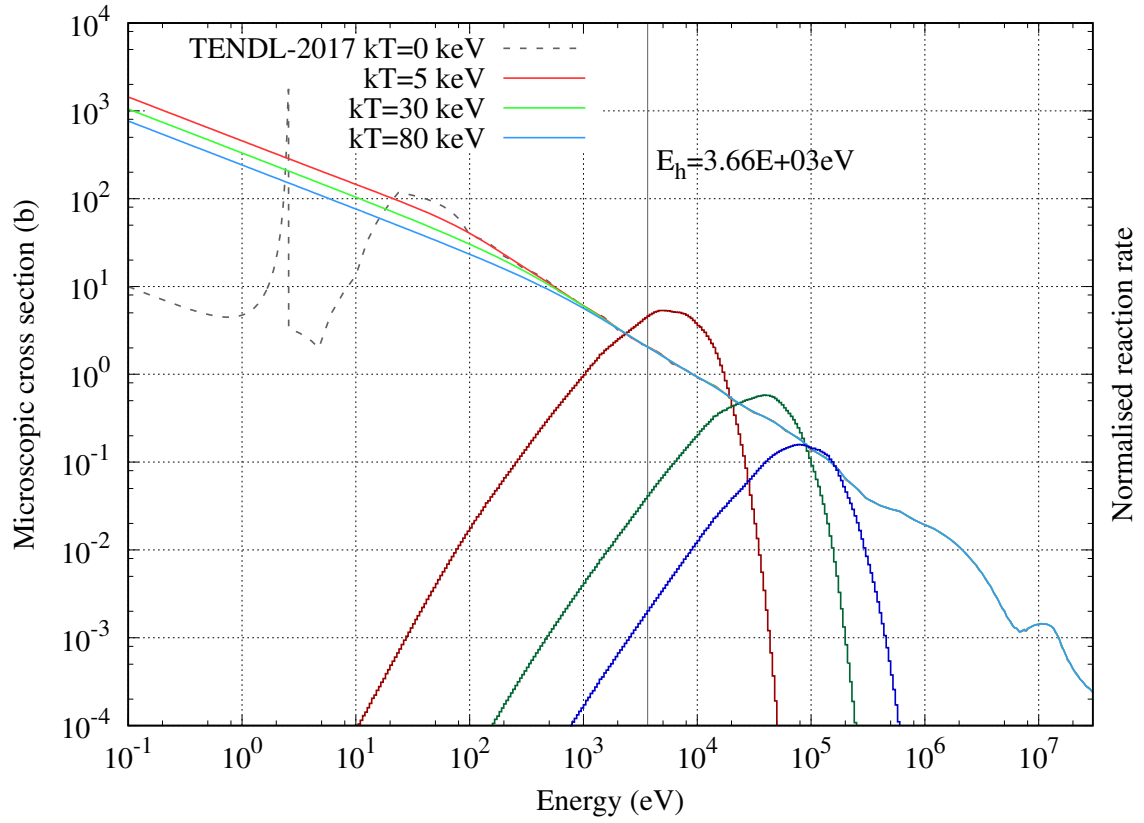
$^{142}\text{Ce}_{58}$ [$T_{1/2} = 5.00 \times 10^{16}$ years]



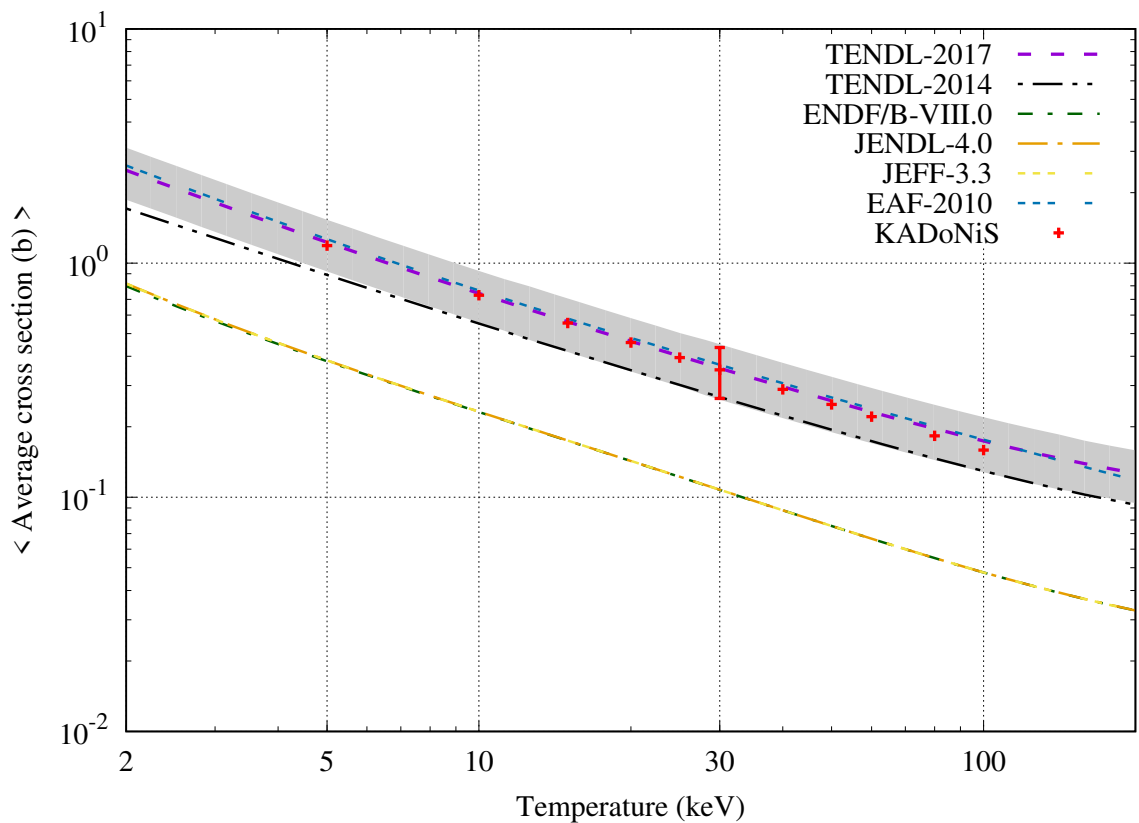
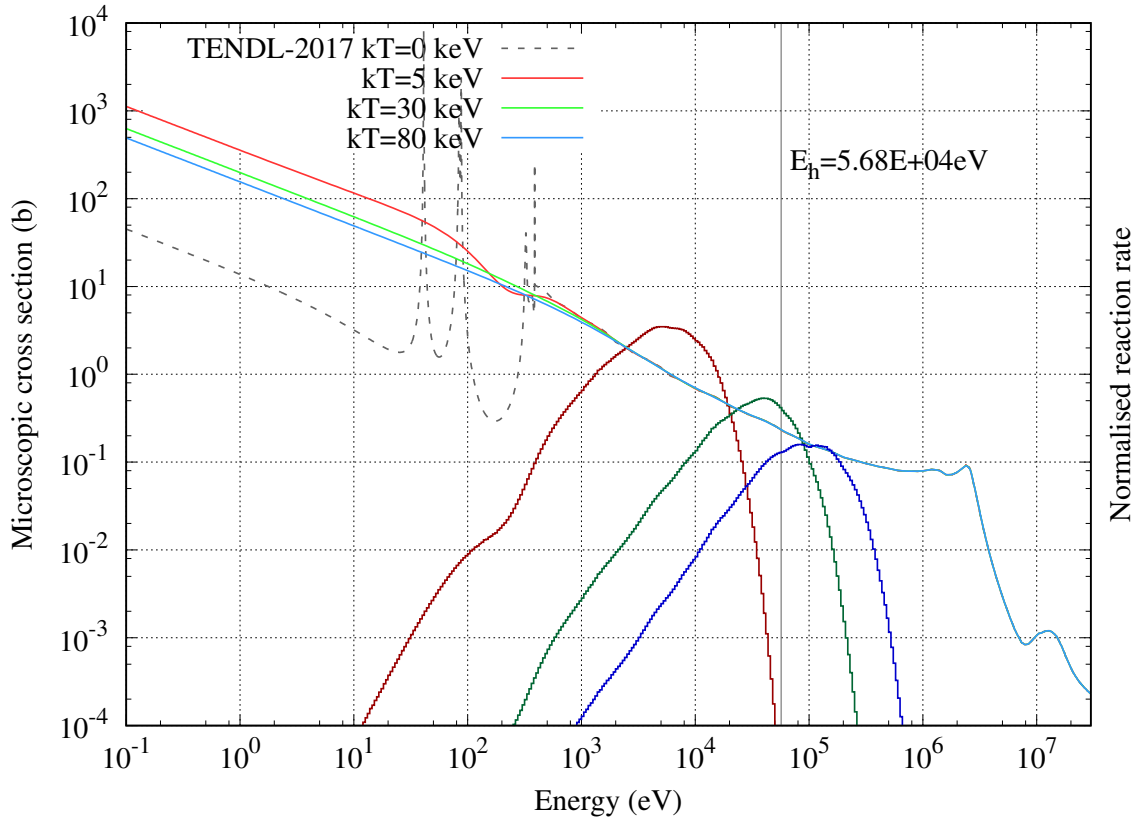
$^{141}\text{Pr}_{59}$ [Stable]



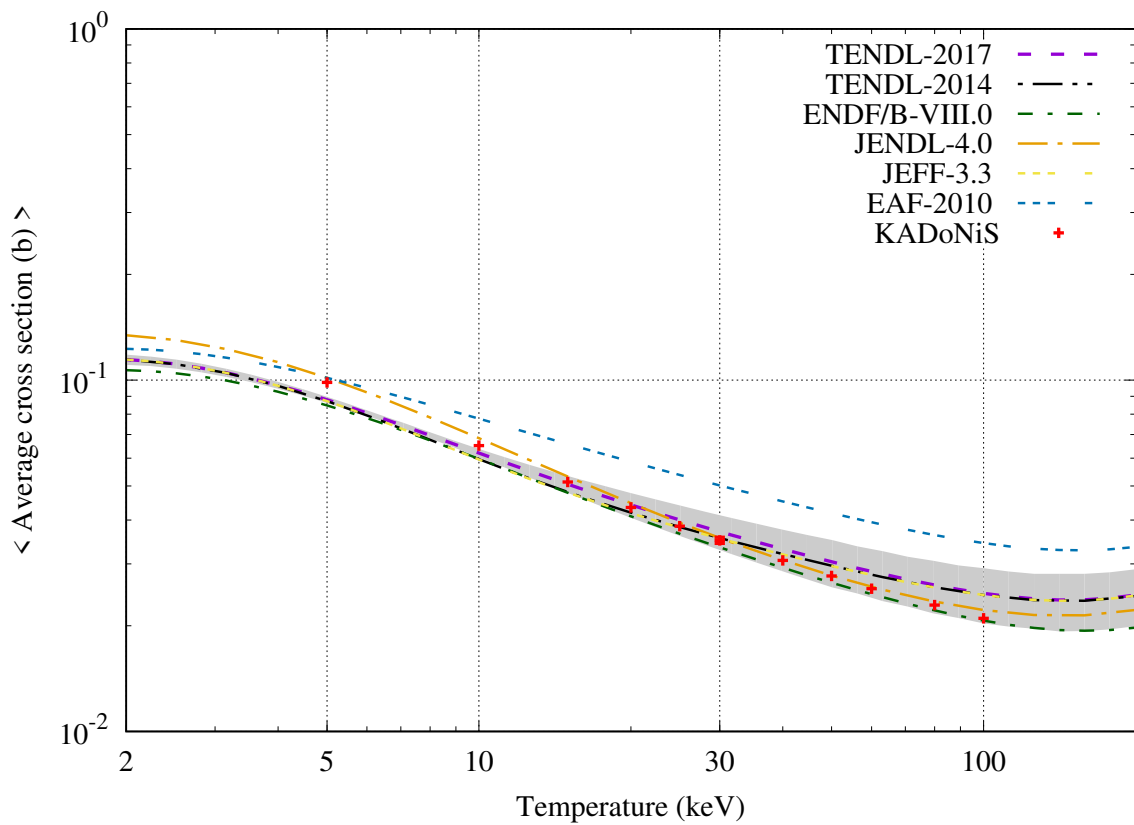
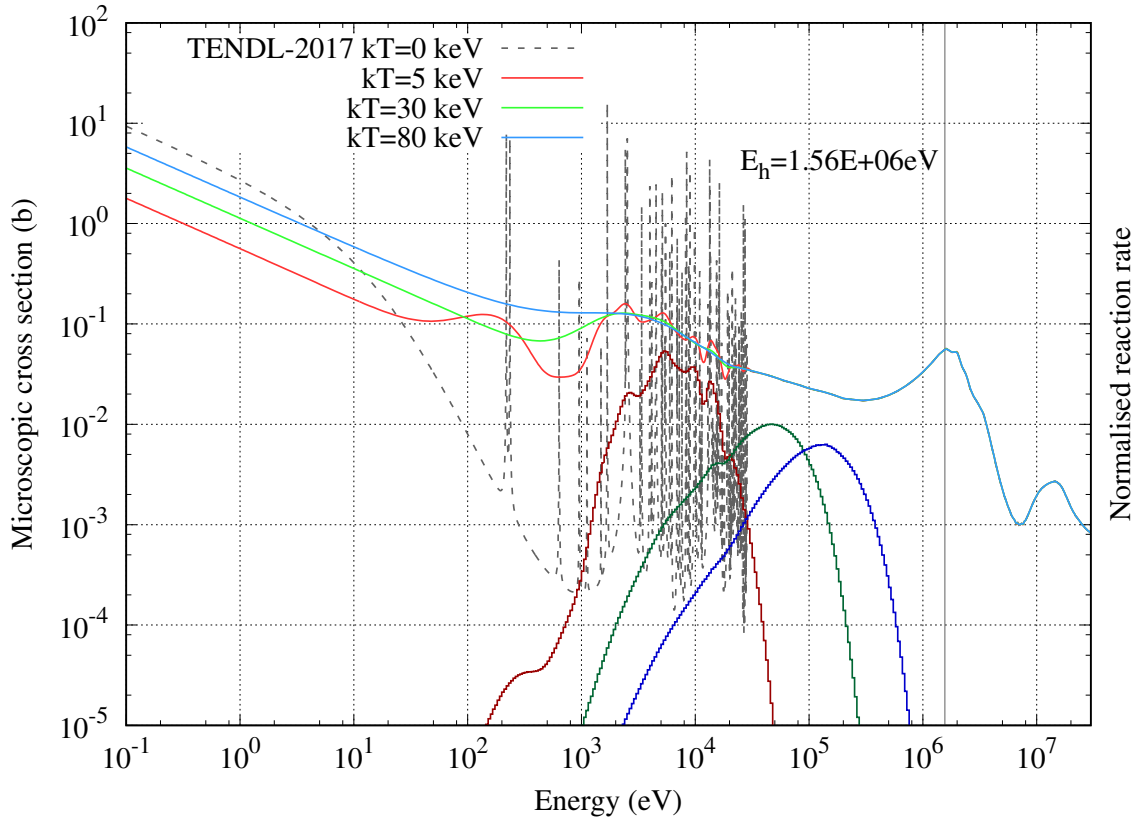
$^{142}\text{Pr}_{59}$ [$T_{1/2} = 19.12$ hours] (KADoNiS=SMC)



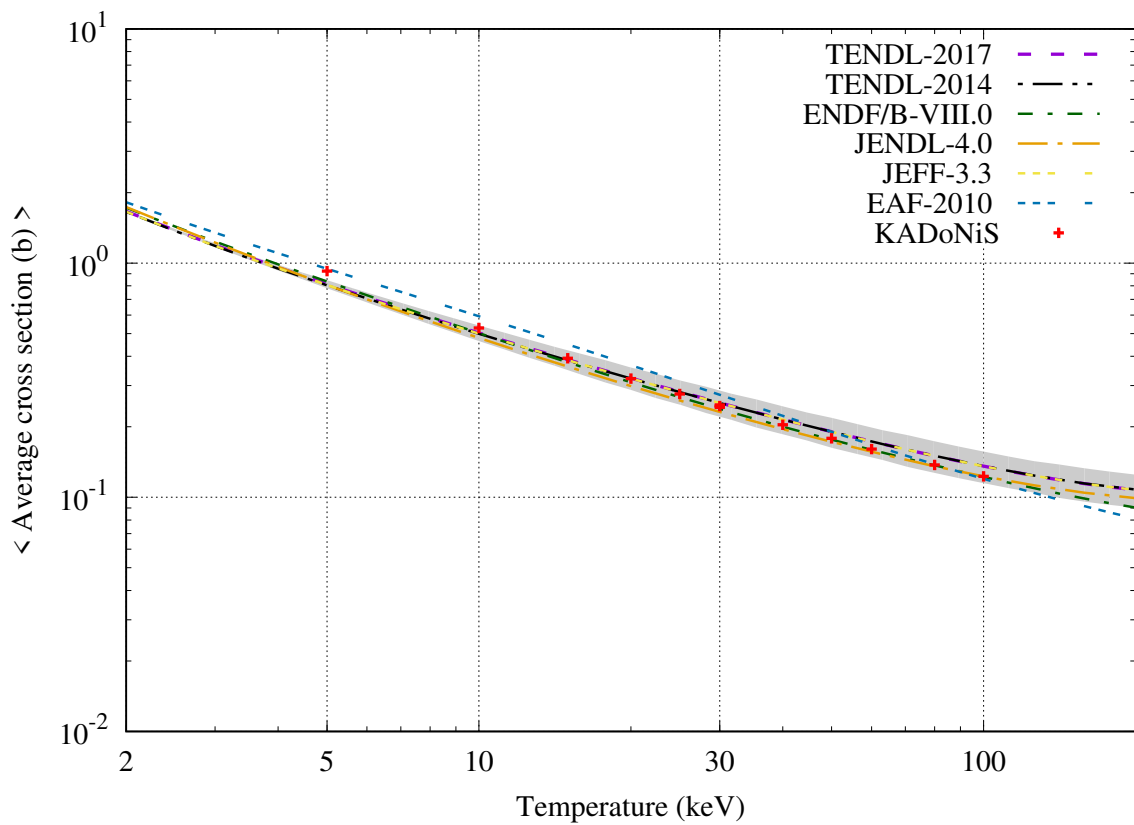
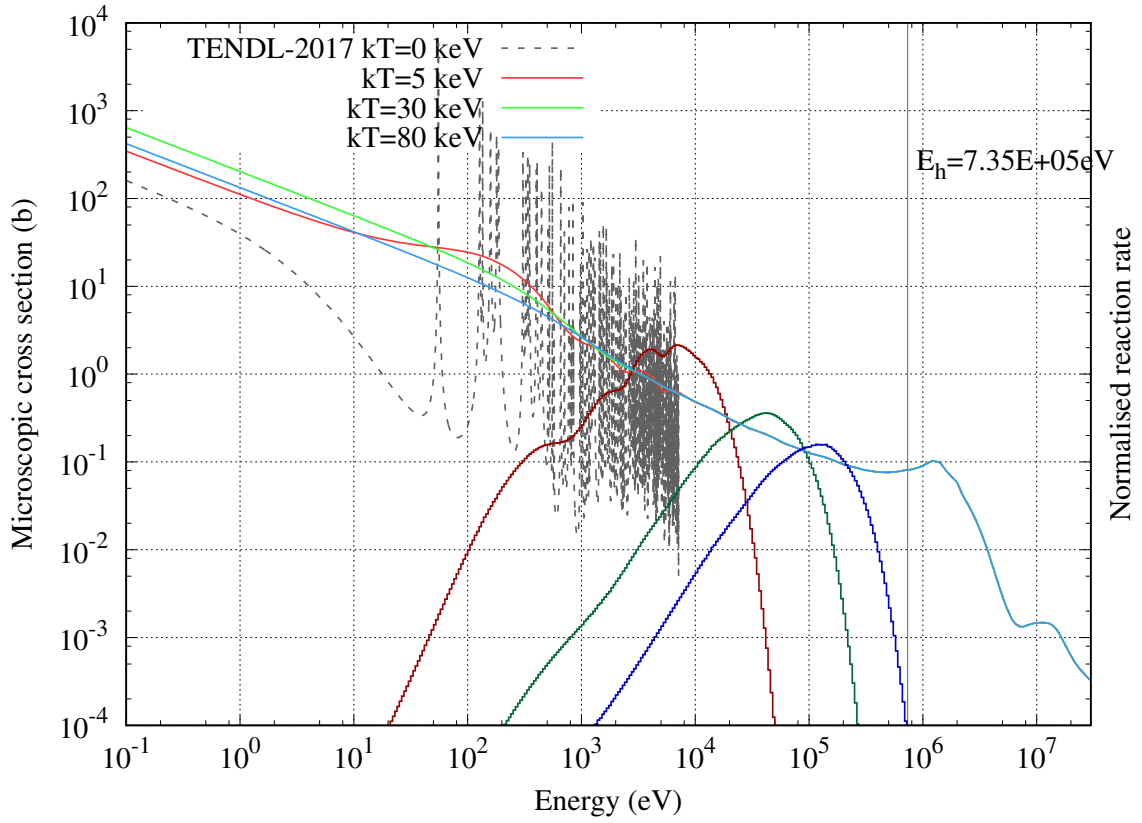
$^{143}\text{Pr}_{59}$ [$T_{1/2} = 13.56$ days] (KADoNiS=SMC)



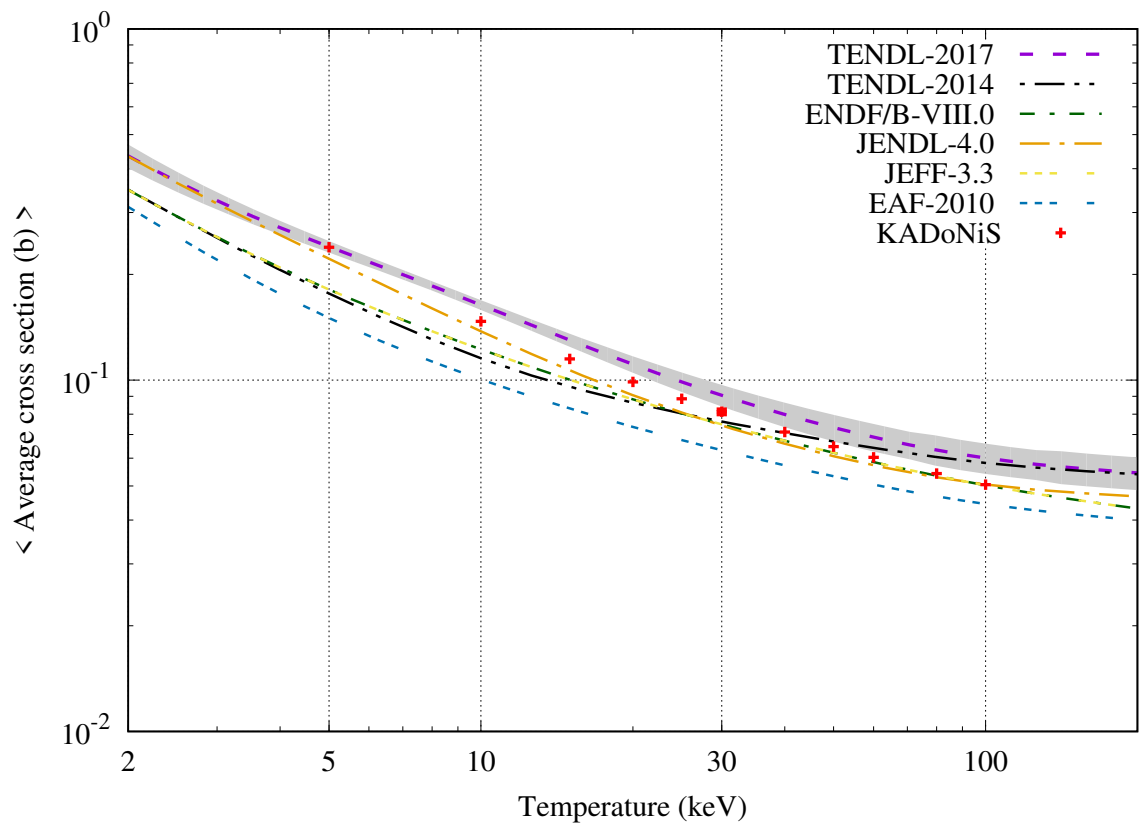
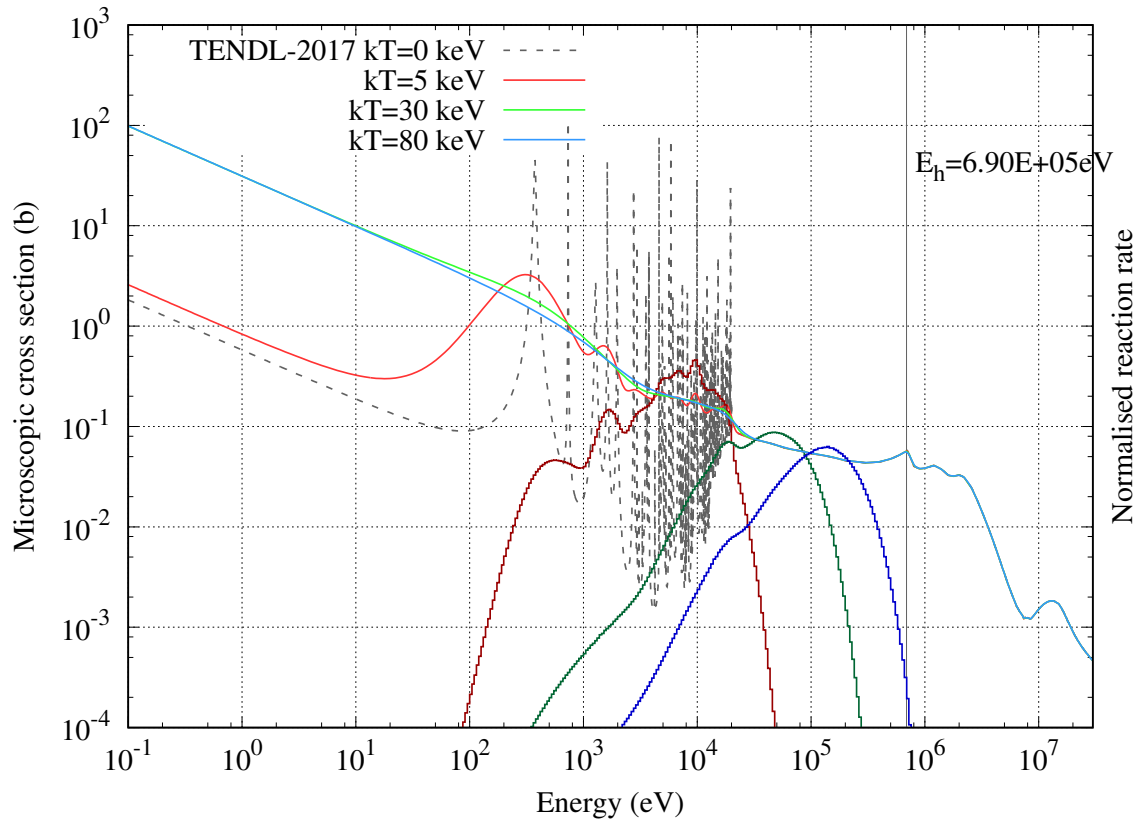
$^{142}\text{Nd}_{60}$ [Stable]



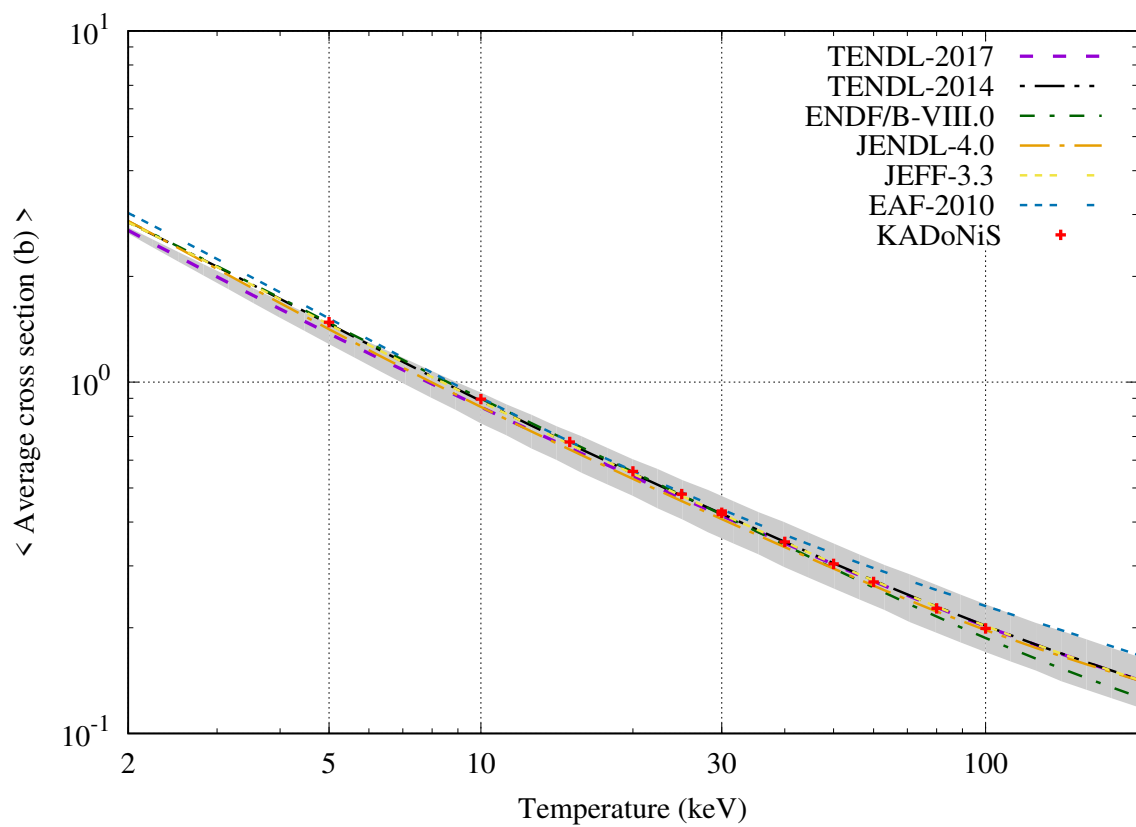
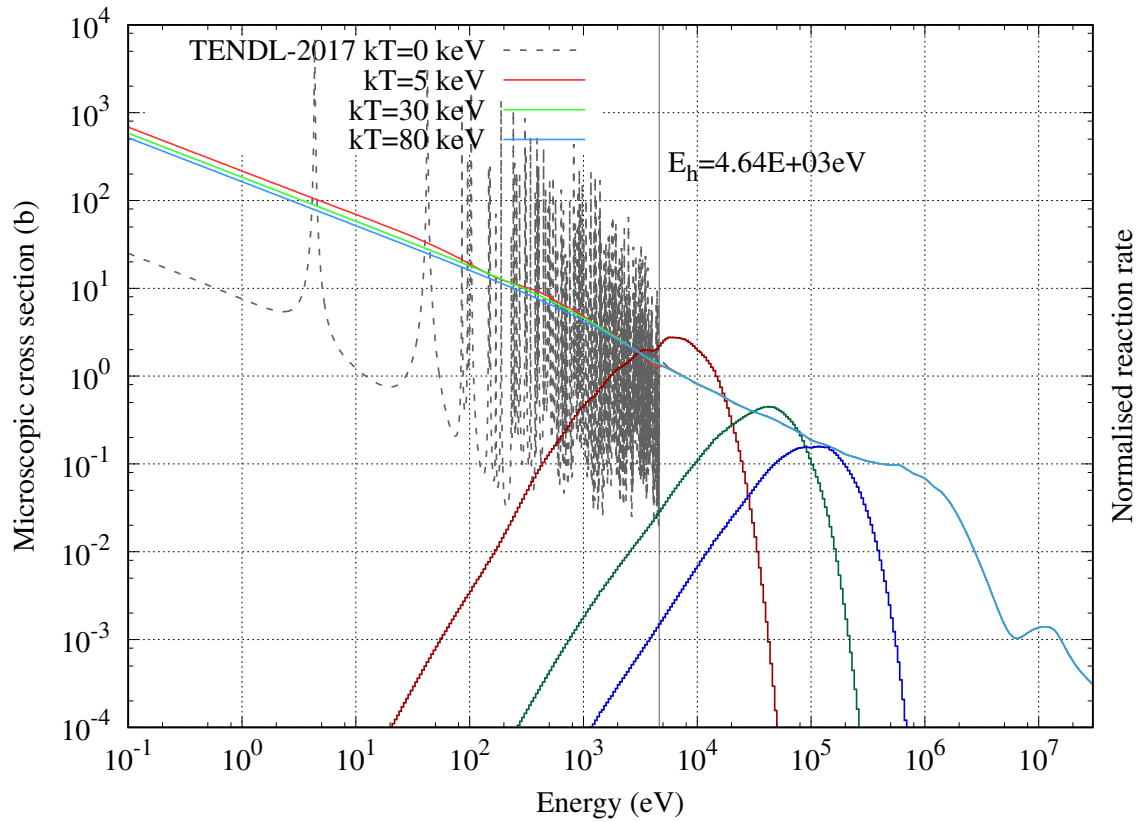
$^{143}\text{Nd}_{60}$ [Stable]



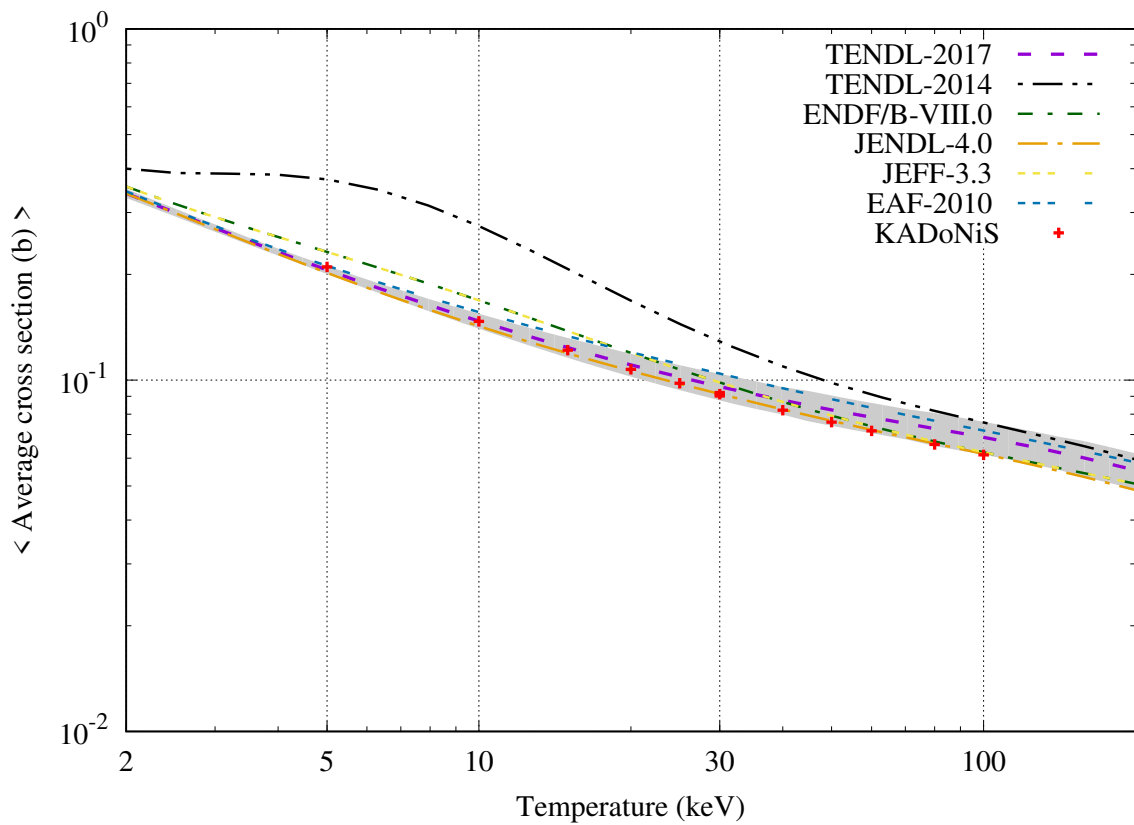
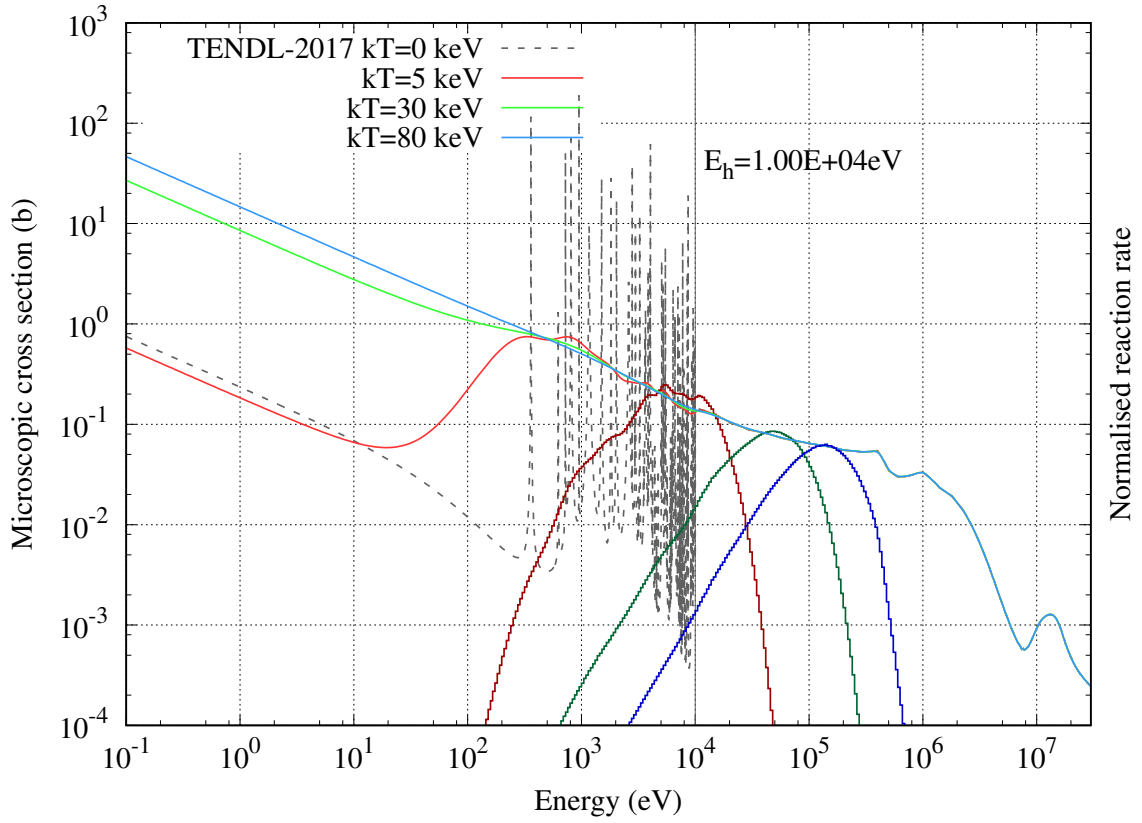
$^{144}\text{Nd}_{60}$ [$T_{1/2} = 2.29 \times 10^{15}$ years]



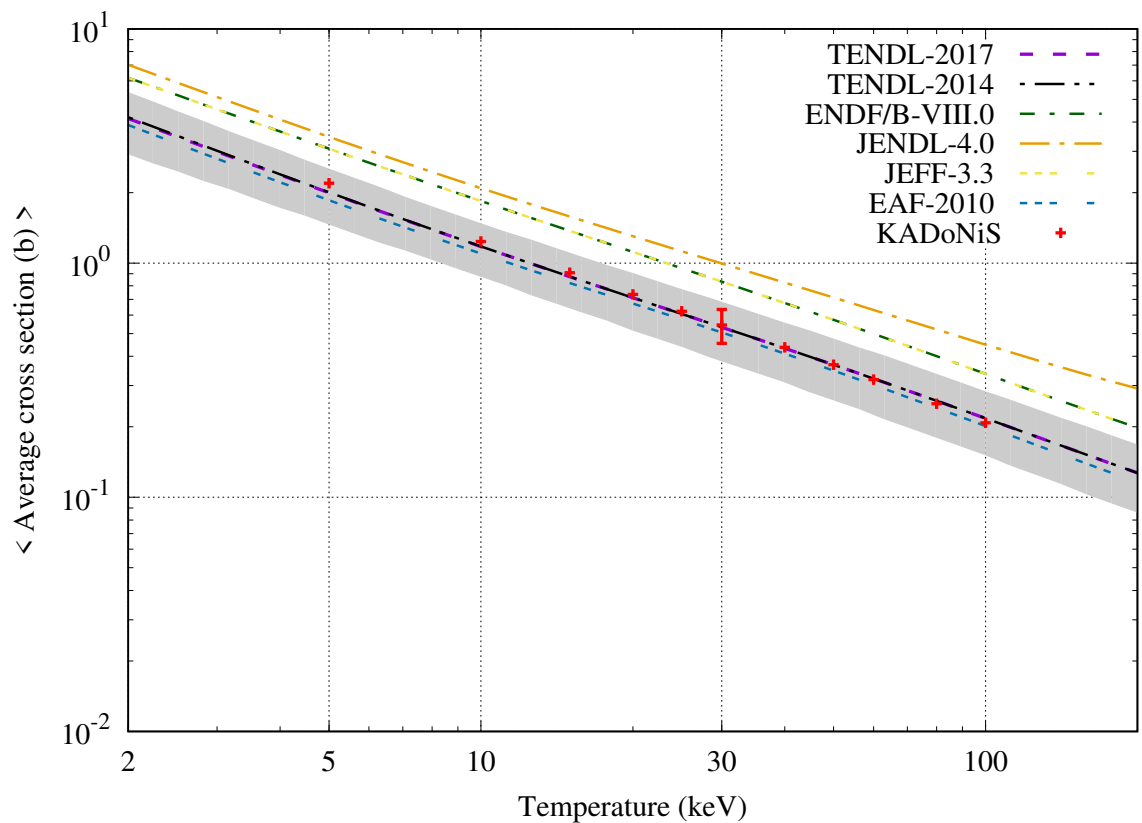
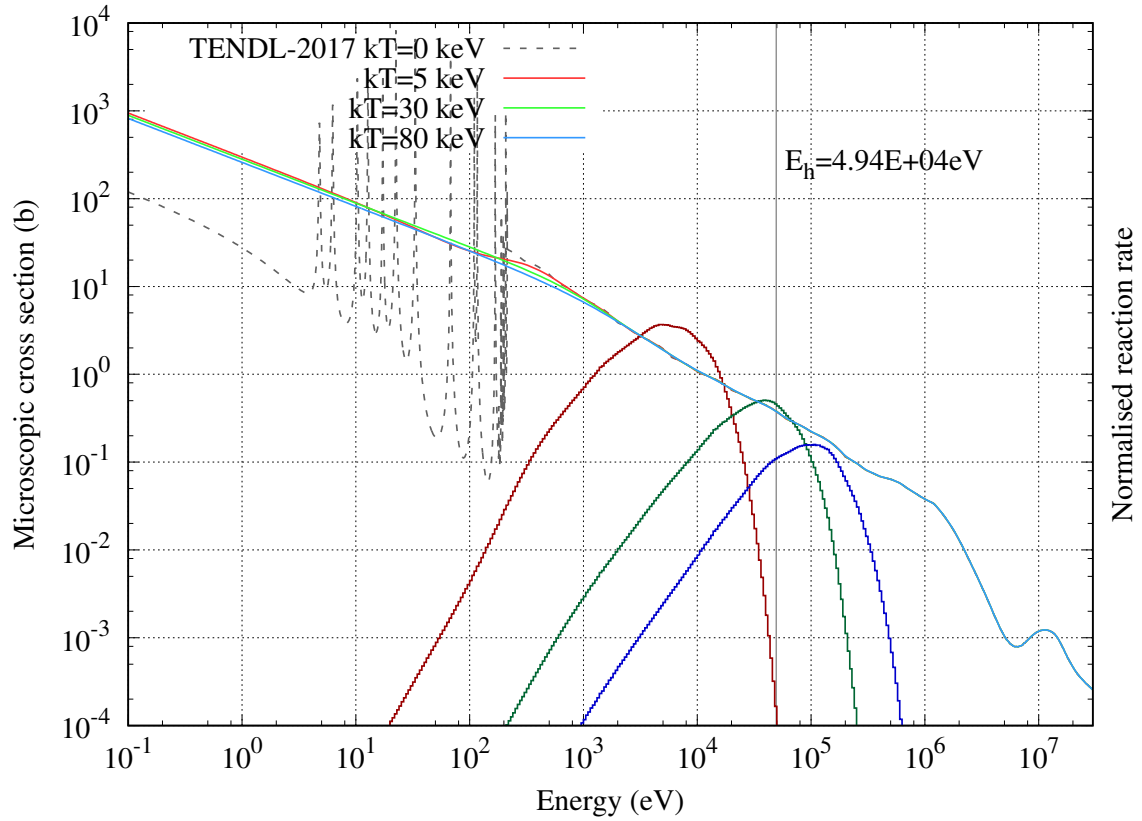
$^{145}\text{Nd}_{60}$ [Stable]



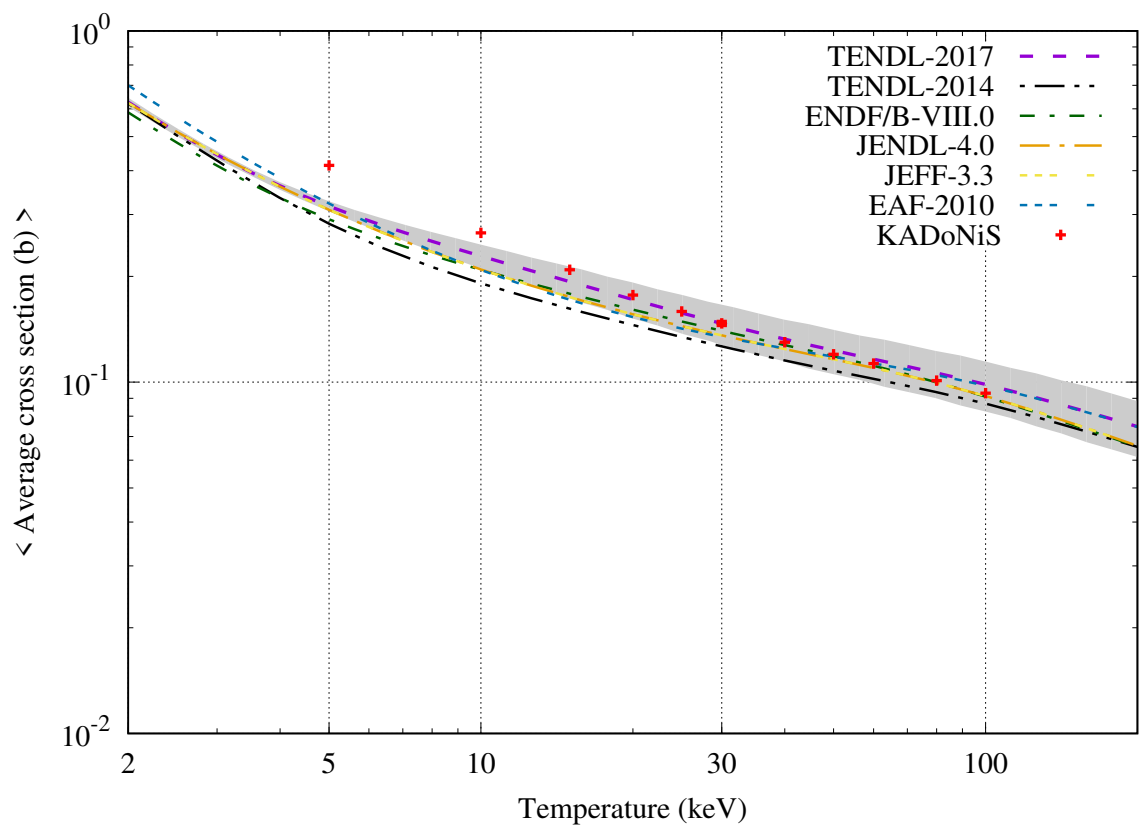
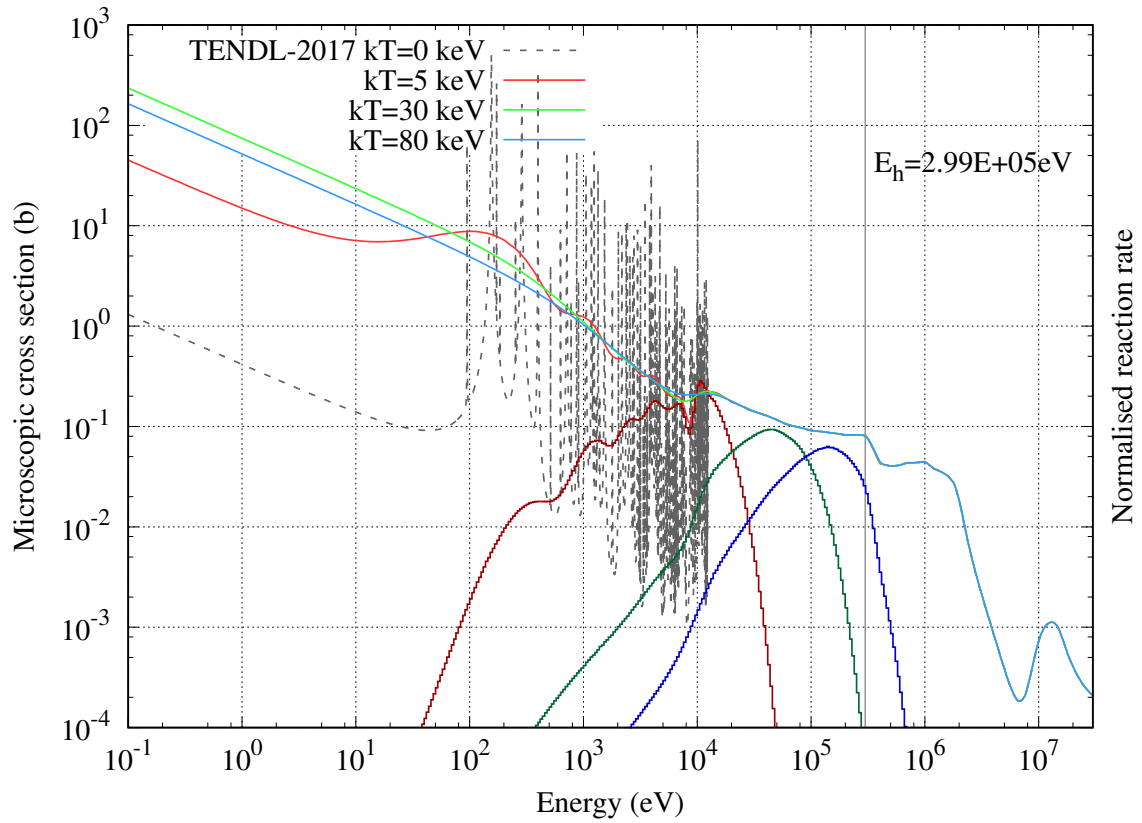
$^{146}\text{Nd}_{60}$ [Stable]



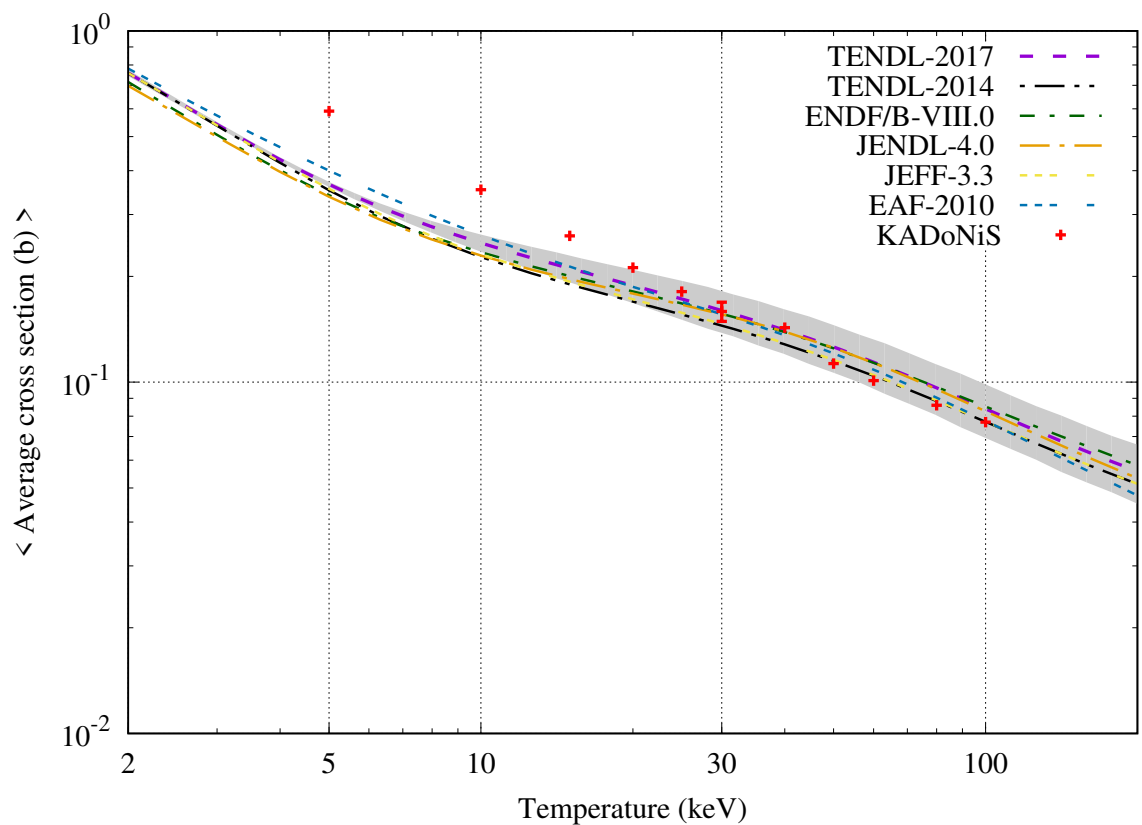
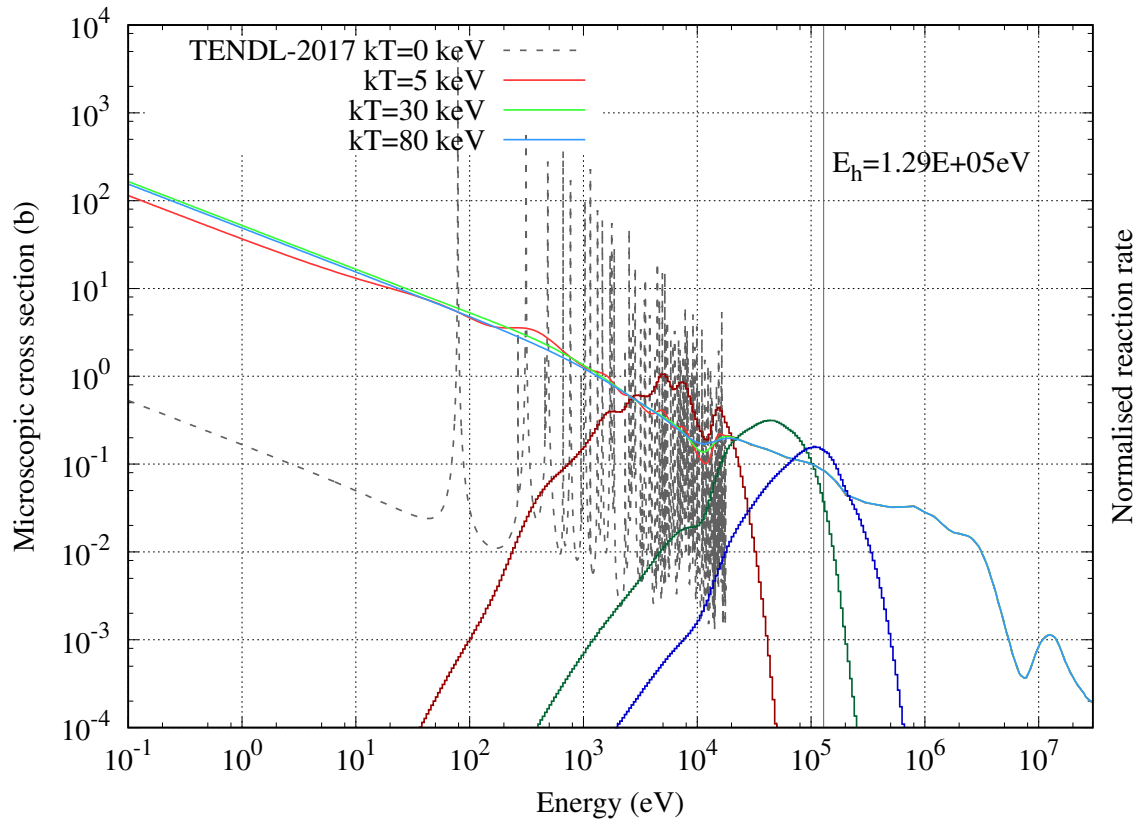
$^{147}\text{Nd}_{60}$ [$T_{1/2} = 10.98$ days] (KADoNiS=SMC)



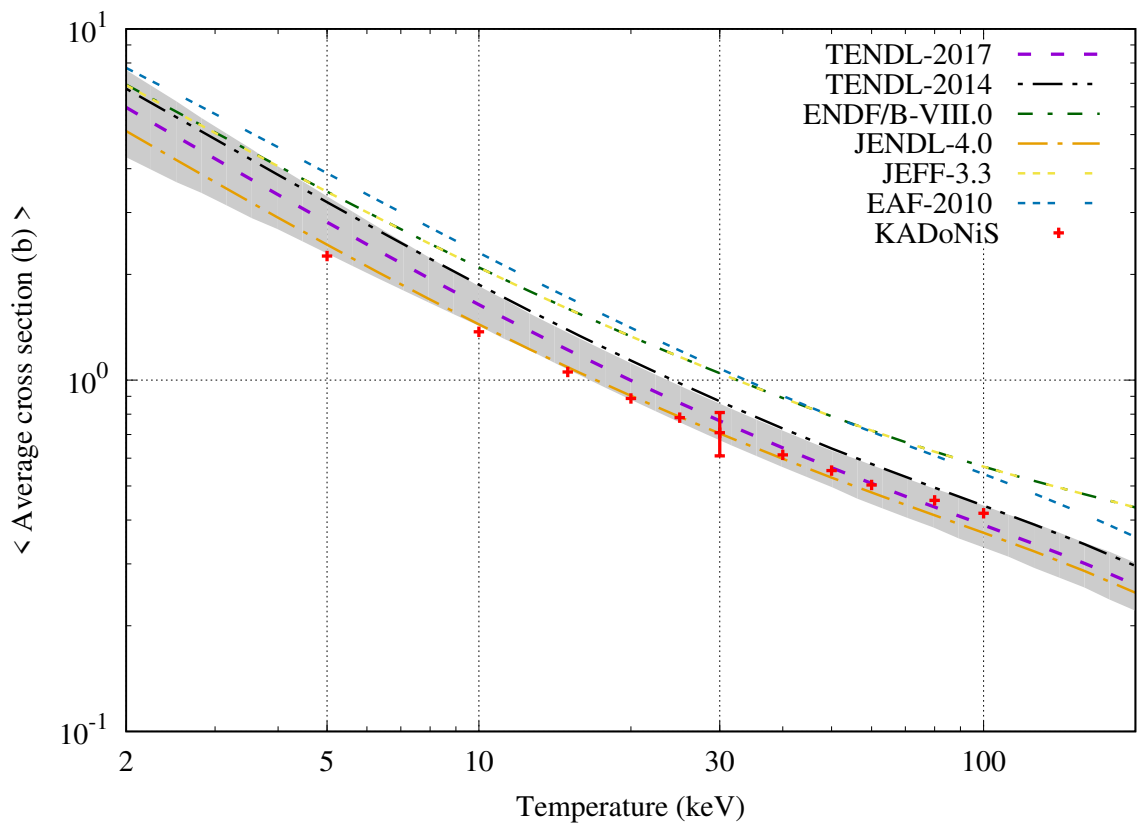
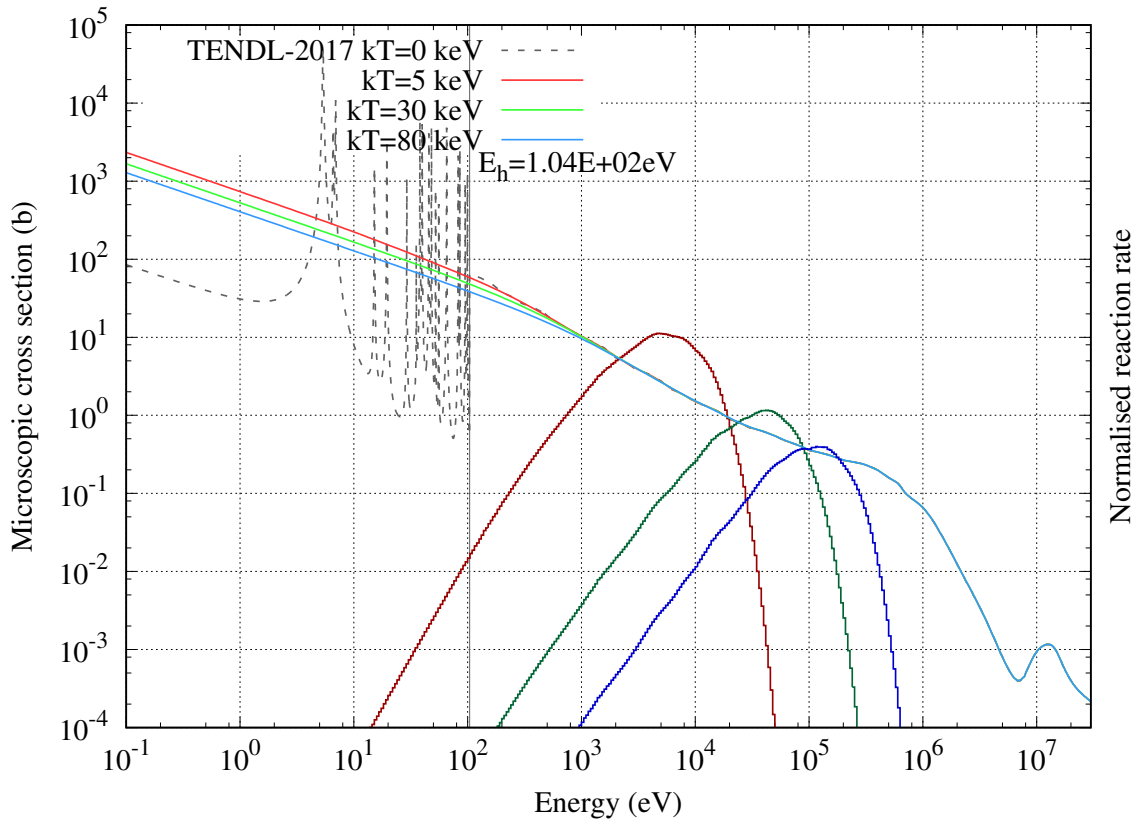
$^{148}\text{Nd}_{60}$ [$T_{1/2} = 2.70 \times 10^{18}$ years]



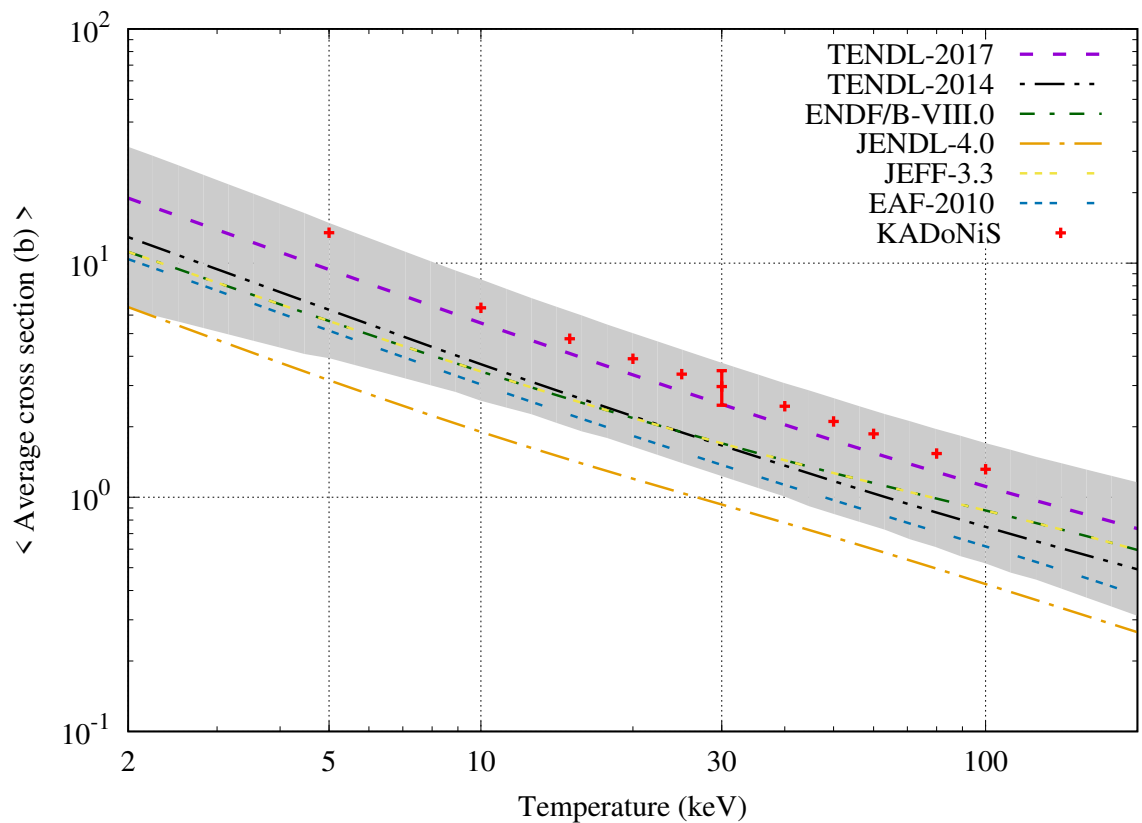
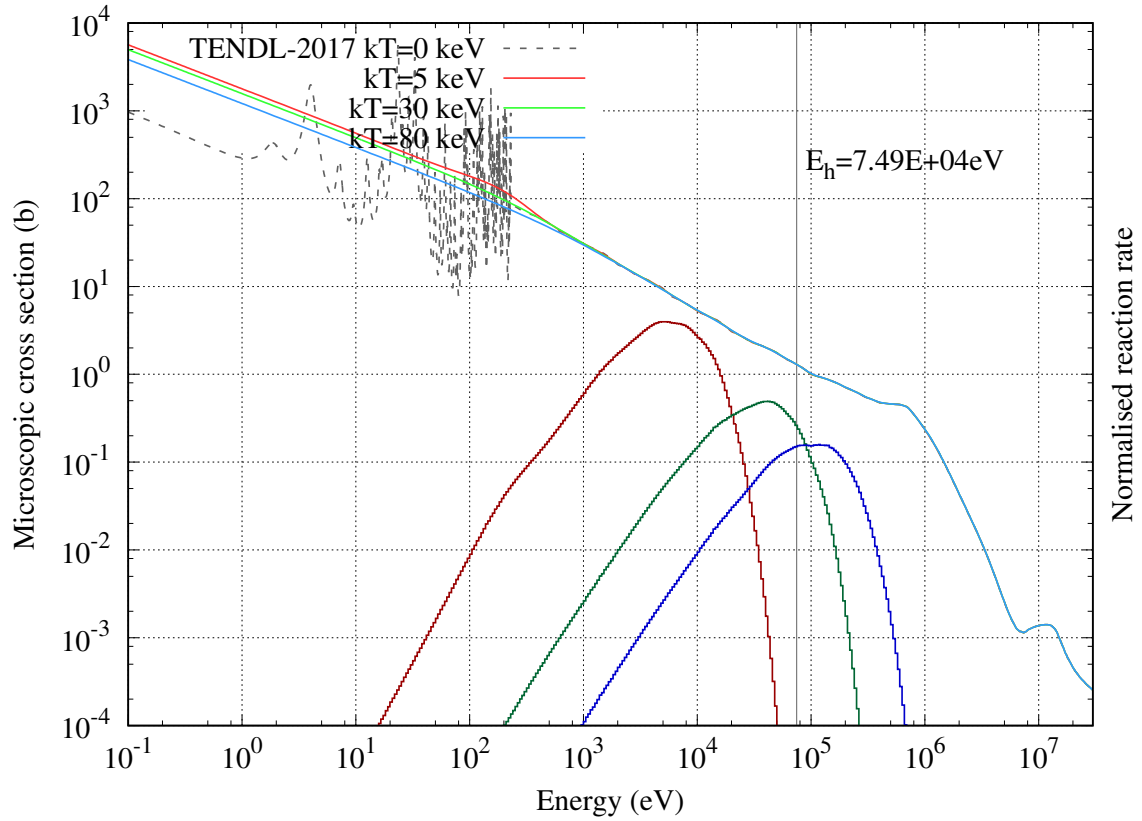
$^{150}\text{Nd}_{60}$ [$T_{1/2} = 2.10 \times 10^{19}$ years]



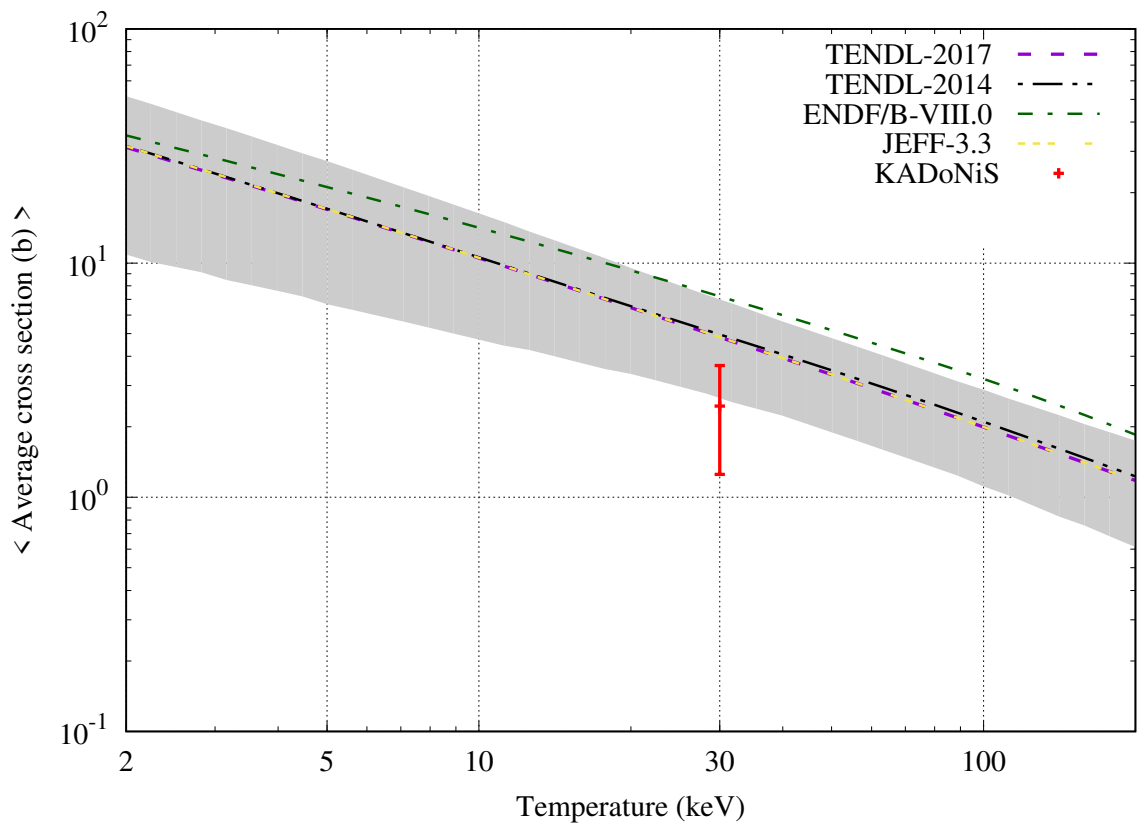
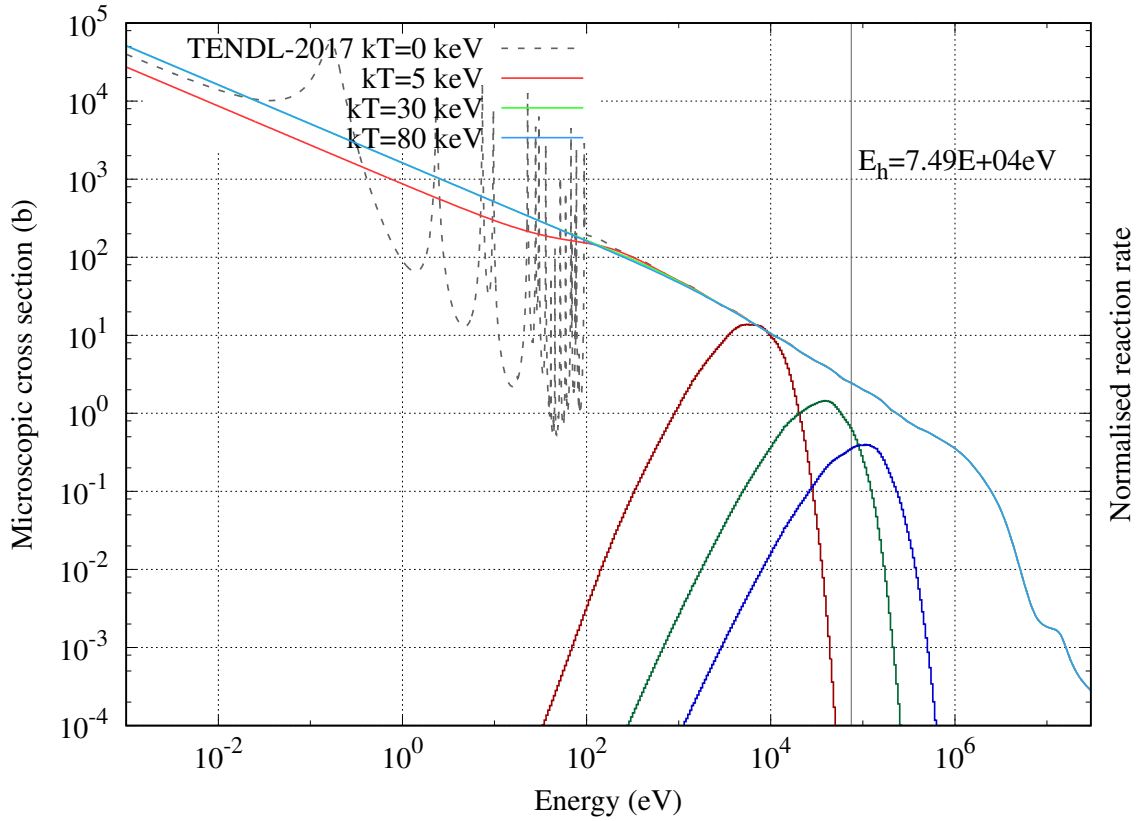
$^{147}\text{Pm}_{61}$ [$T_{1/2} = 2.62$ years]



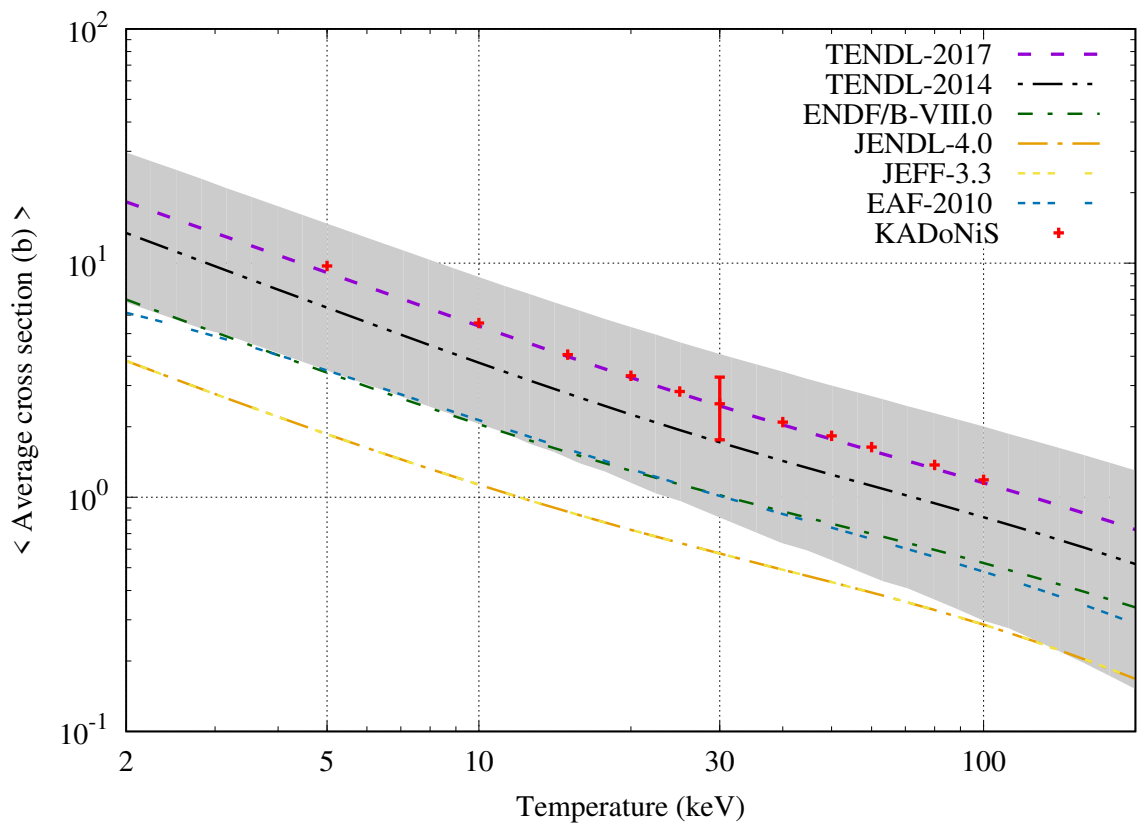
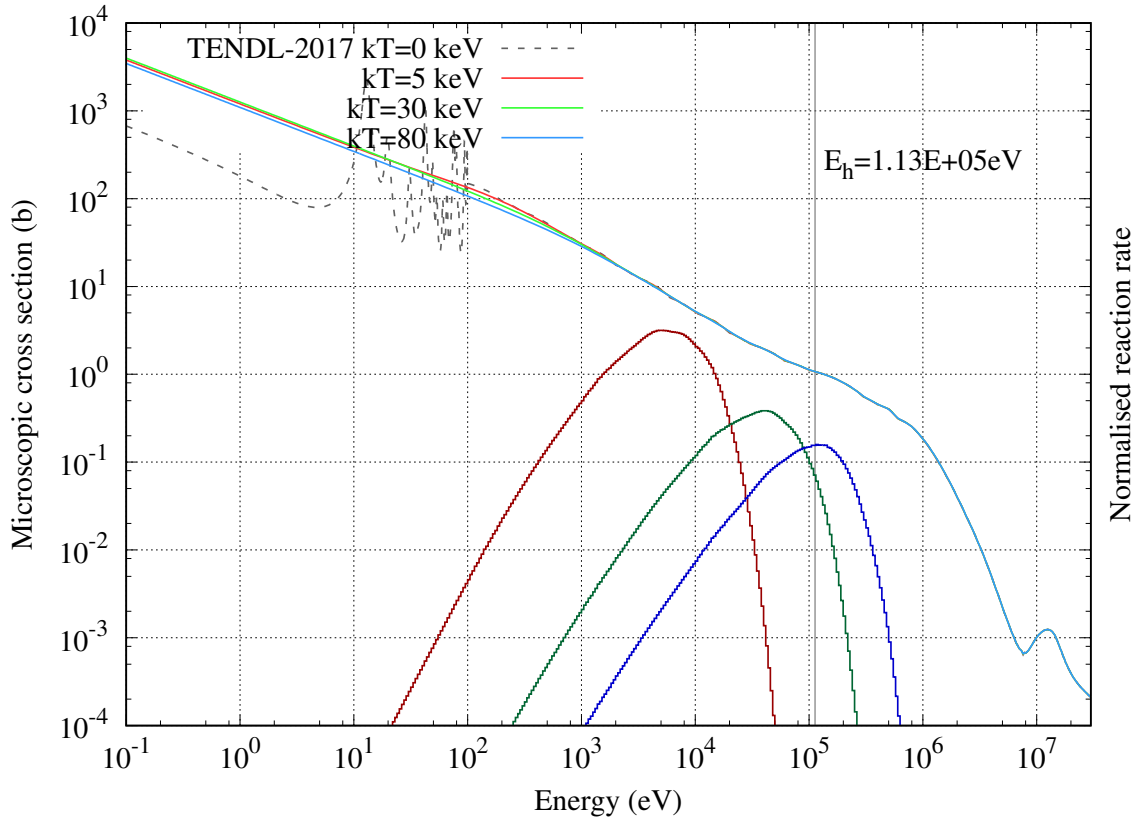
$^{148}\text{Pm}_{61}$ [$T_{1/2} = 5.37$ days] (KADoNiS=SMC)



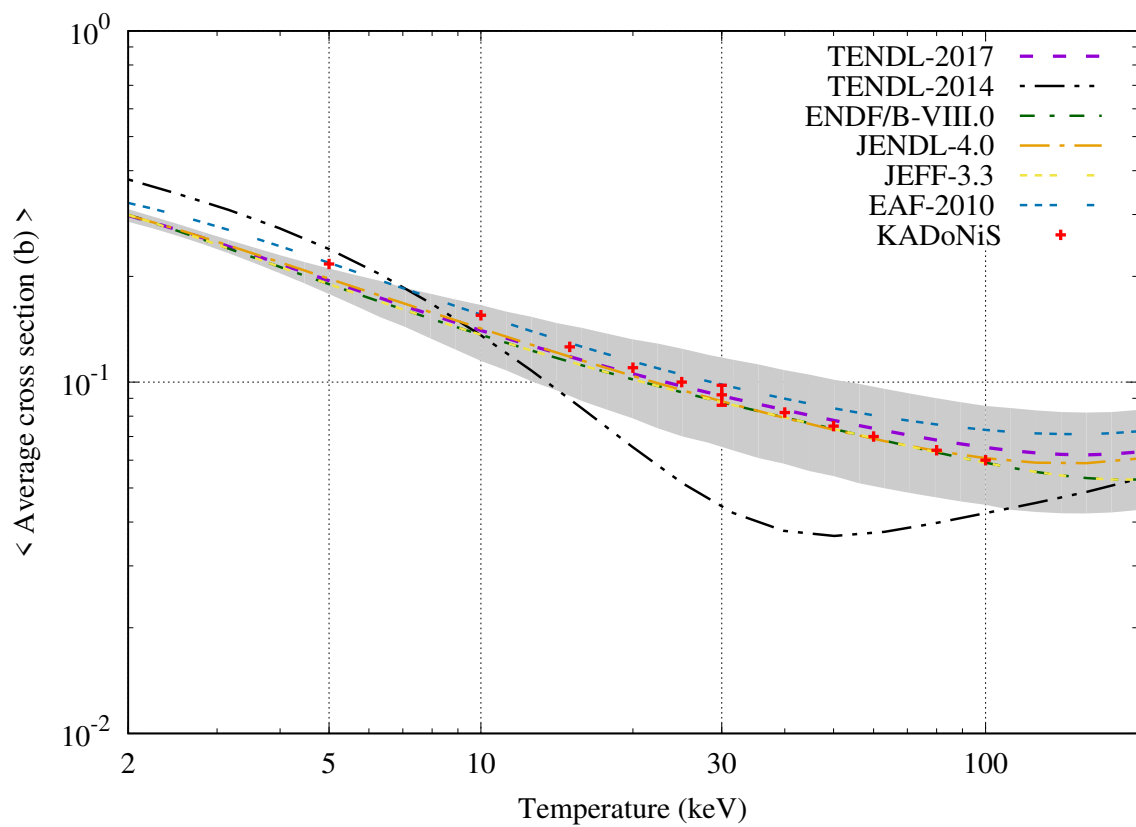
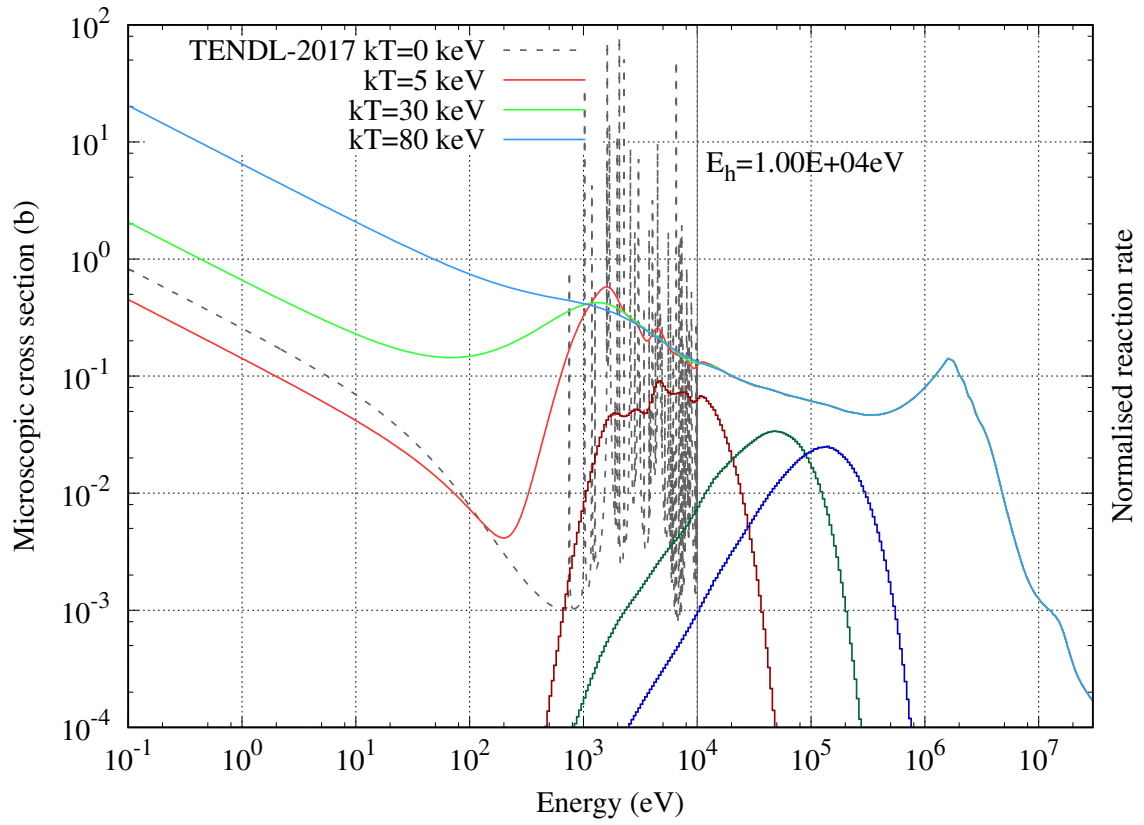
$^{148m}\text{Pm}_{61}$ [$T_{1/2} = 41.05$ days] (KADoNiS=SMC)



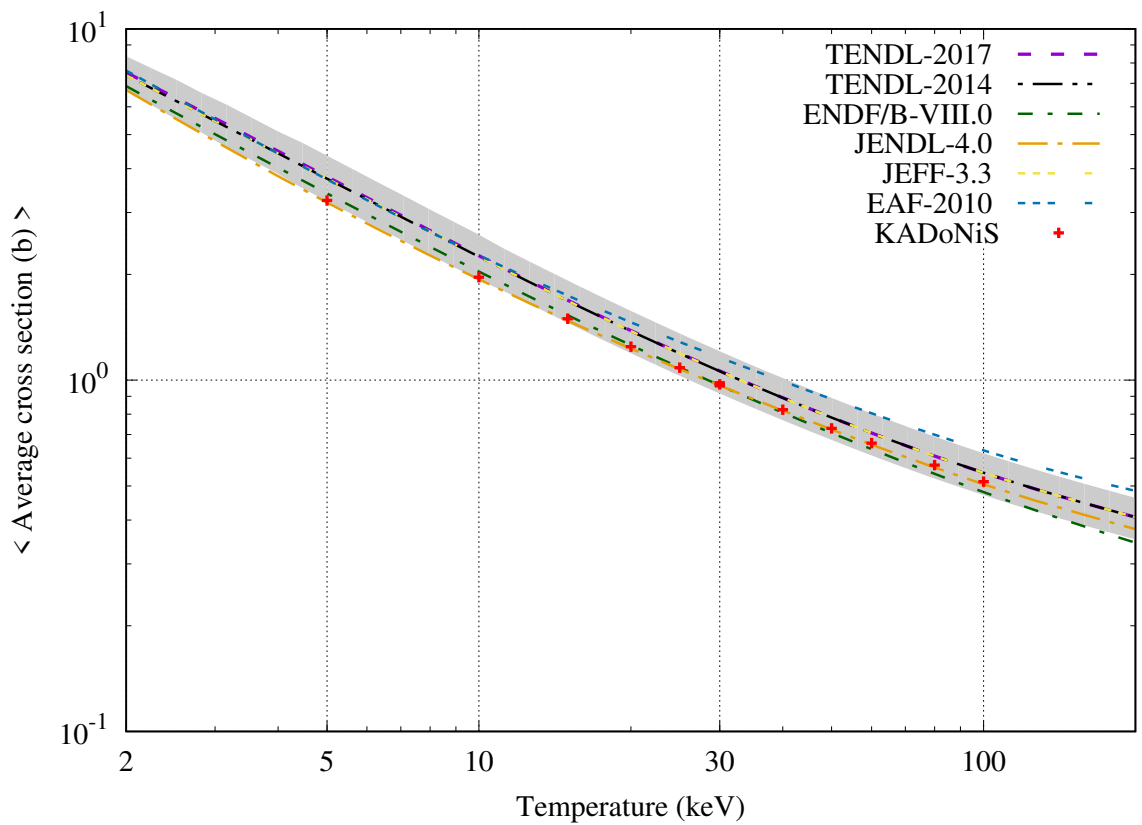
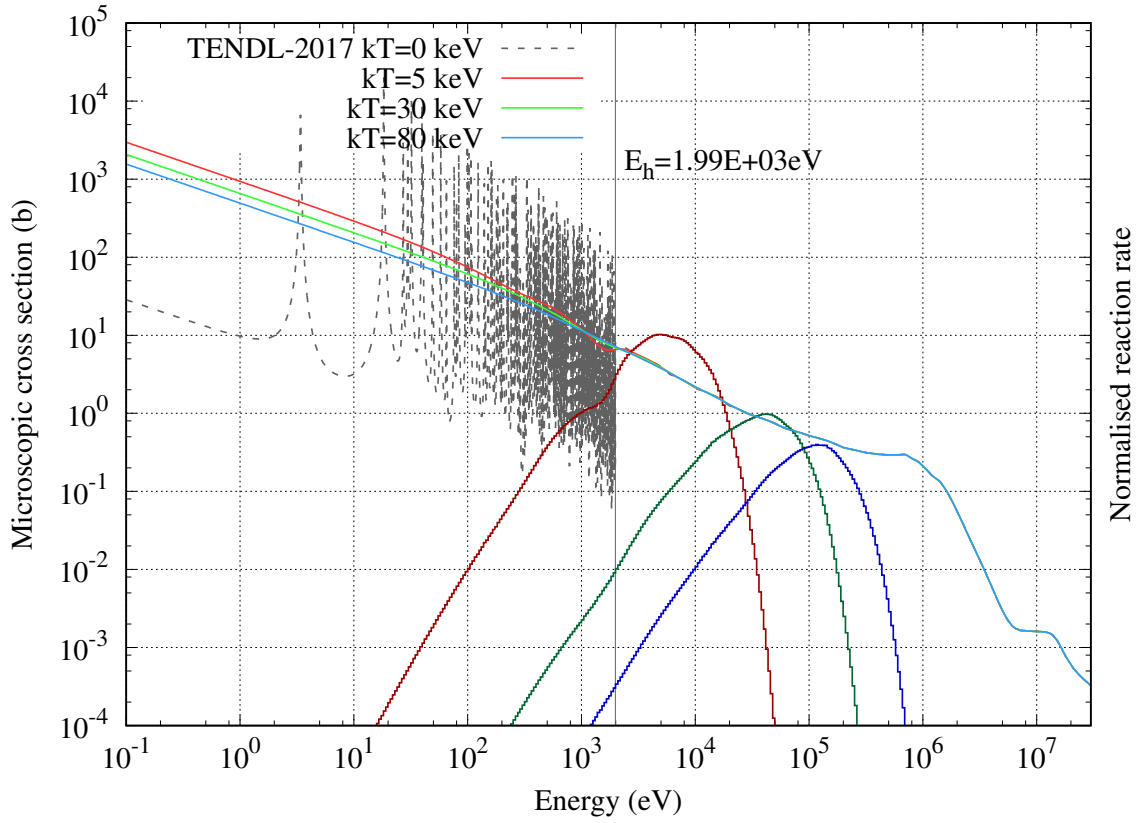
$^{149}\text{Pm}_{61}$ [$T_{1/2} = 2.21$ days] (KADoNiS=SMC)



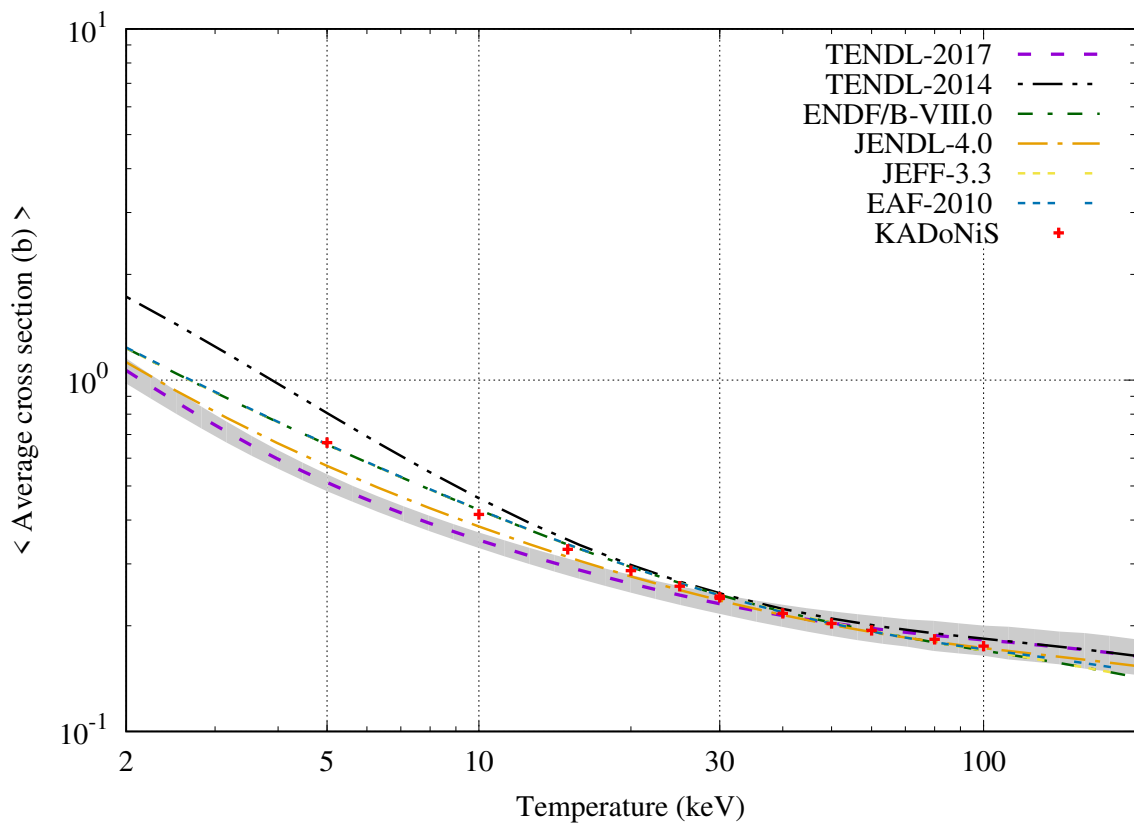
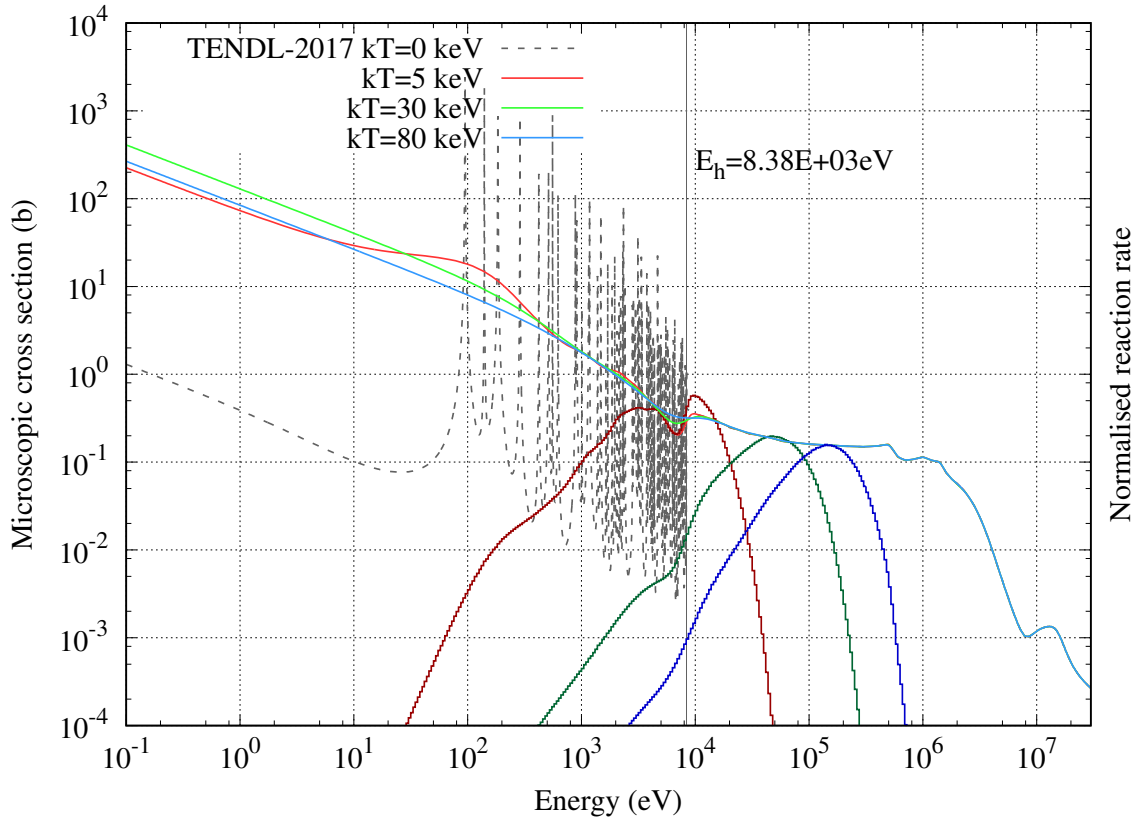
$^{144}\text{Sm}_{62}$ [Stable]



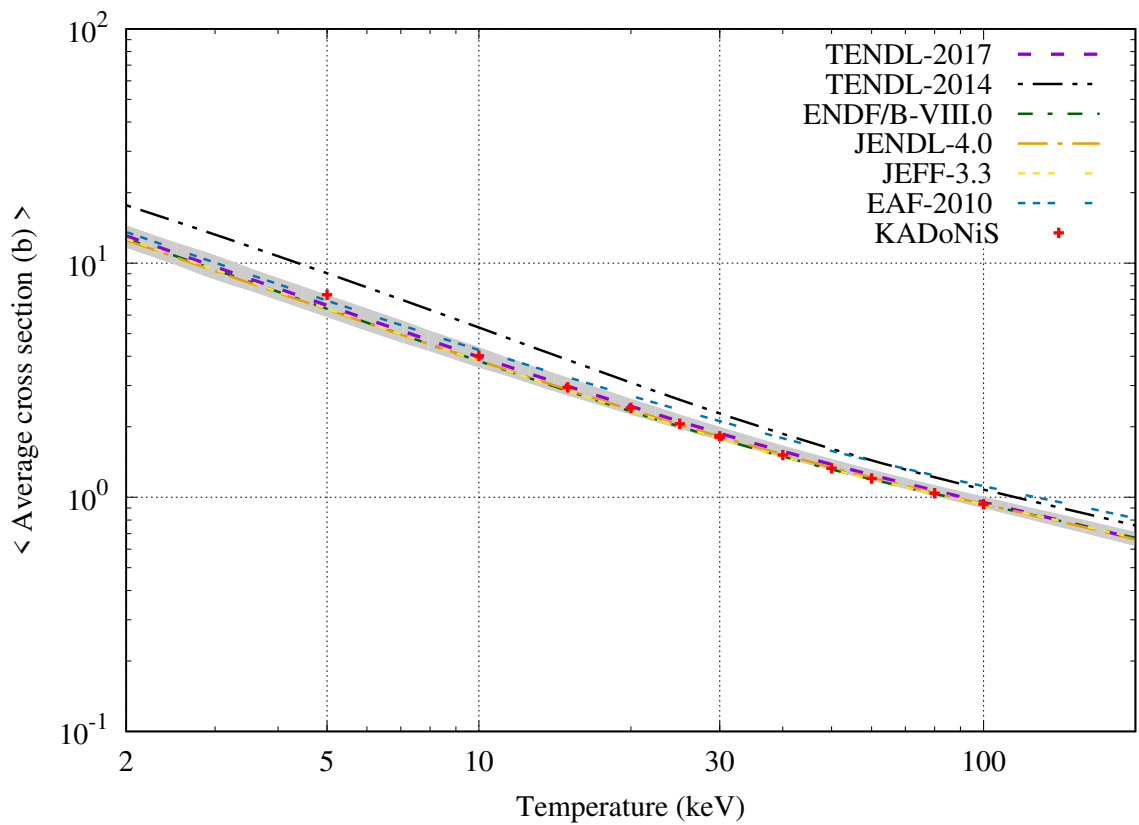
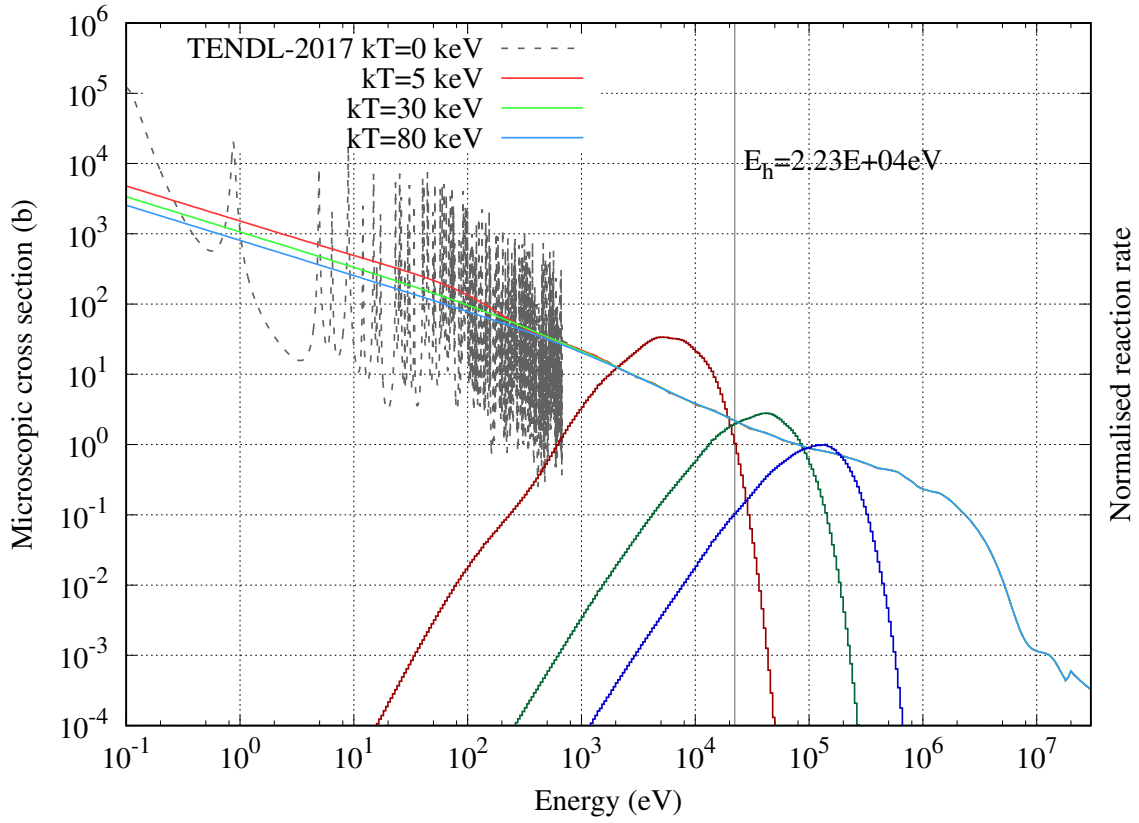
$^{147}\text{Sm}_{62}$ [$T_{1/2} = 1.06 \times 10^{11}$ years]



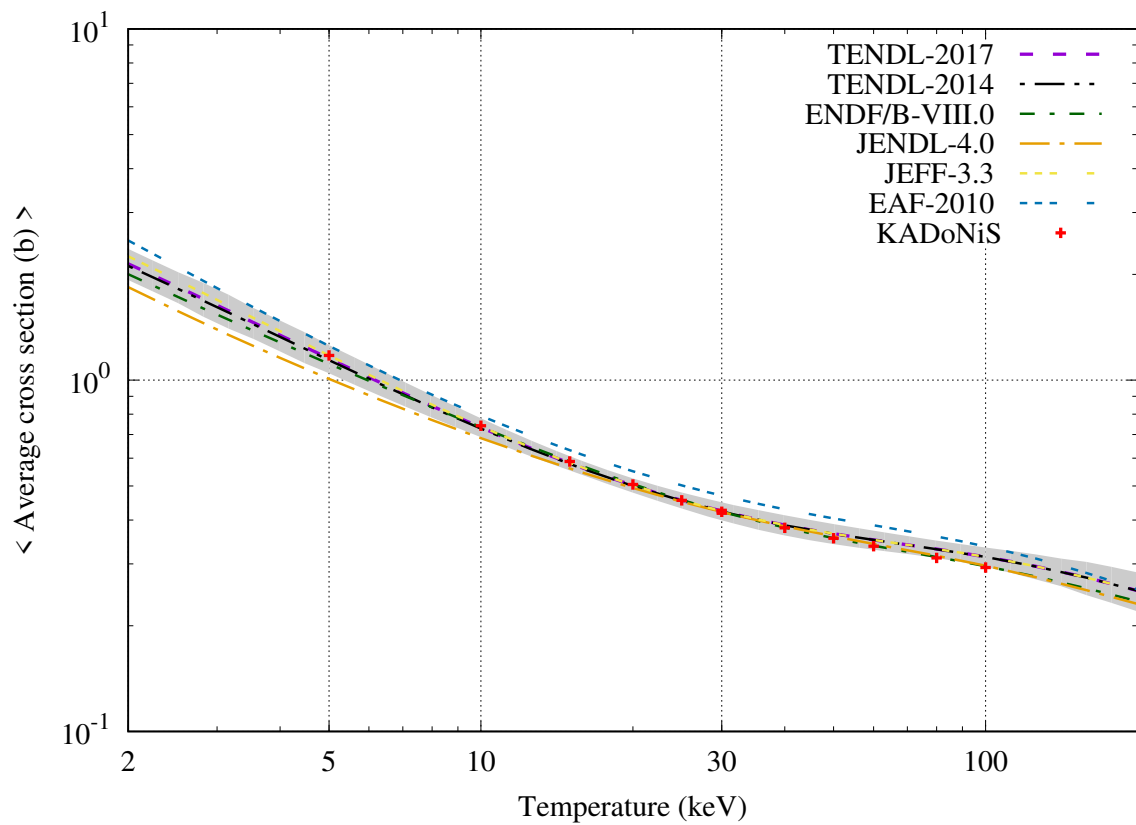
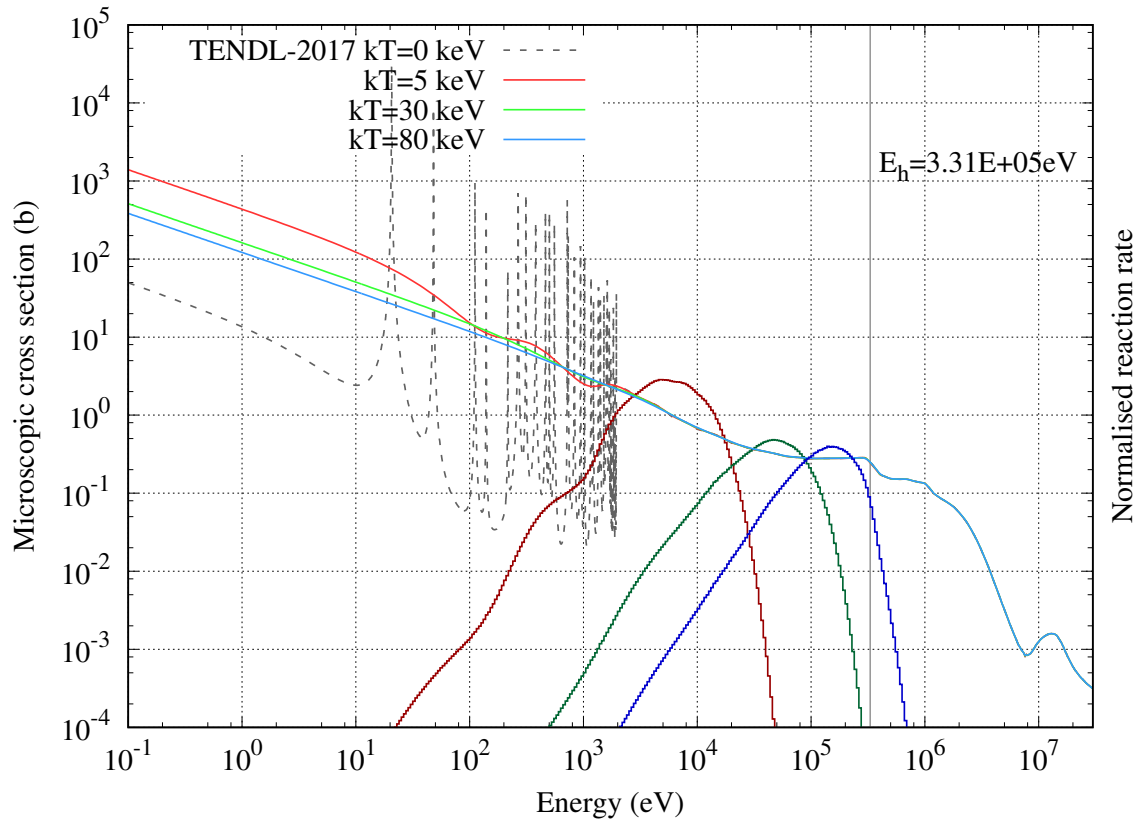
$^{148}\text{Sm}_{62}$ [$T_{1/2} = 7.00 \times 10^{15}$ years]



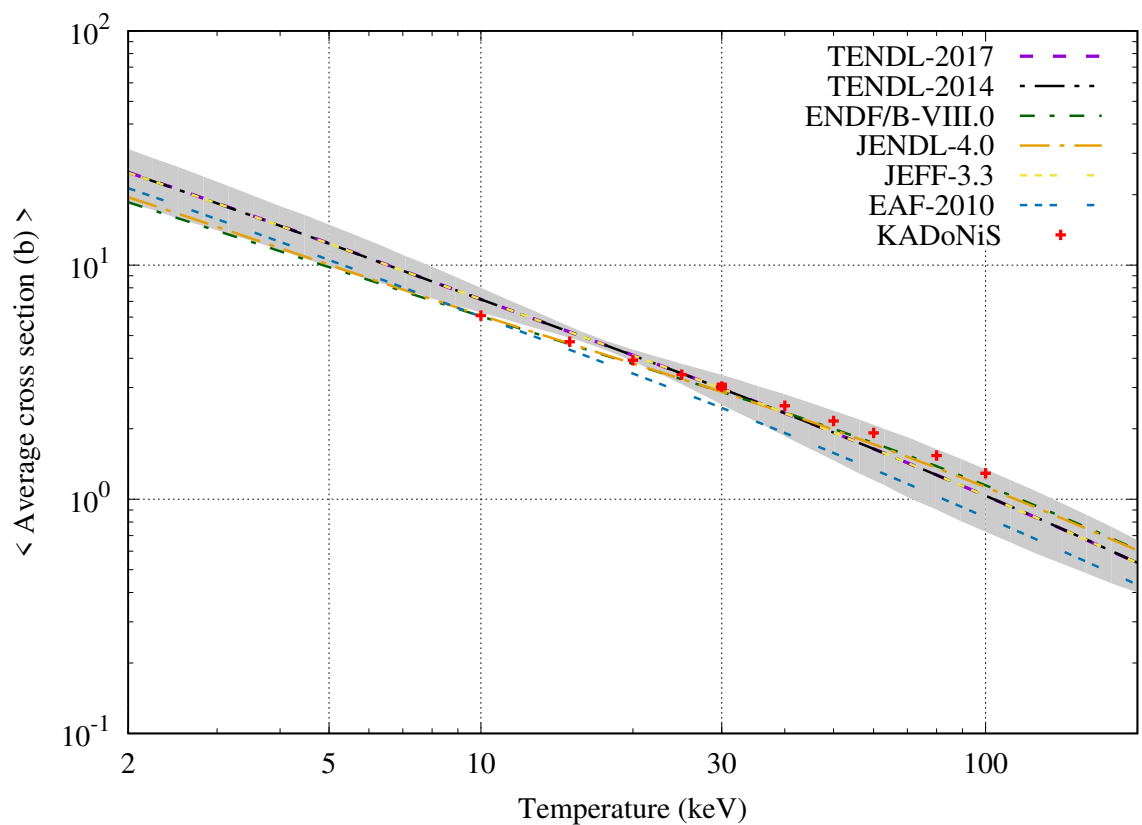
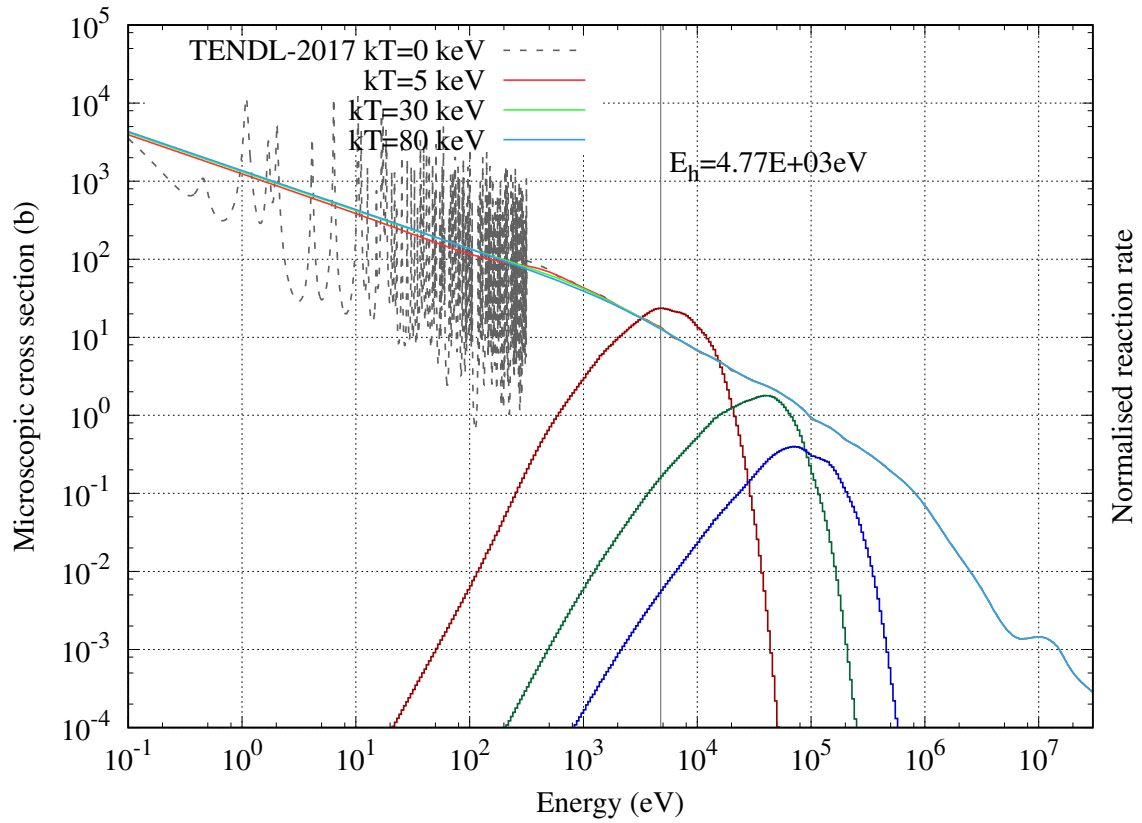
$^{149}\text{Sm}_{62}$ [$T_{1/2} = 2.00 \times 10^{15}$ years]



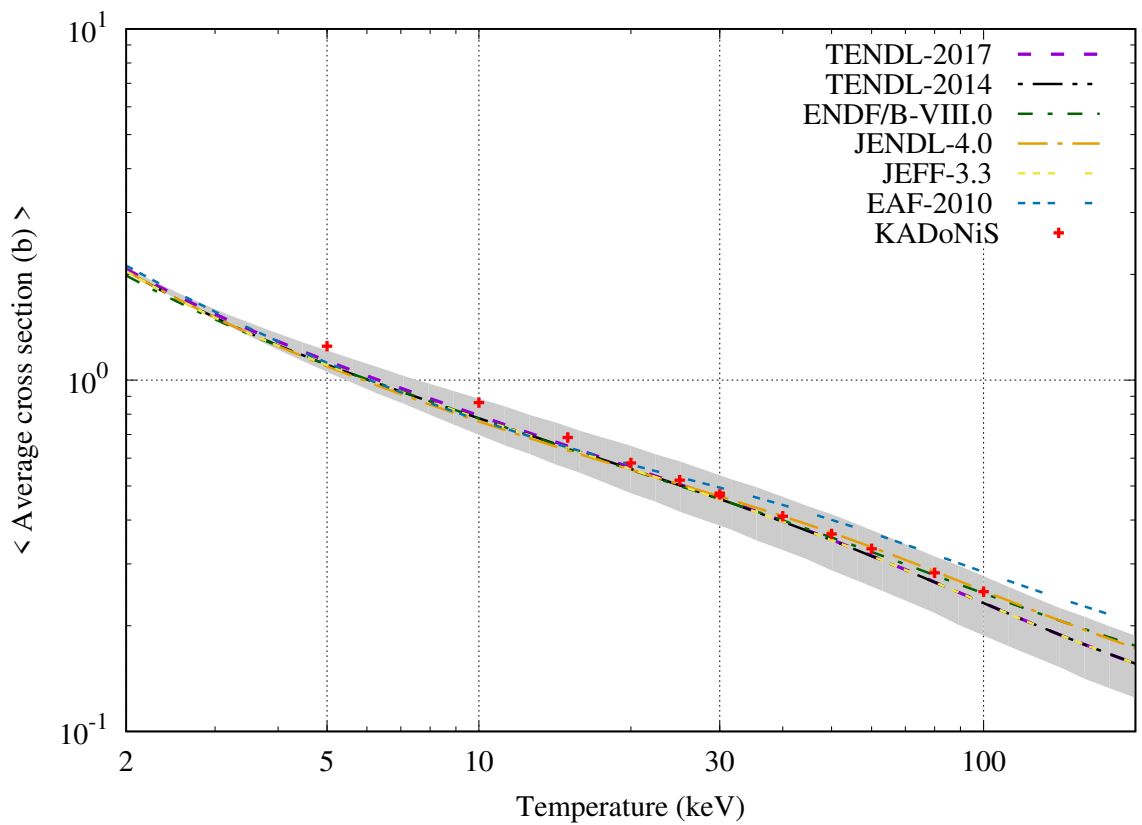
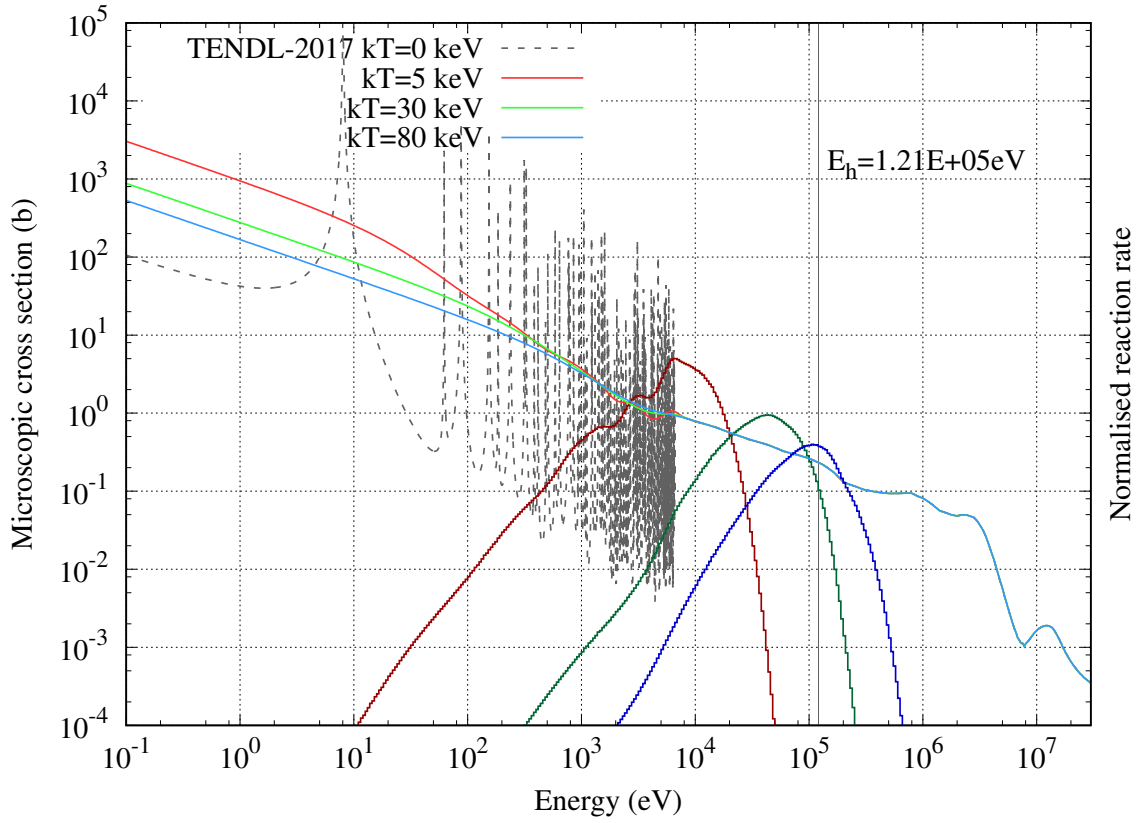
$^{150}\text{Sm}_{62}$ [Stable]



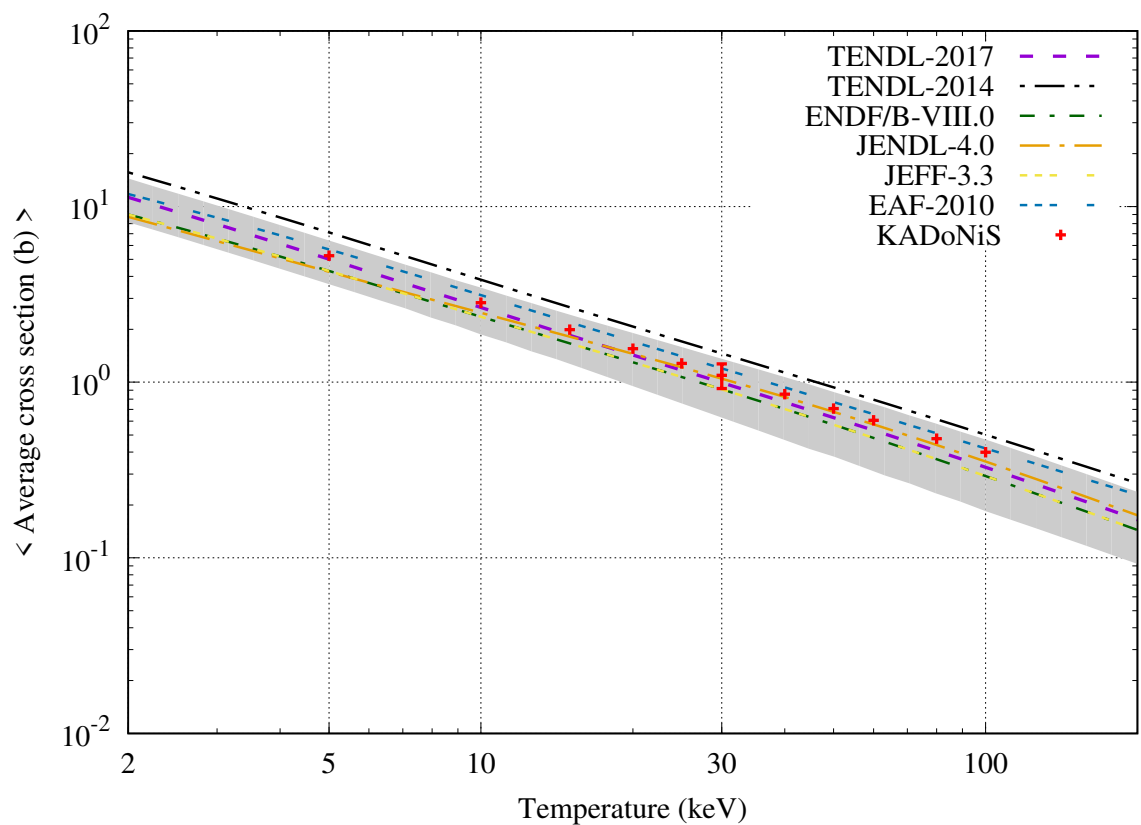
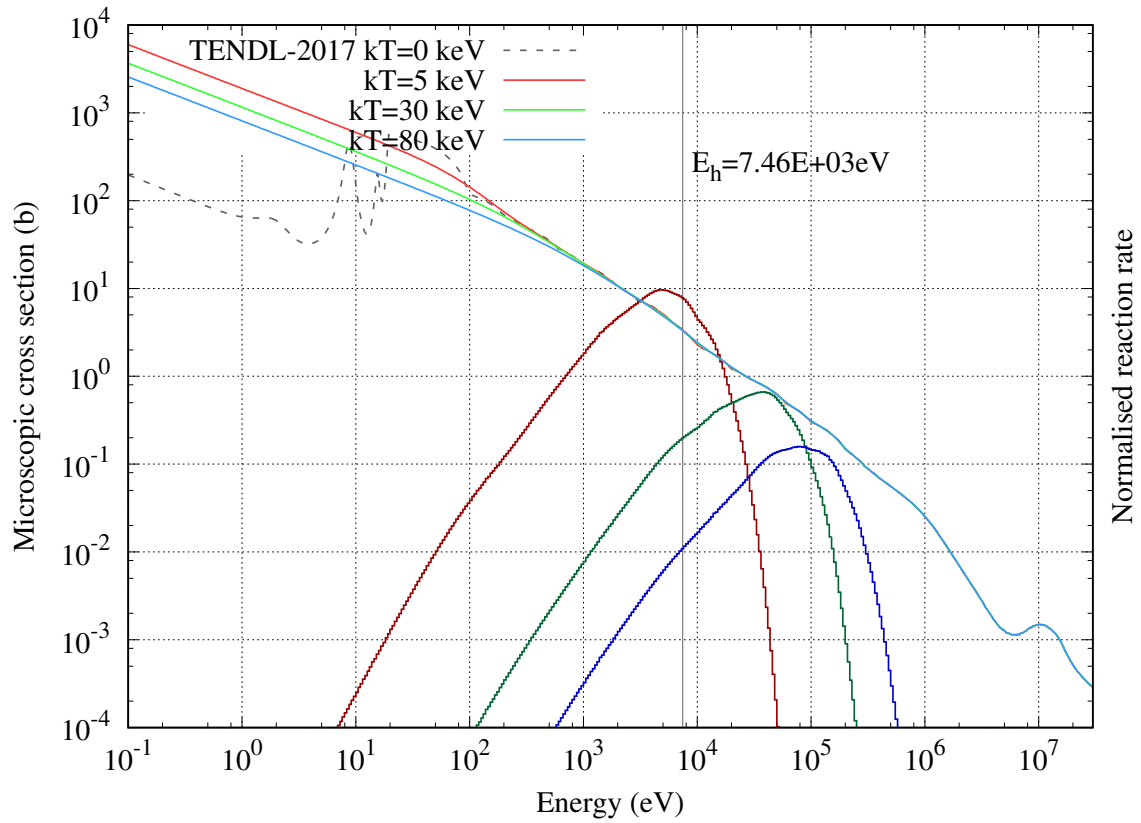
$^{151}\text{Sm}_{62}$ [$T_{1/2} = 90.00$ years]



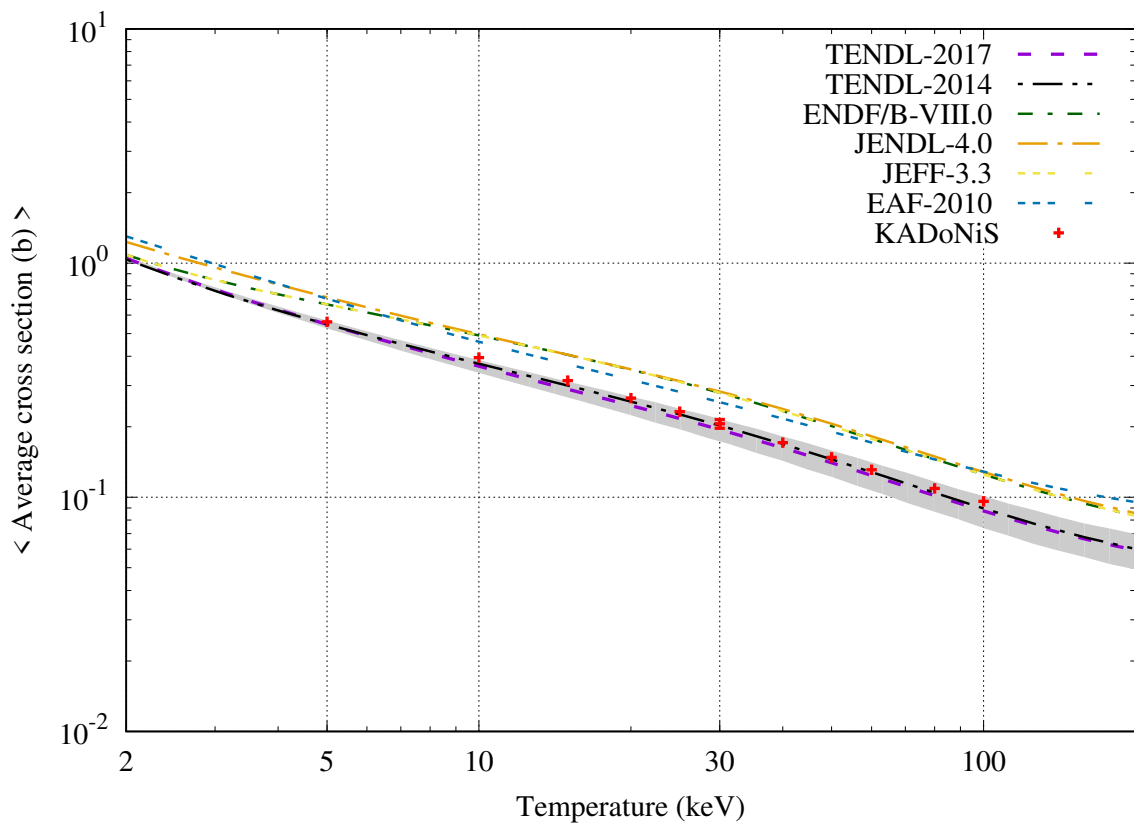
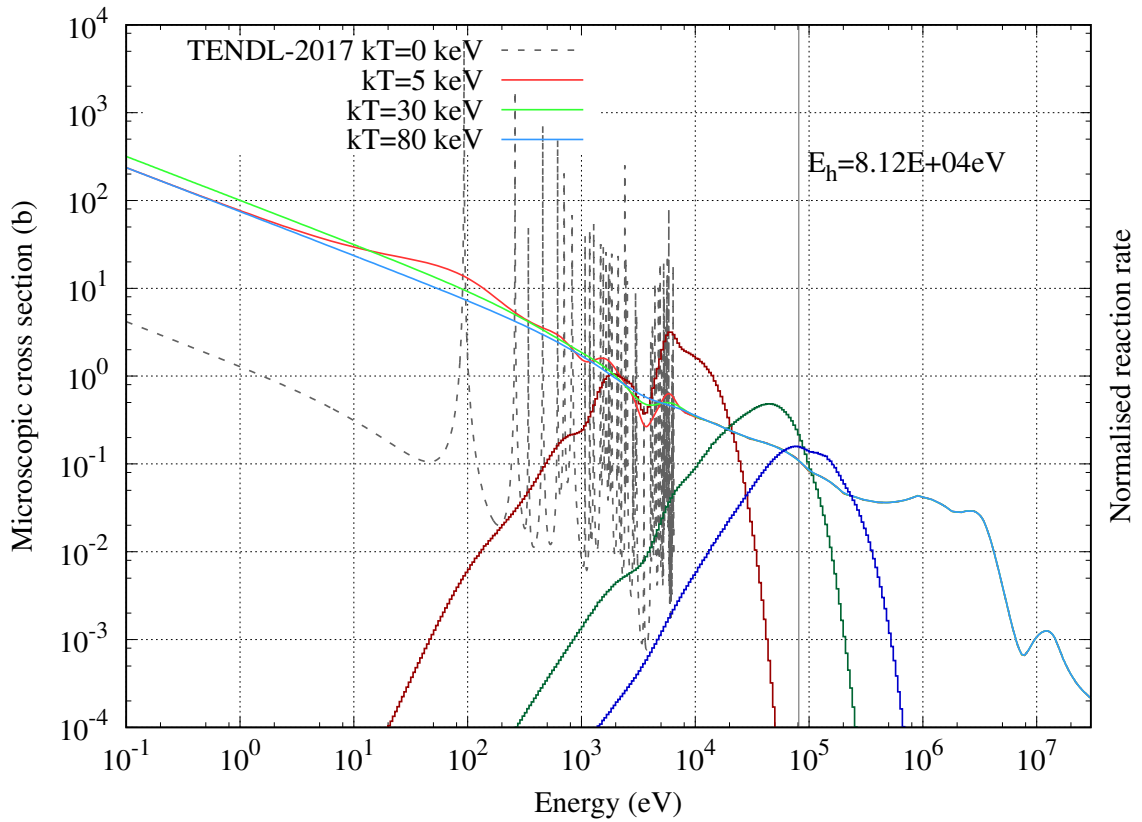
$^{152}\text{Sm}_{62}$ [Stable]



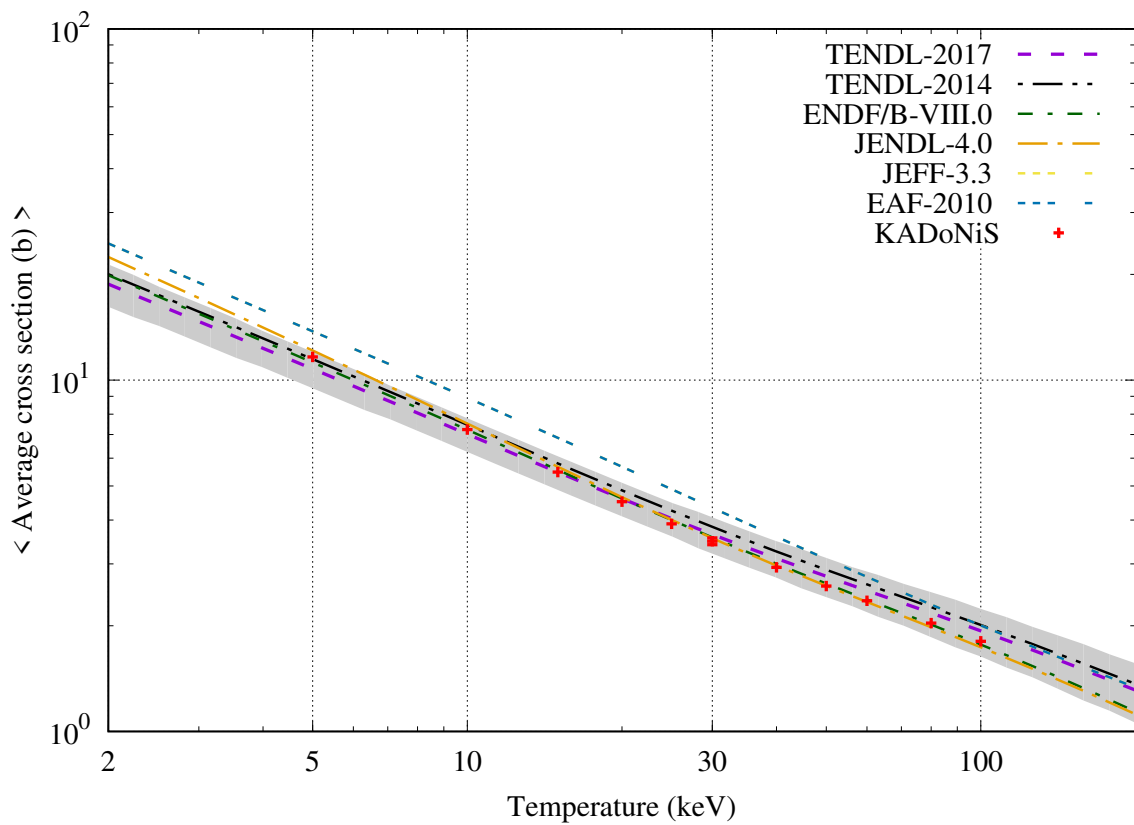
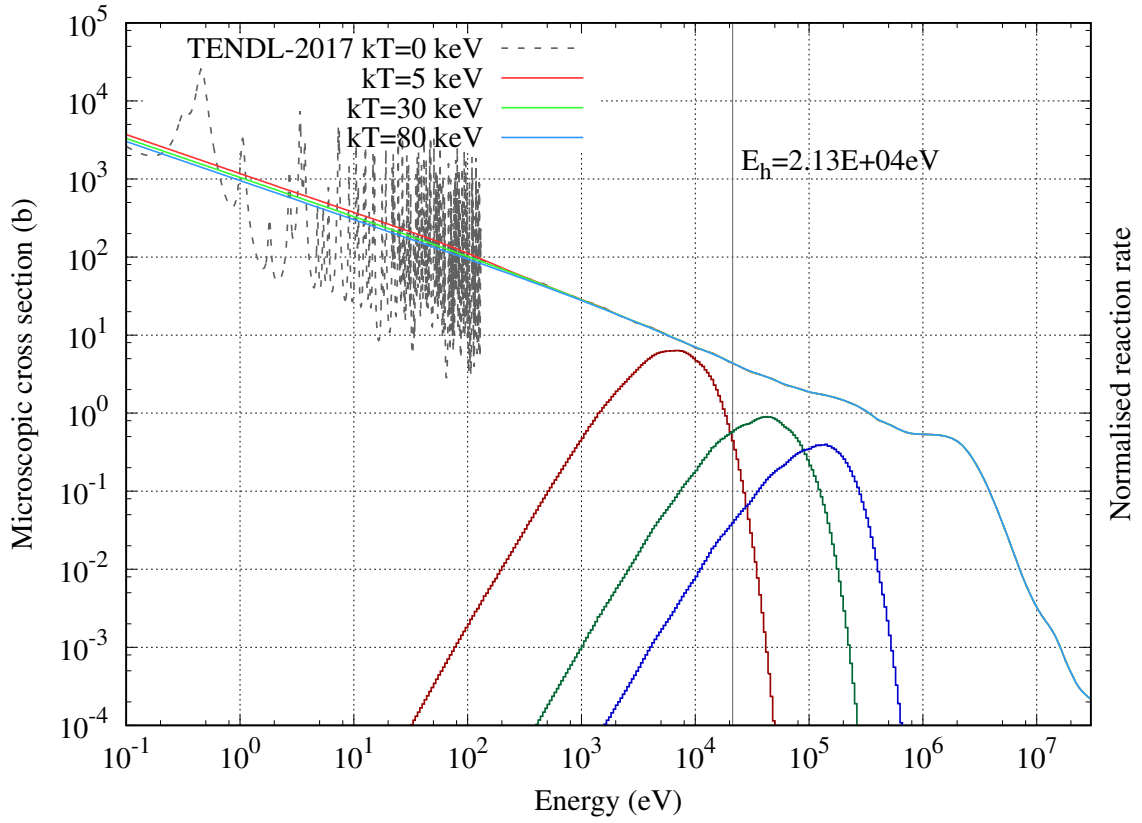
$^{153}\text{Sm}_{62}$ [$T_{1/2} = 1.93$ days] (KADoNiS=SMC)



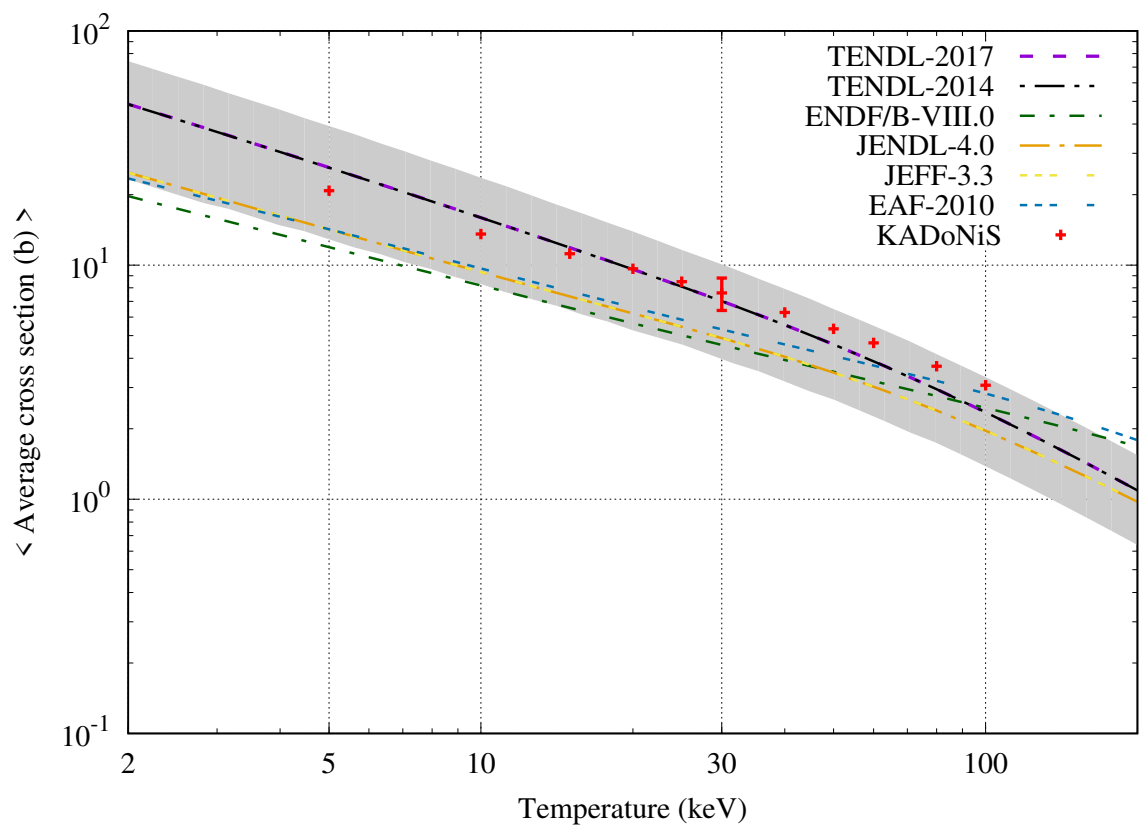
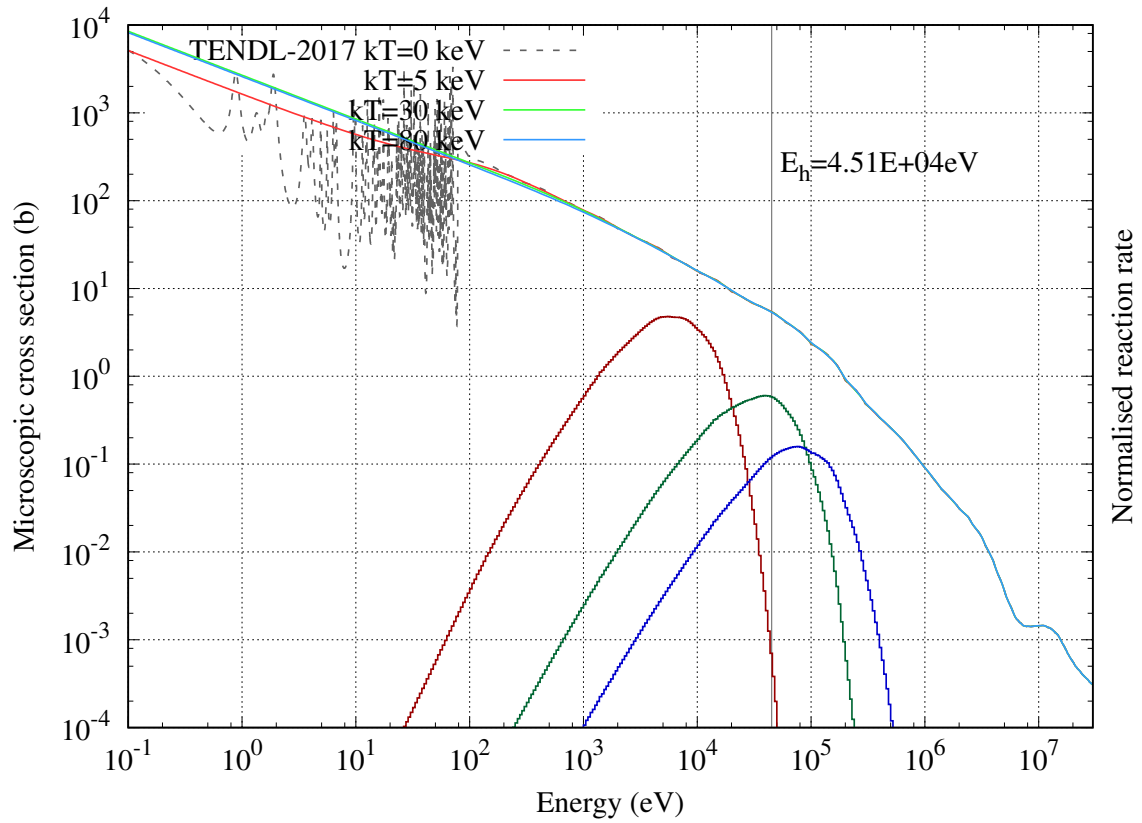
$^{154}\text{Sm}_{62}$ [Stable]



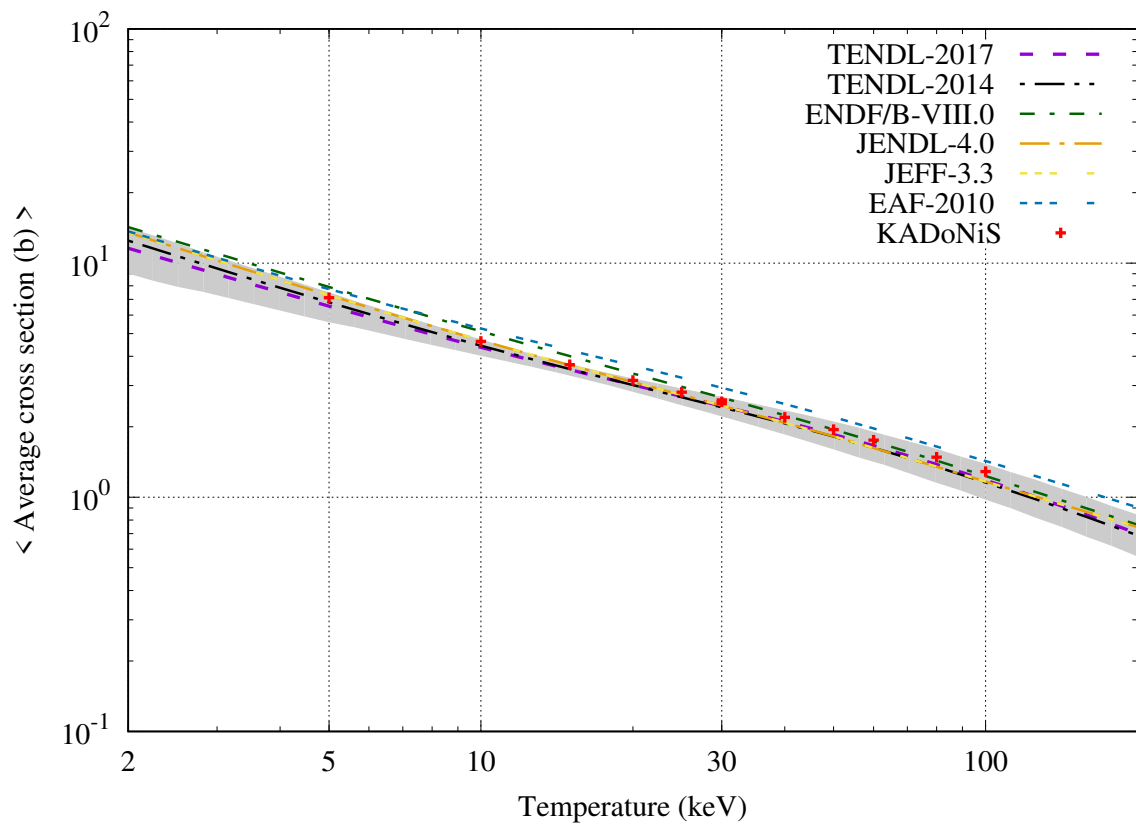
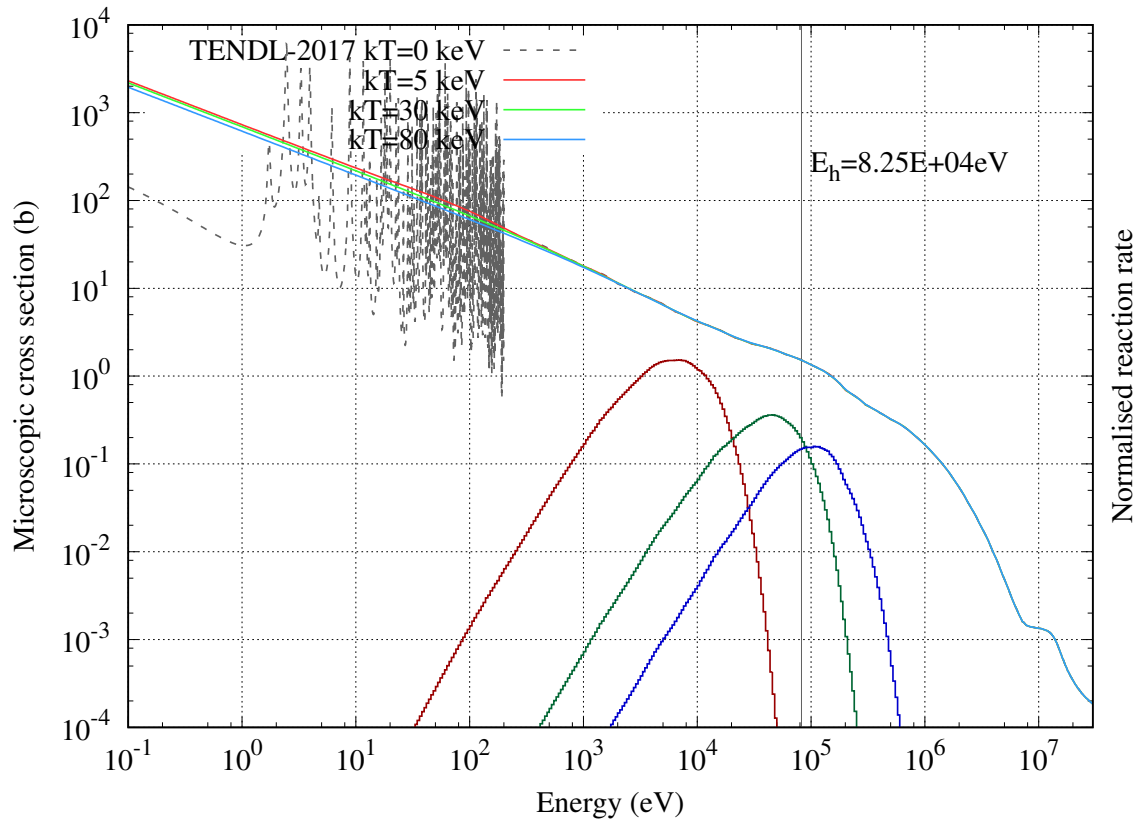
$^{151}\text{Eu}_{63}$ [Stable]



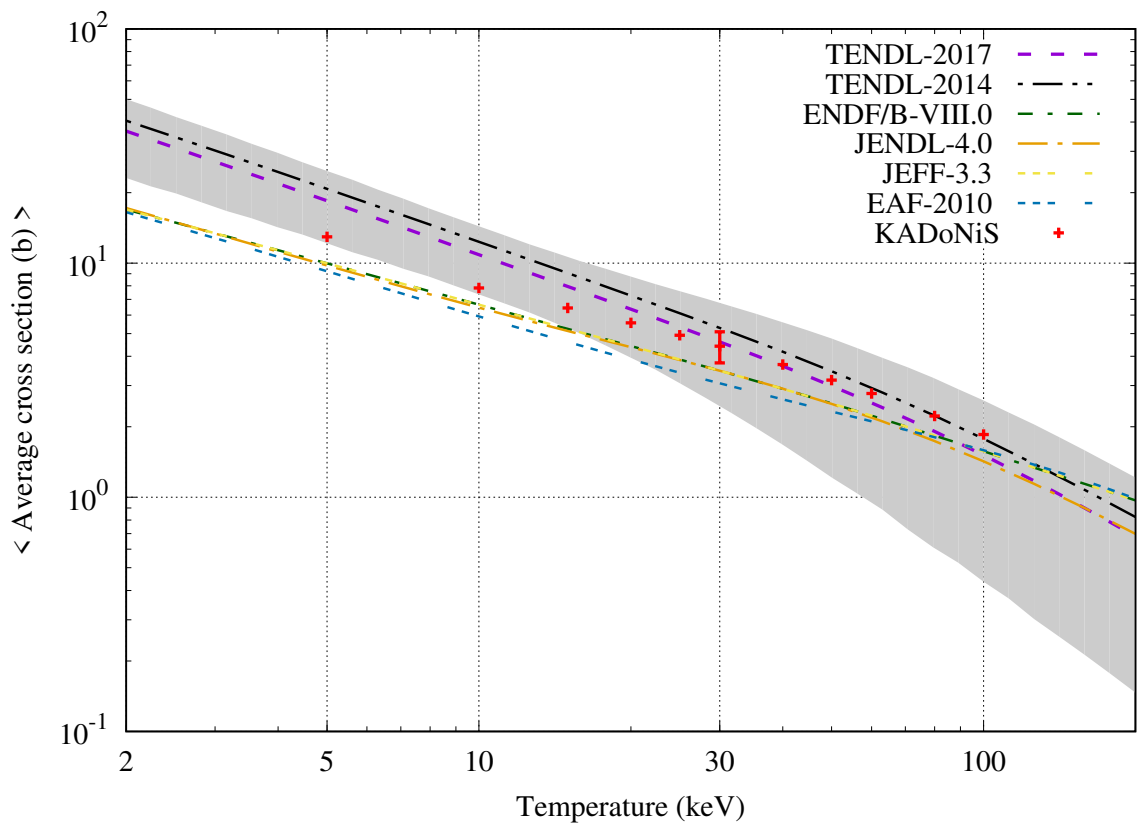
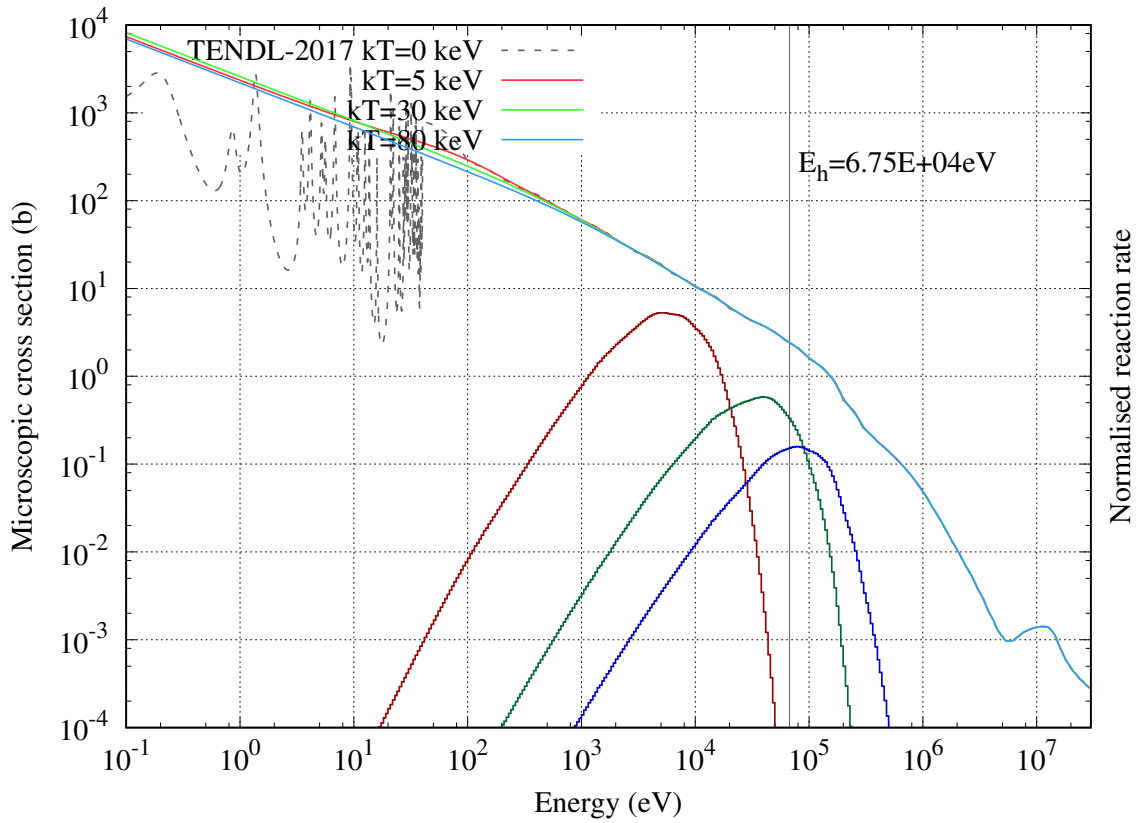
$^{152}\text{Eu}_{63}$ [$T_{1/2} = 13.52$ years] (KADoNiS=SMC)



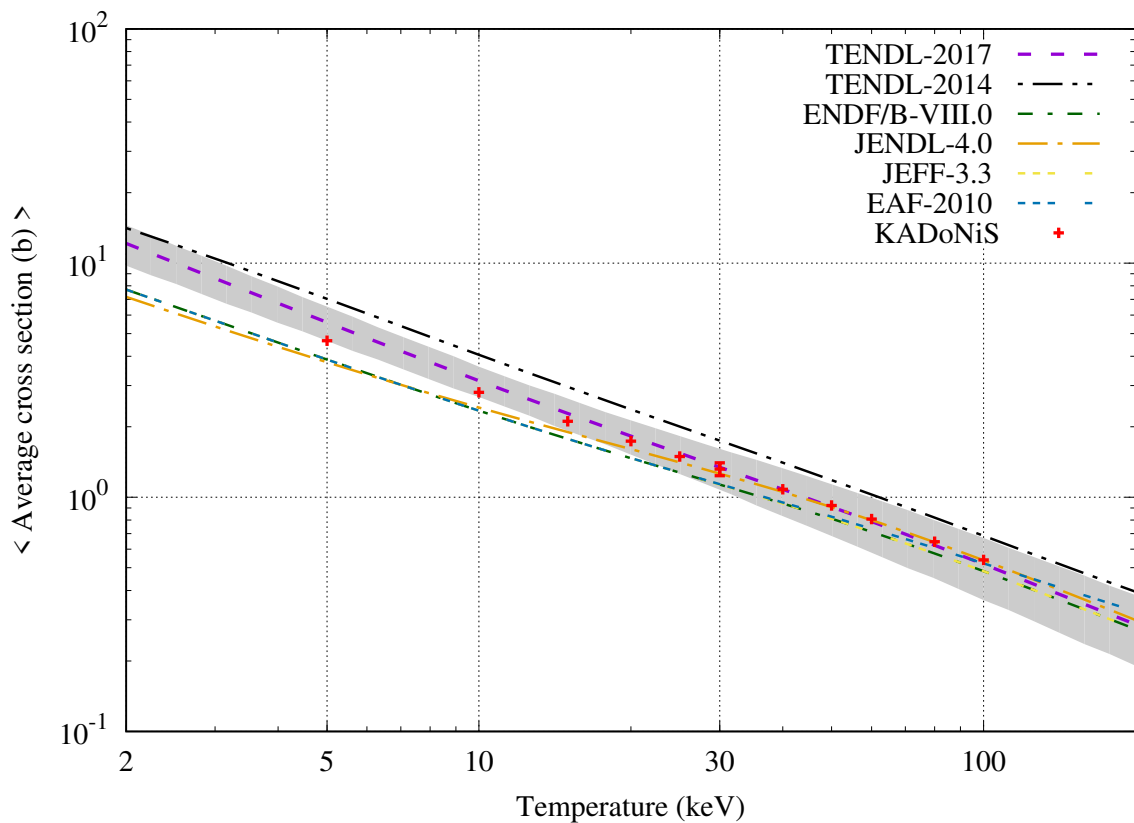
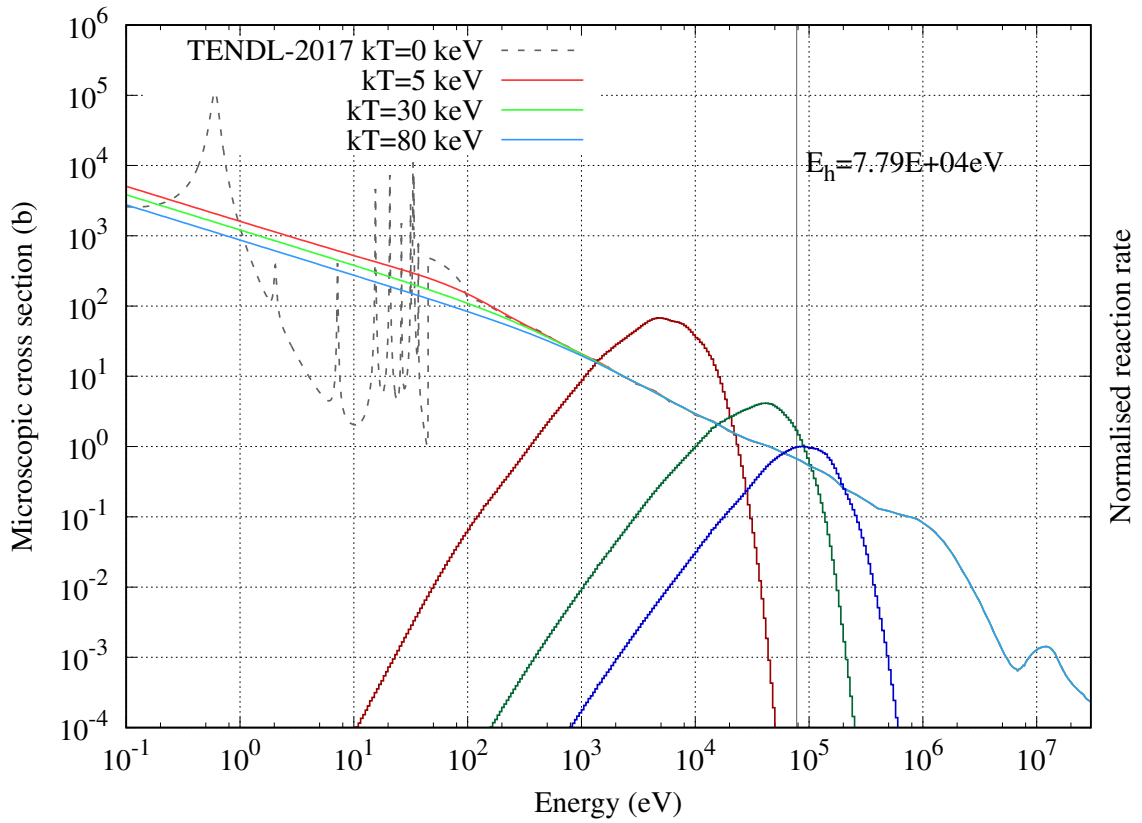
$^{153}\text{Eu}_{63}$ [Stable]



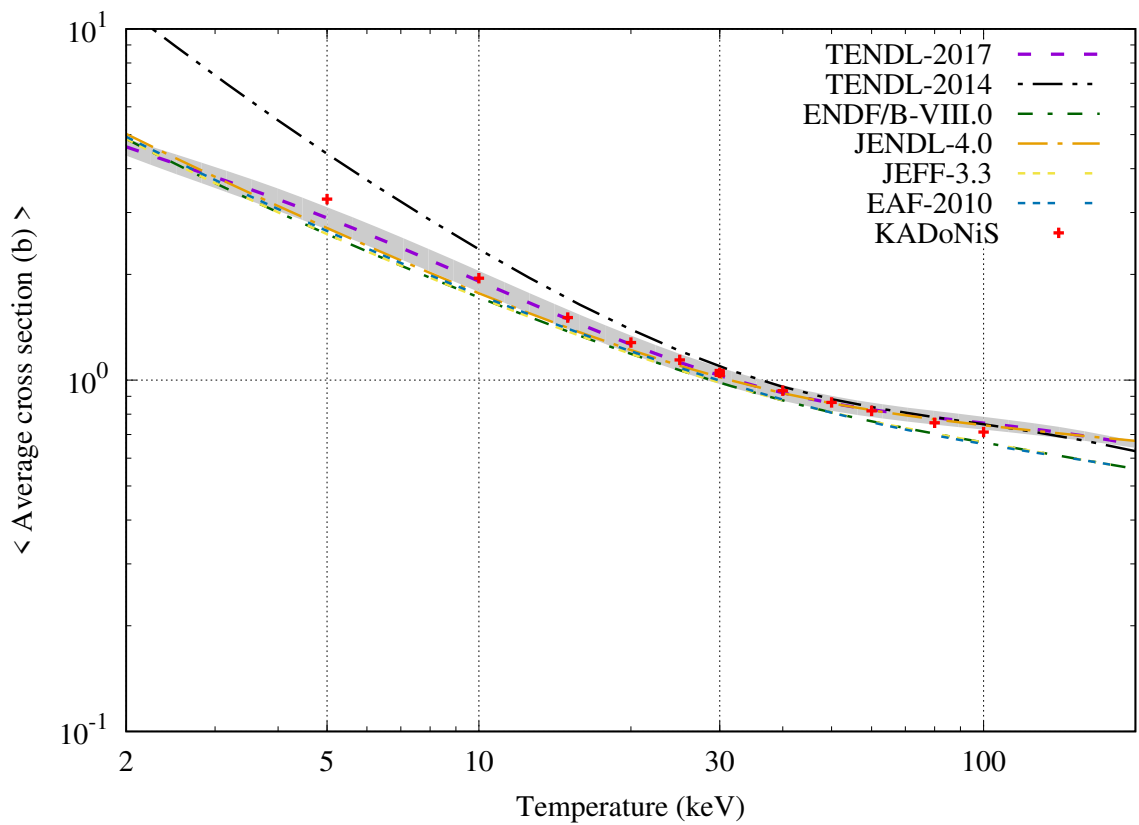
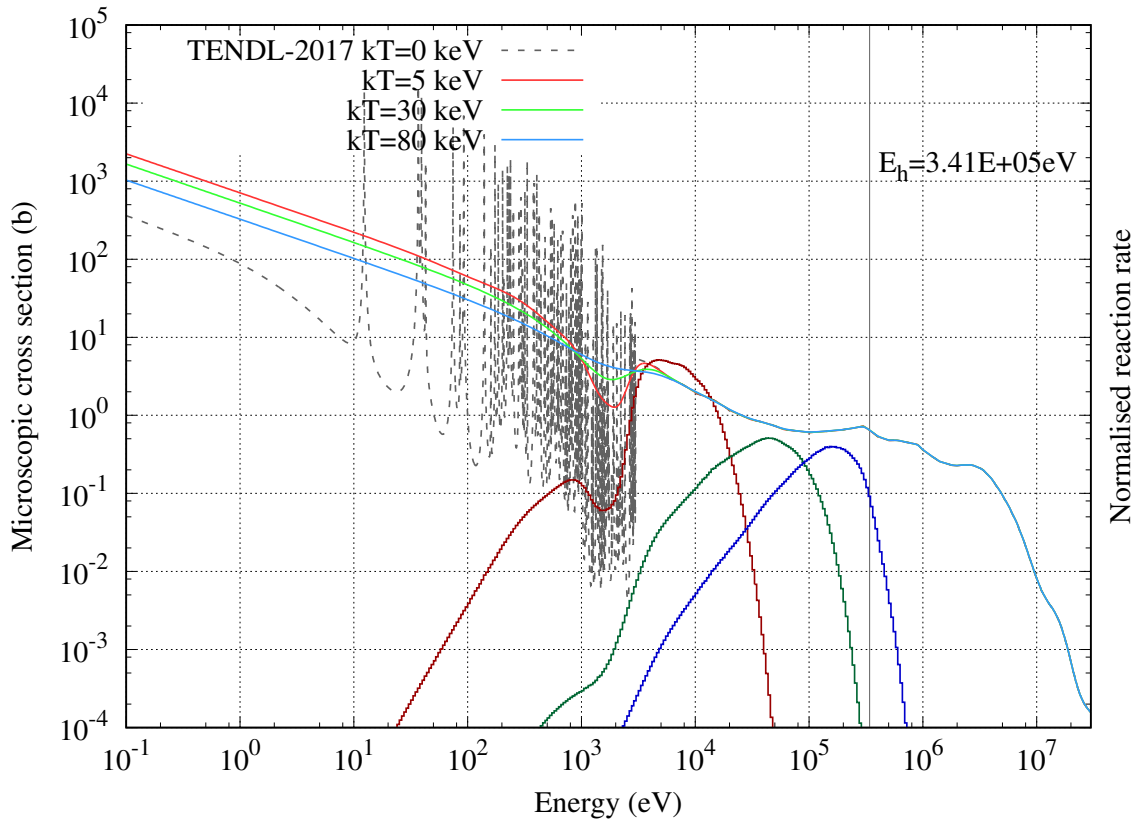
$^{154}\text{Eu}_{63}$ [$T_{1/2} = 8.59$ years]



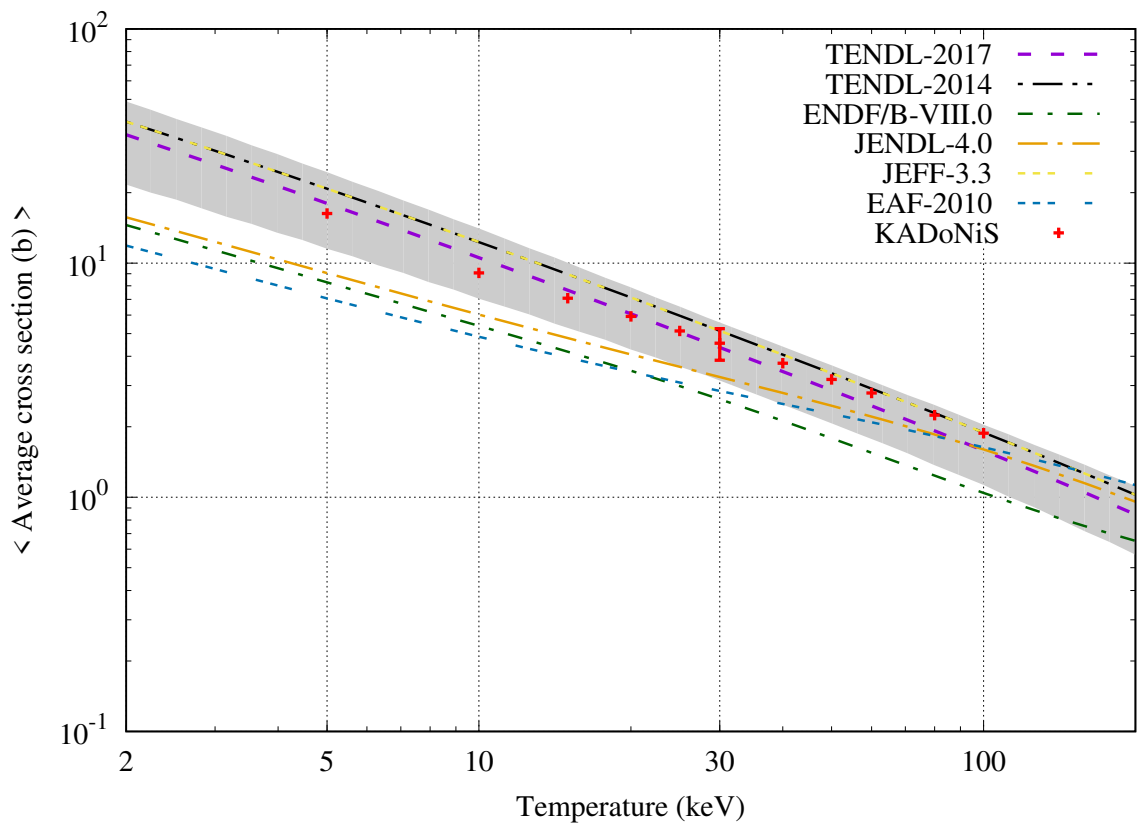
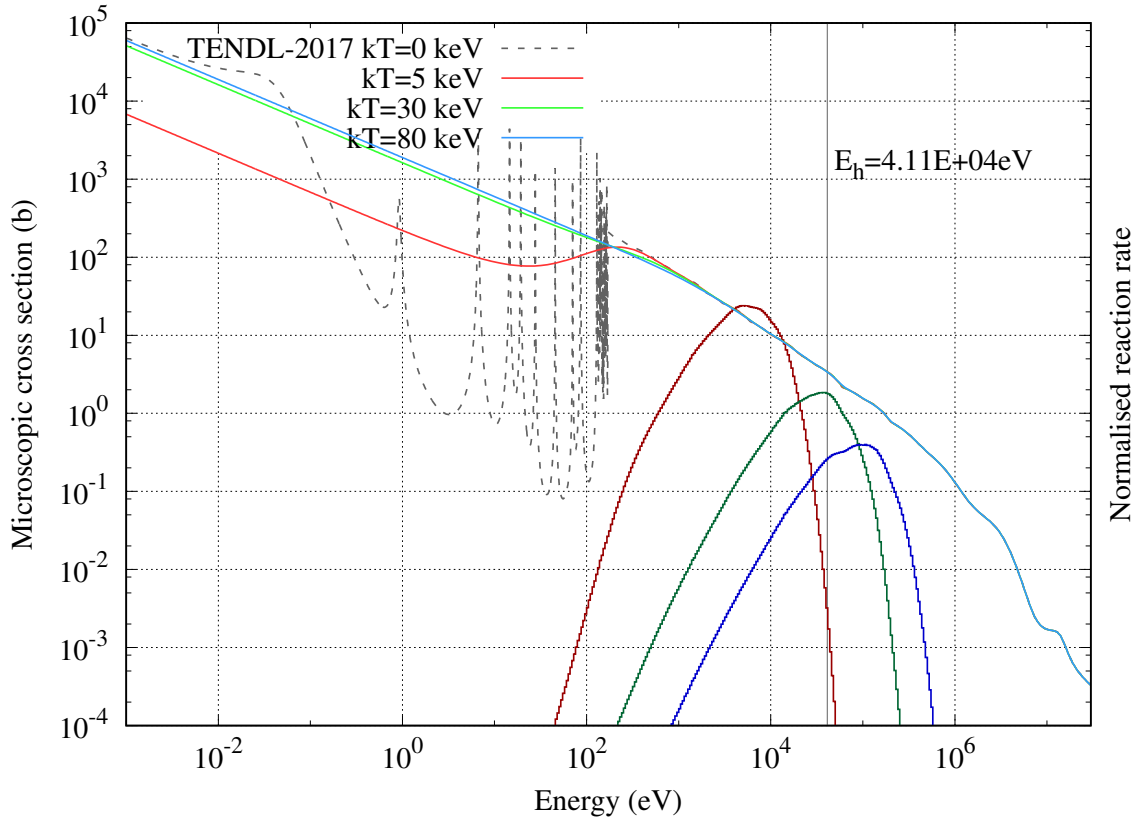
$^{155}\text{Eu}_{63}$ [$T_{1/2} = 4.75$ years]



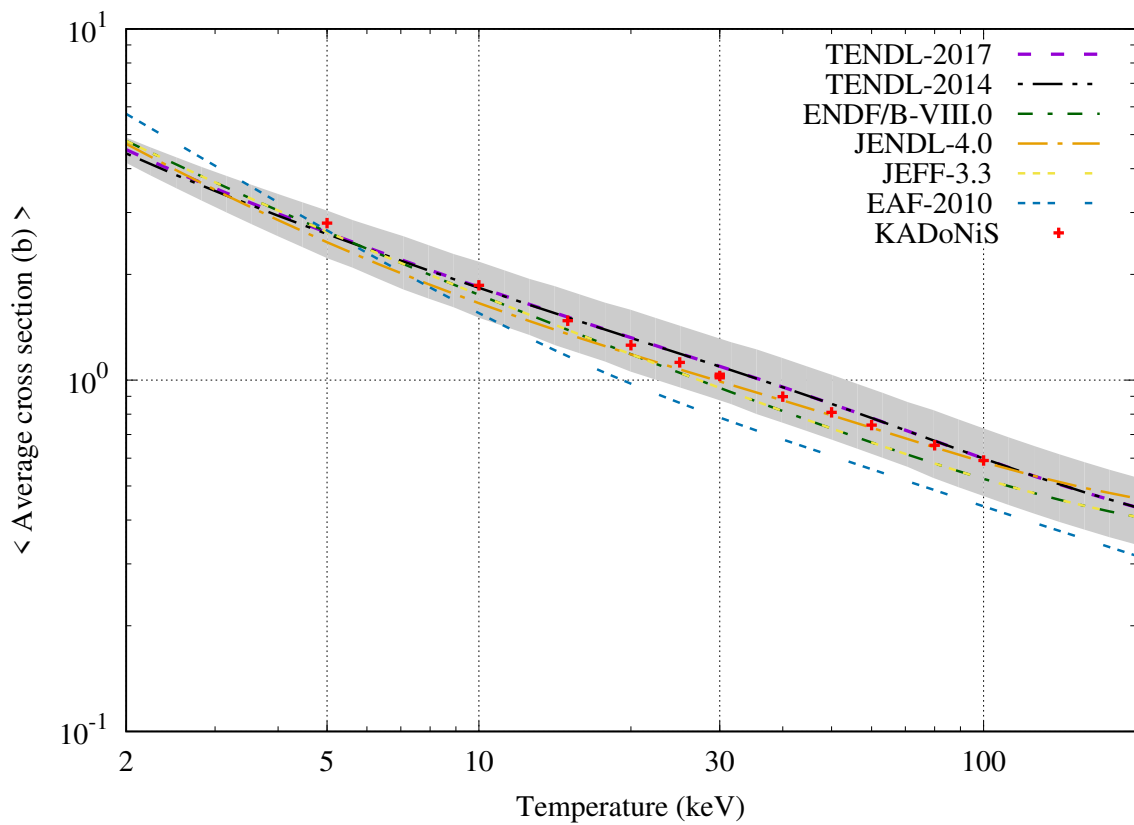
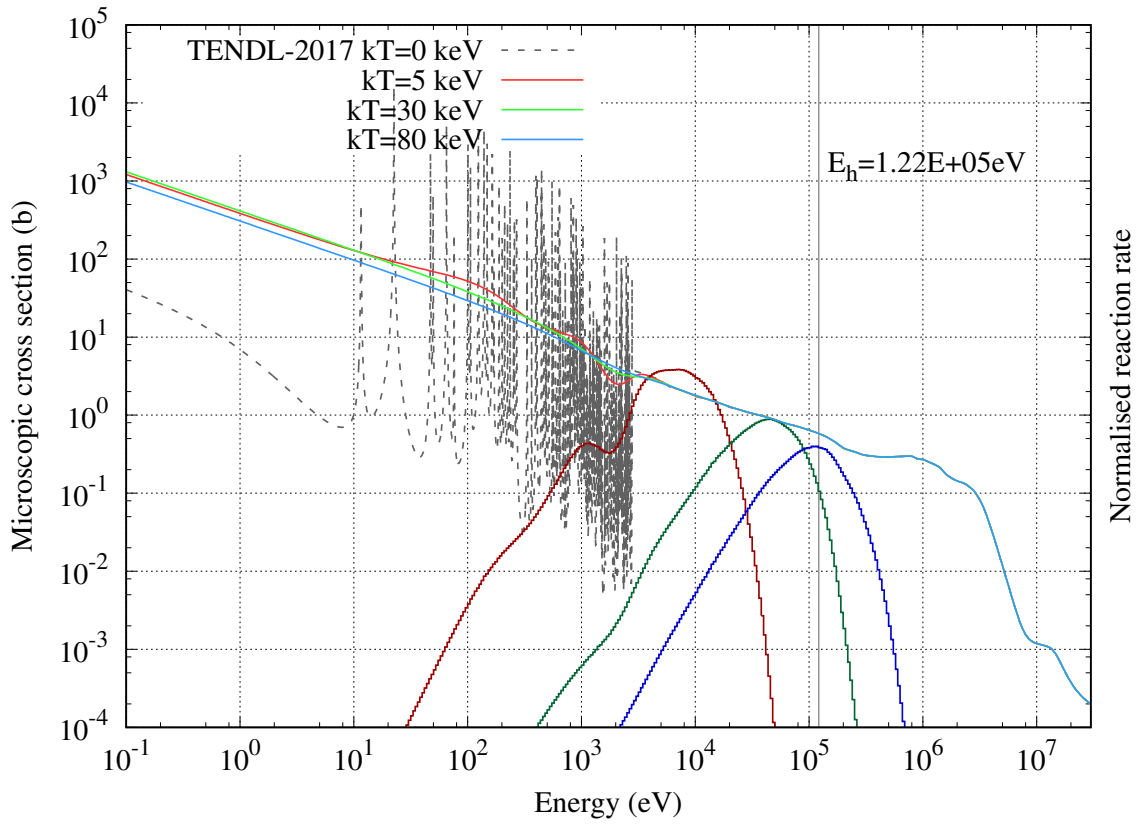
$^{152}\text{Gd}_{64}$ [$T_{1/2} = 1.08 \times 10^{14}$ years]



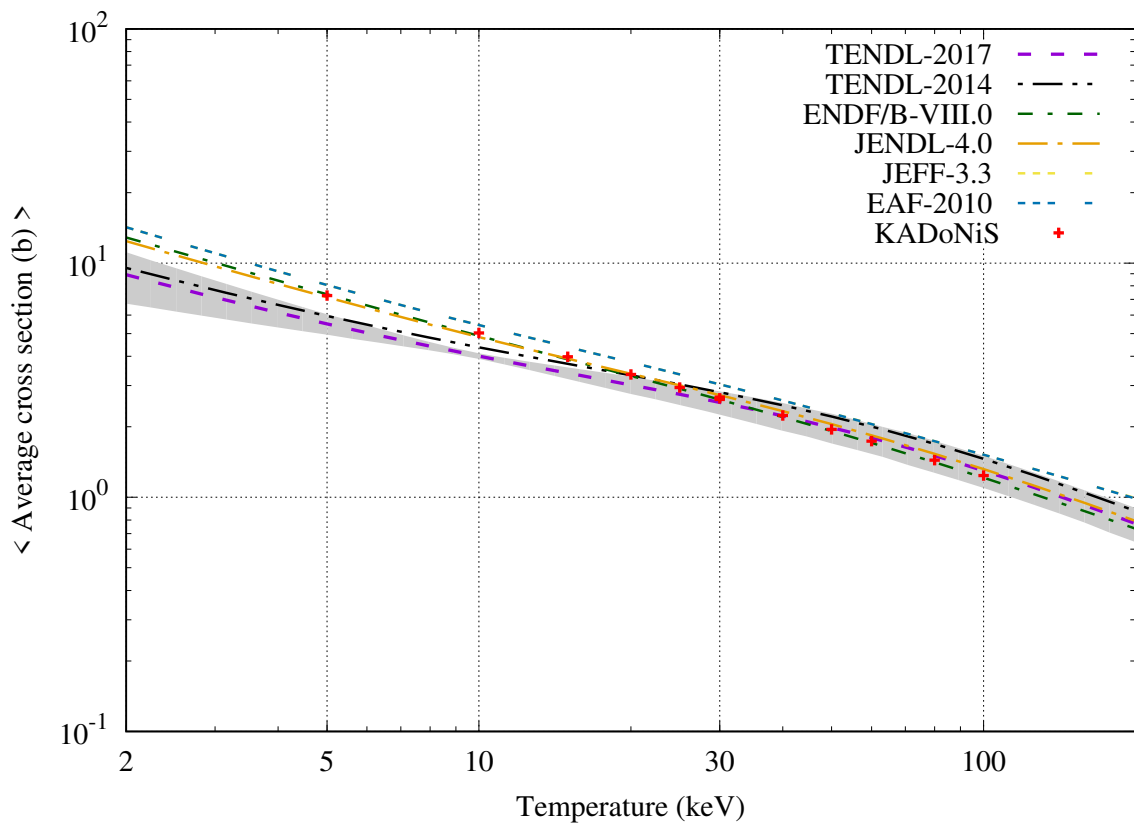
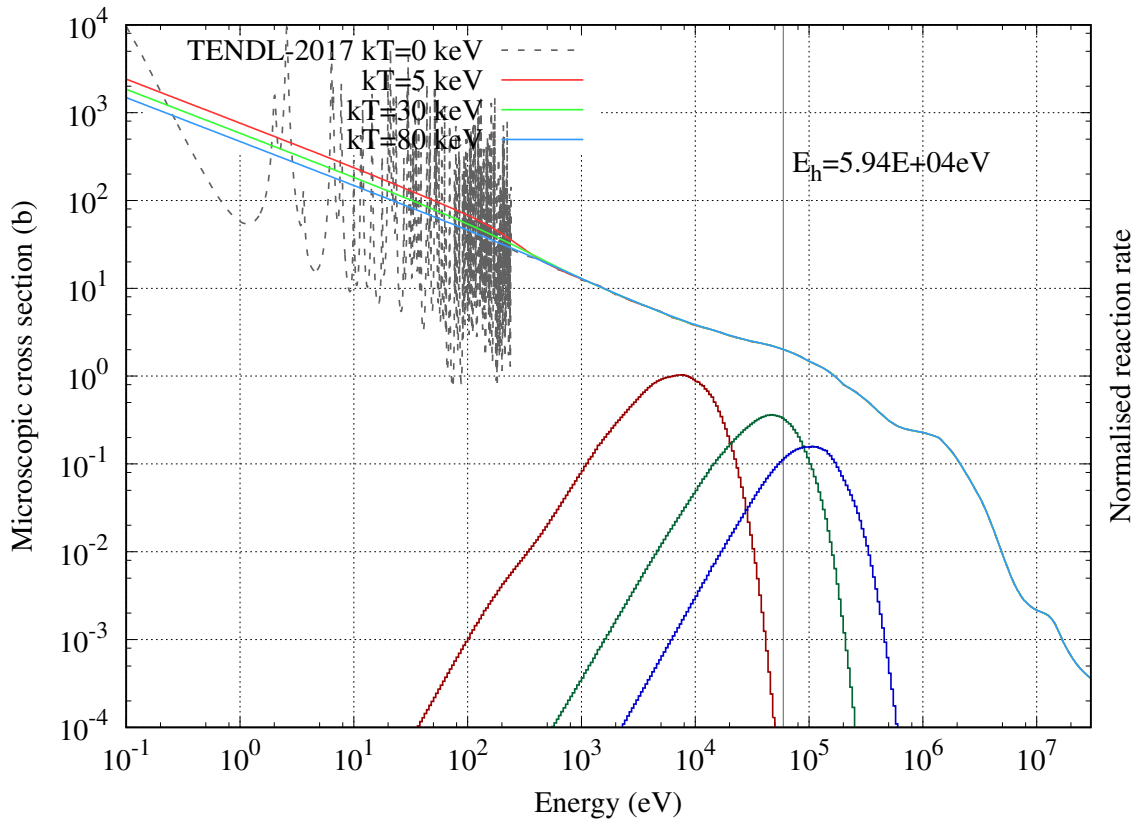
$^{153}\text{Gd}_{64}$ [$T_{1/2} = 240.40$ days] (KADoNiS=SMC)



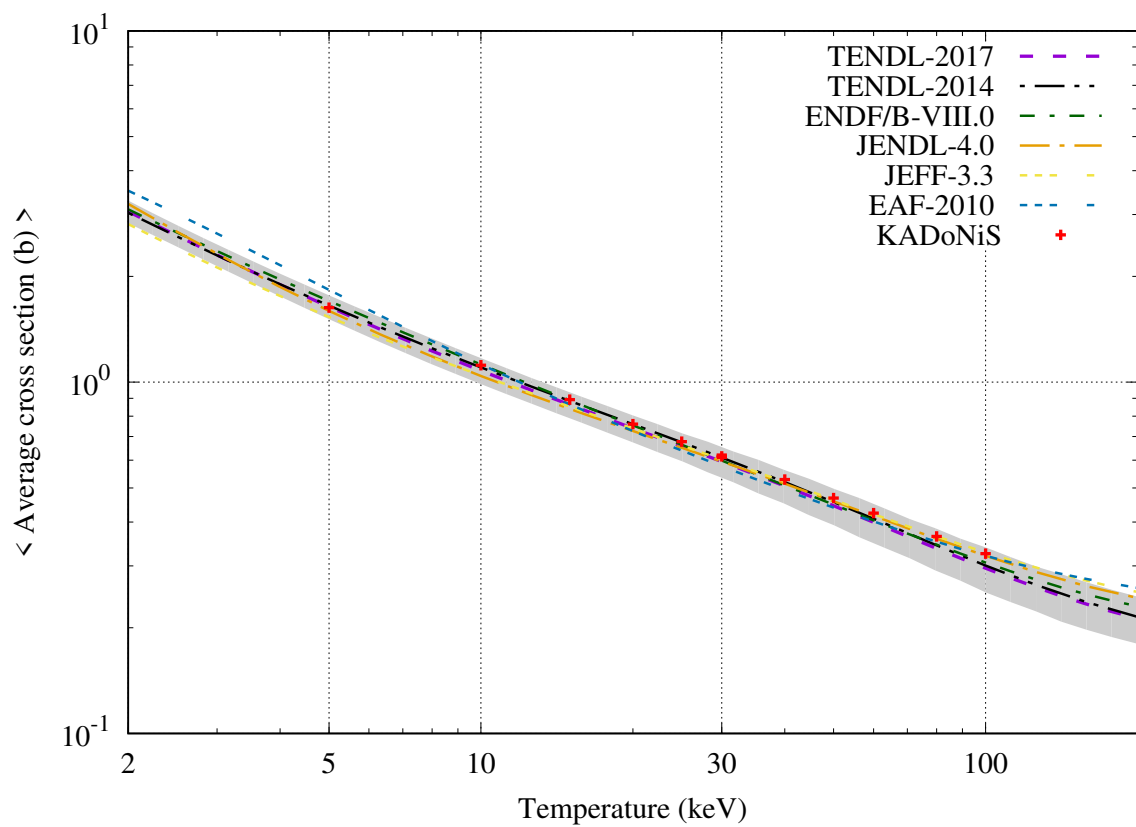
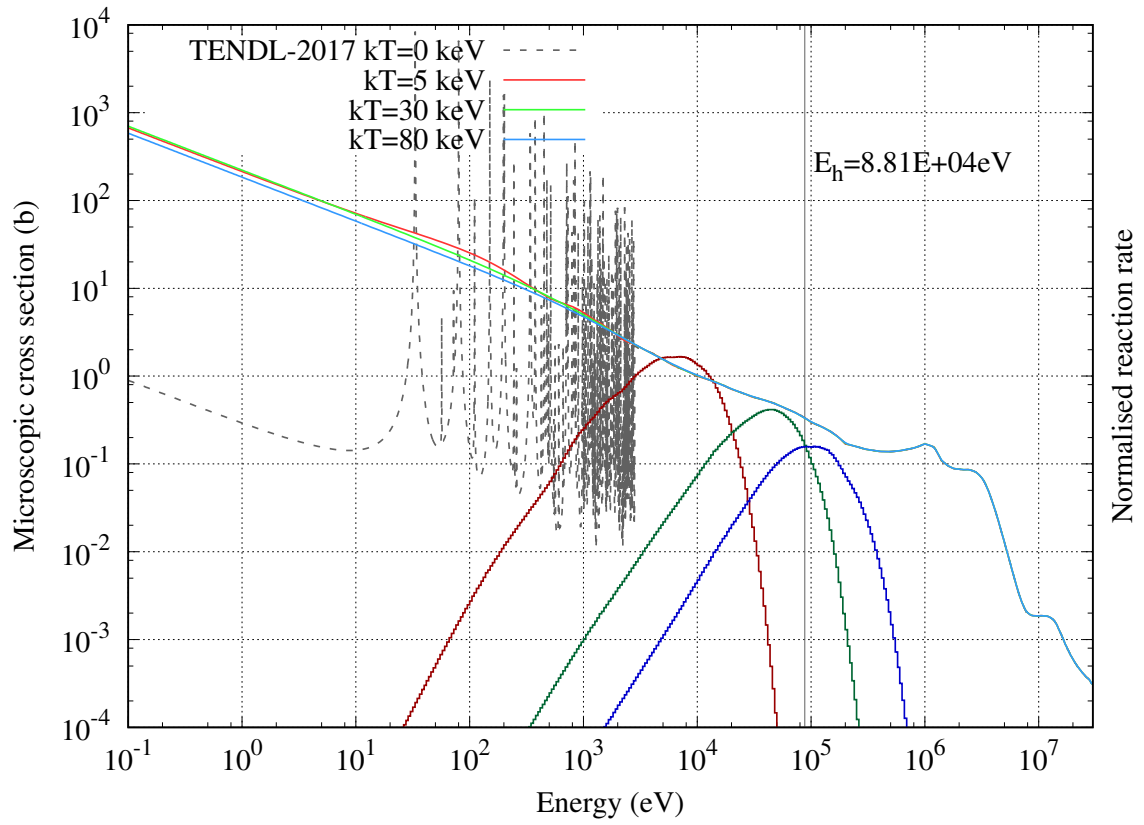
$^{154}\text{Gd}_{64}$ [Stable]



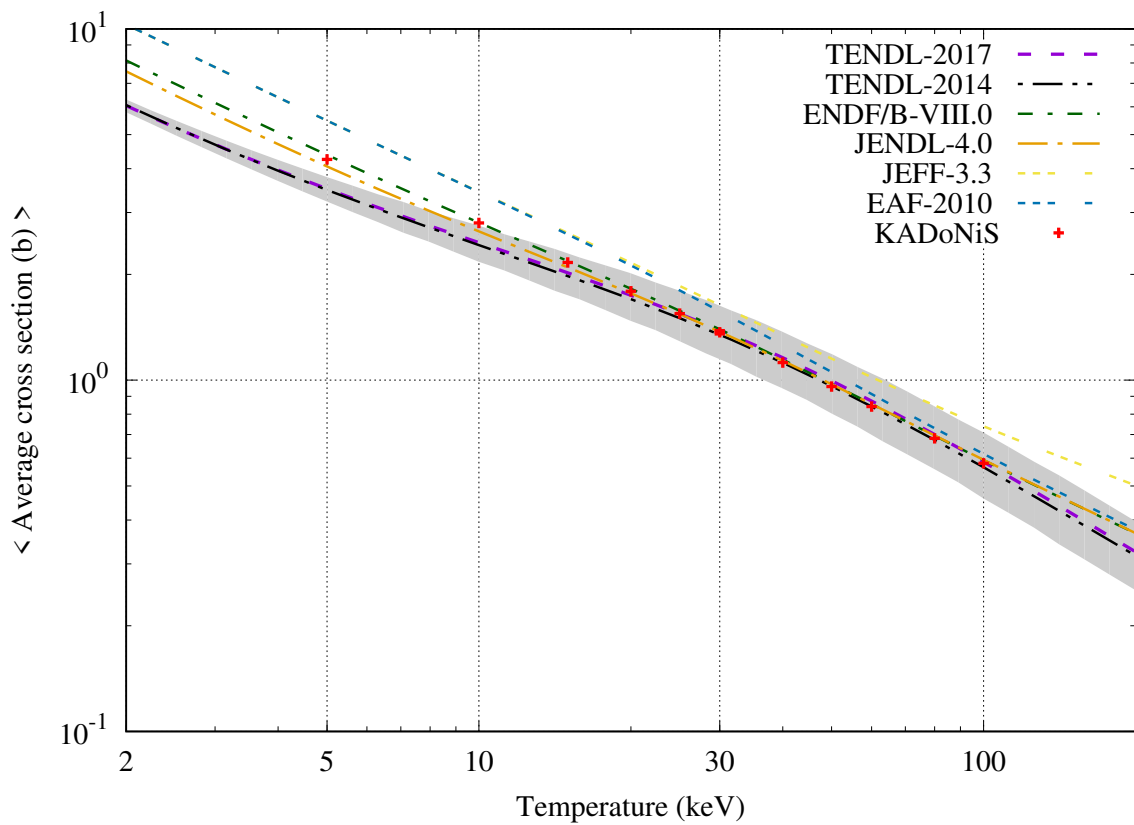
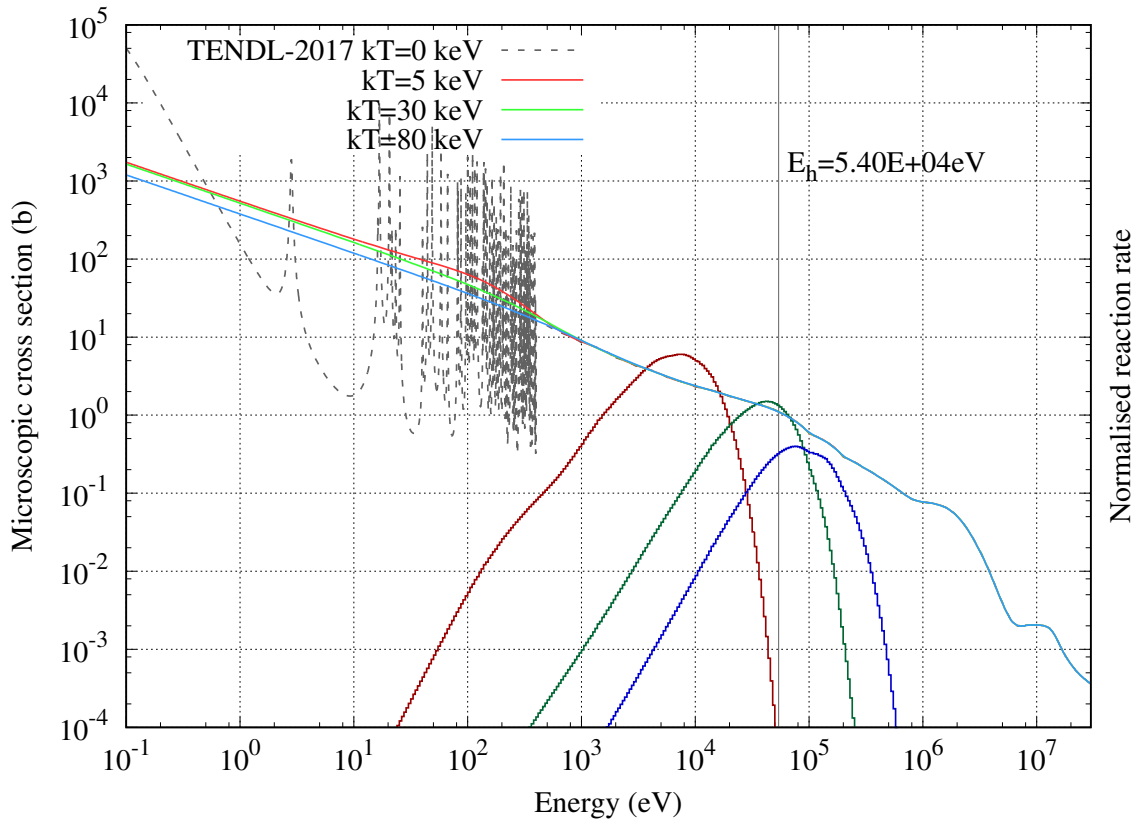
$^{155}\text{Gd}_{64}$ [Stable]



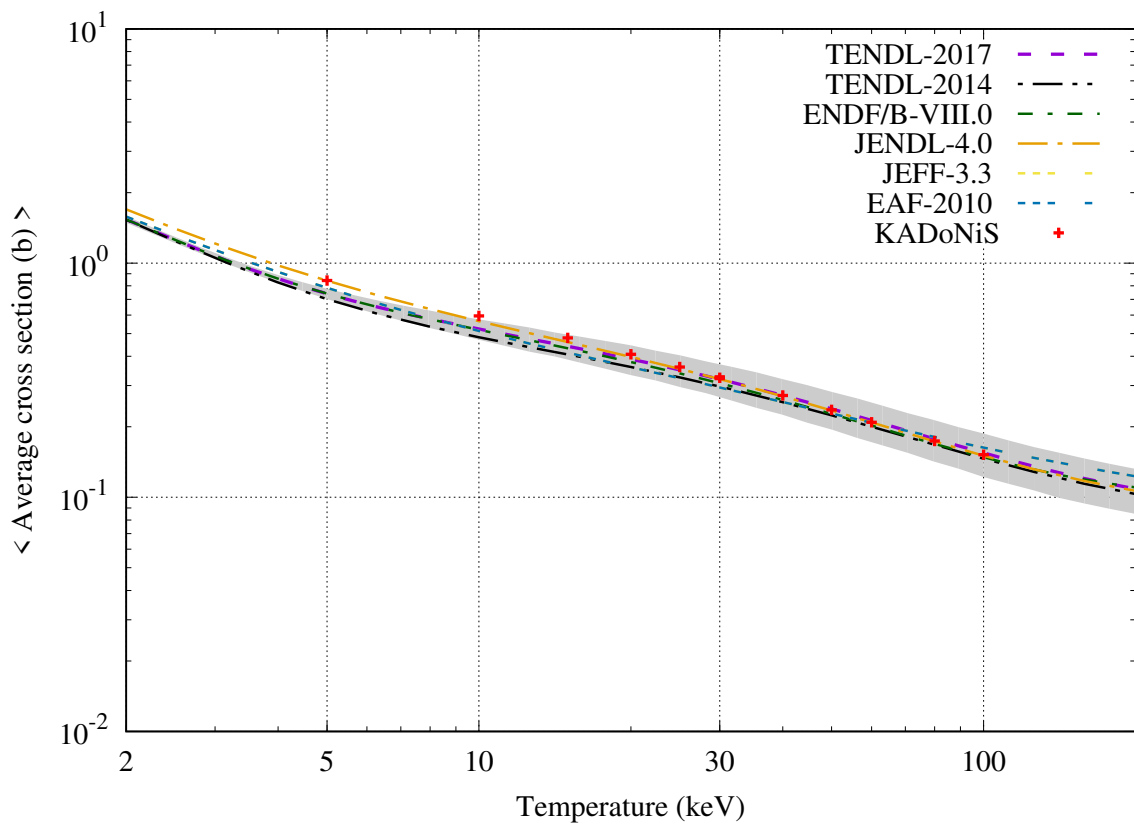
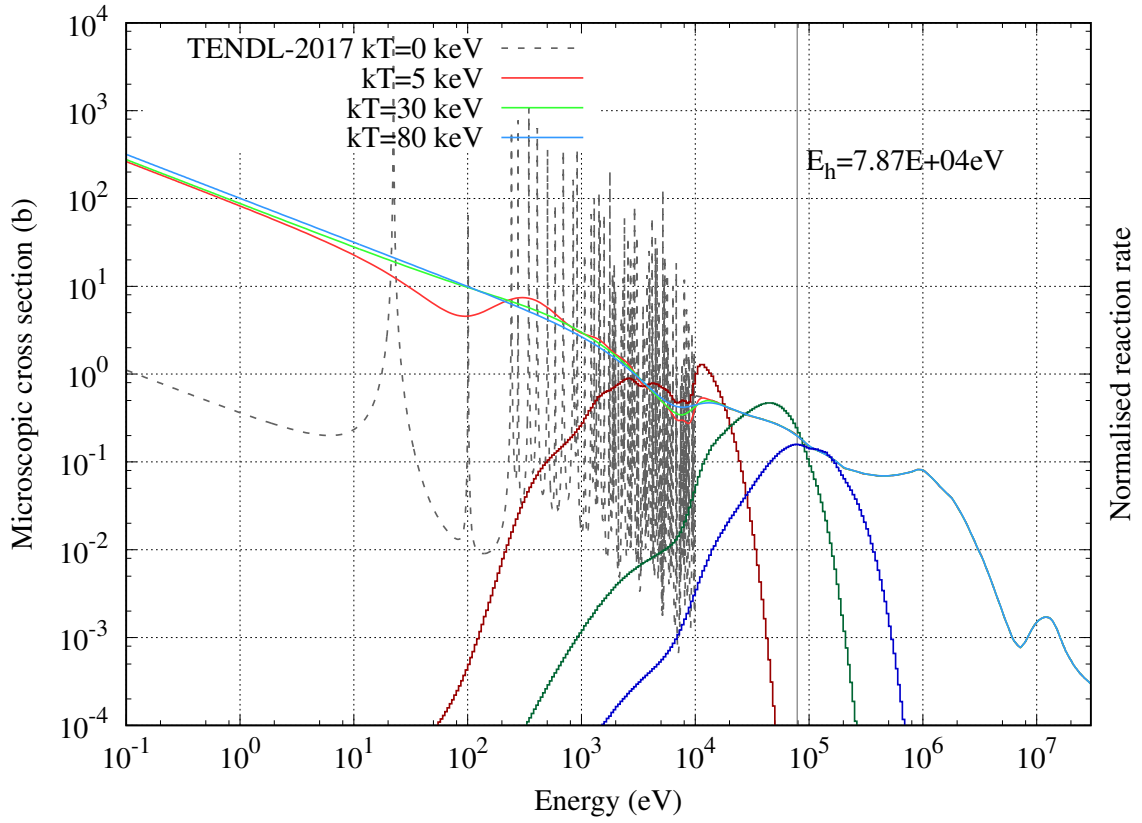
$^{156}\text{Gd}_{64}$ [Stable]



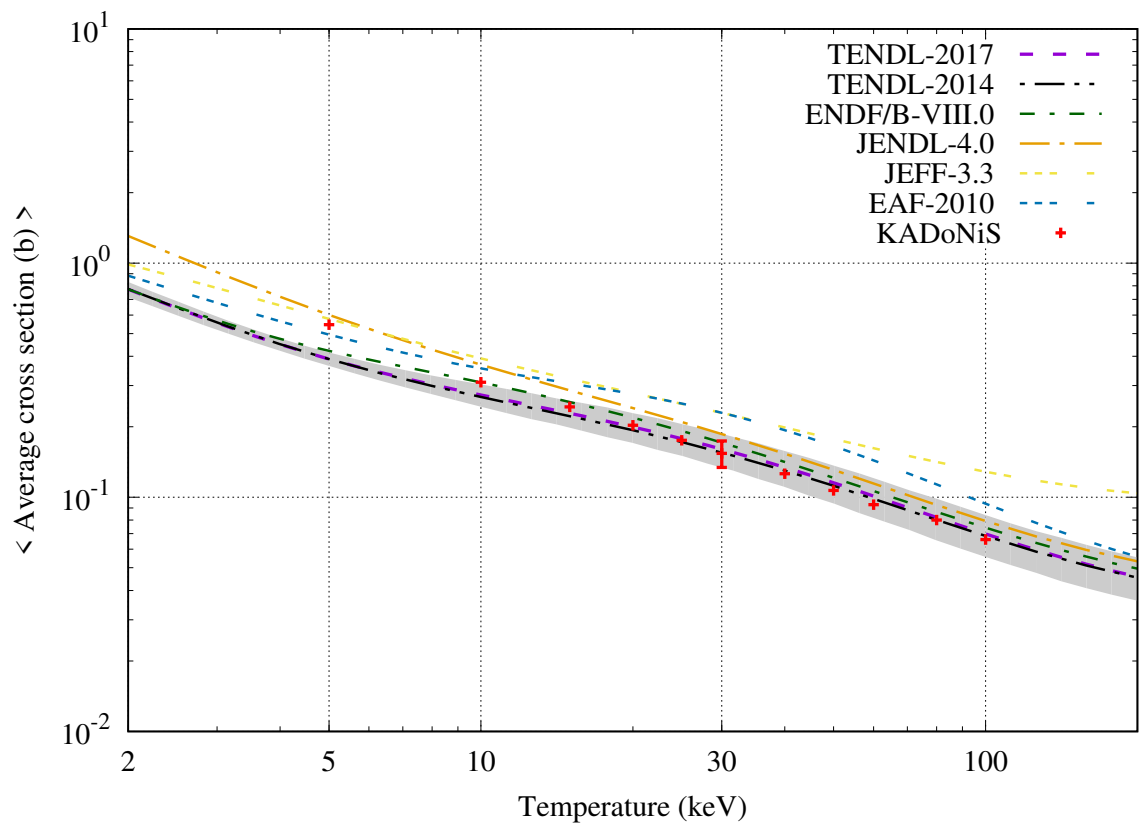
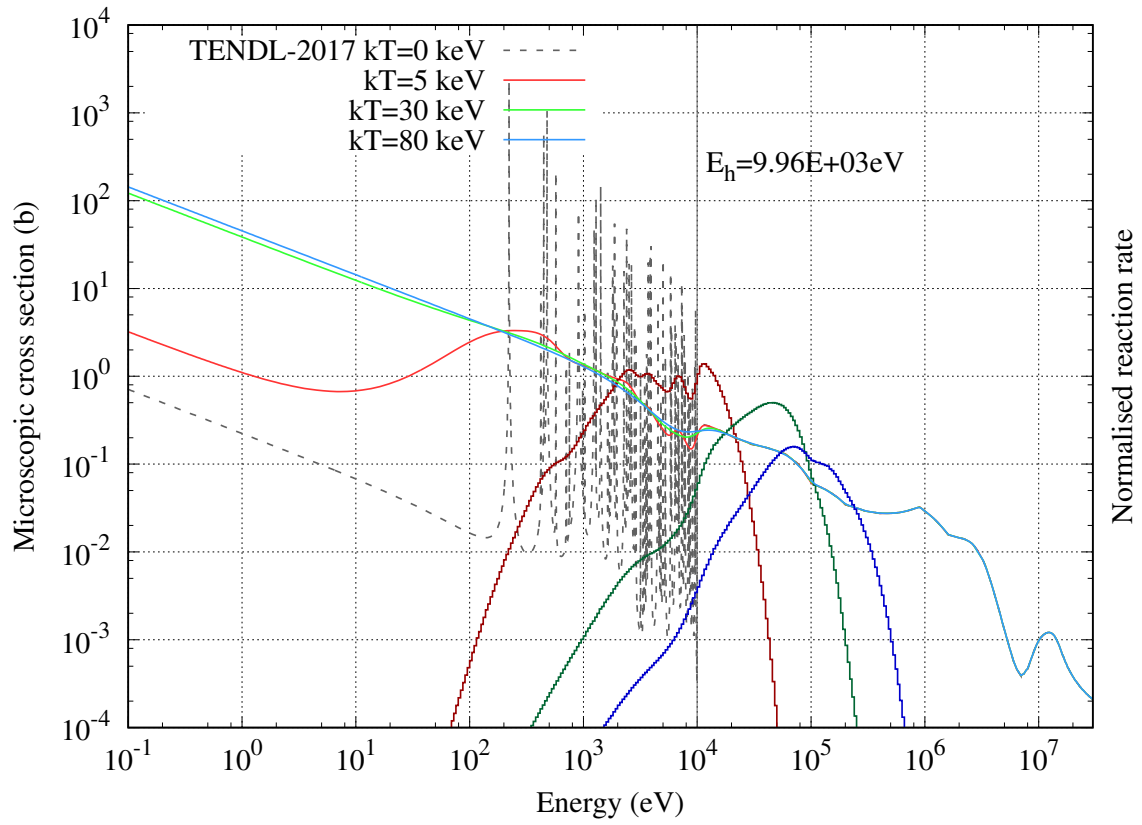
$^{157}\text{Gd}_{64}$ [Stable]



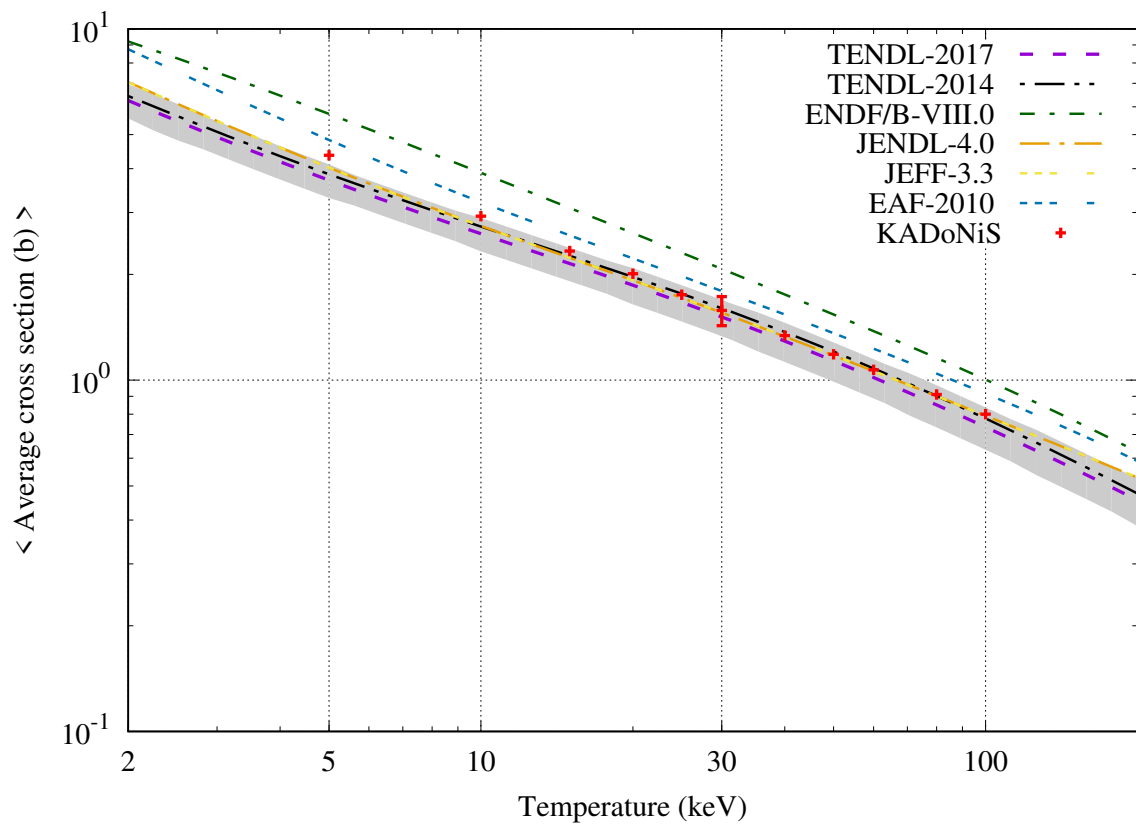
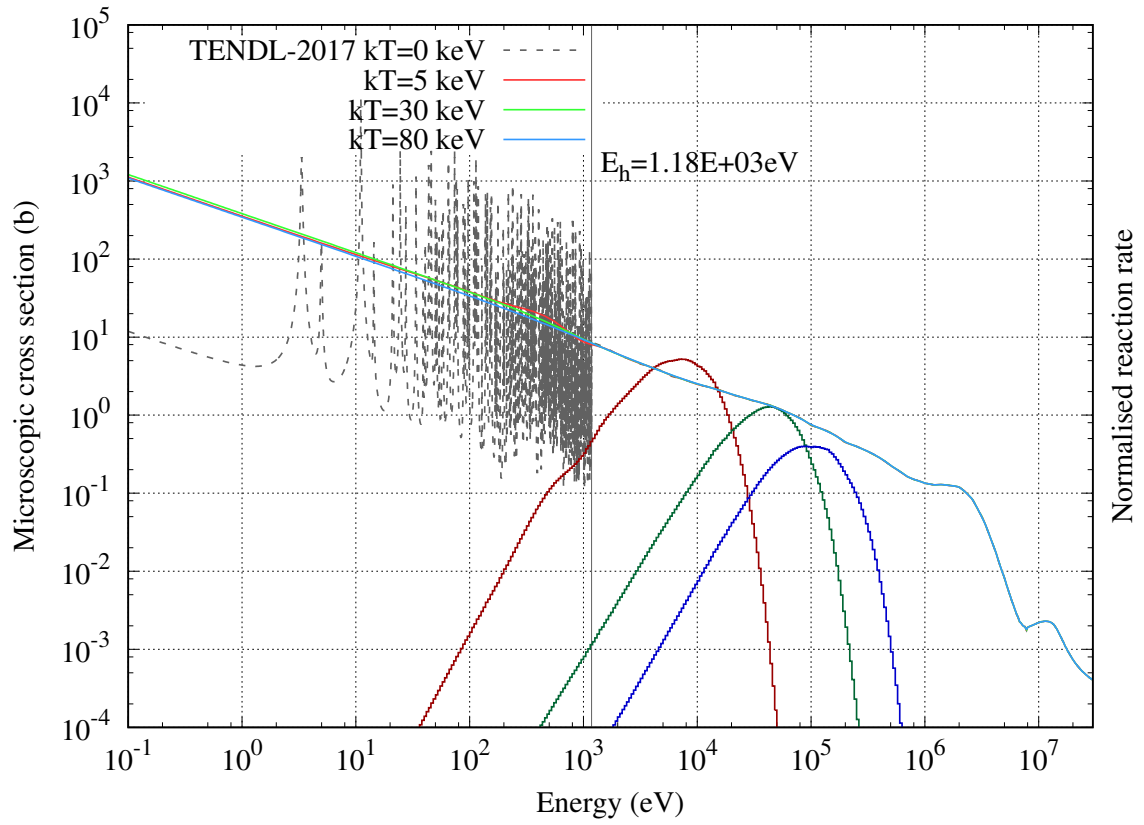
$^{158}\text{Gd}_{64}$ [Stable]



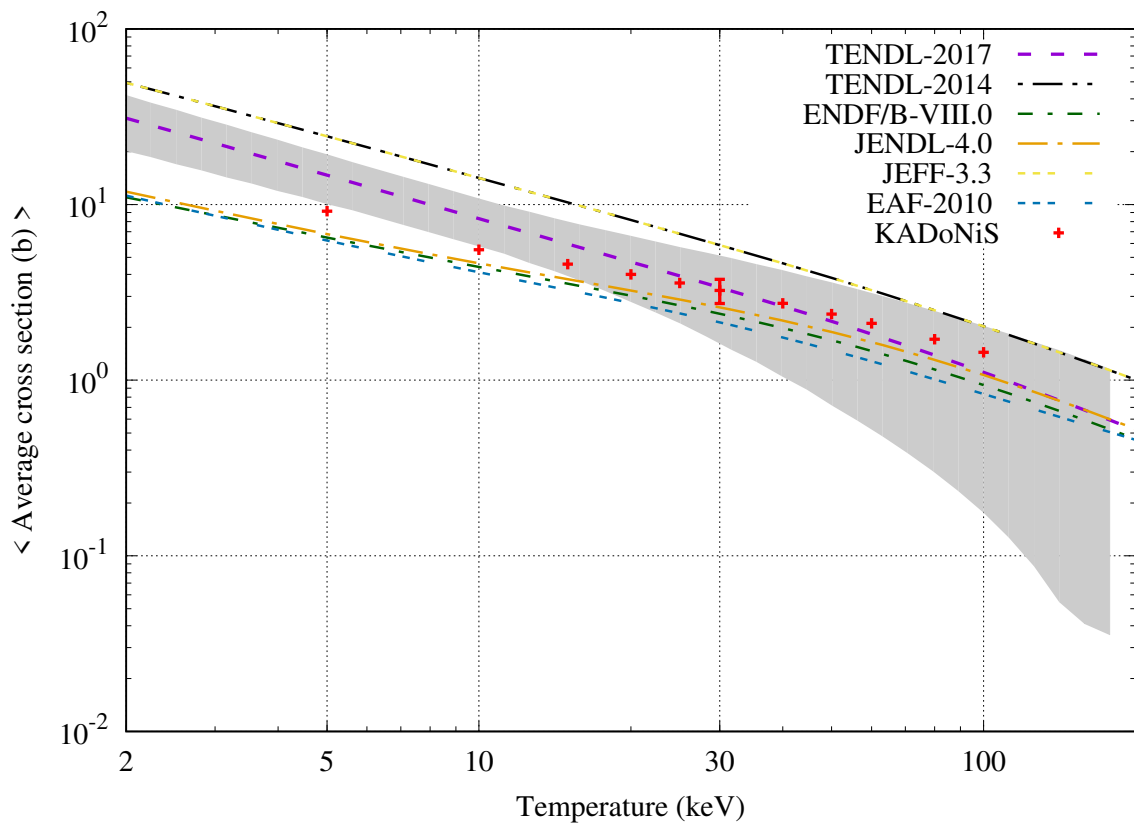
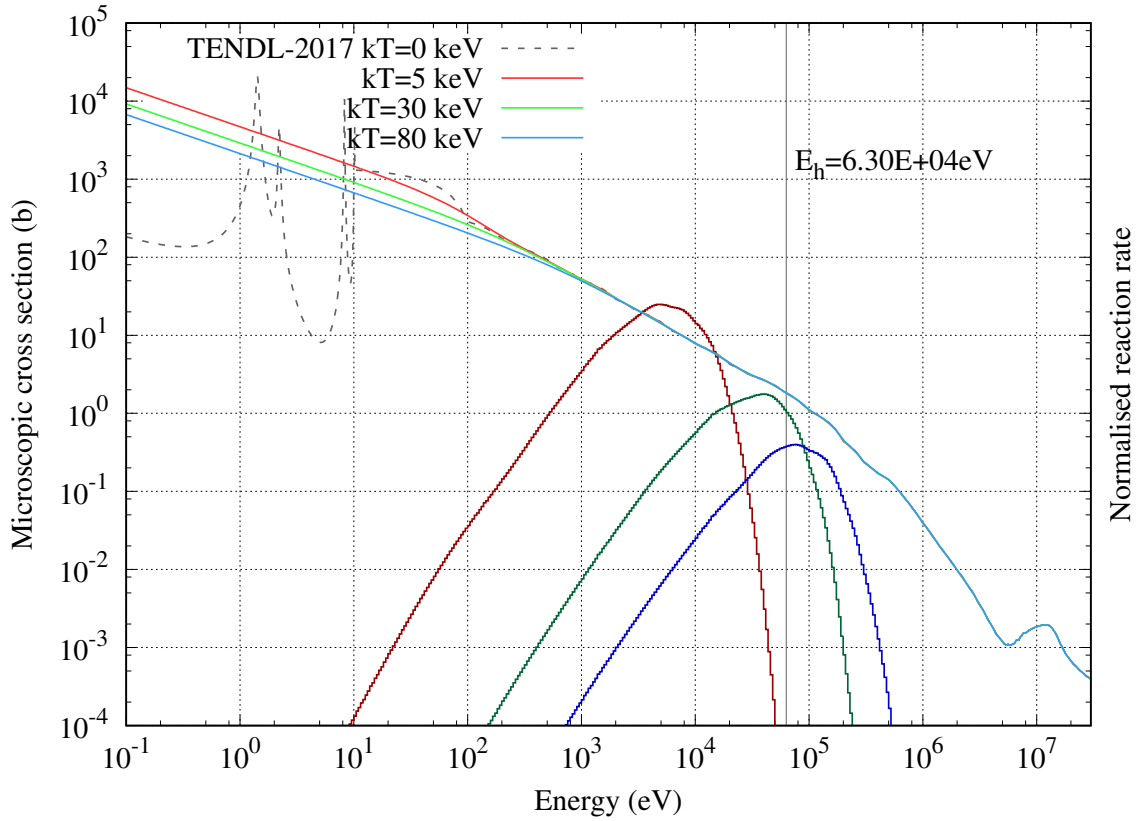
$^{160}\text{Gd}_{64}$ [$T_{1/2} = 1.30 \times 10^{17}$ years]



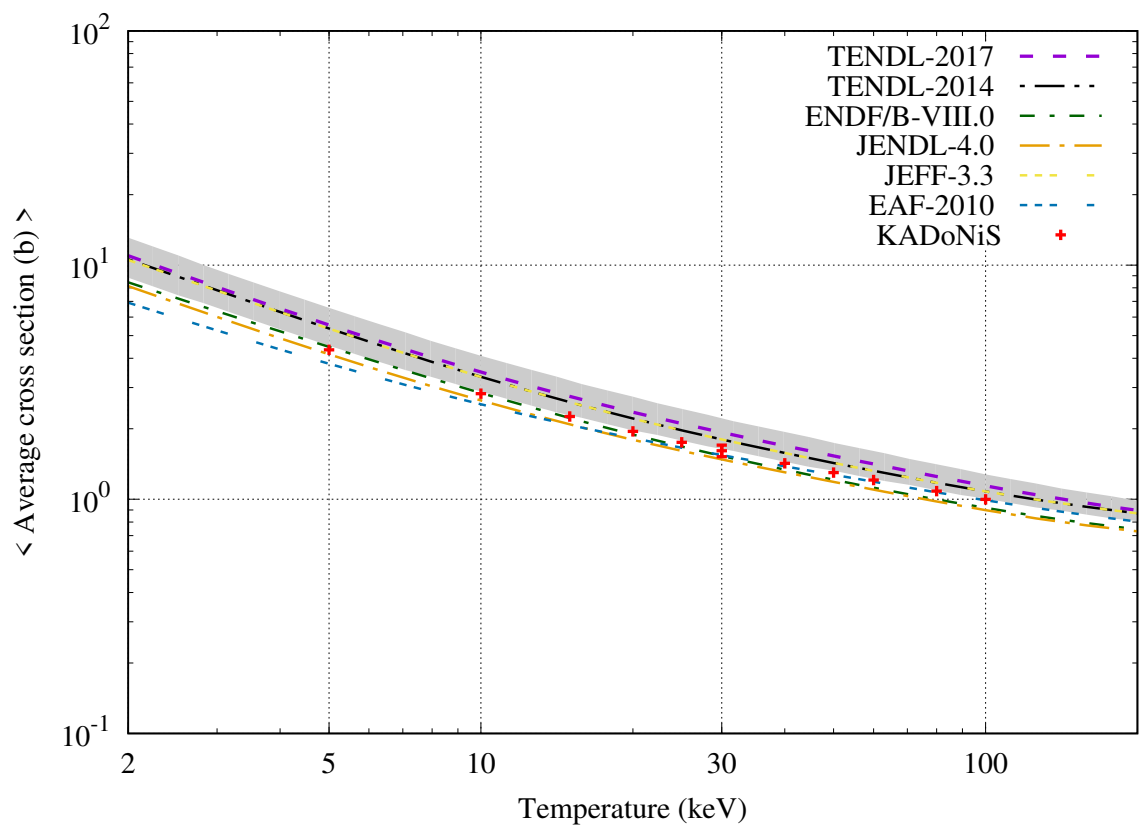
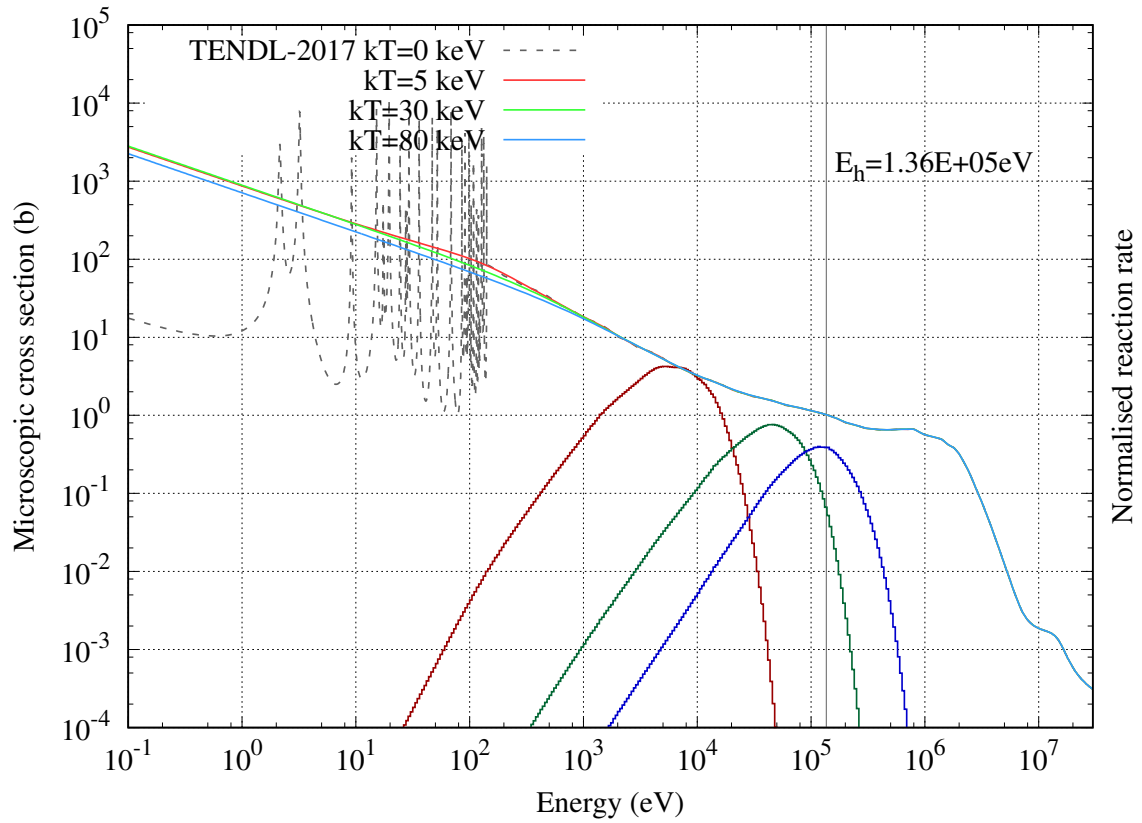
$^{159}\text{Tb}_{65}$ [Stable]



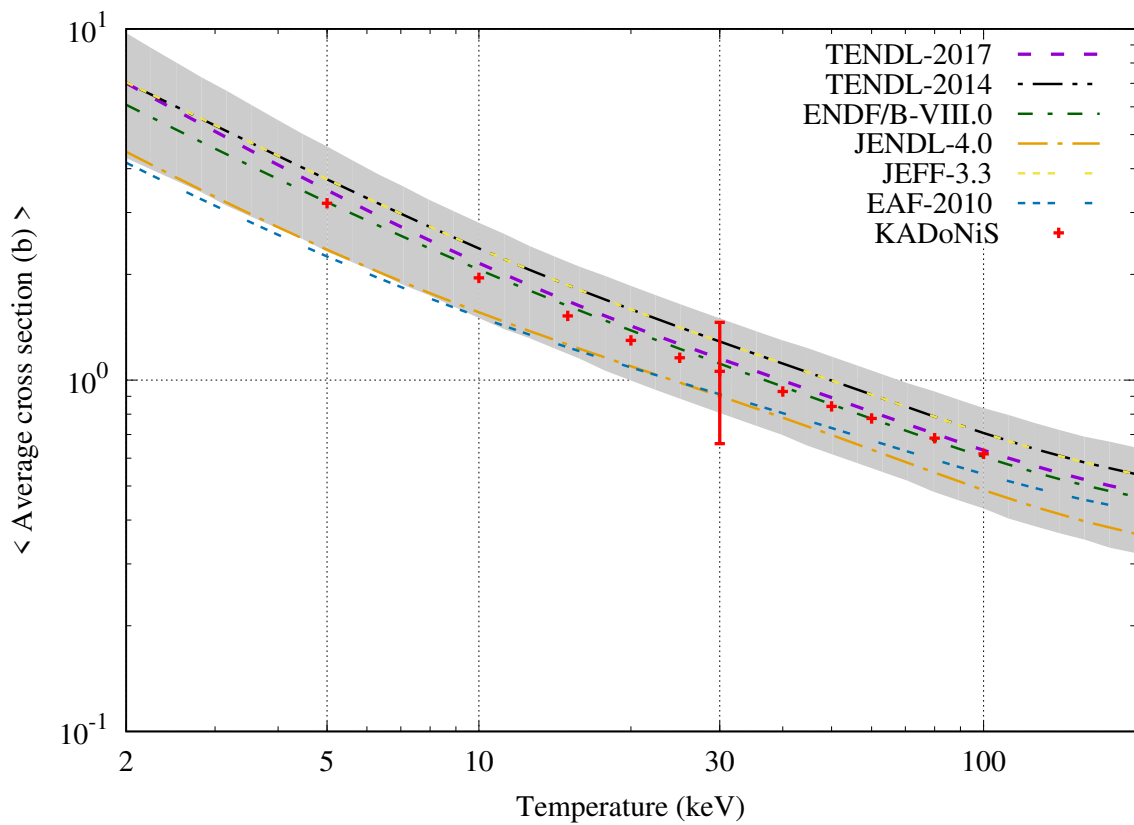
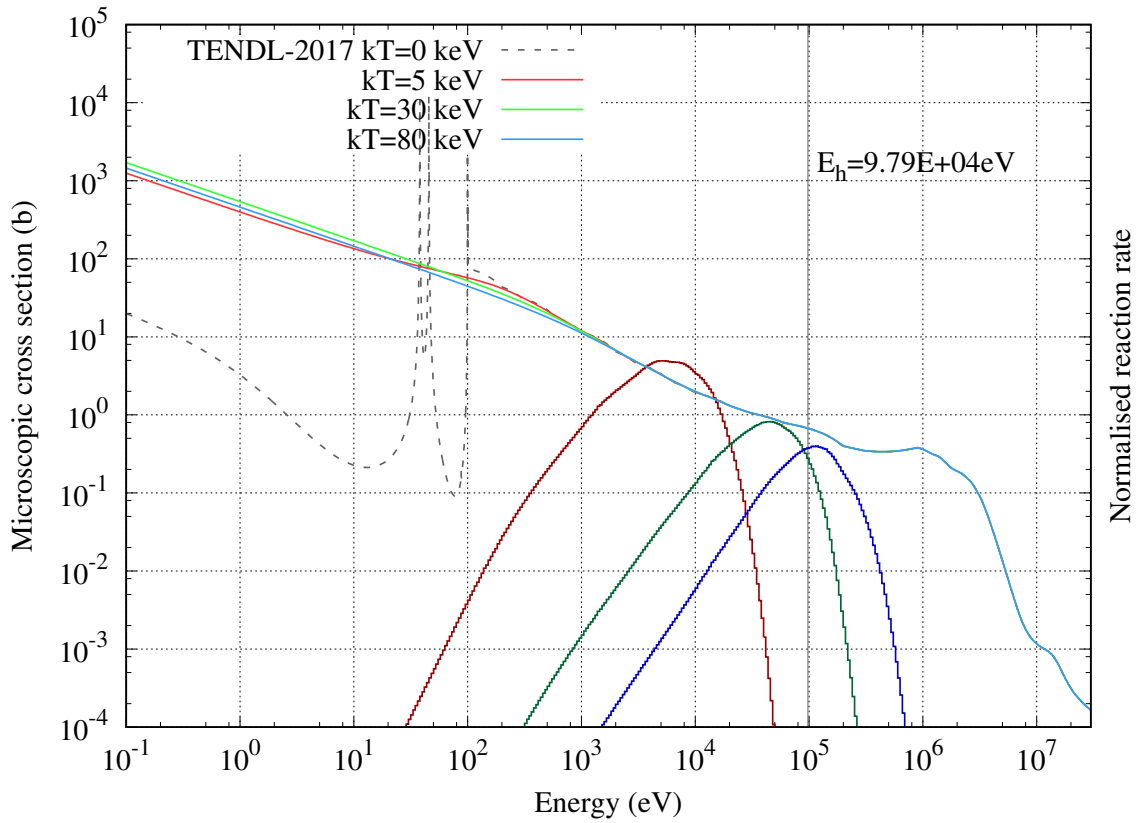
$^{160}\text{Tb}_{65}$ [$T_{1/2} = 72.30$ days] (KADoNiS=SMC)



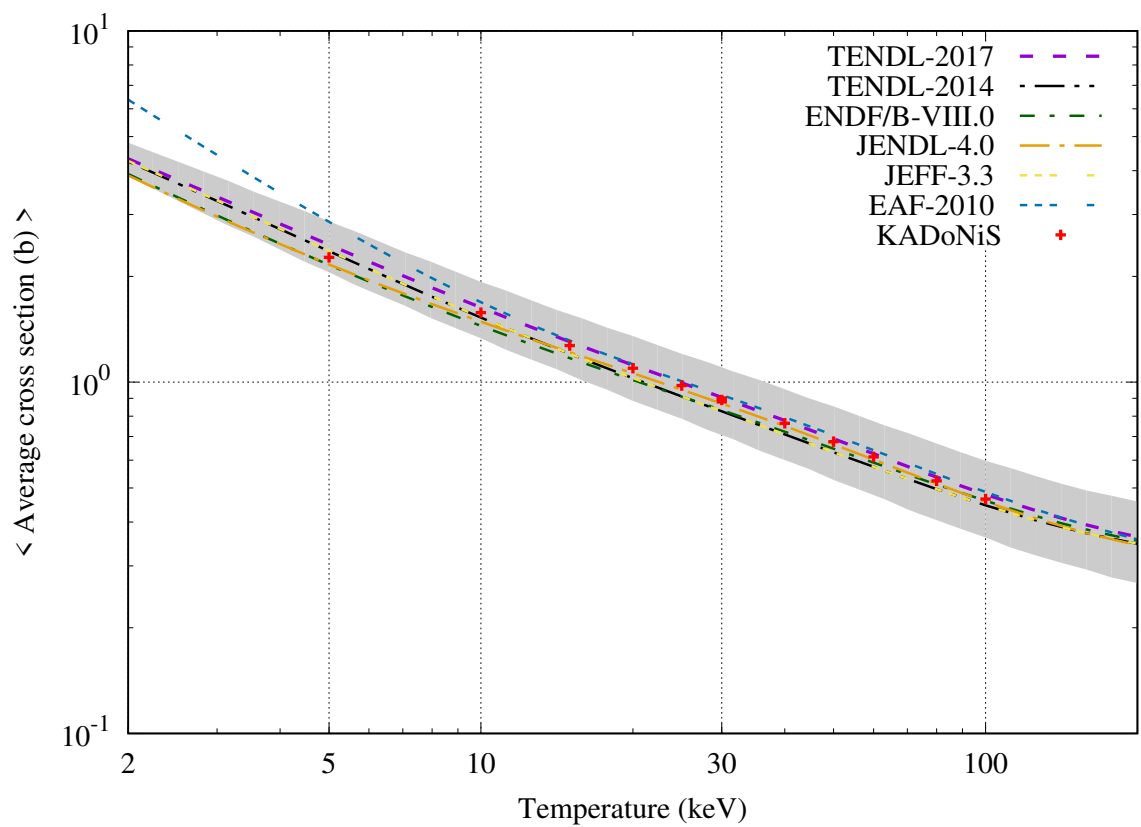
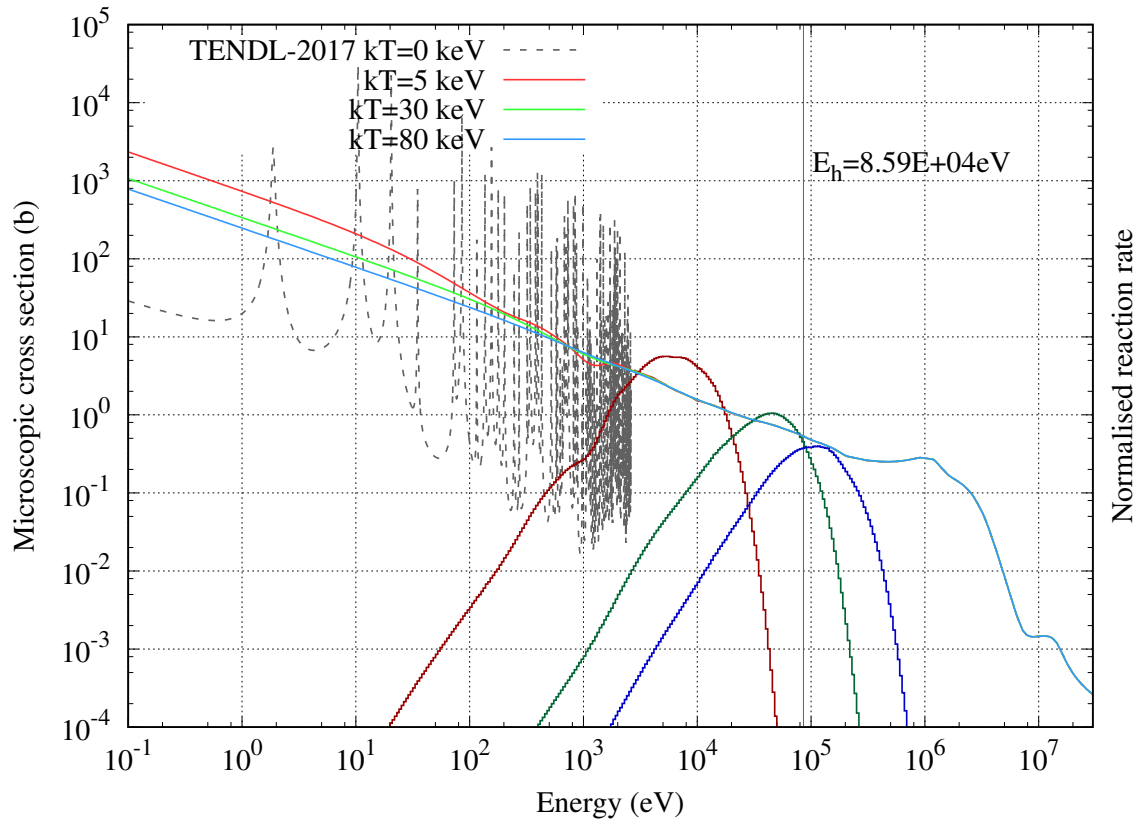
$^{156}\text{Dy}_{66}$ [$T_{1/2} = 1.00 \times 10^{18}$ years]



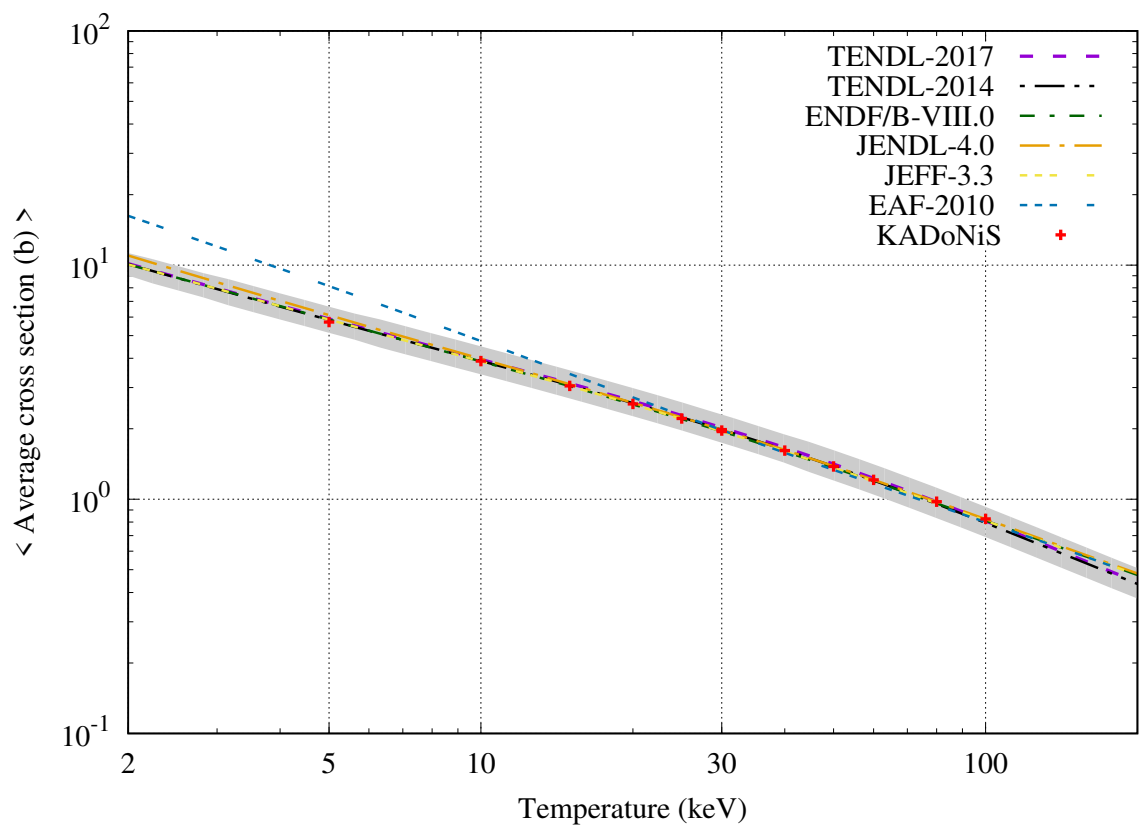
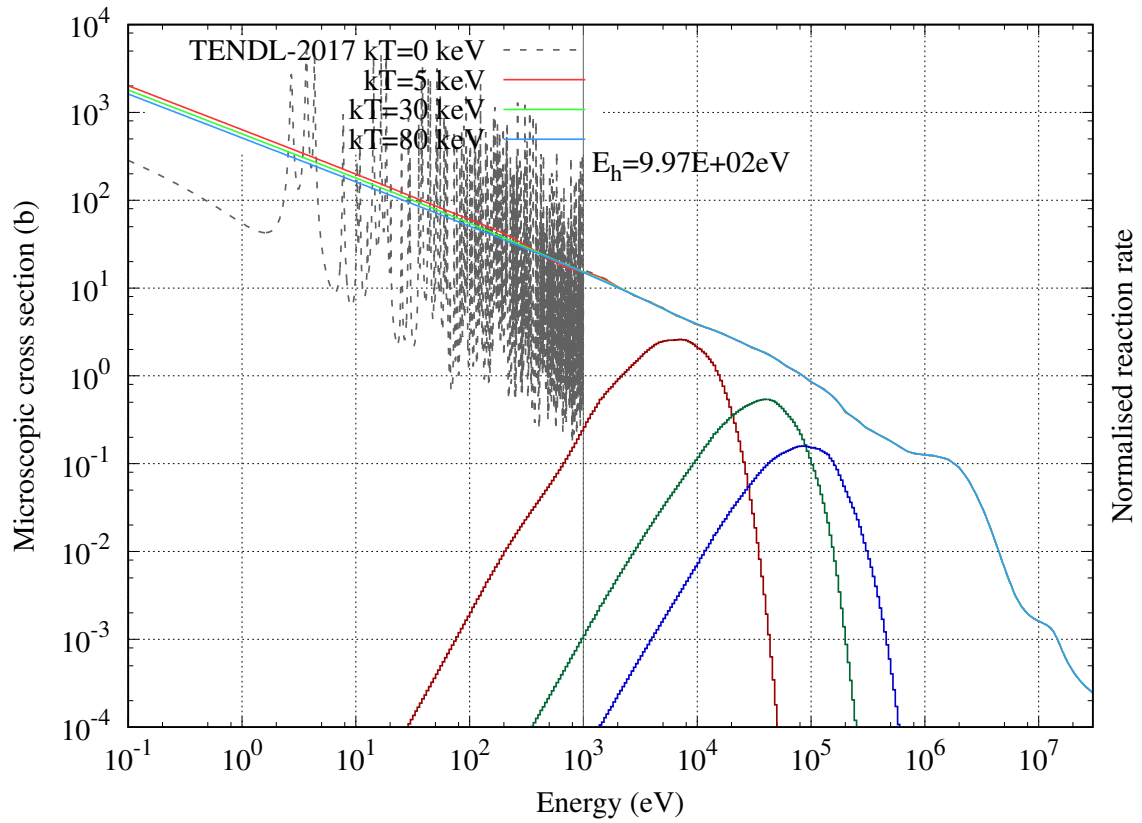
$^{158}\text{Dy}_{66}$ [Stable] (KADoNiS=SMC)



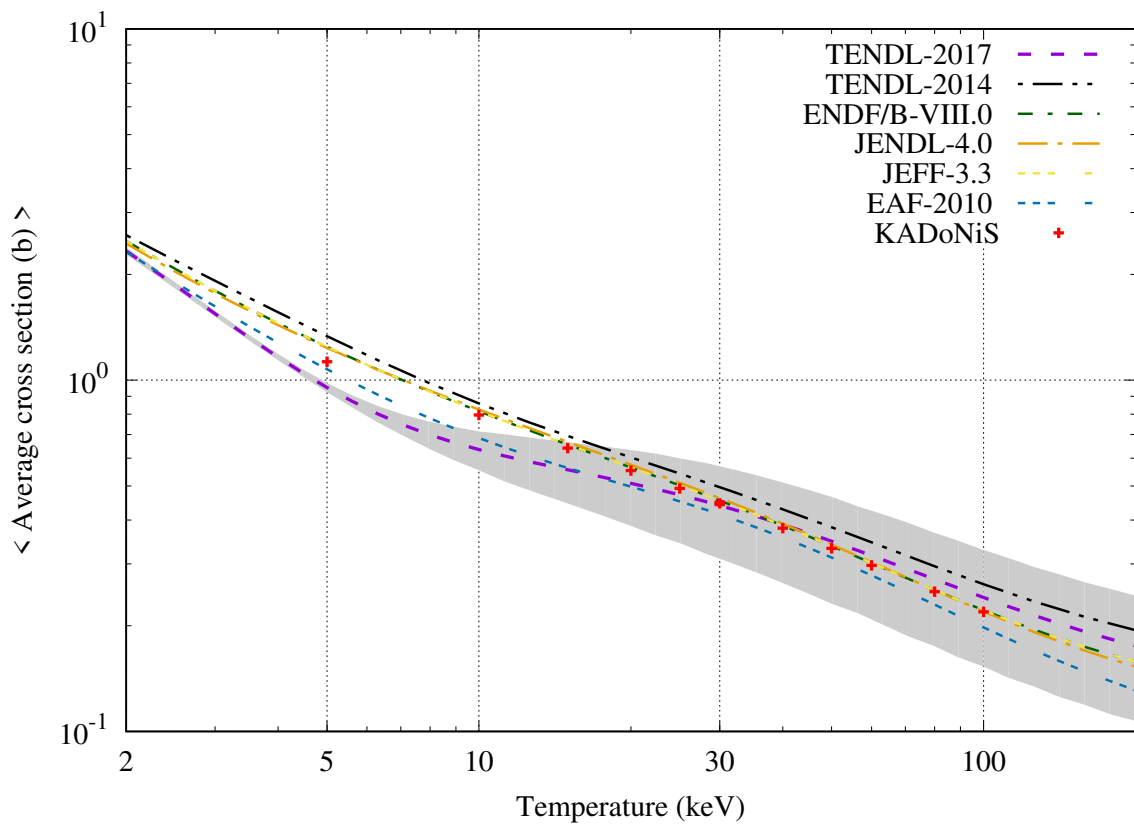
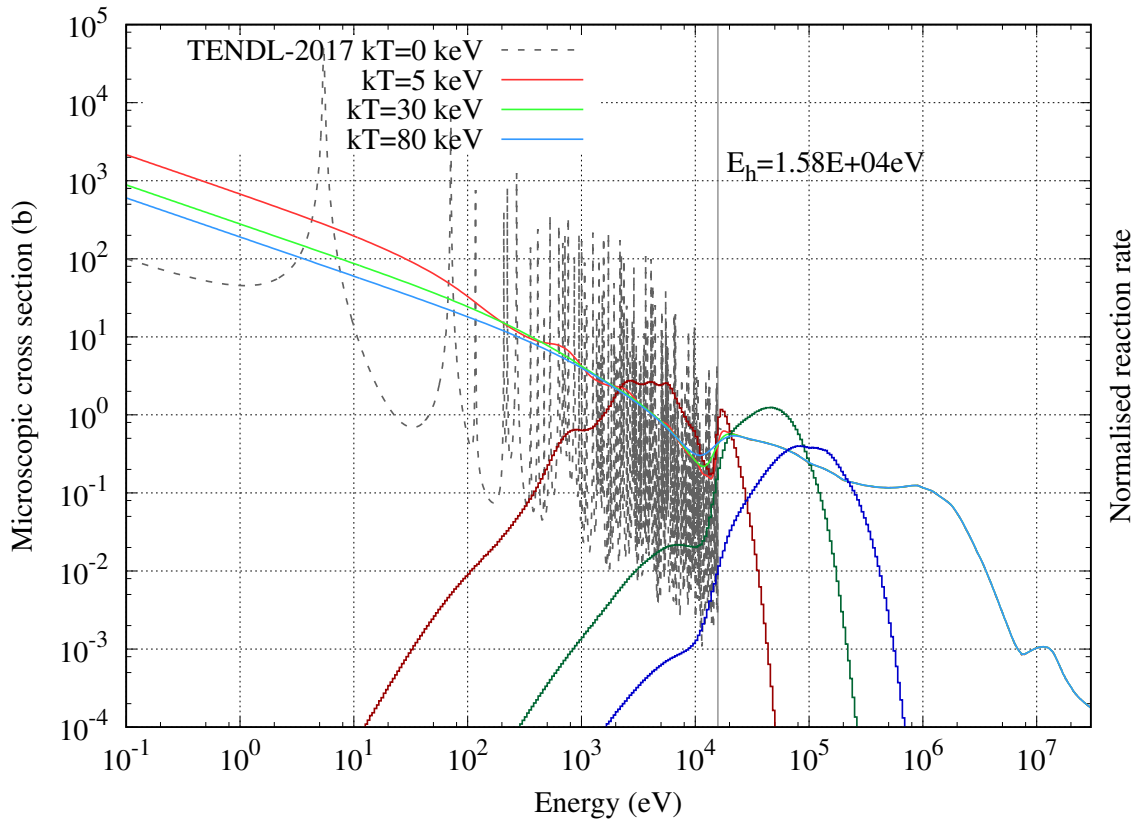
$^{160}\text{Dy}_{66}$ [Stable]



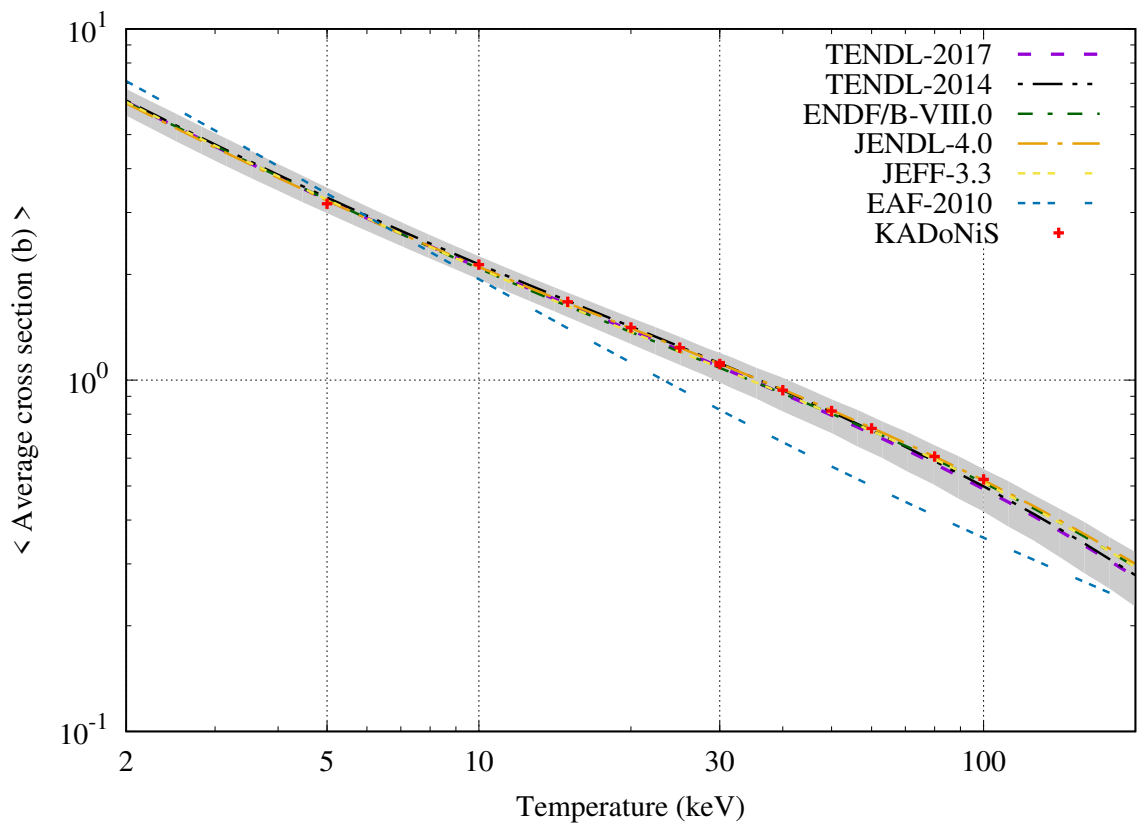
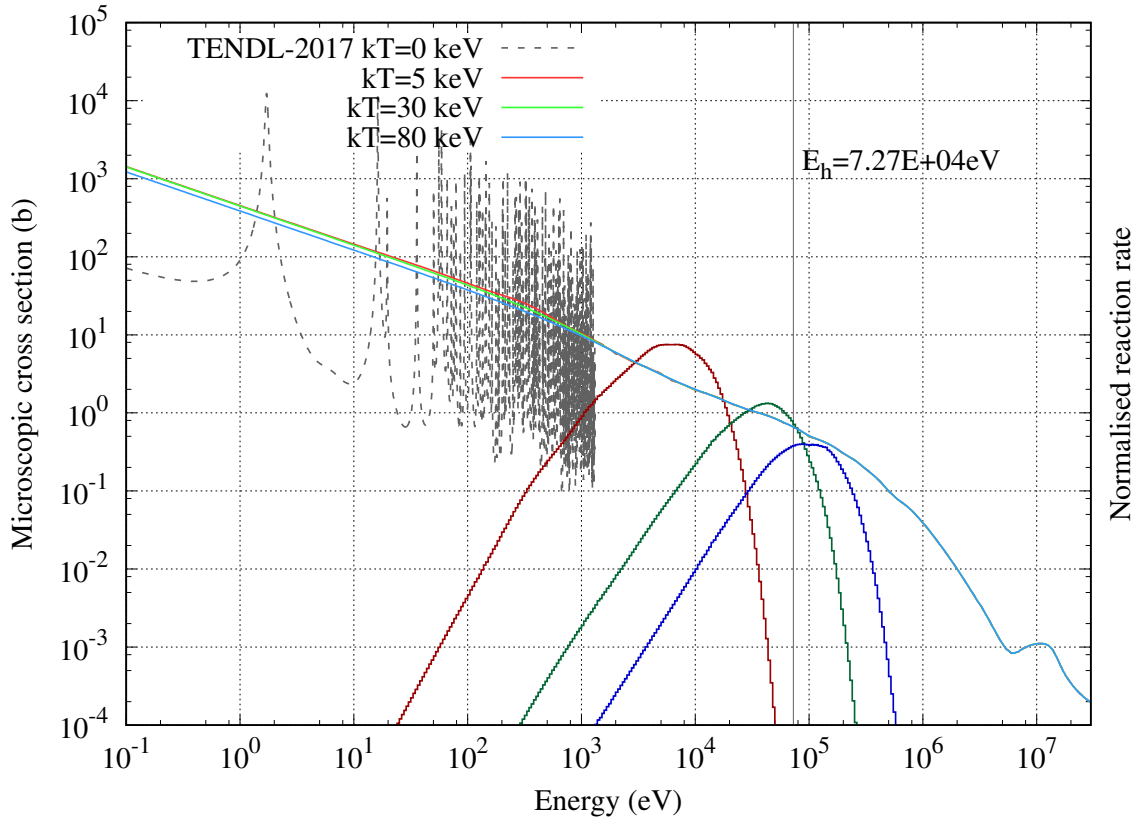
$^{161}\text{Dy}_{66}$ [Stable]



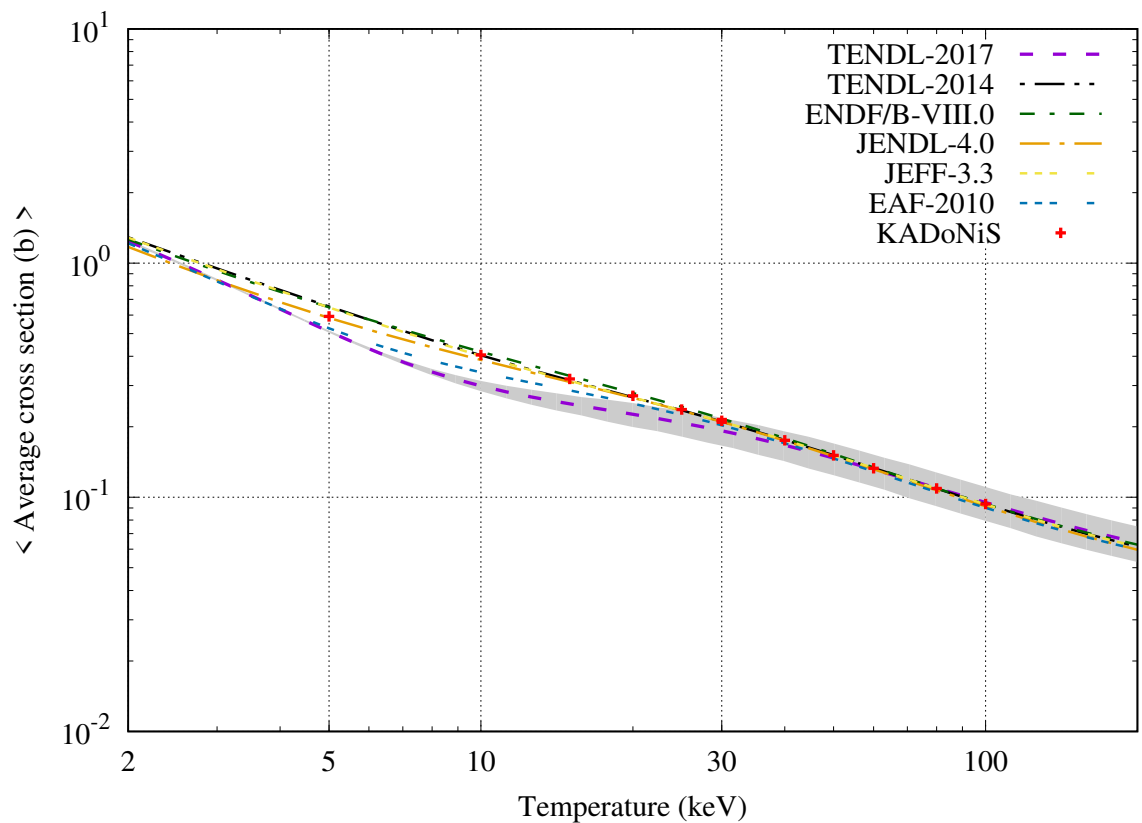
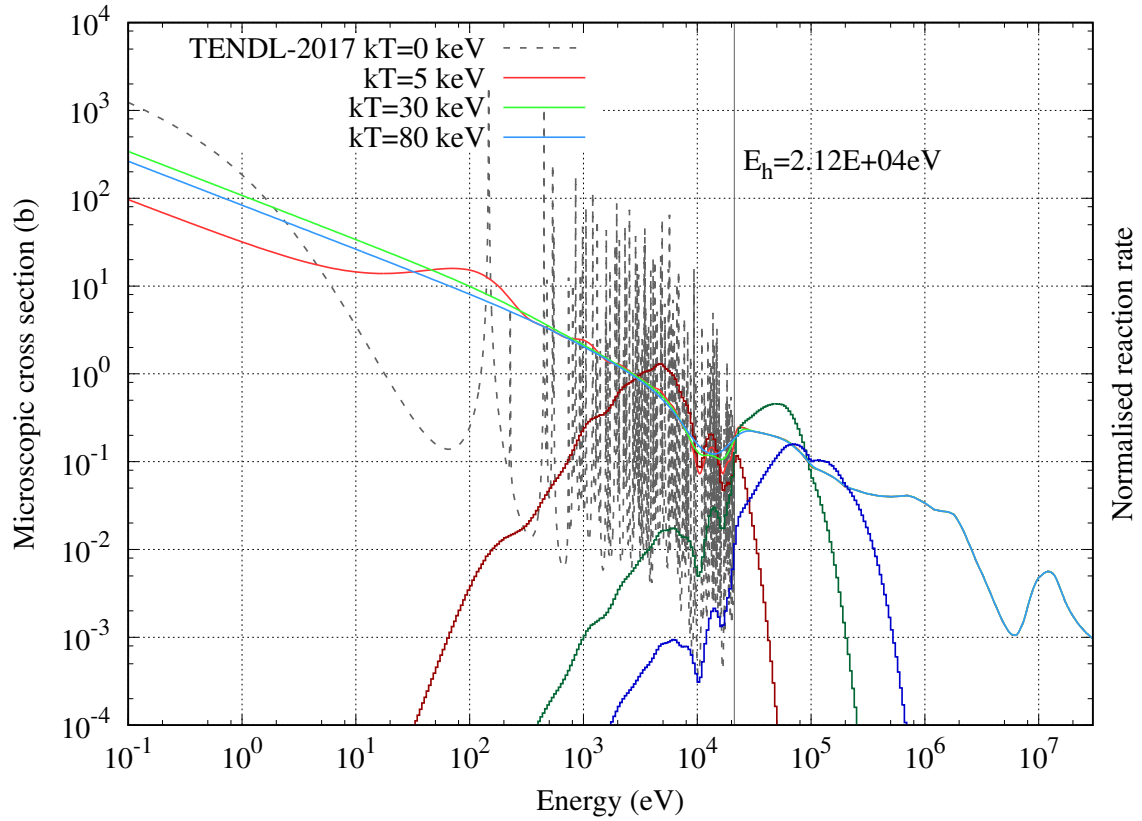
$^{162}\text{Dy}_{66}$ [Stable]



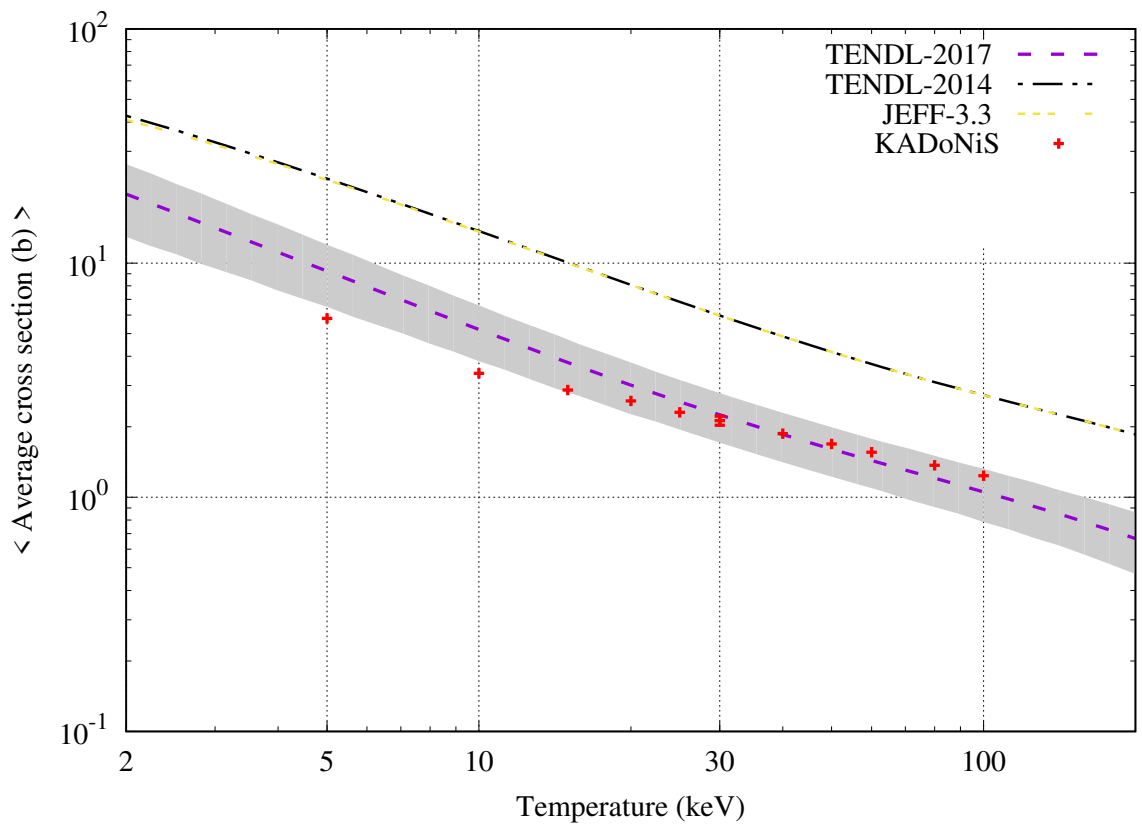
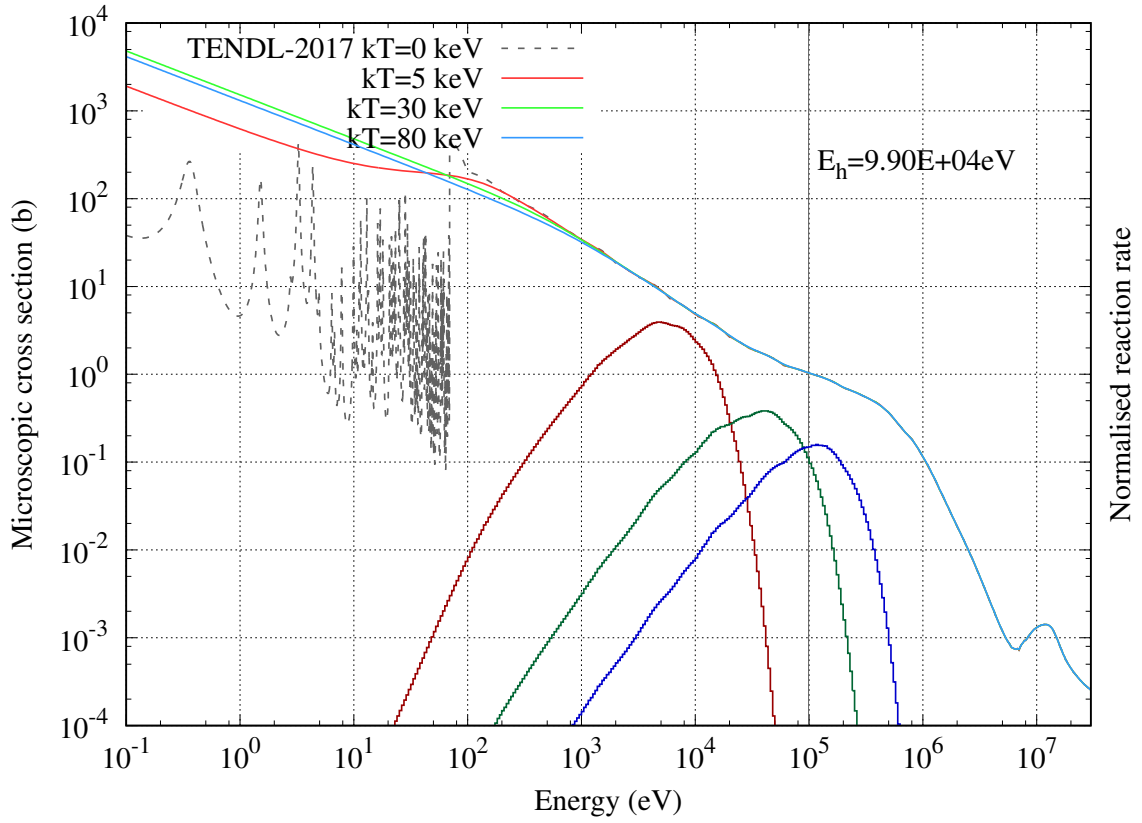
$^{163}\text{Dy}_{66}$ [Stable]

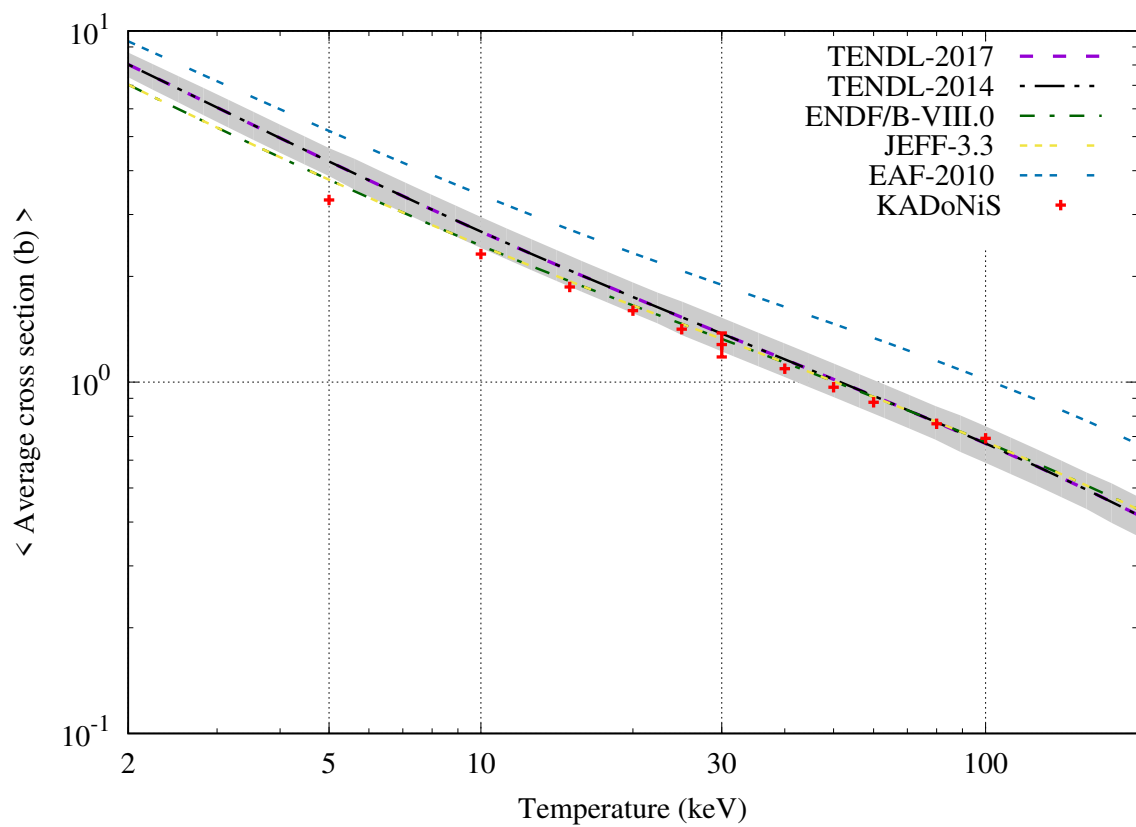
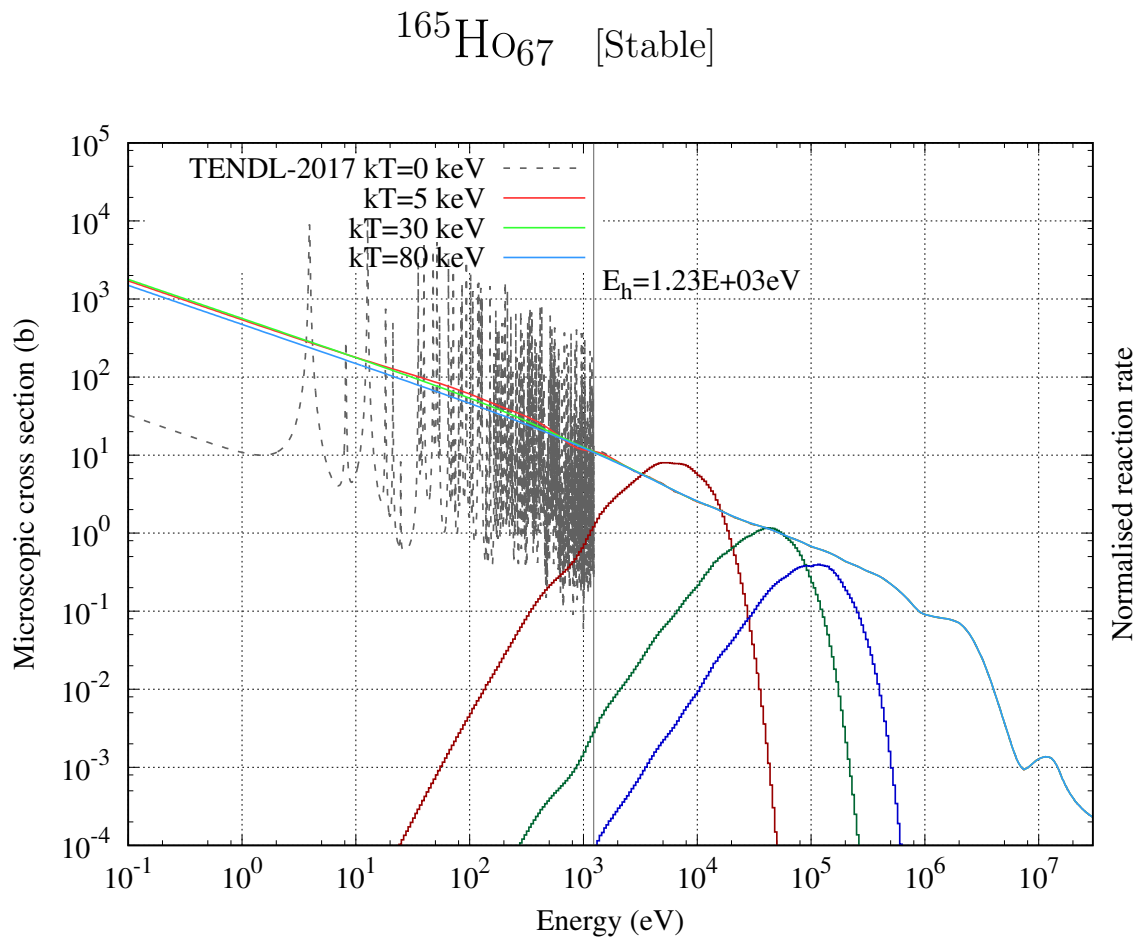


$^{164}\text{Dy}_{66}$ [Stable]

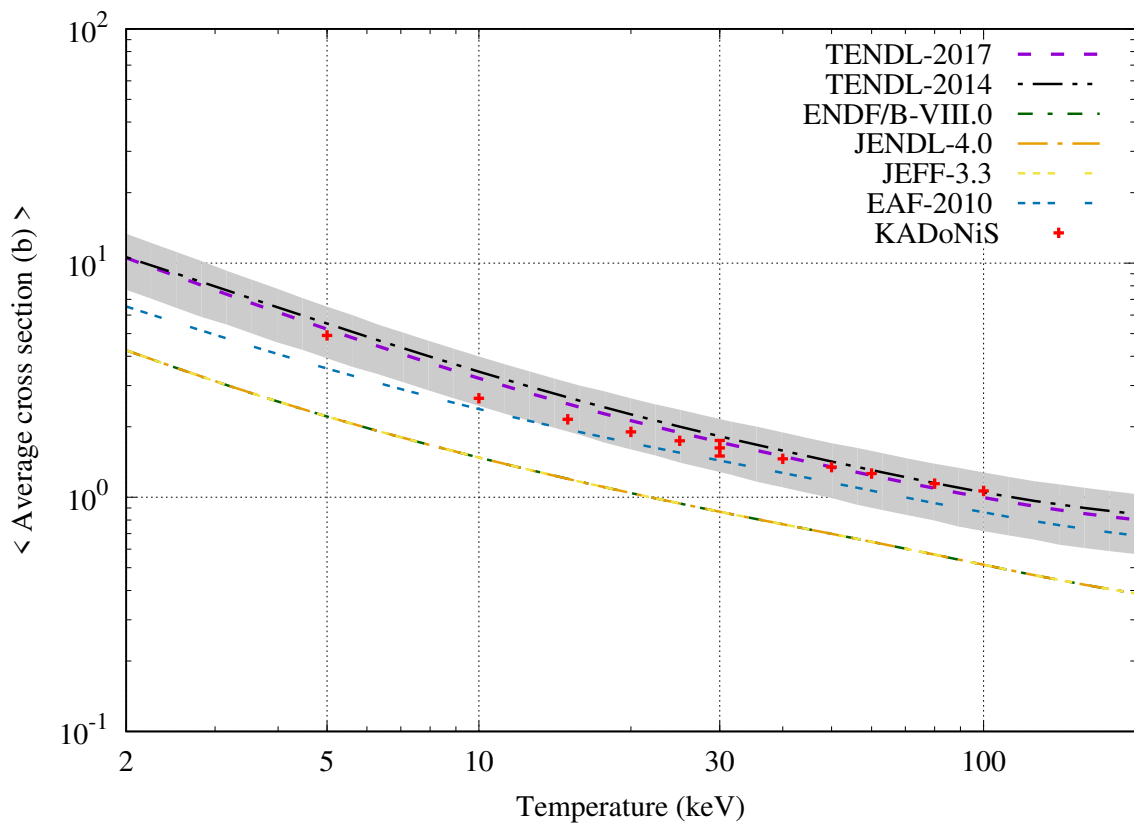
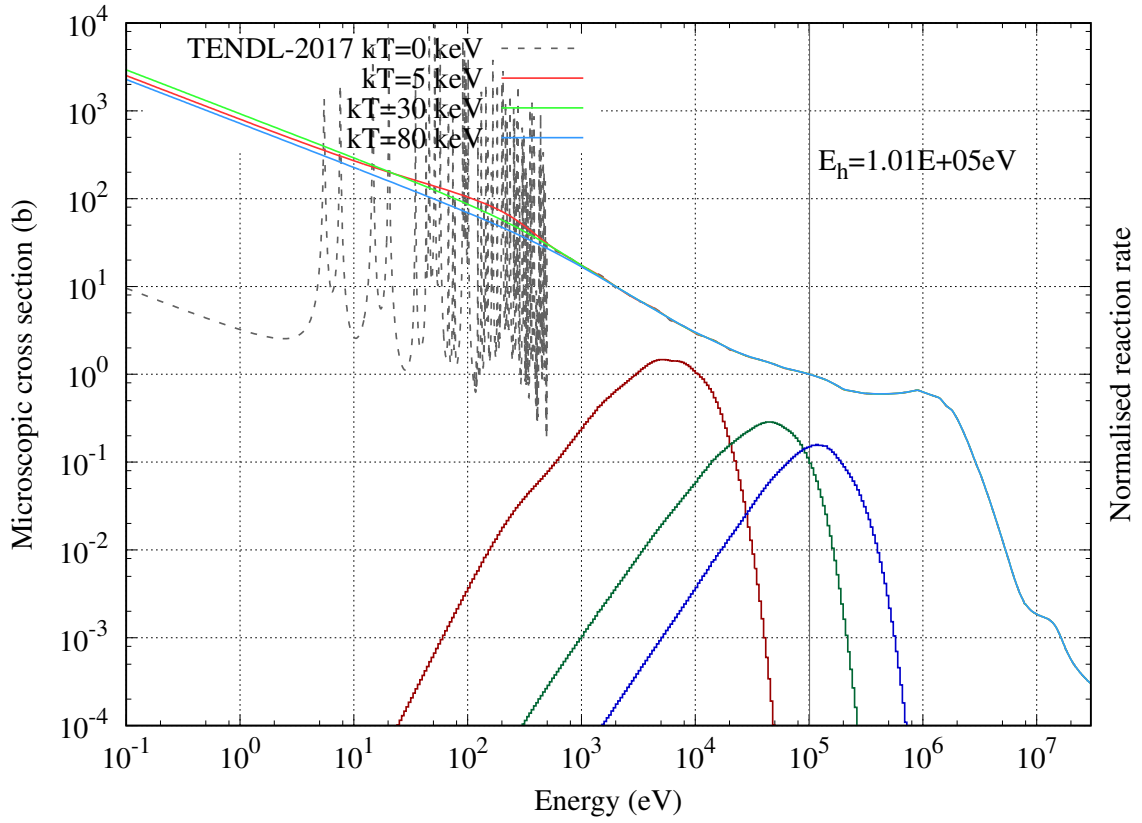


$^{163}\text{Ho}_{67}$ [$T_{1/2} = 4.57 \times 10^3$ years]

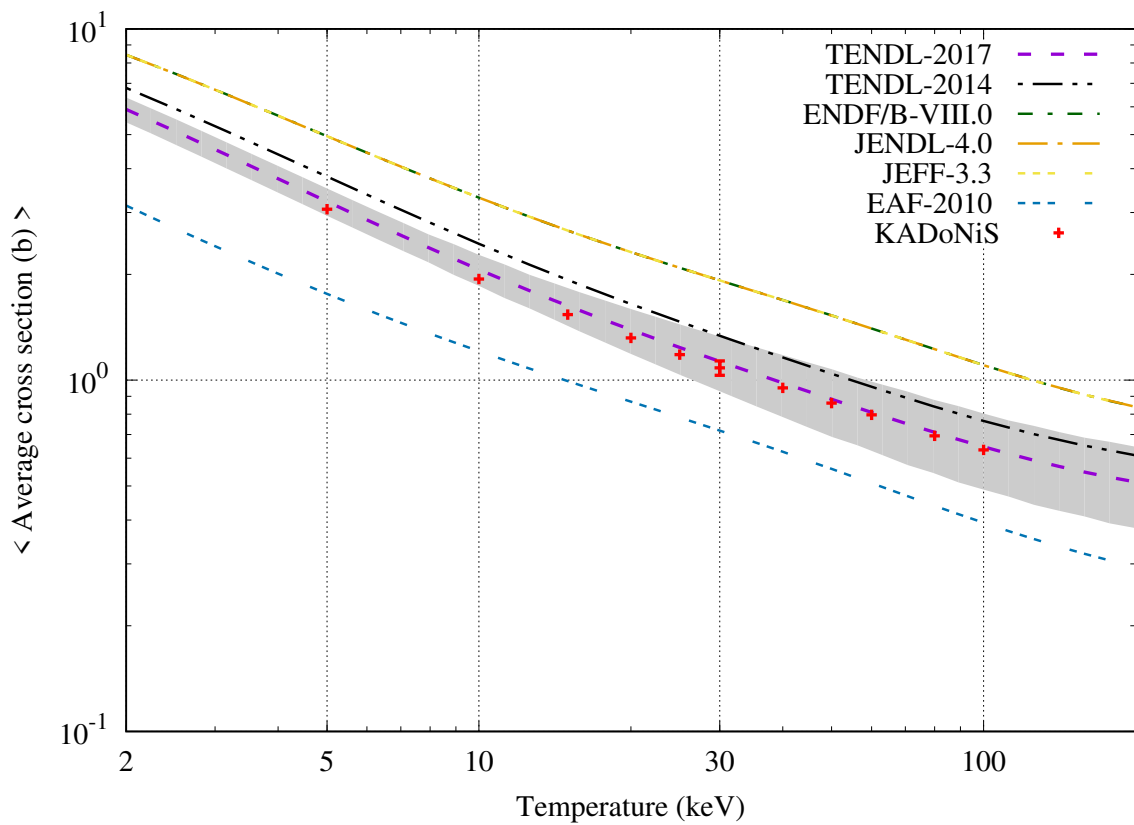
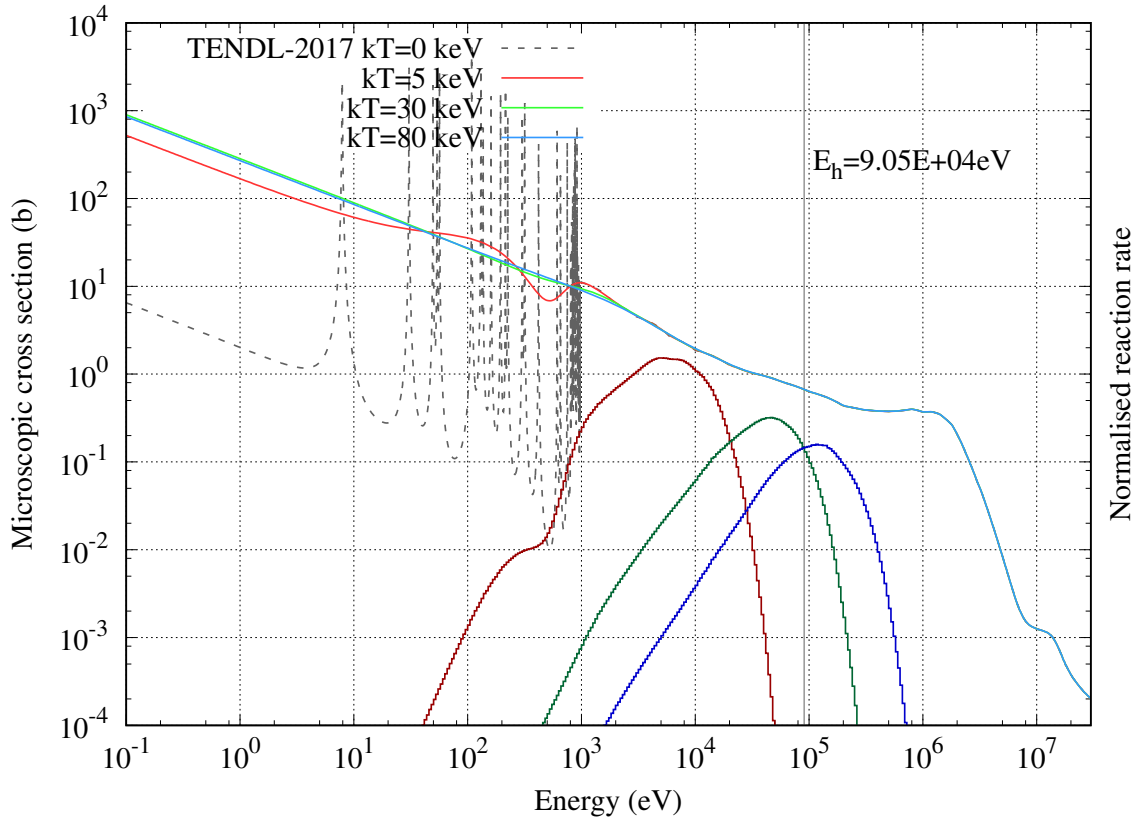




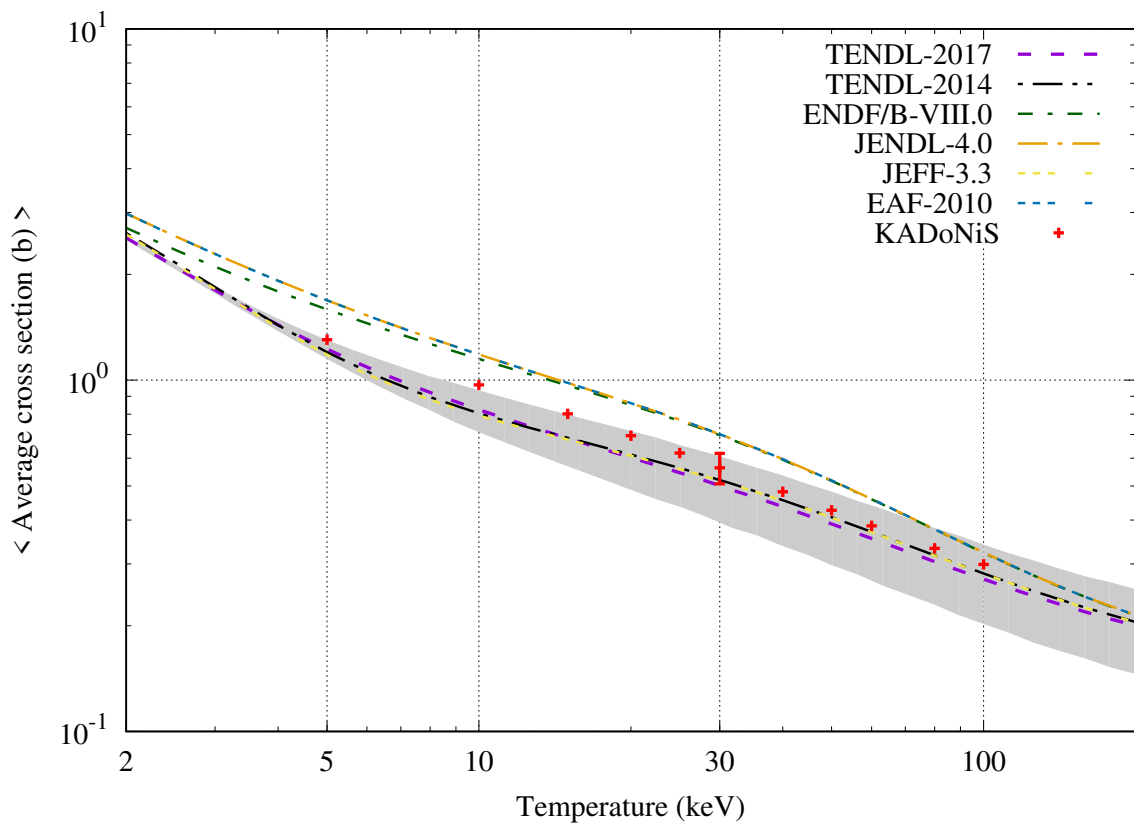
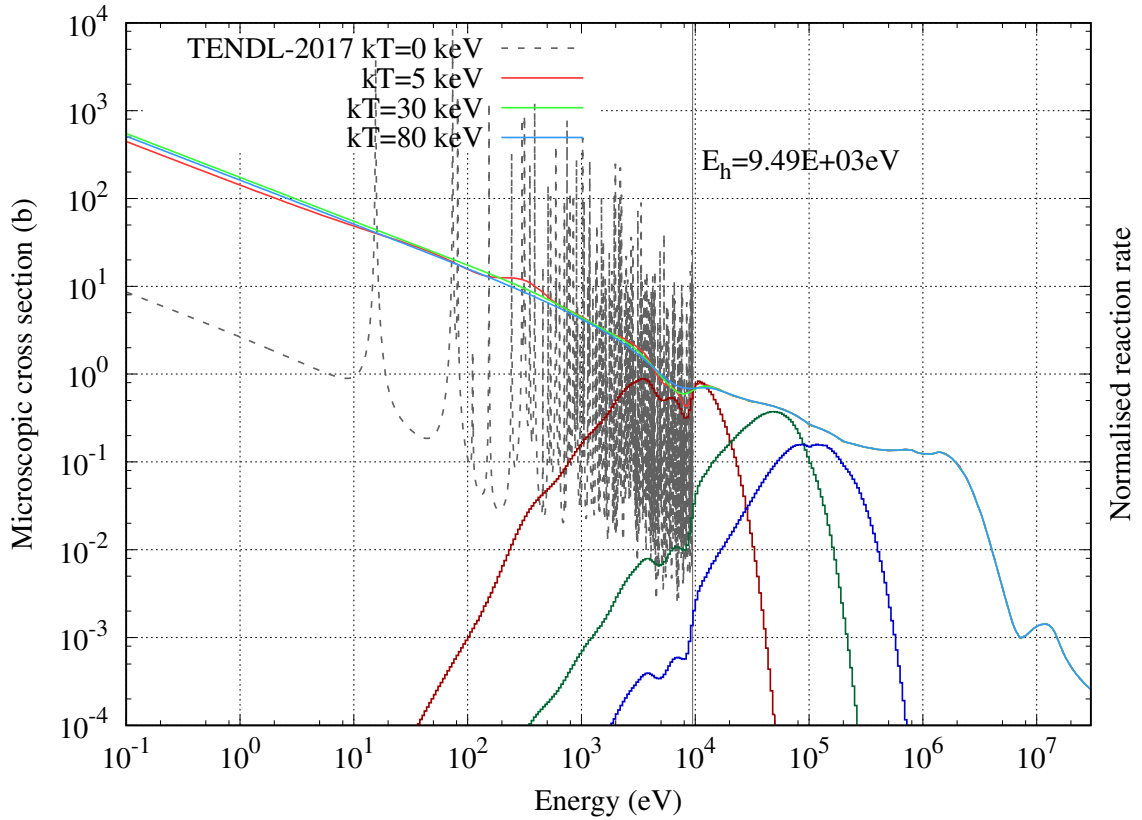
$^{162}\text{Er}_{68}$ [$T_{1/2} = 1.40 \times 10^{14}$ years]



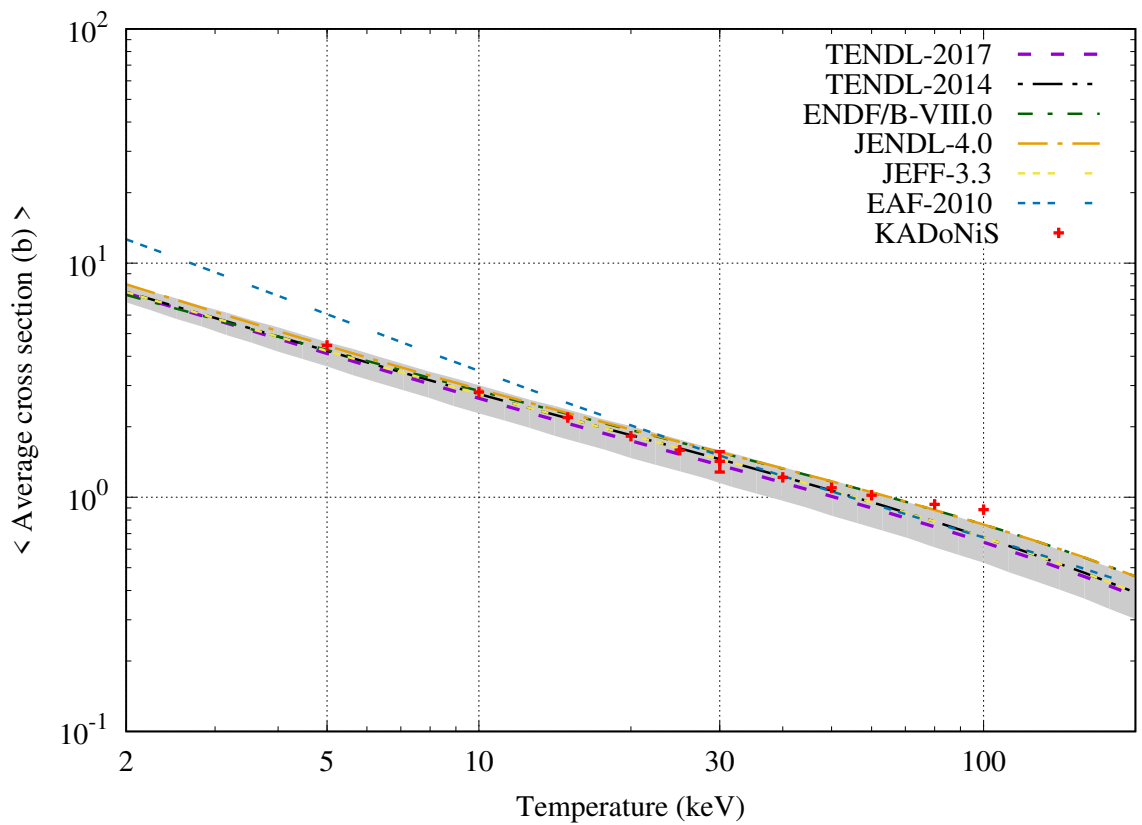
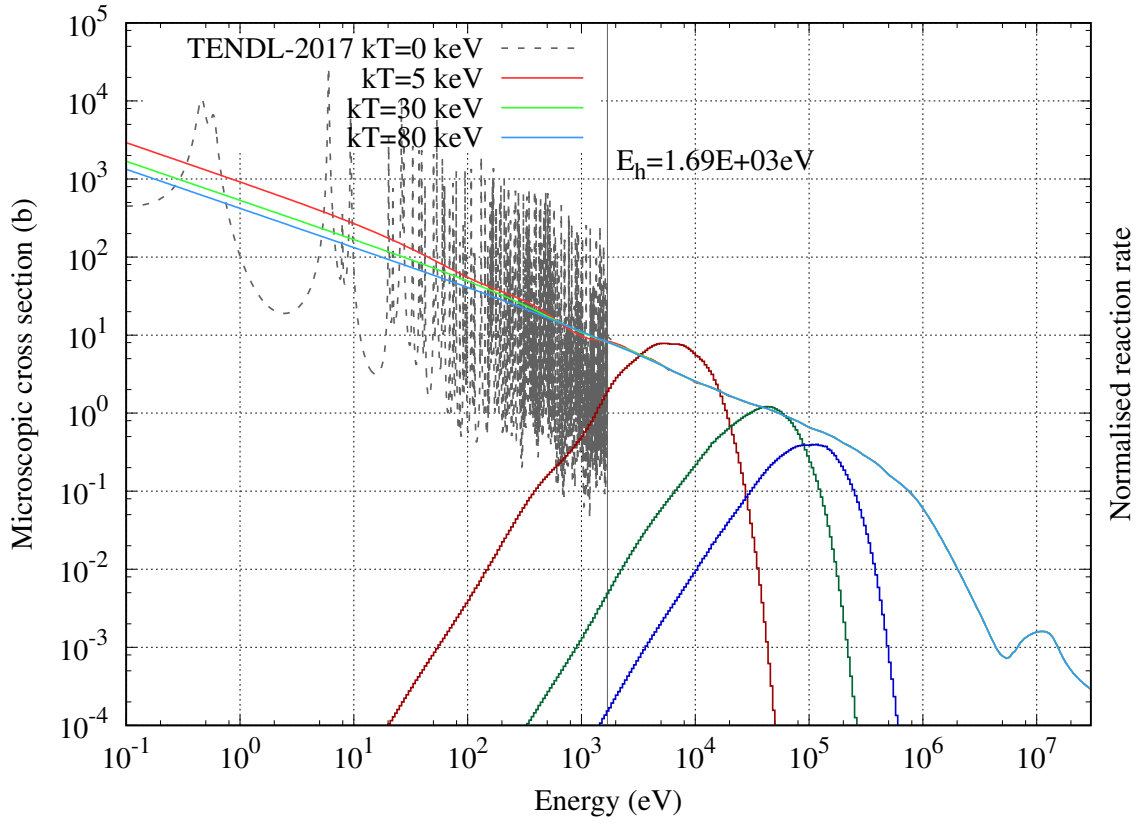
$^{164}\text{Er}_{68}$ [Stable]



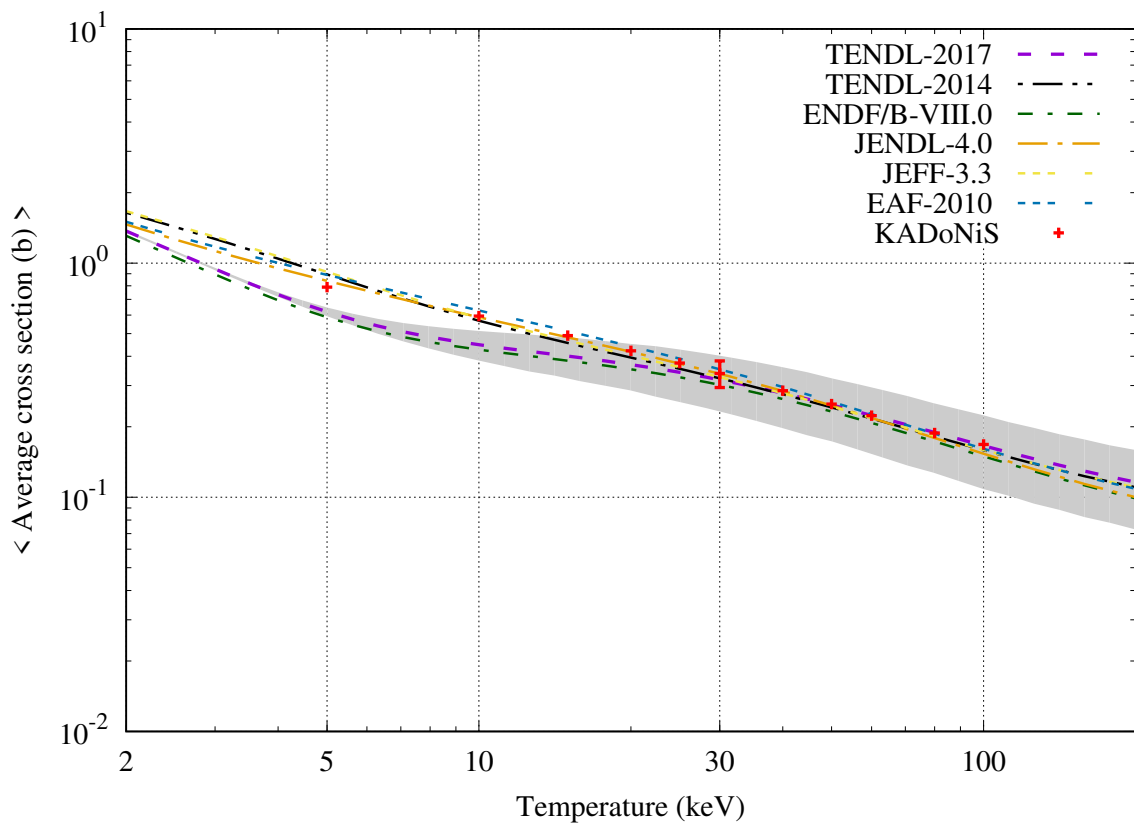
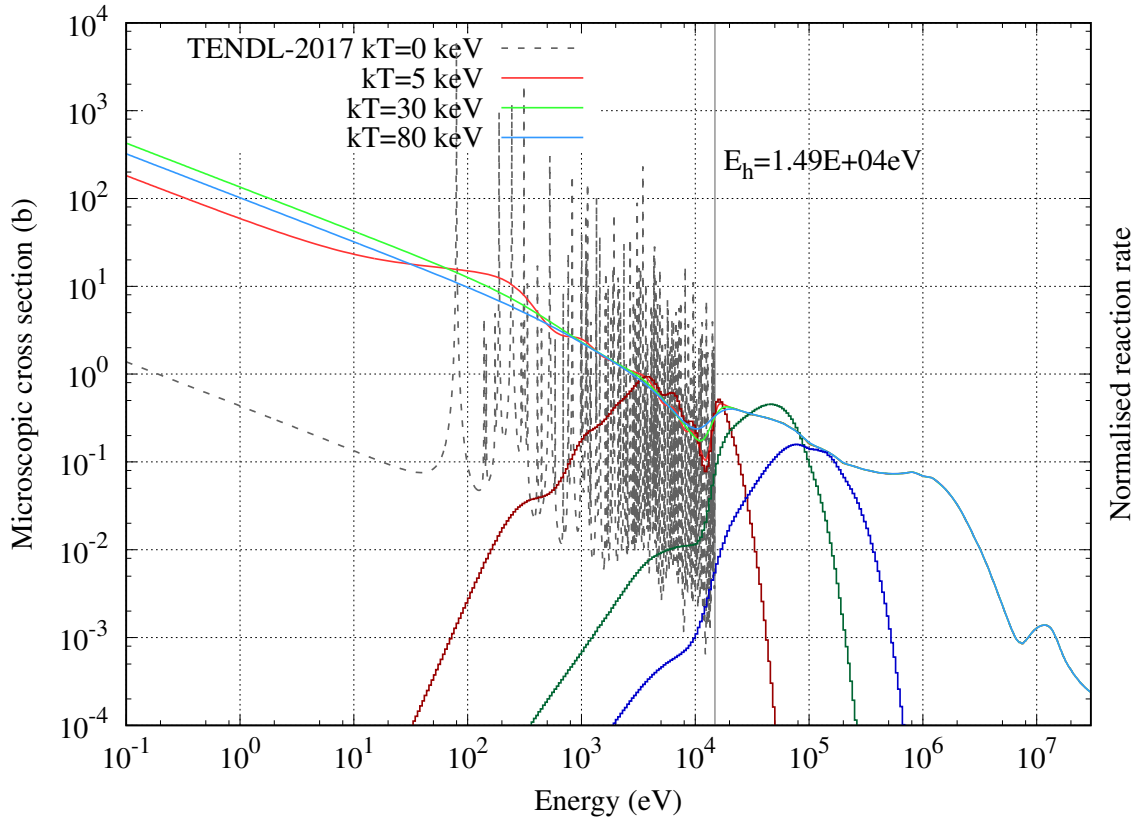
$^{166}\text{Er}_{68}$ [Stable]



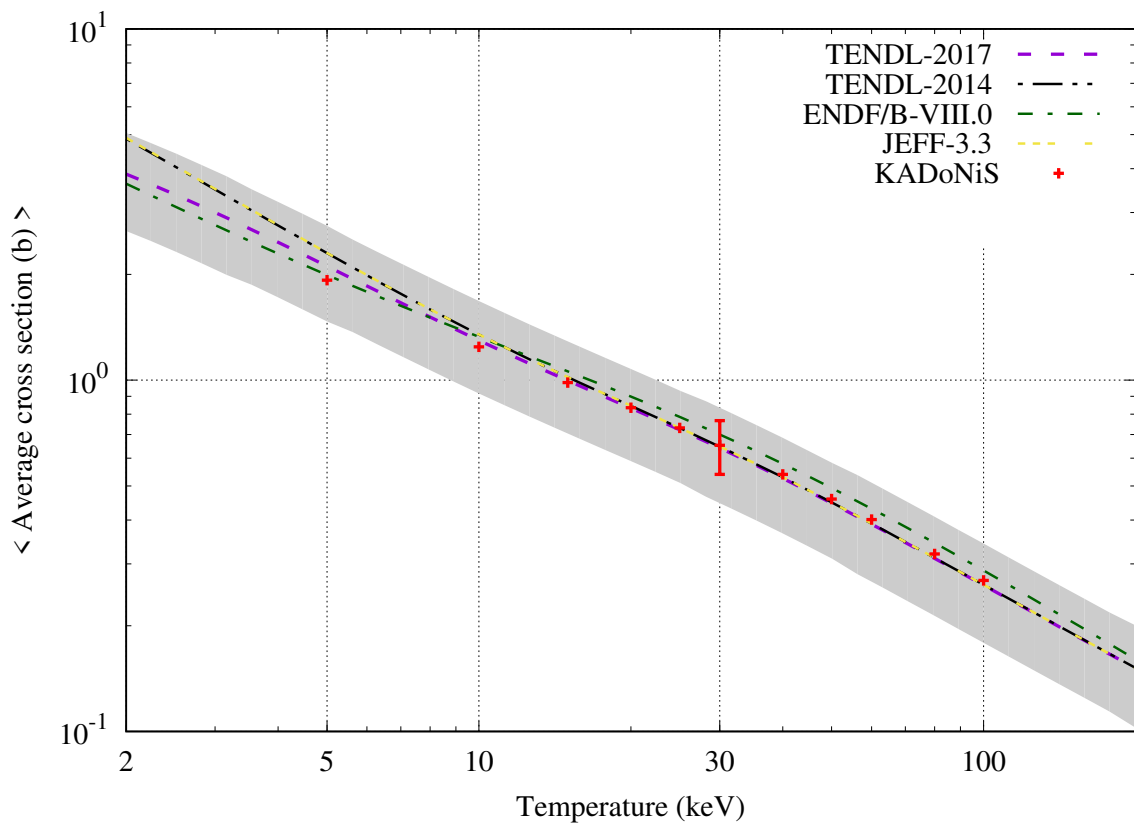
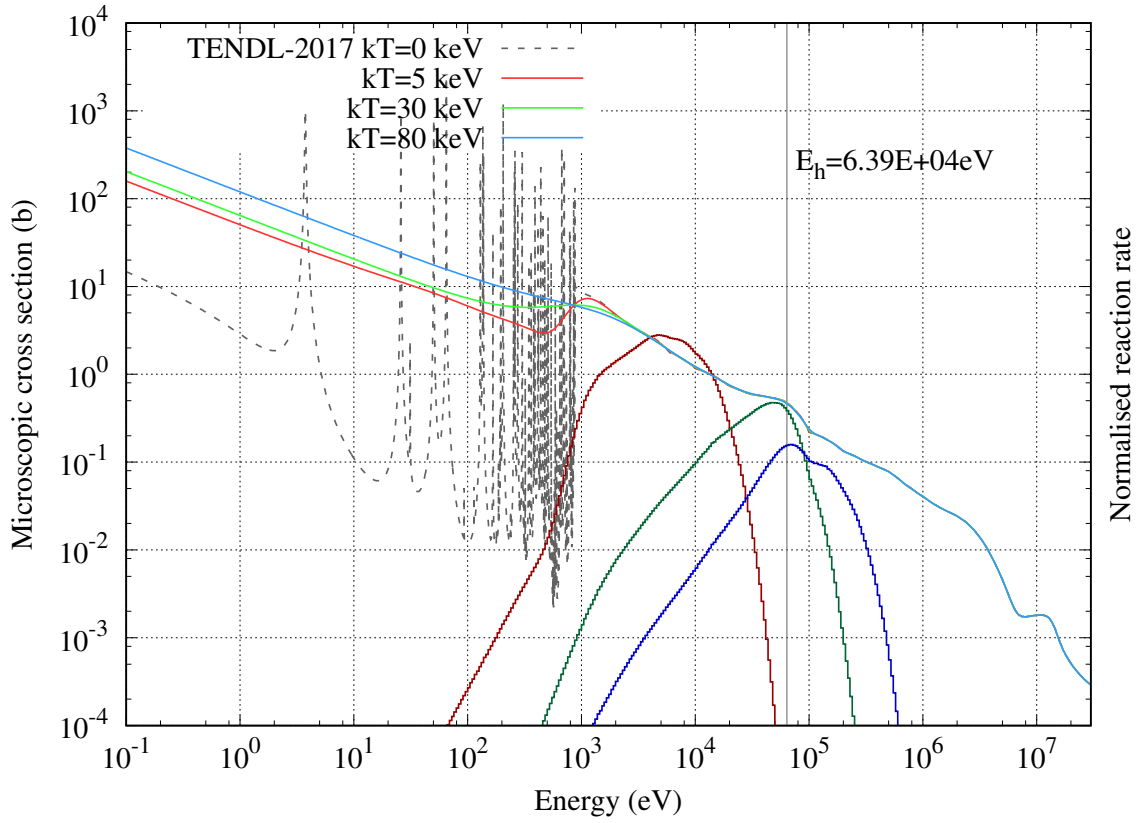
$^{167}\text{Er}_{68}$ [Stable]



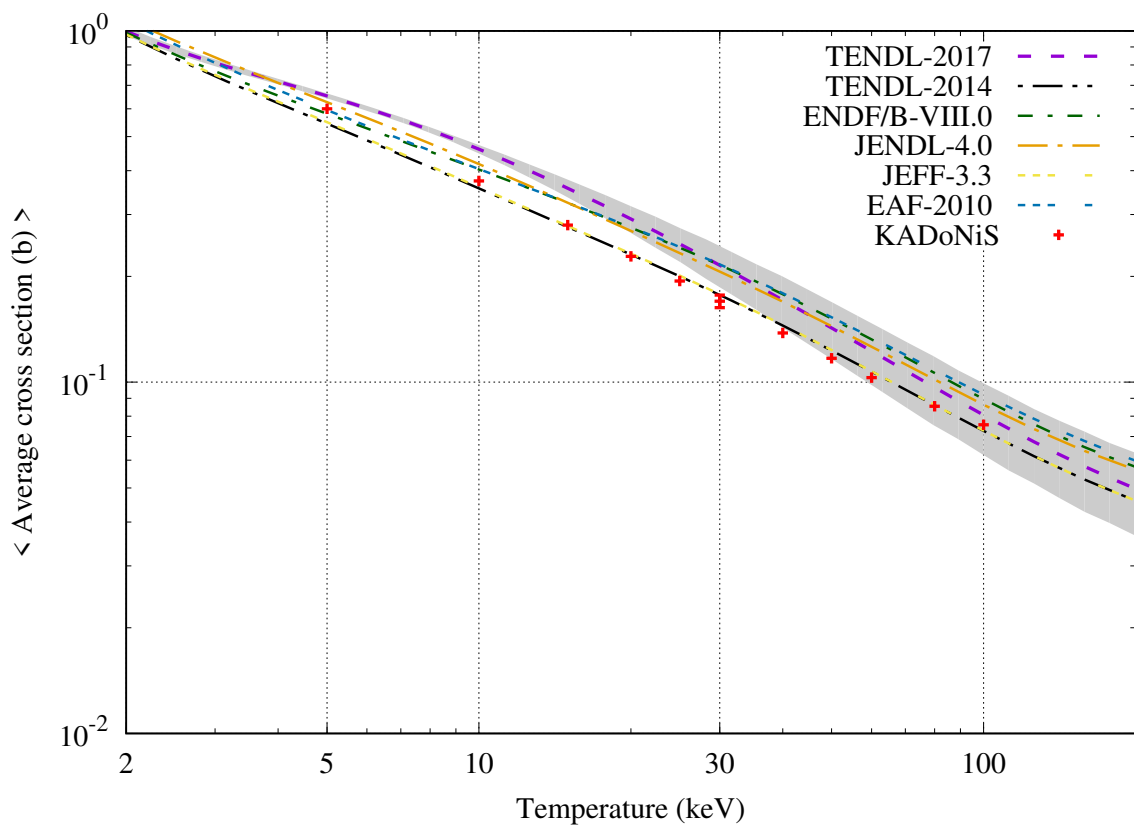
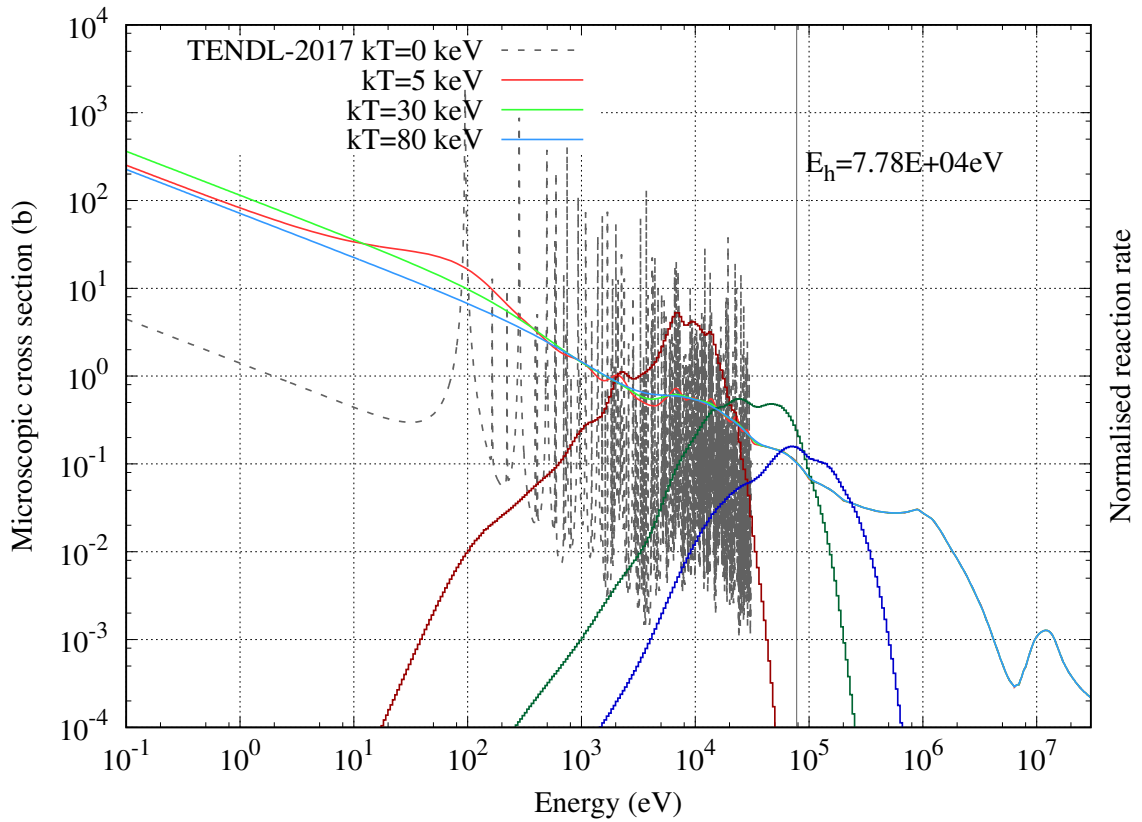
$^{168}\text{Er}_{68}$ [Stable]



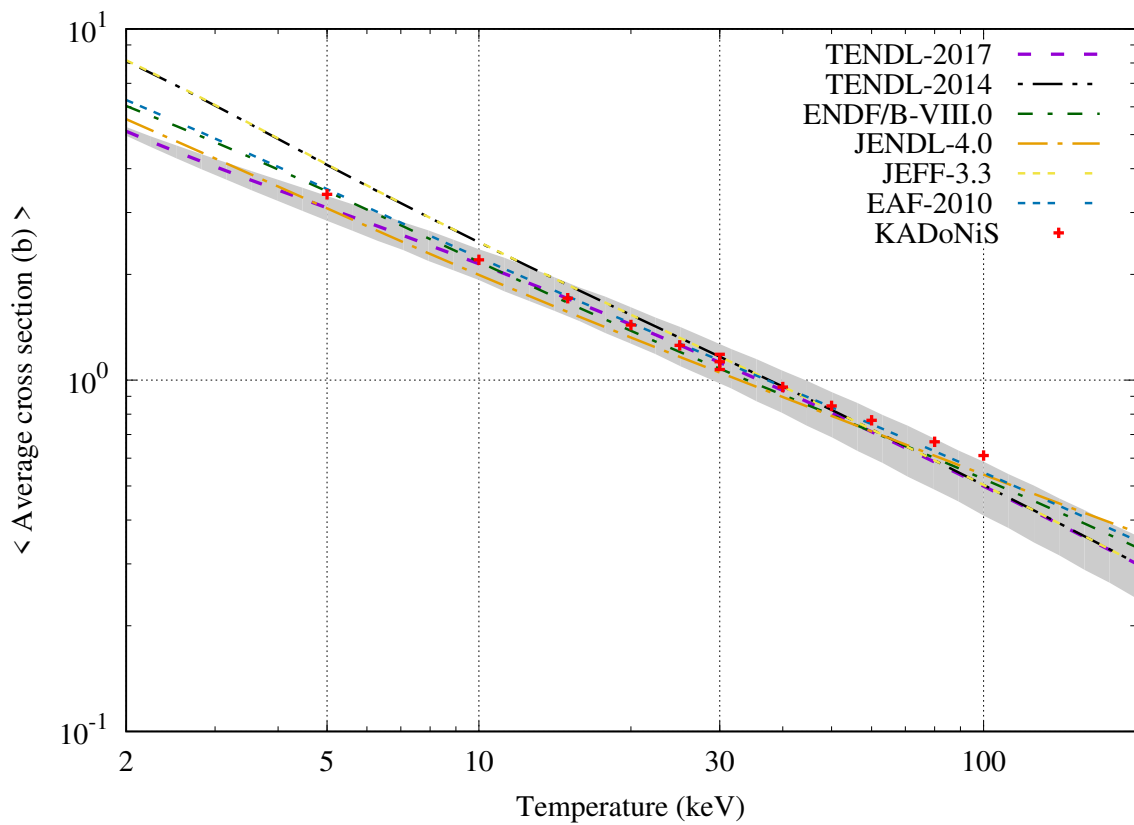
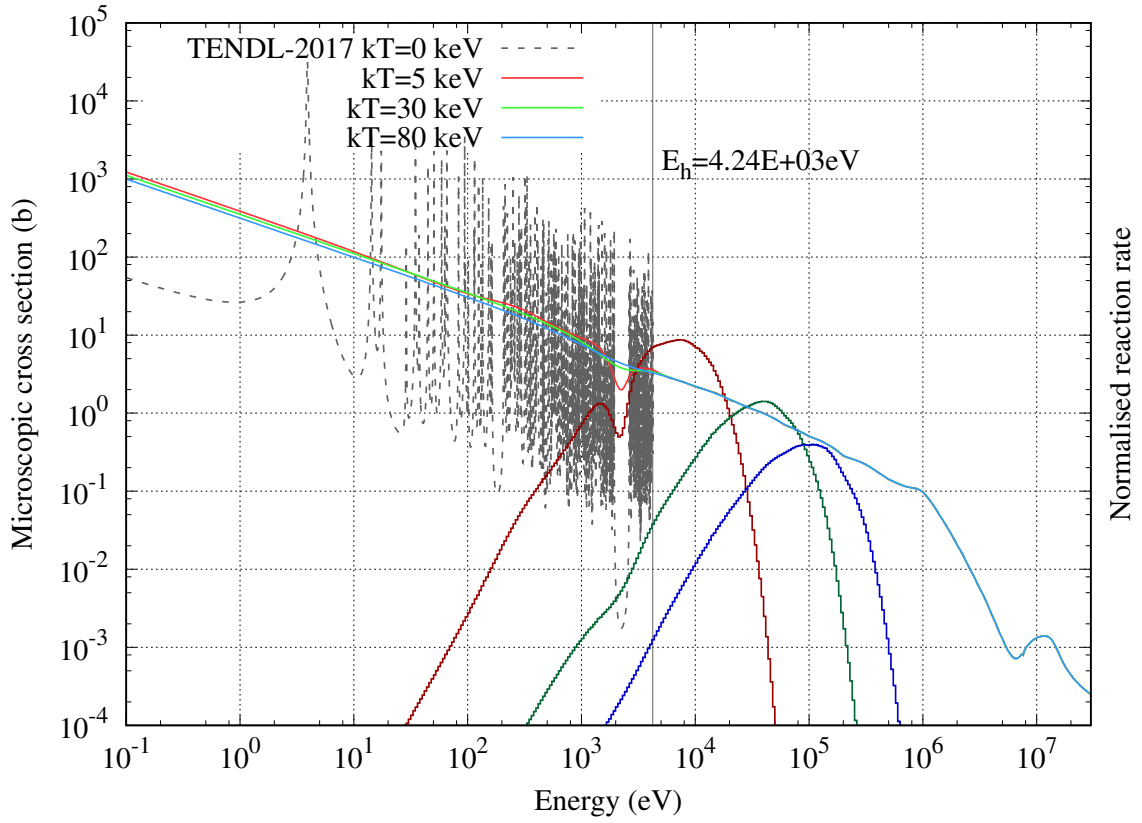
$^{169}\text{Er}_{68}$ [$T_{1/2} = 9.40$ days] (KADoNiS=SMC)



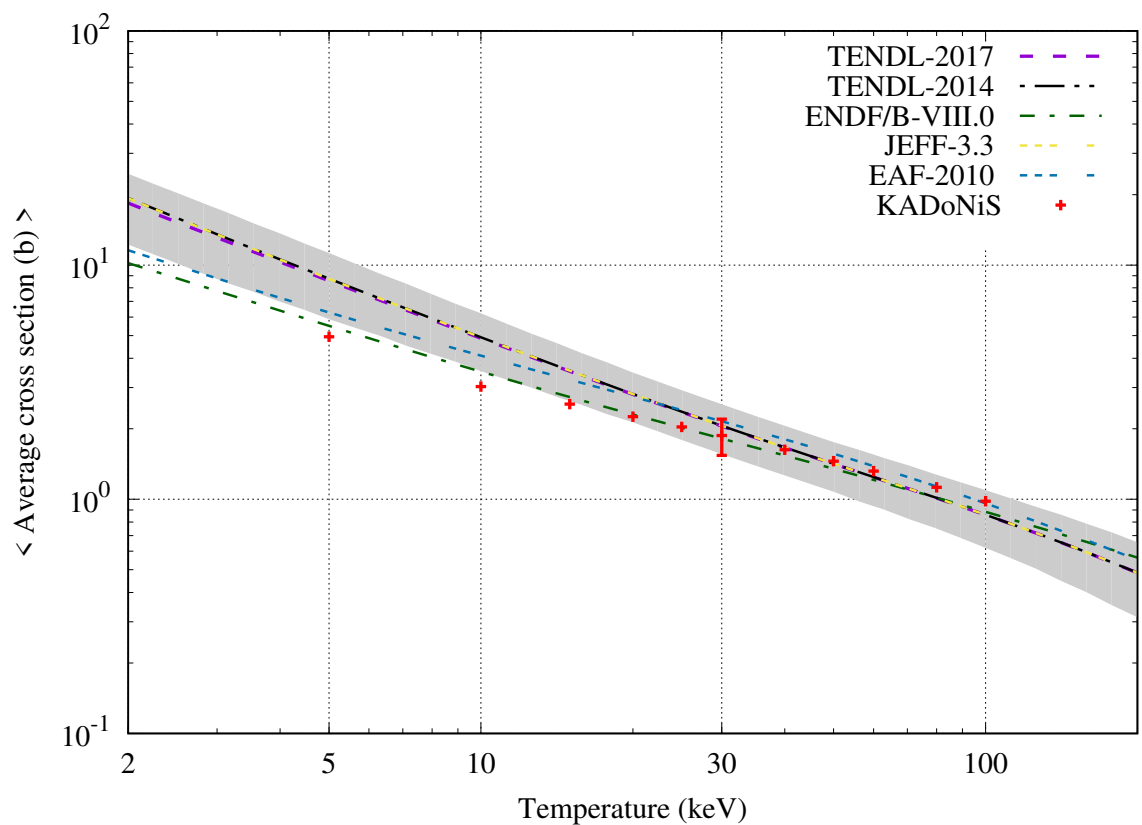
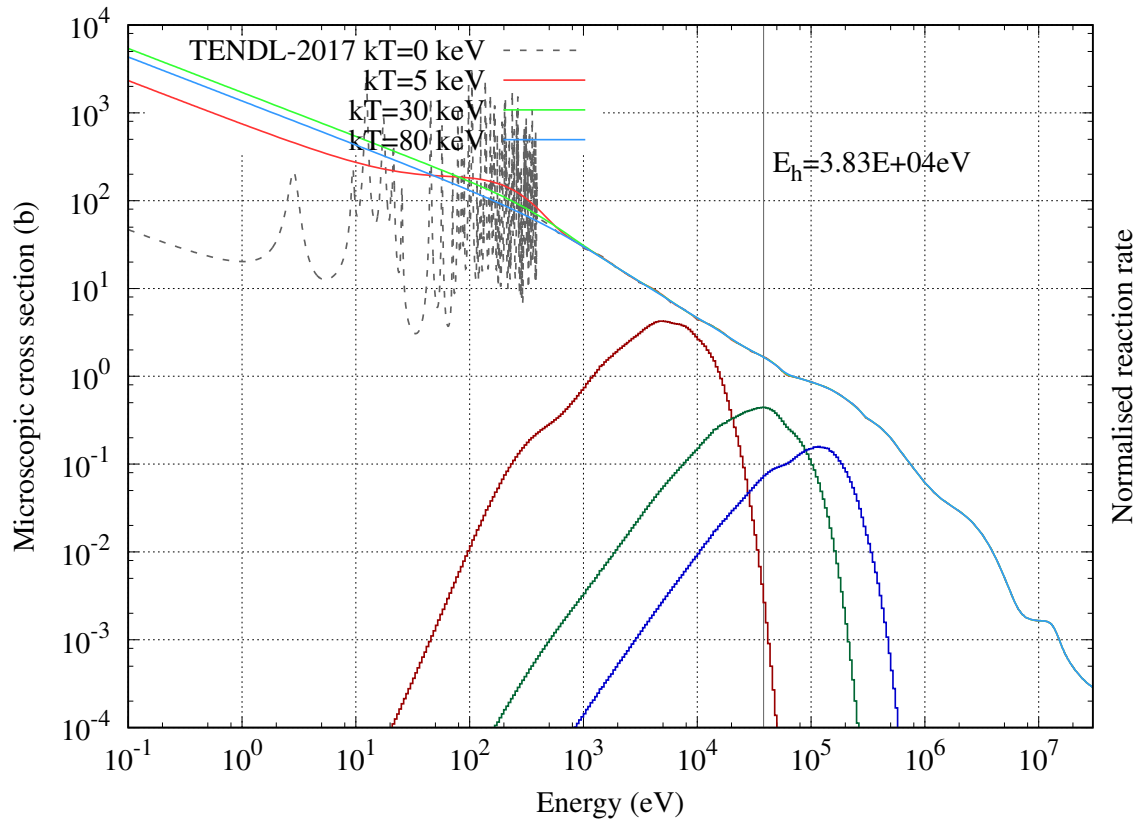
$^{170}\text{Er}_{68}$ [Stable]



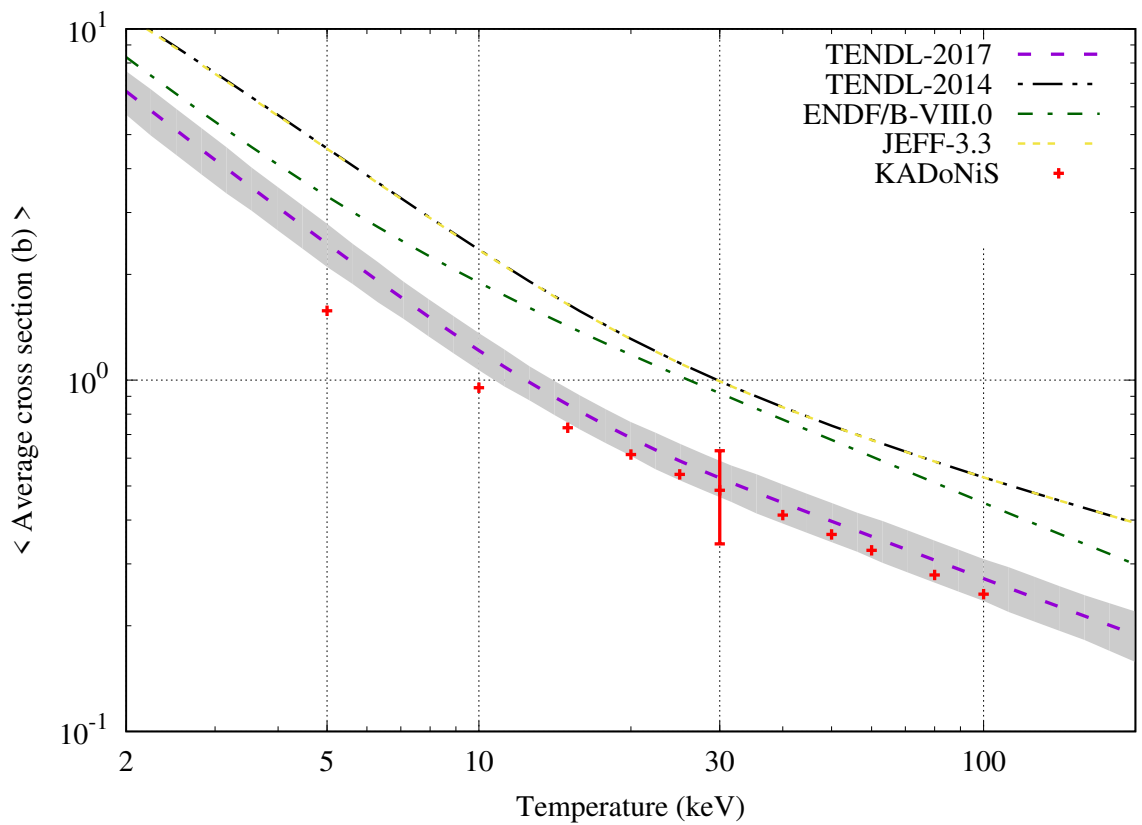
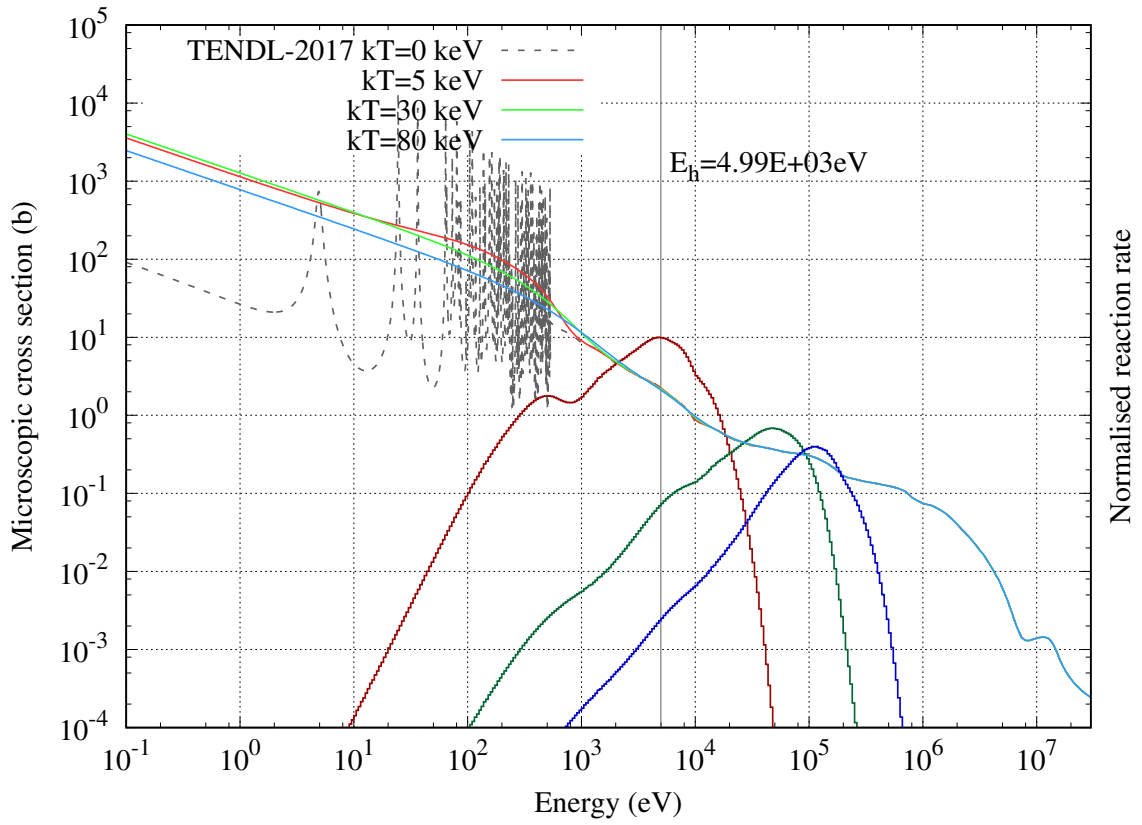
$^{169}\text{Tm}_{69}$ [Stable]



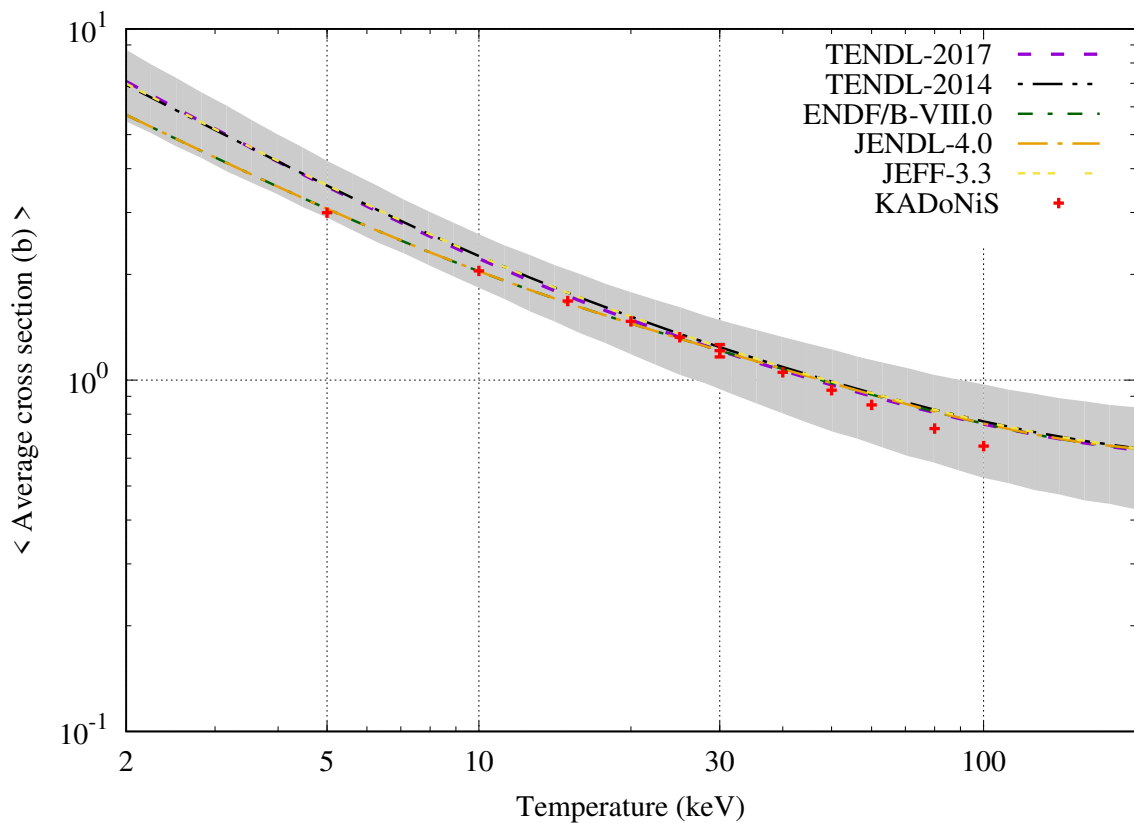
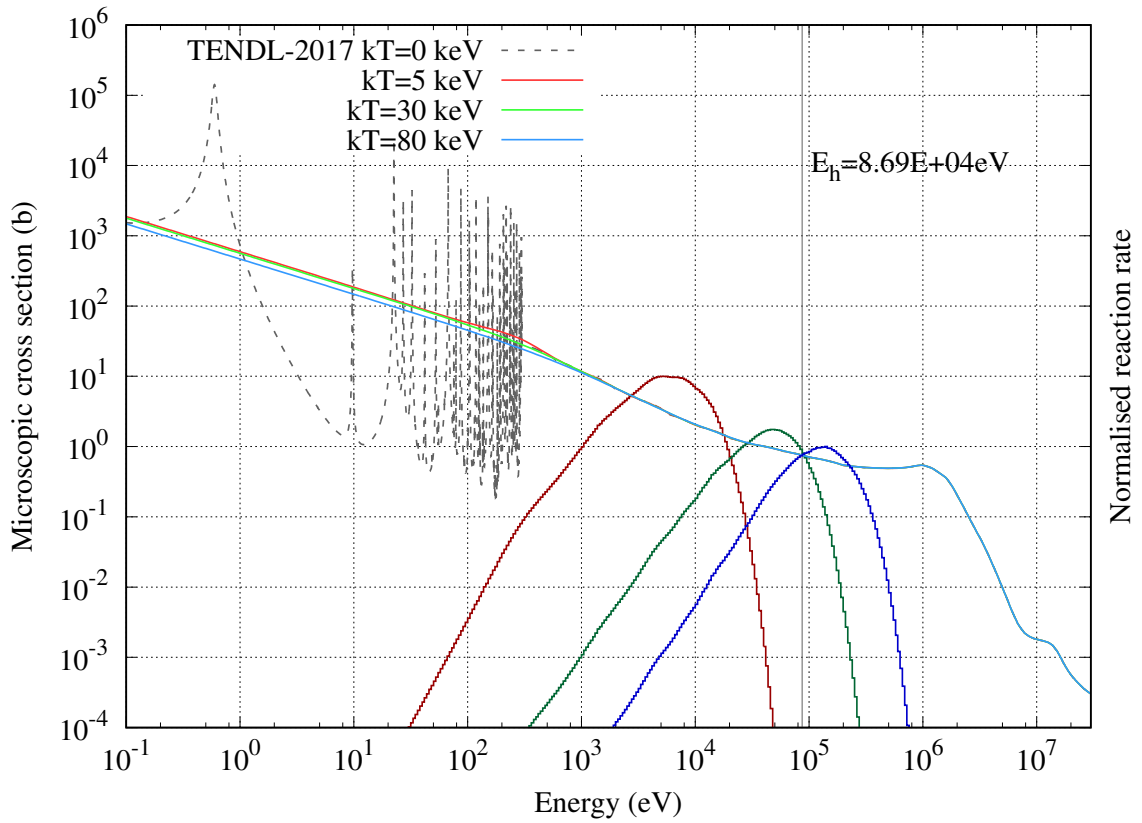
$^{170}\text{Tm}_{69}$ [$T_{1/2} = 128.60$ days] (KADoNiS=SMC)



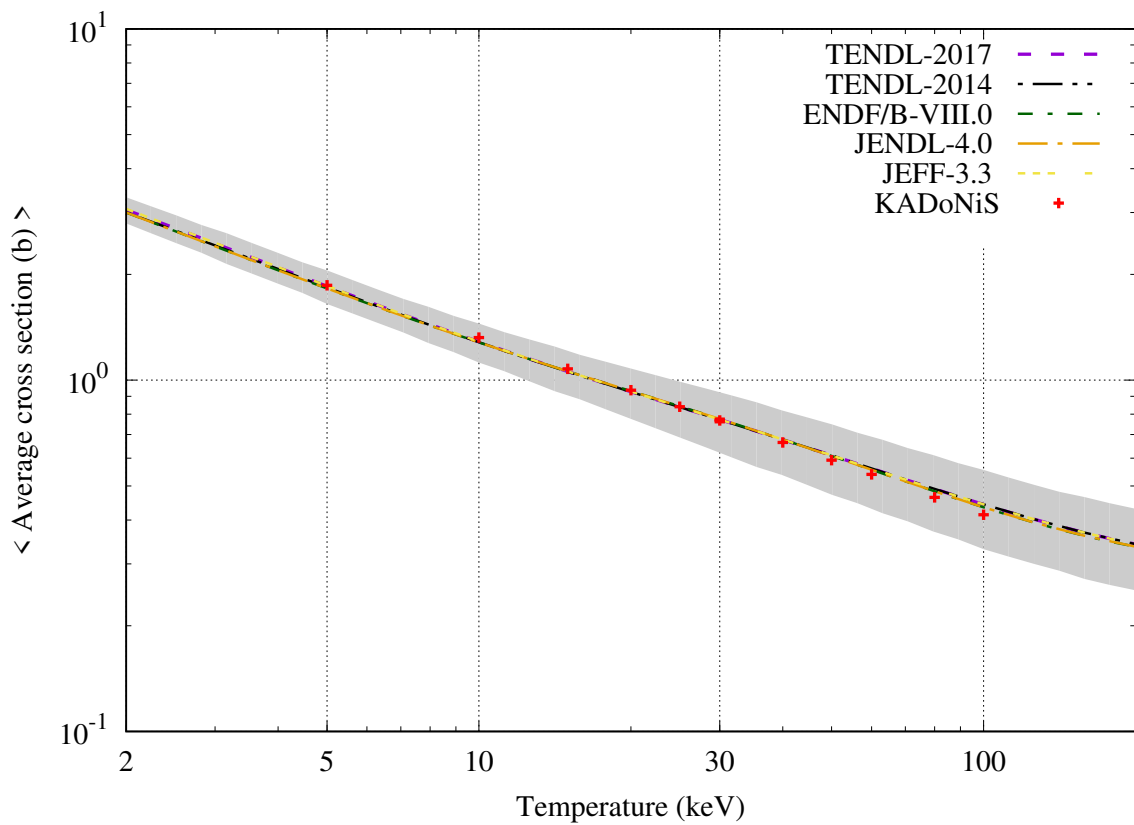
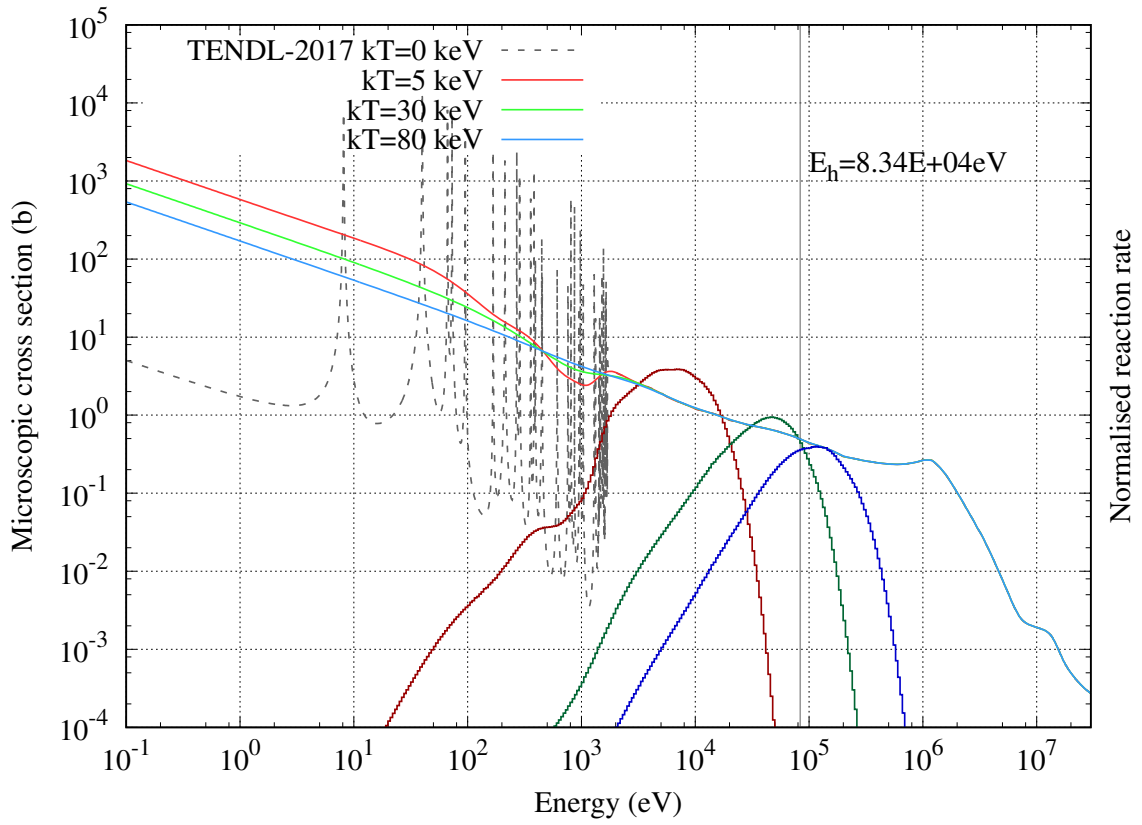
$^{171}\text{Tm}_{69}$ [$T_{1/2} = 1.92$ years] (KADoNiS=SMC)



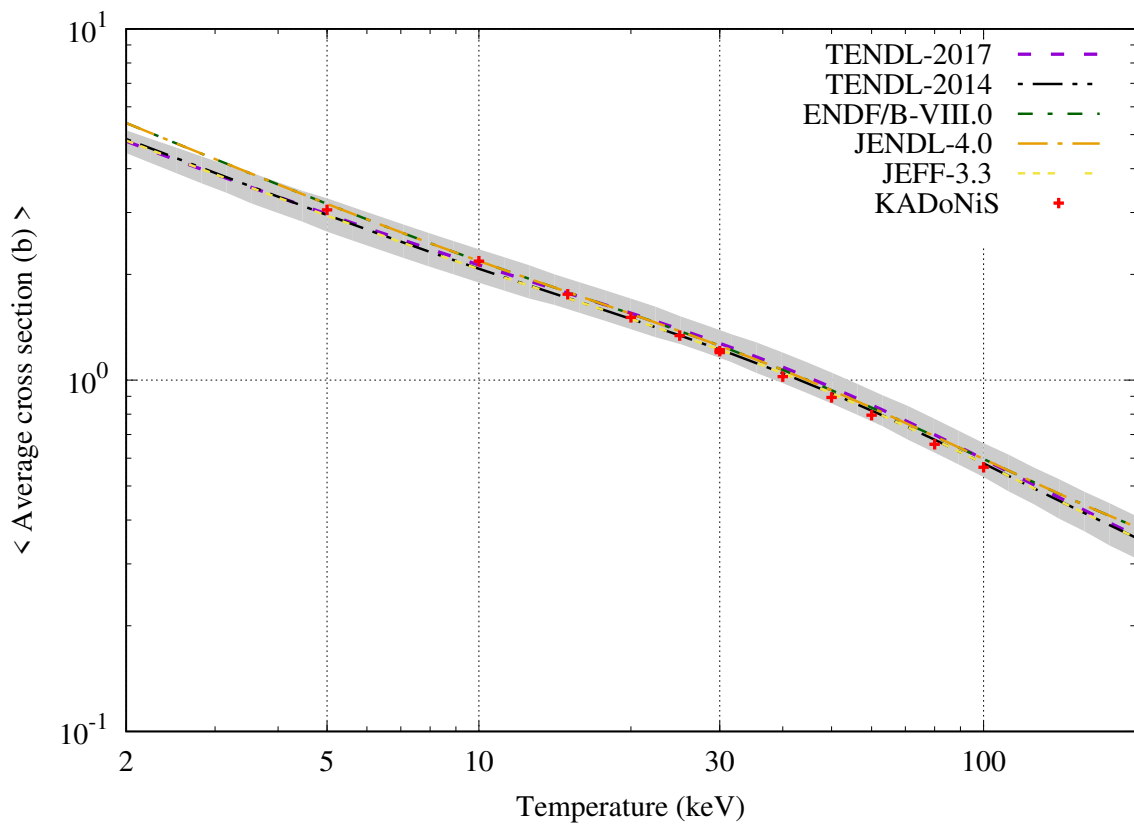
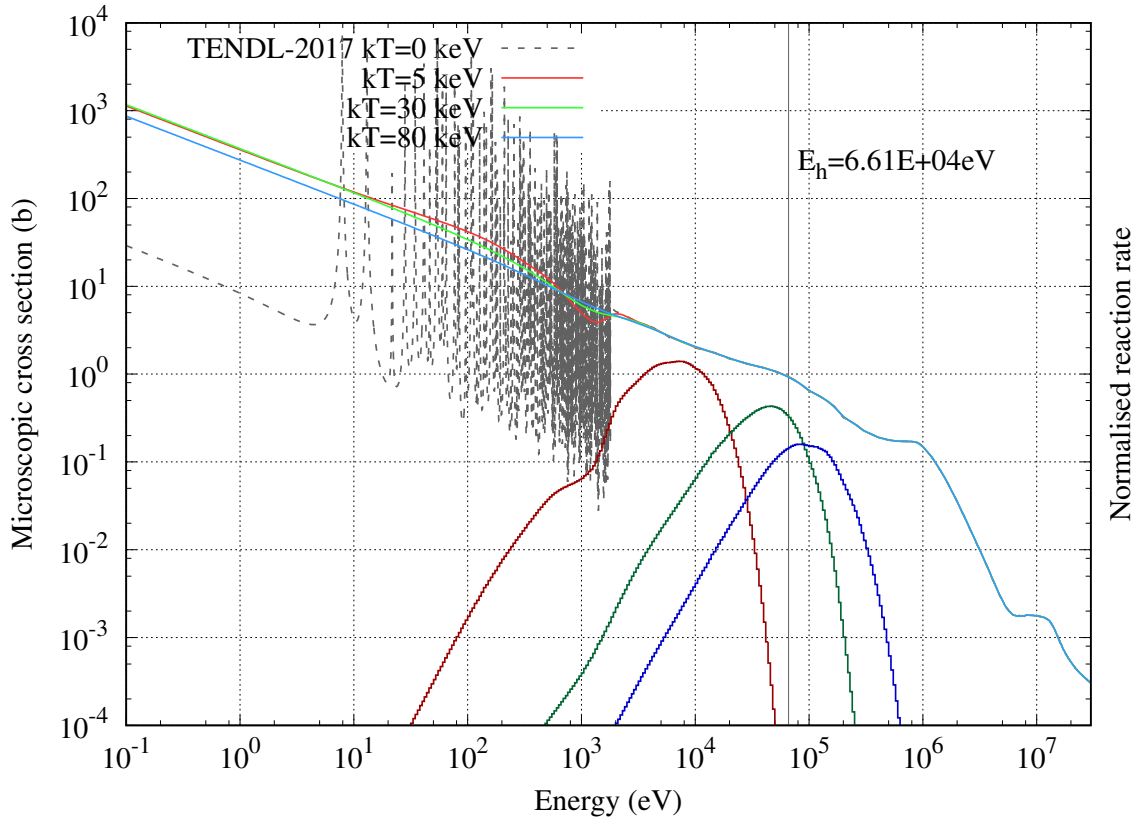
$^{168}\text{Yb}_{70}$ [$T_{1/2} = 1.30 \times 10^{14}$ years]



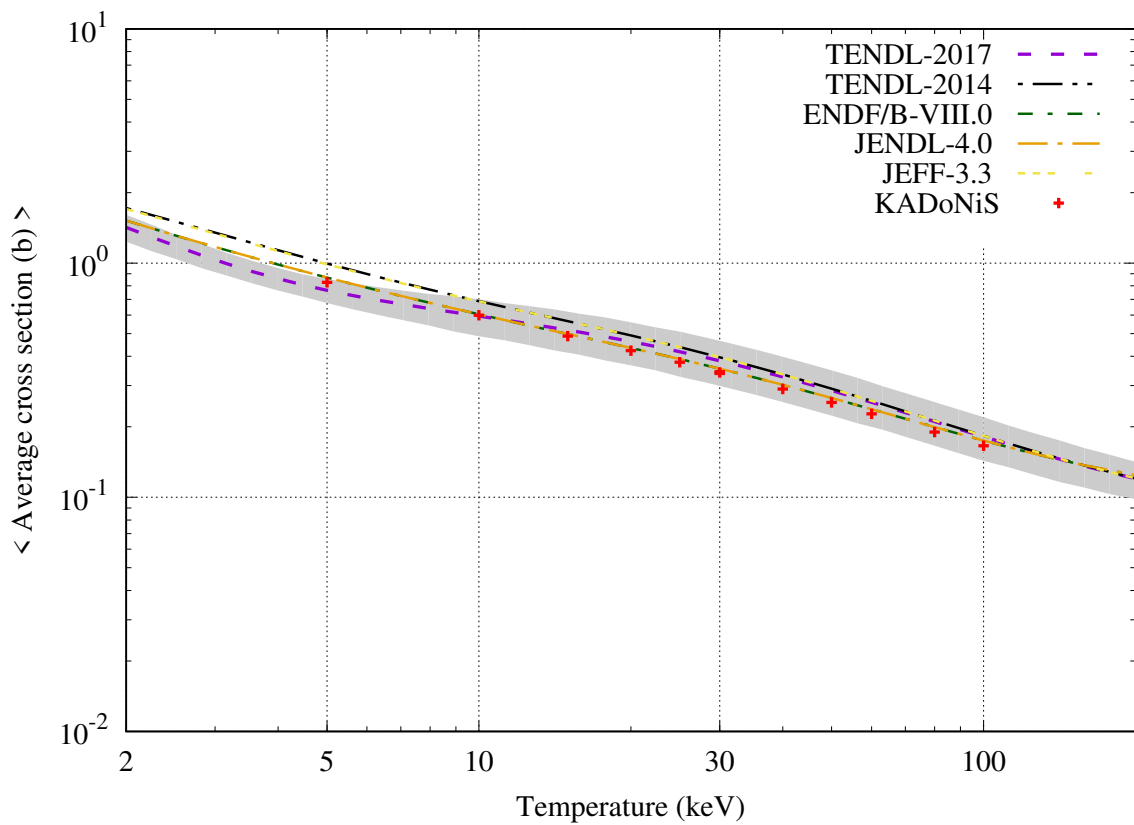
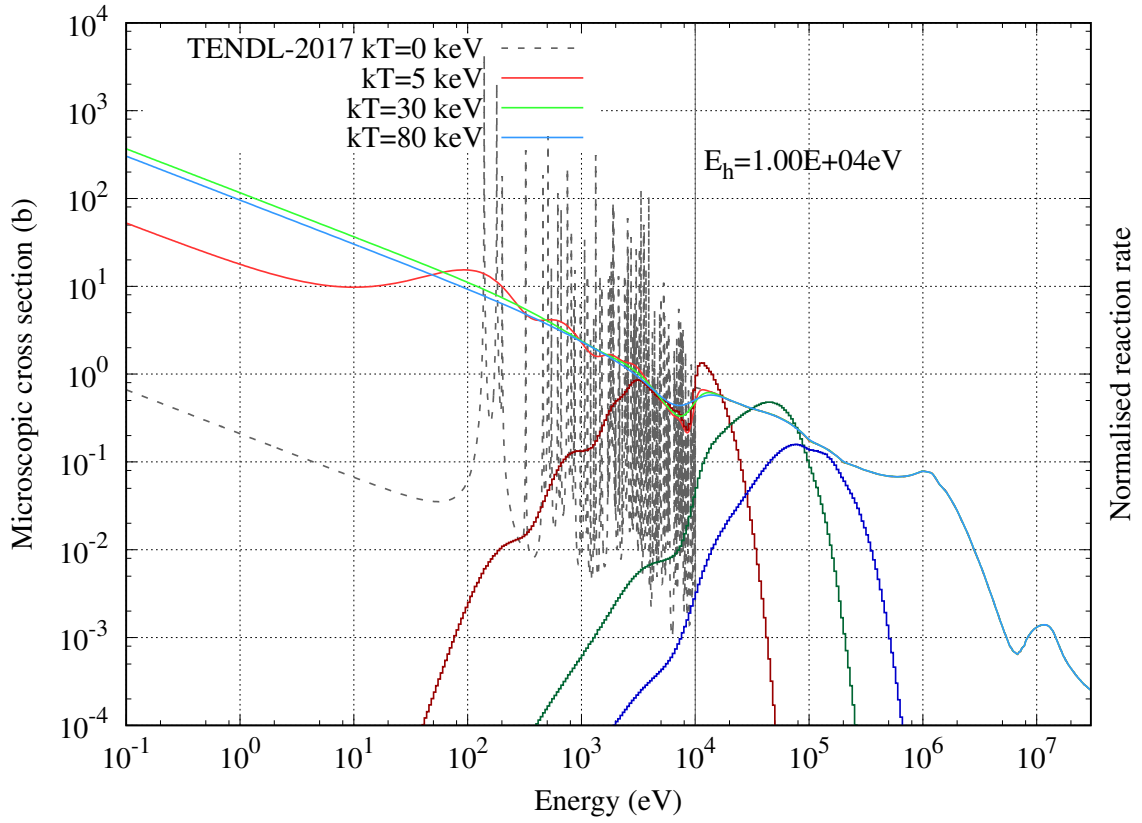
$^{170}\text{Yb}_{70}$ [Stable]



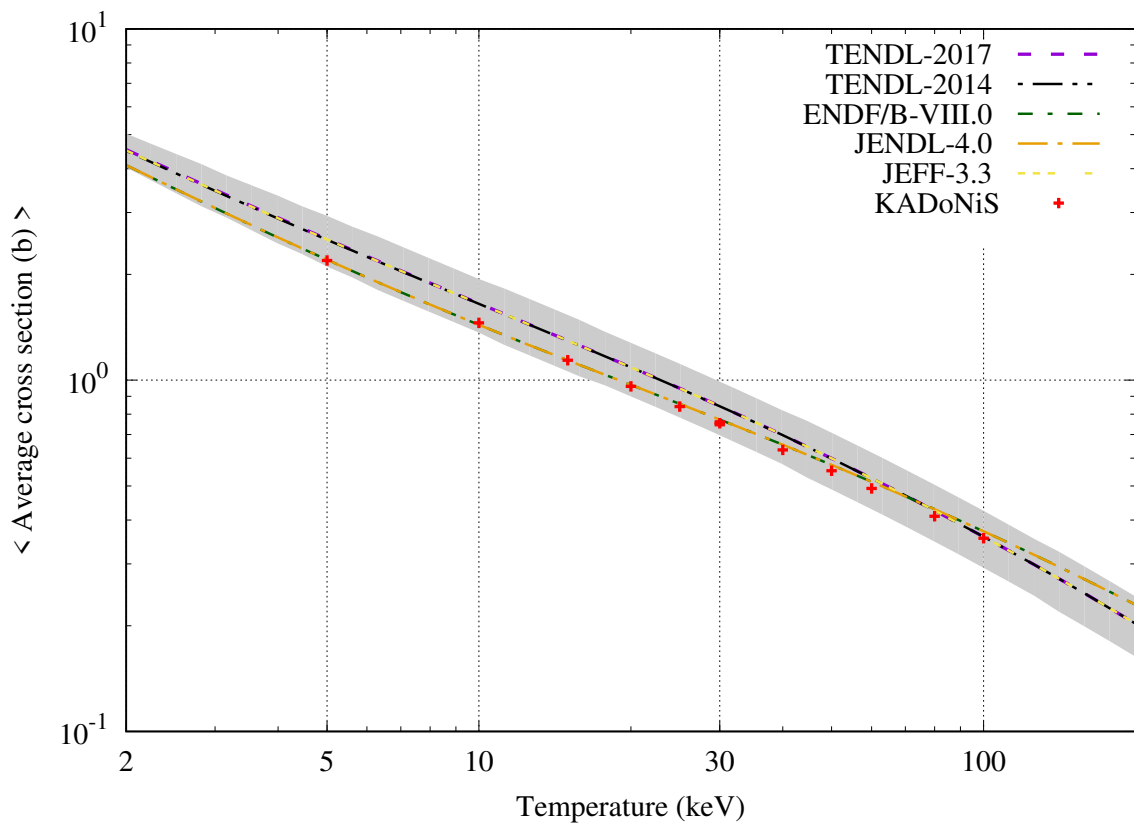
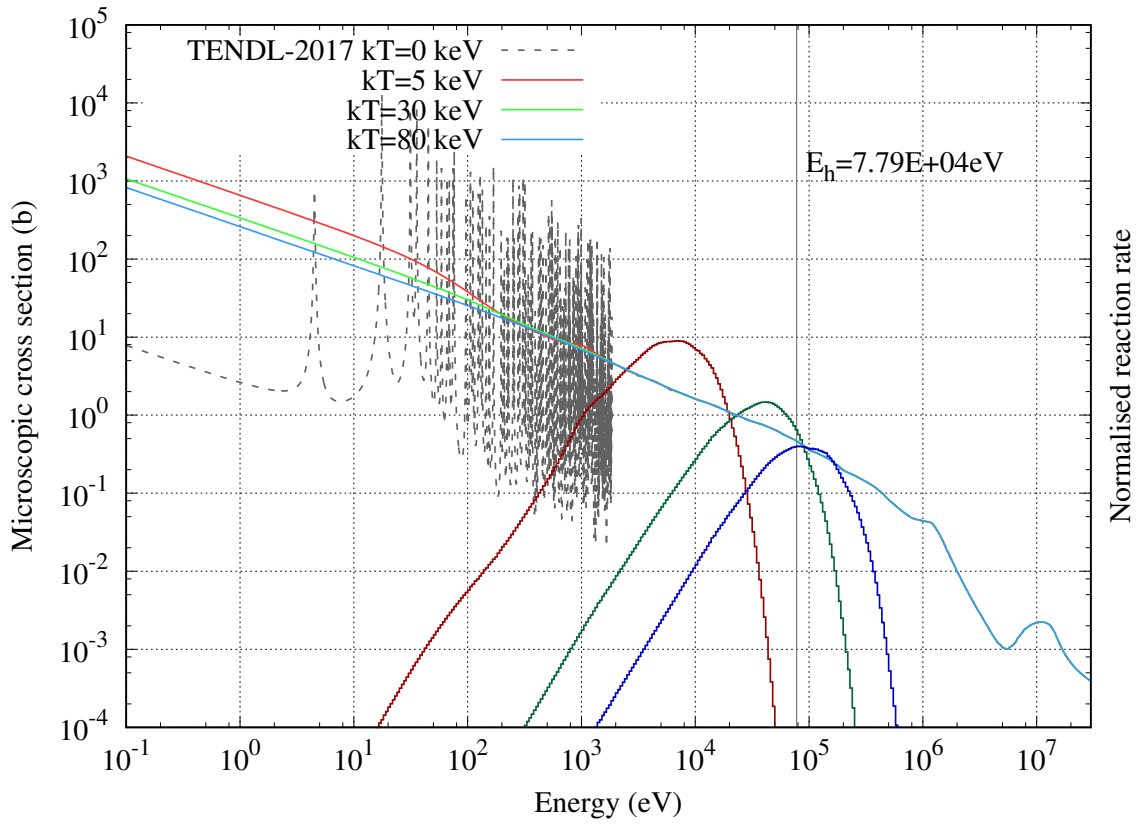
$^{171}\text{Yb}_{70}$ [Stable]



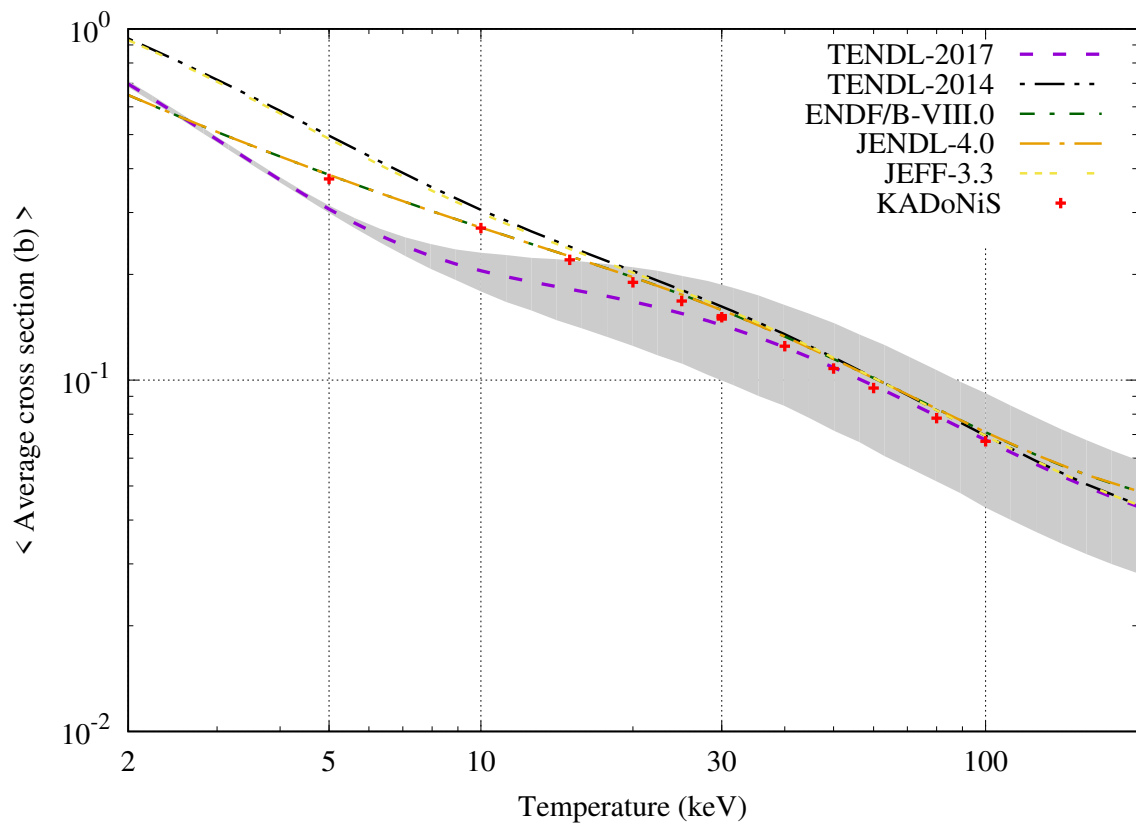
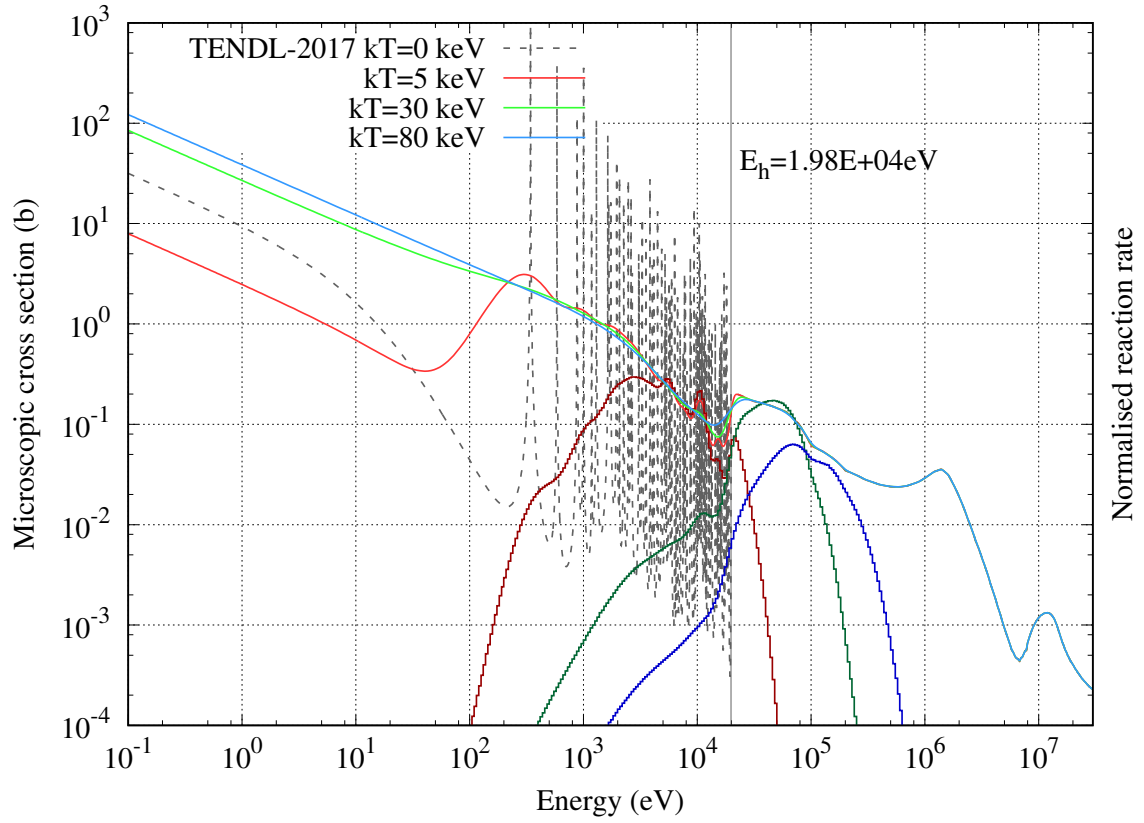
$^{172}\text{Yb}_{70}$ [Stable]



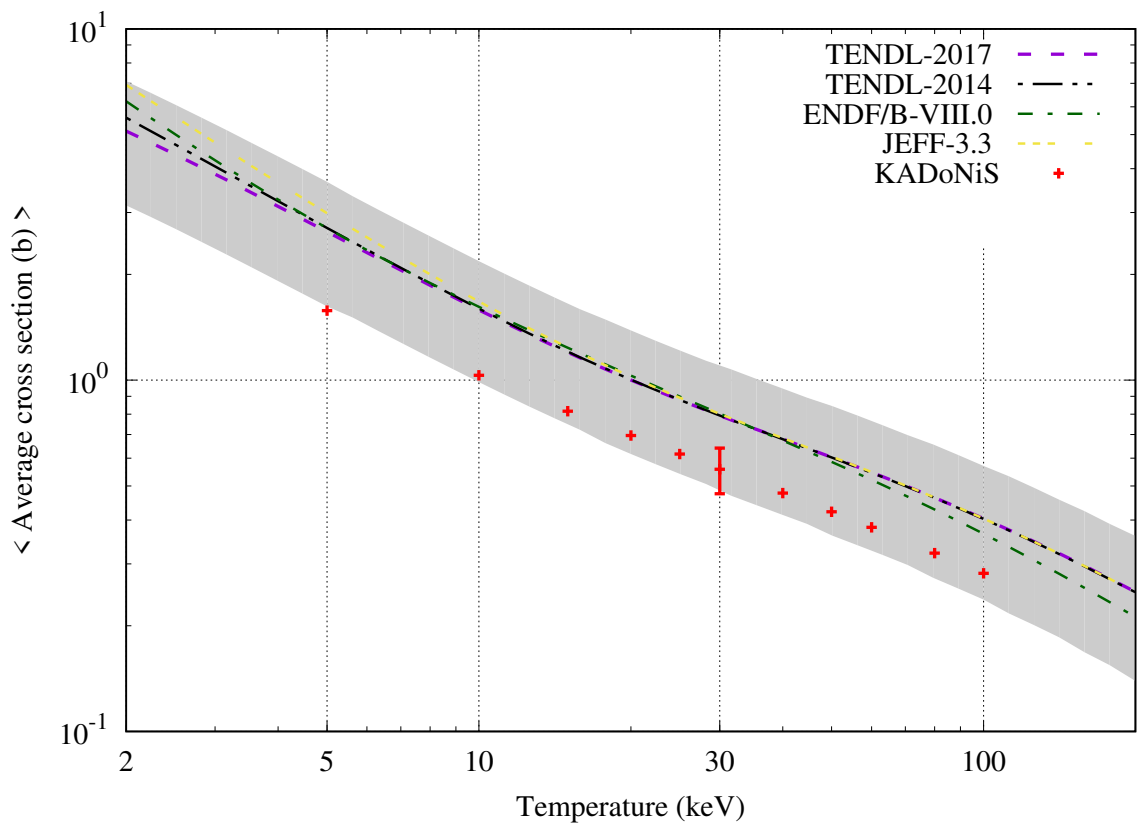
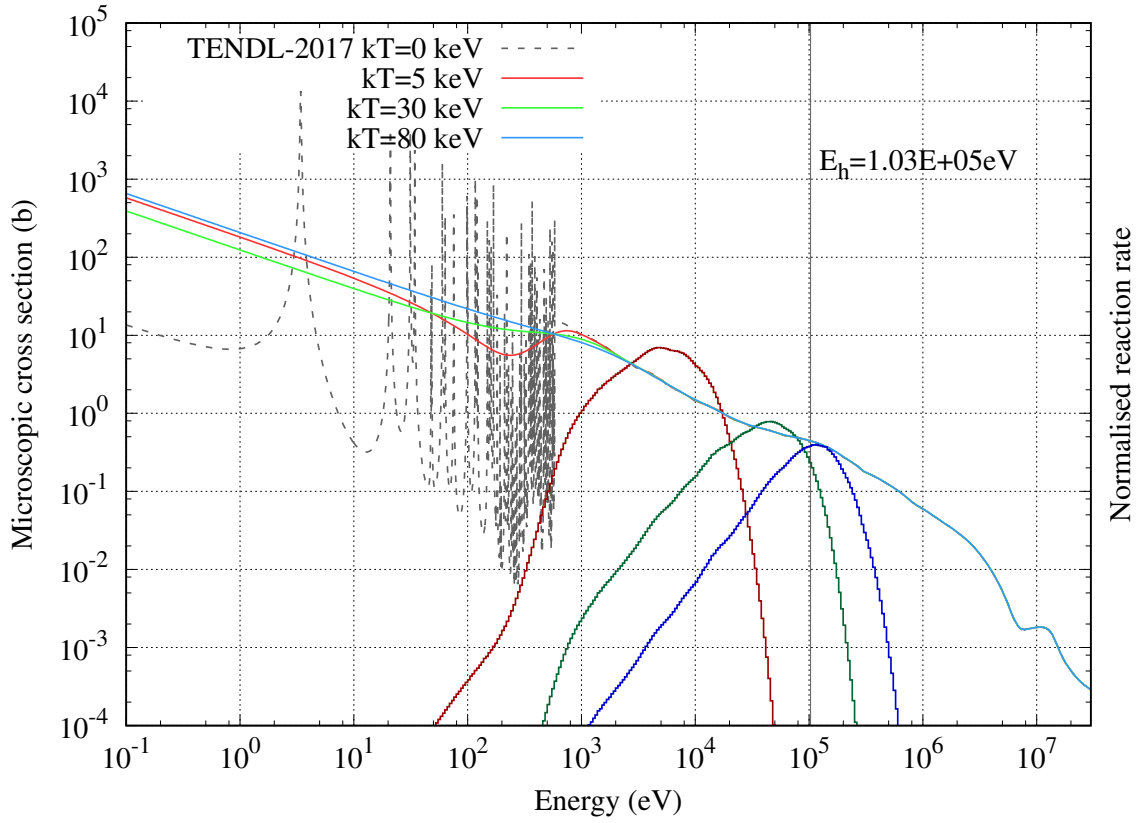
$^{173}\text{Yb}_{70}$ [Stable]



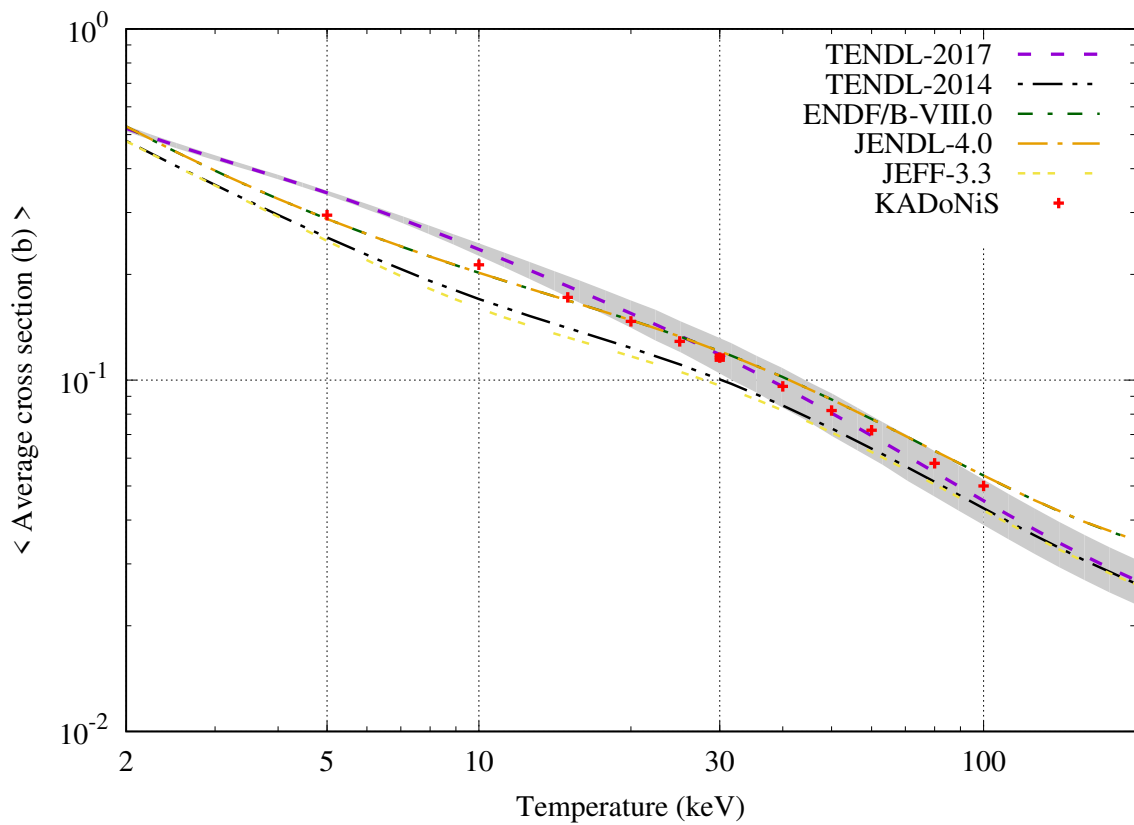
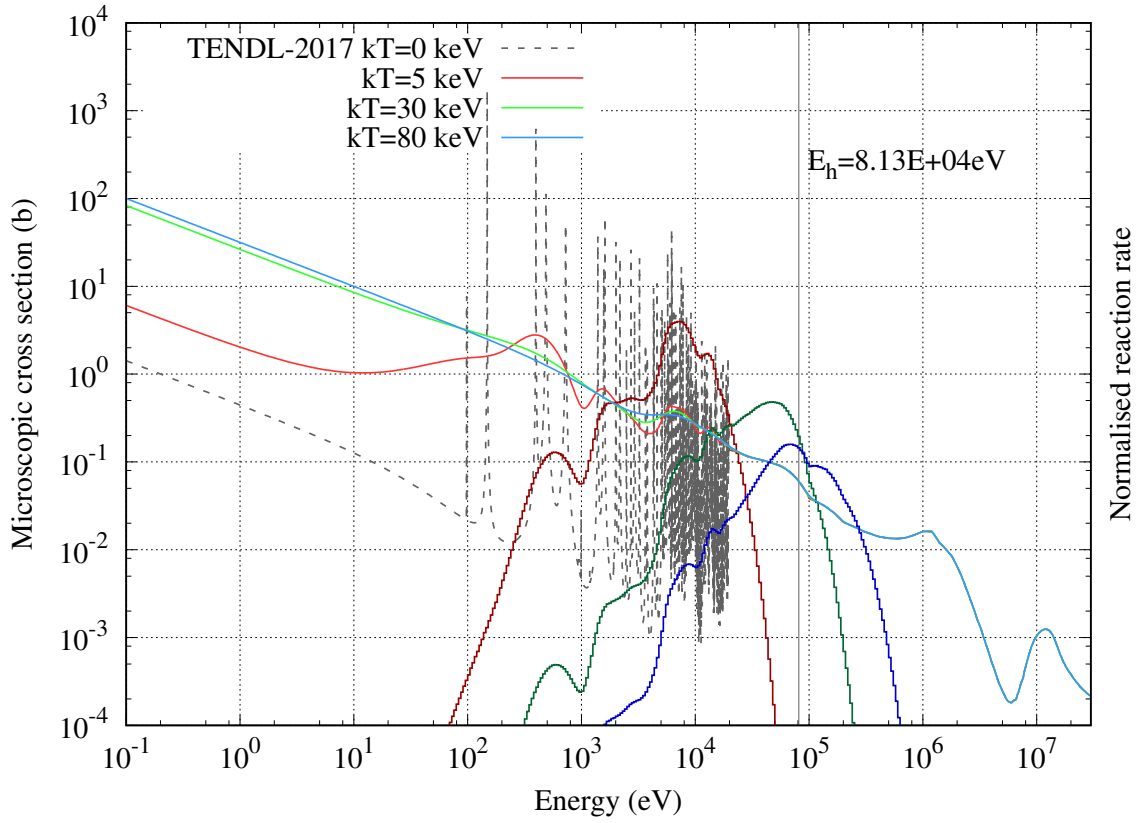
$^{174}\text{Yb}_{70}$ [Stable]



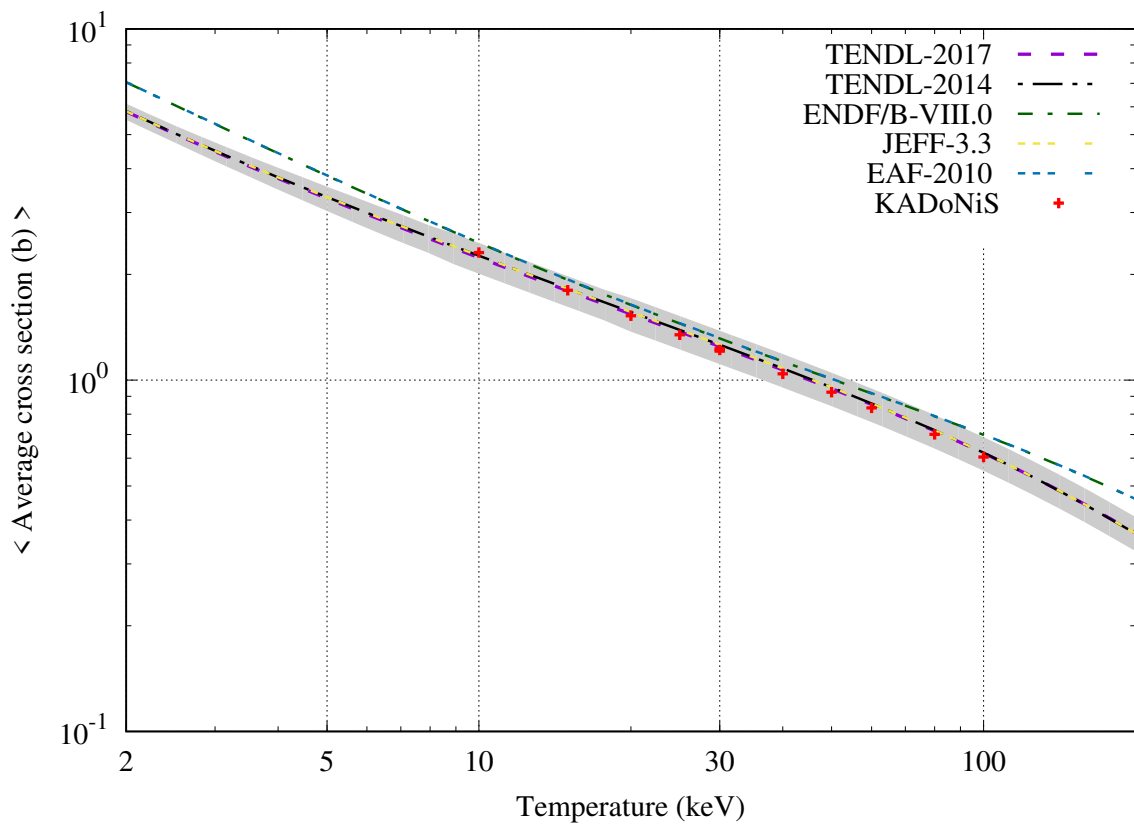
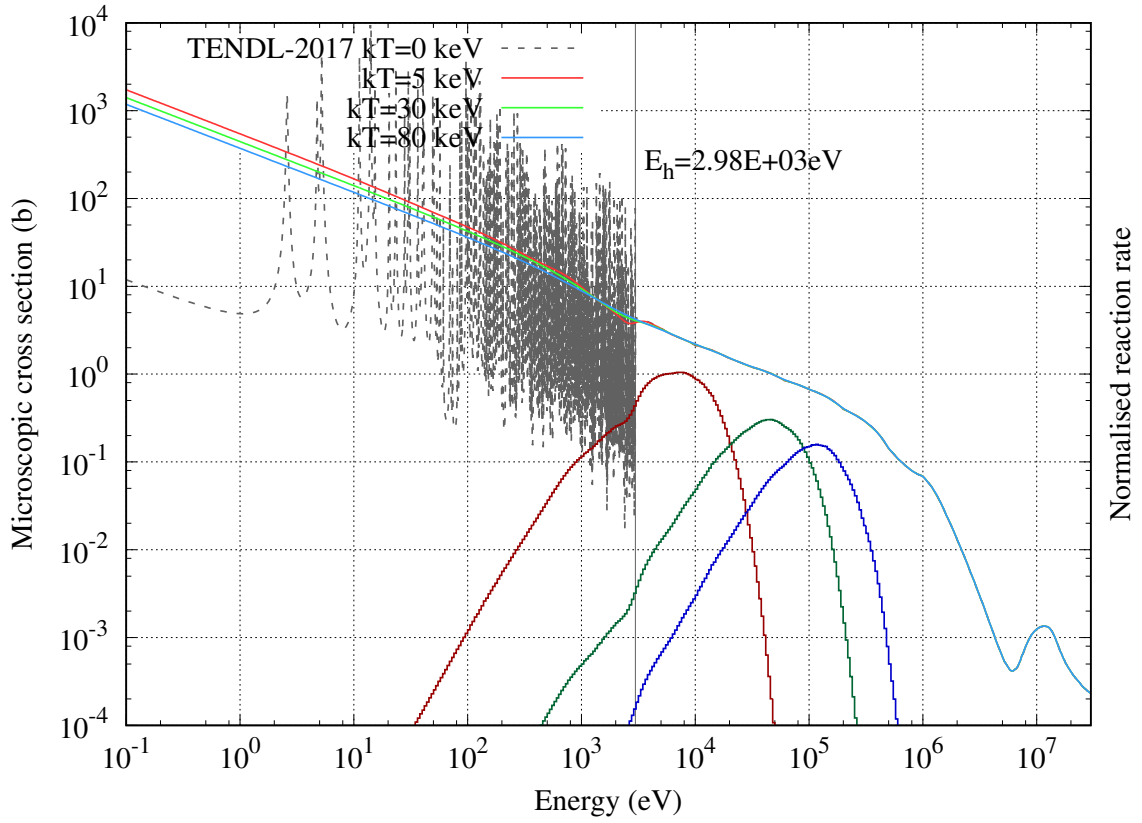
$^{175}\text{Yb}_{70}$ [$T_{1/2} = 4.18$ days] (KADoNiS=SMC)



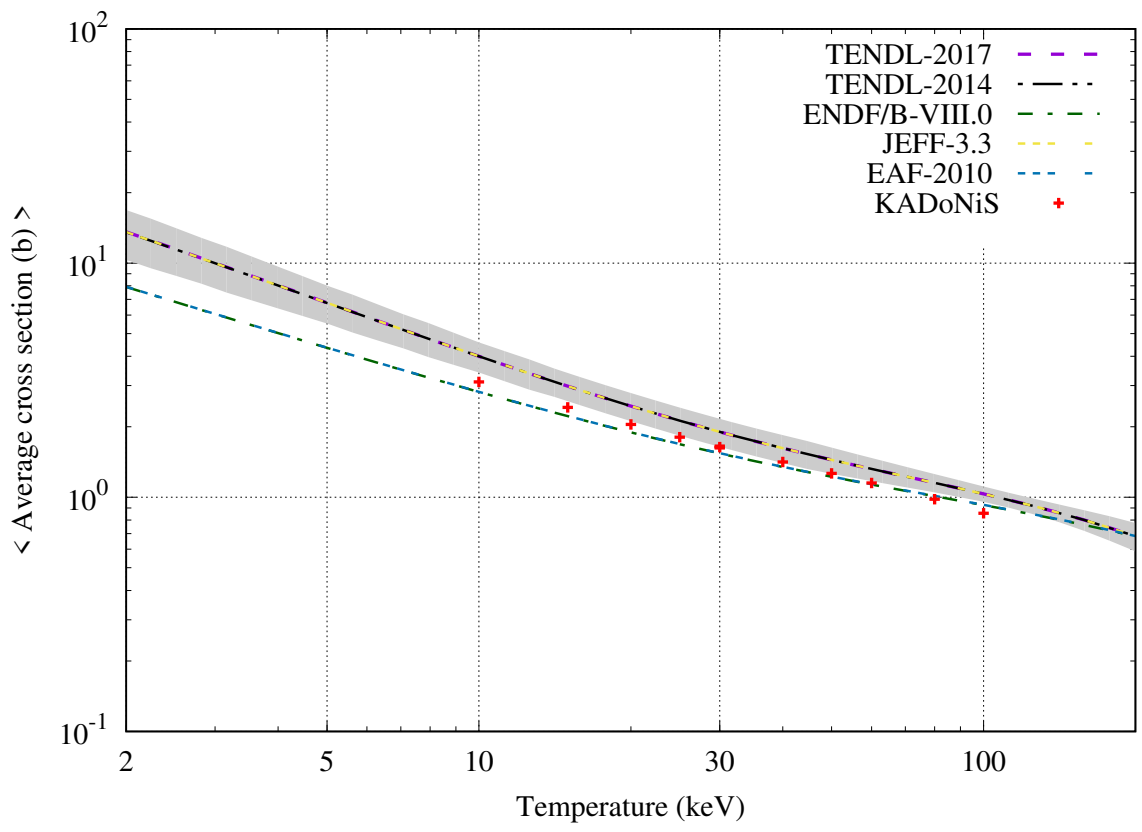
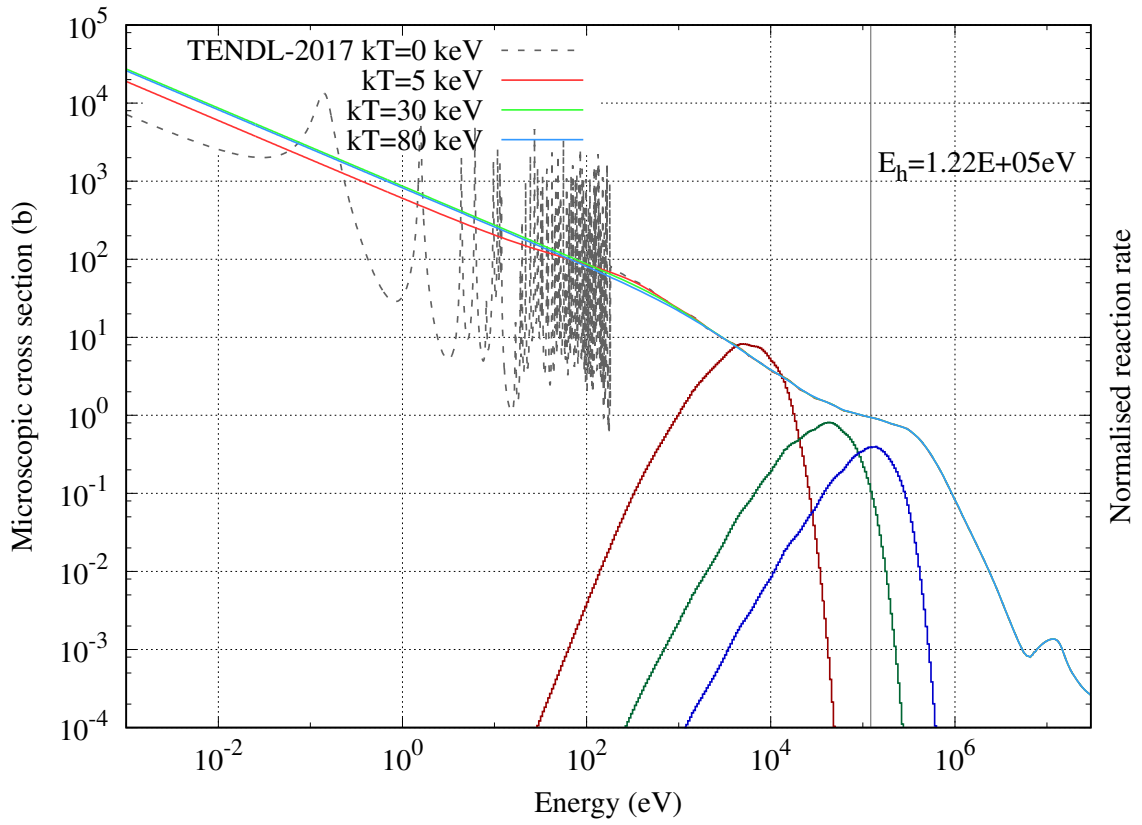
$^{176}\text{Yb}_{70}$ [Stable]



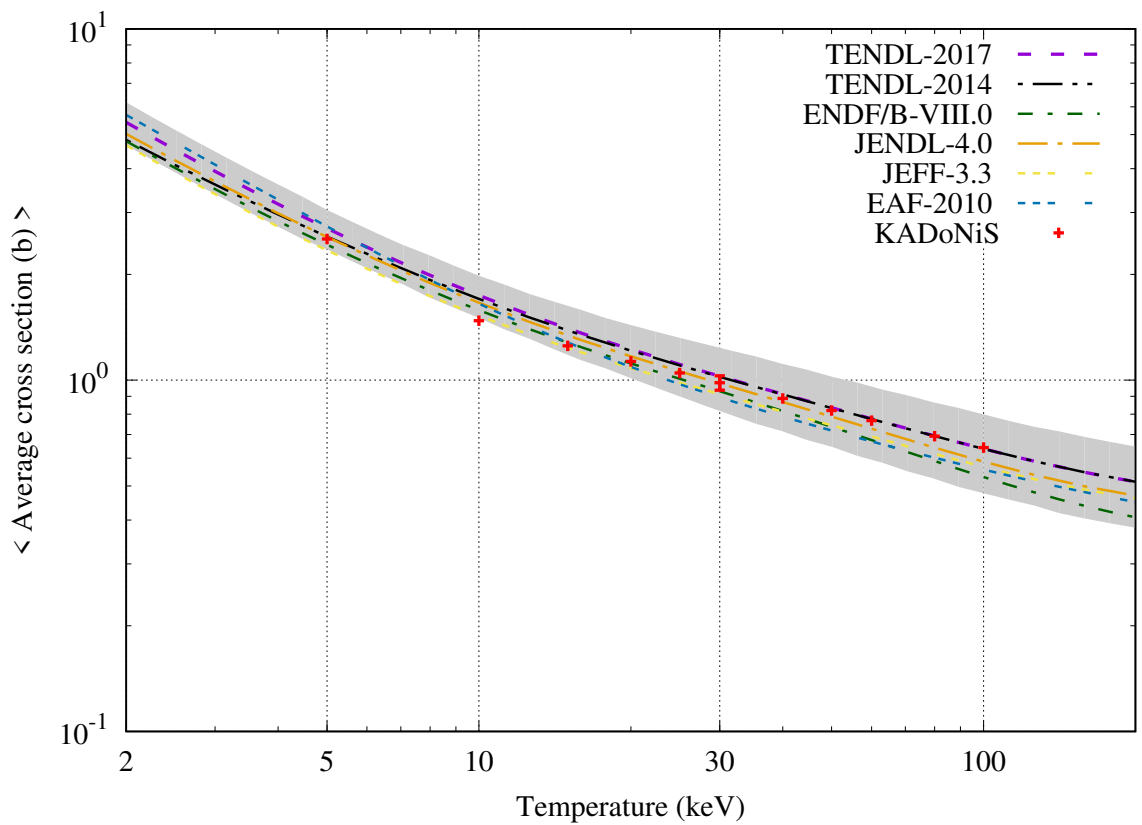
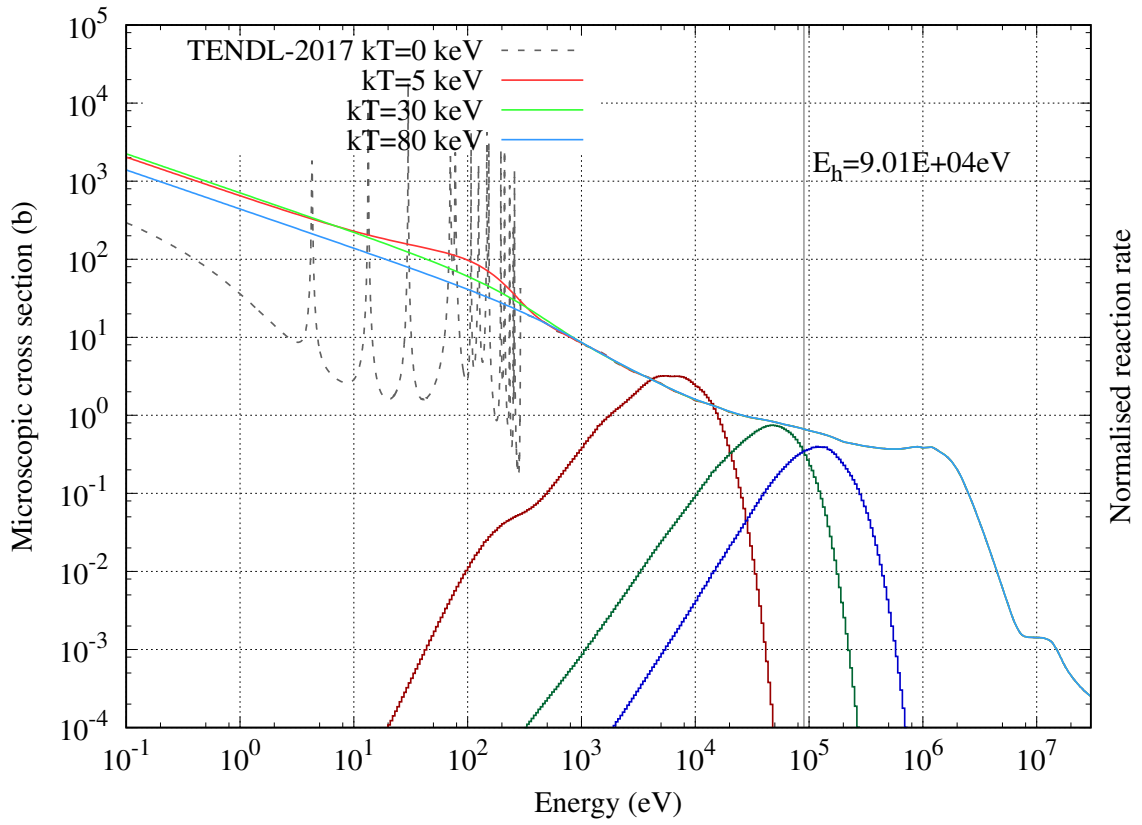
$^{175}\text{Lu}_{71}$ [Stable]



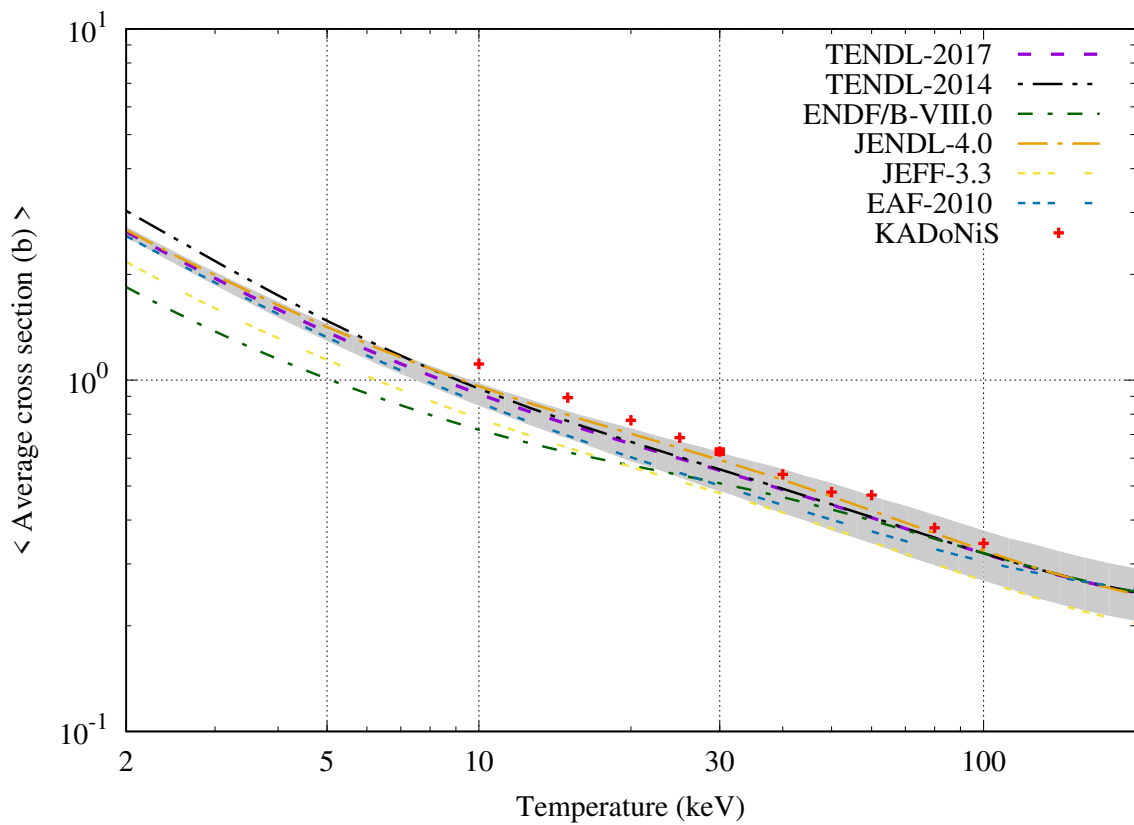
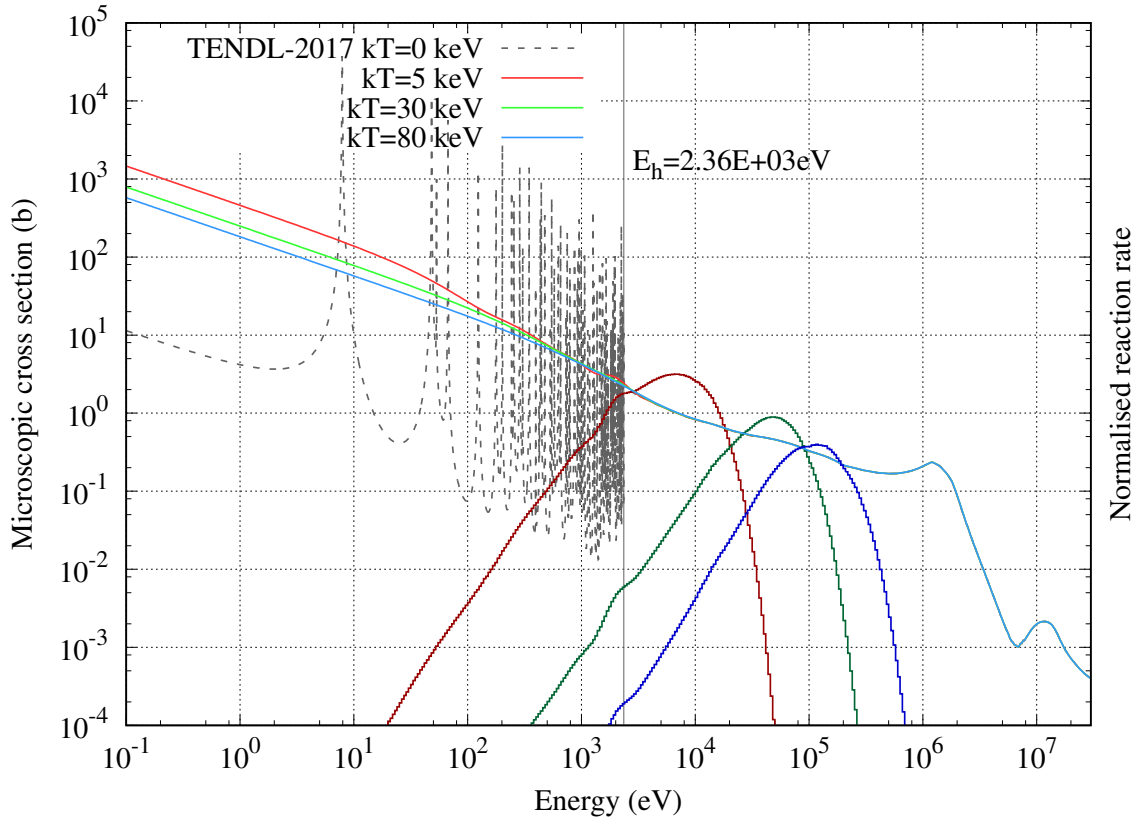
$^{176}\text{Lu}_{71}$ [$T_{1/2} = 4.00 \times 10^{10}$ years]



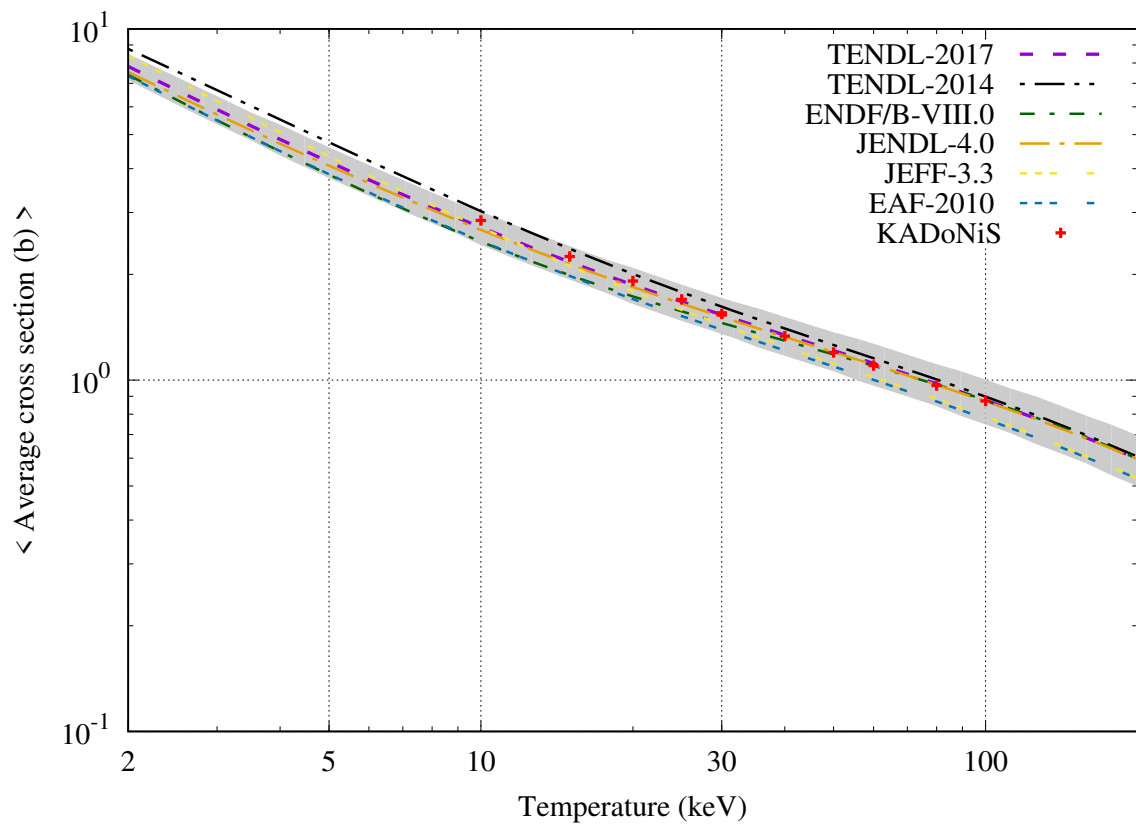
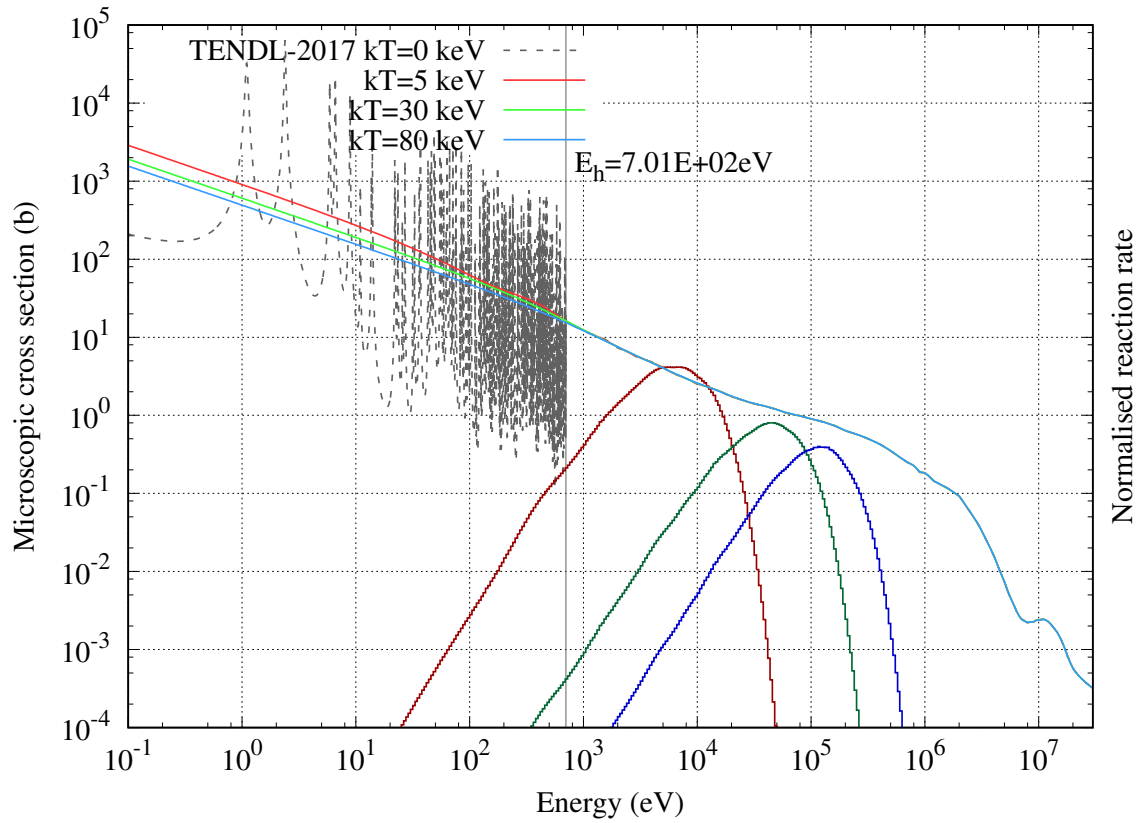
$^{174}\text{Hf}_{72}$ [$T_{1/2} = 2.00 \times 10^{15}$ years]



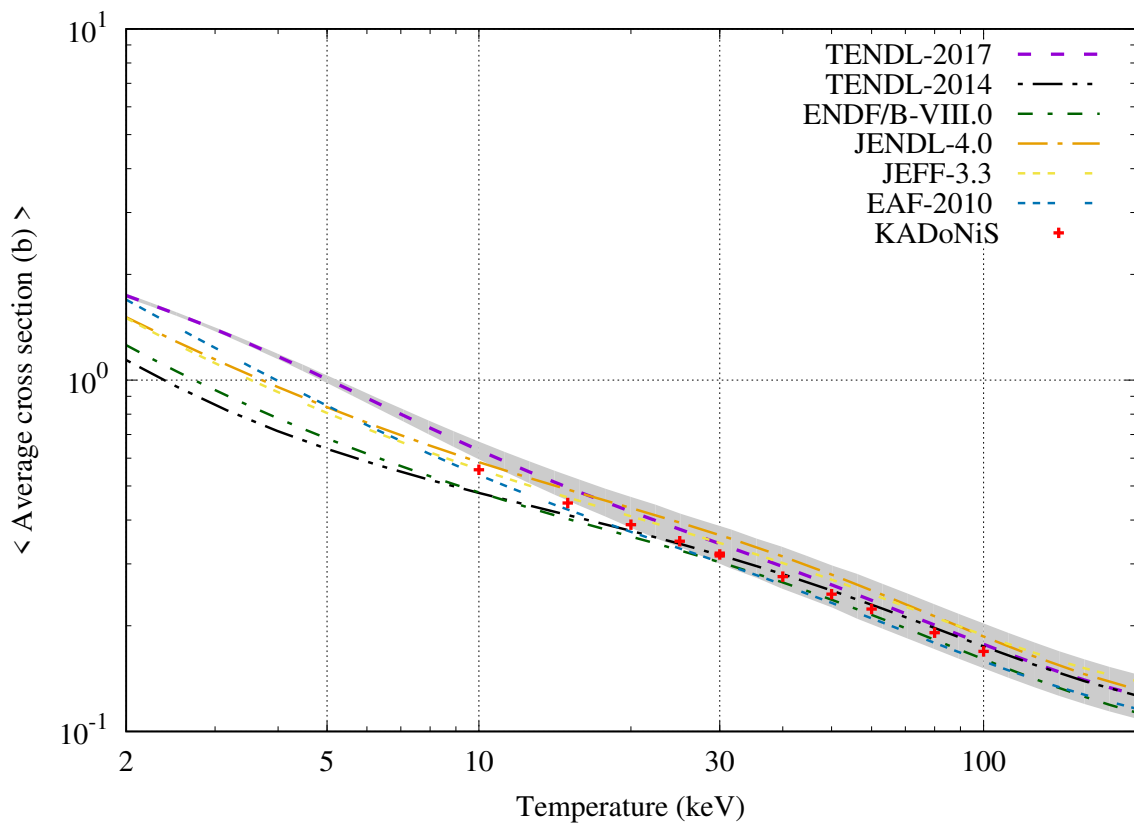
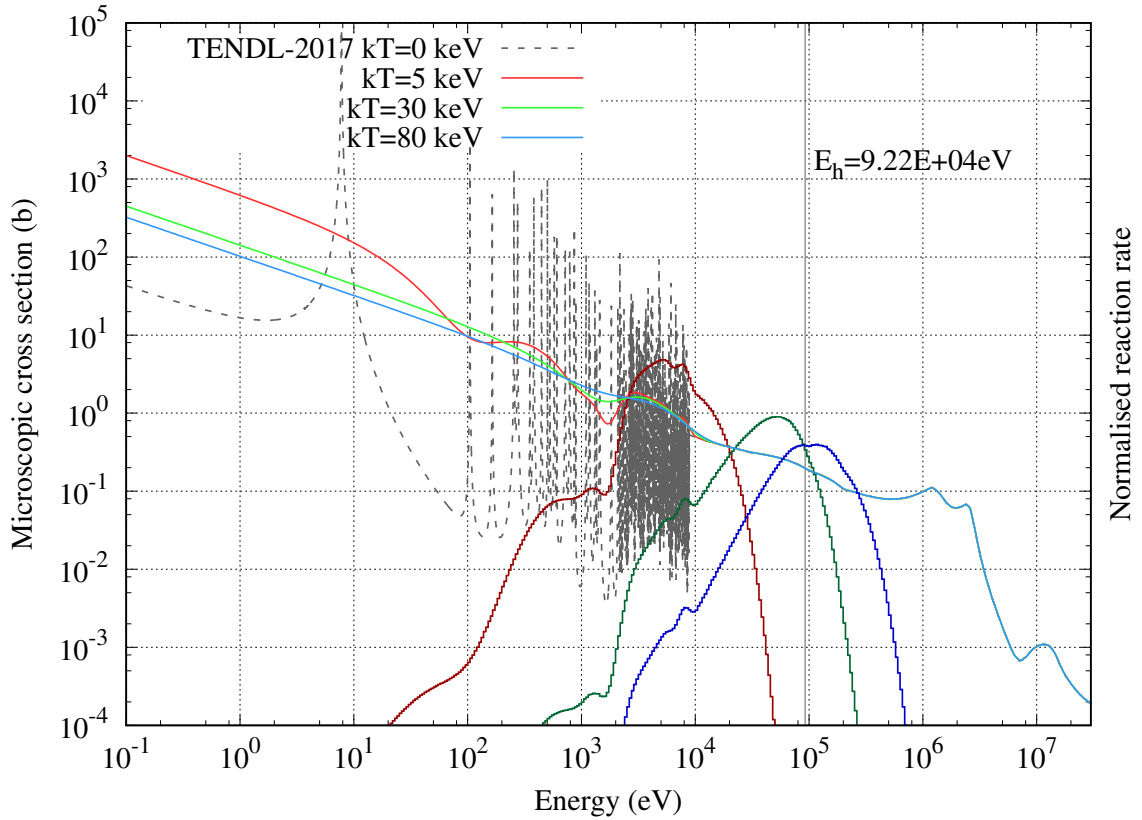
$^{176}\text{Hf}_{72}$ [Stable]



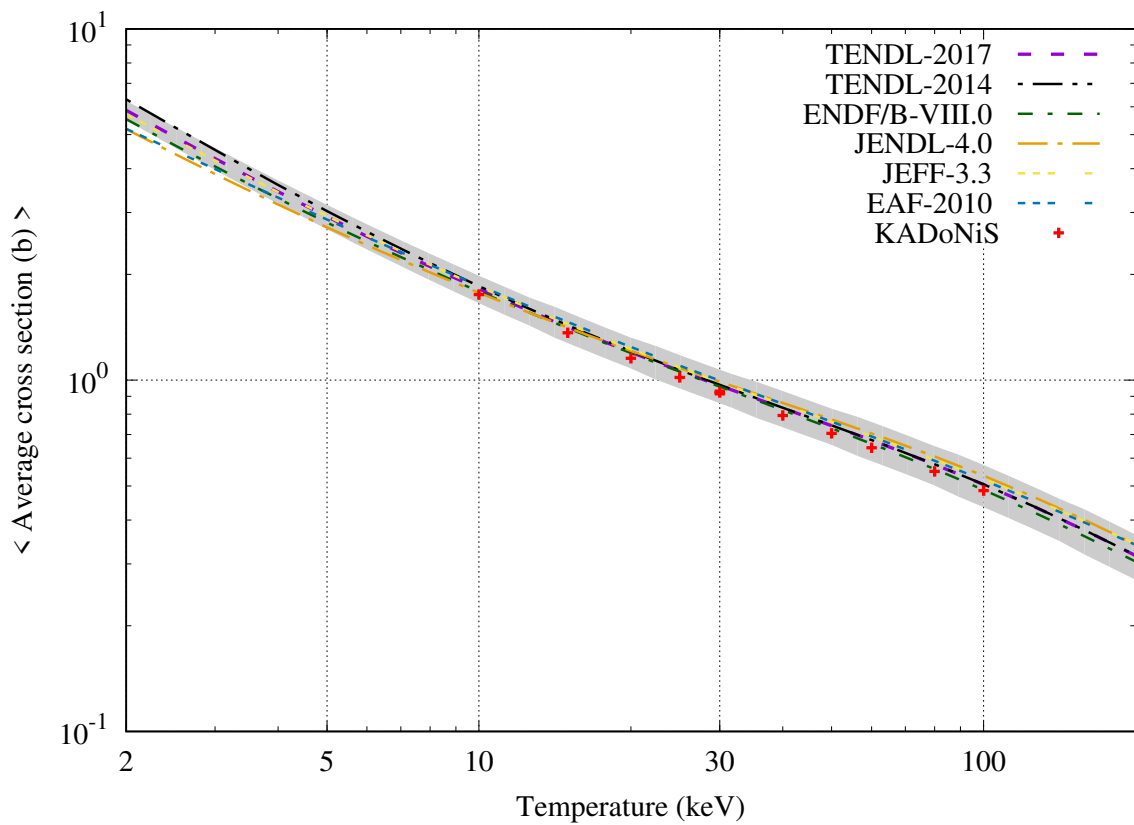
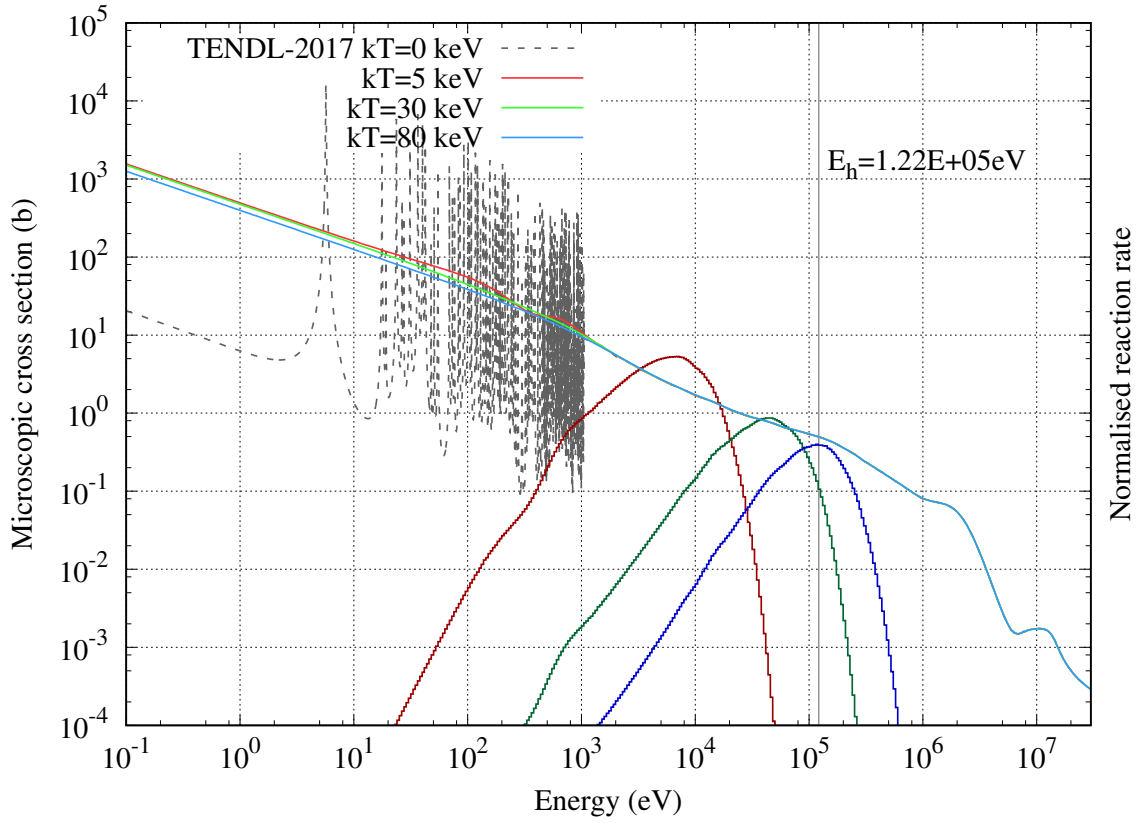
$^{177}\text{Hf}_{72}$ [$T_{1/2} = 51.40$ minutes]



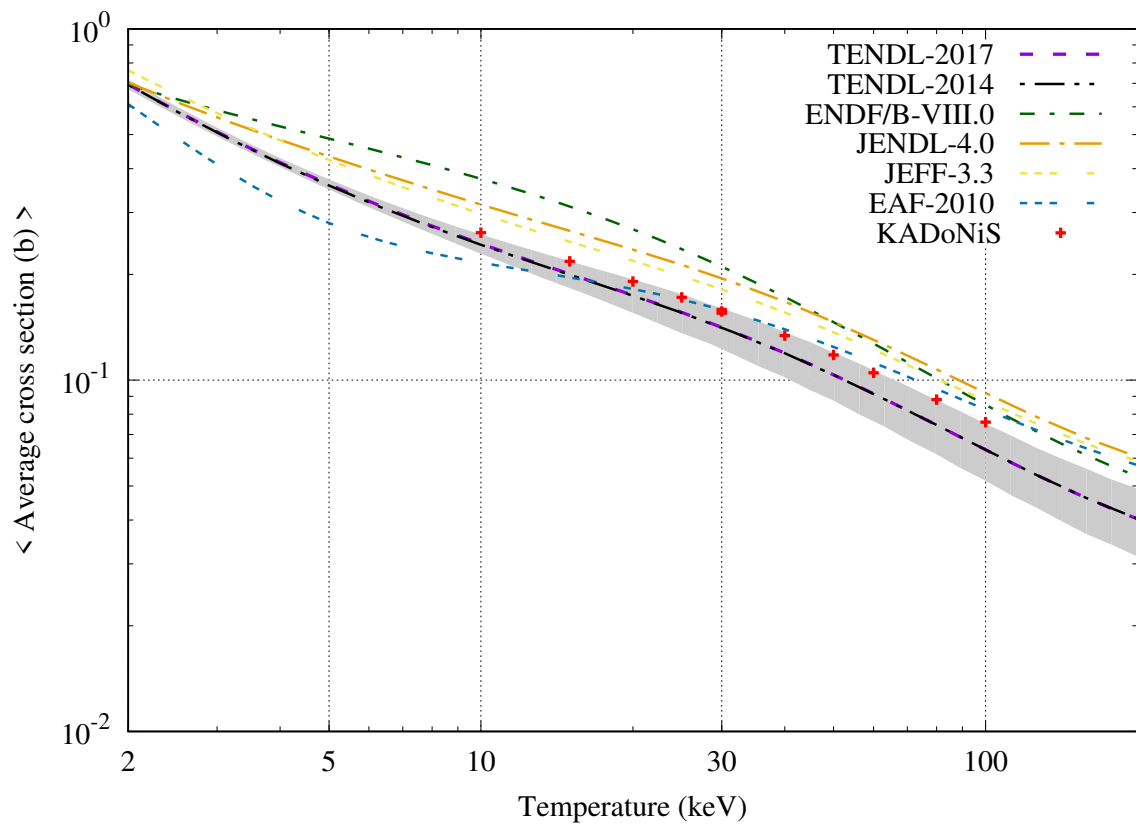
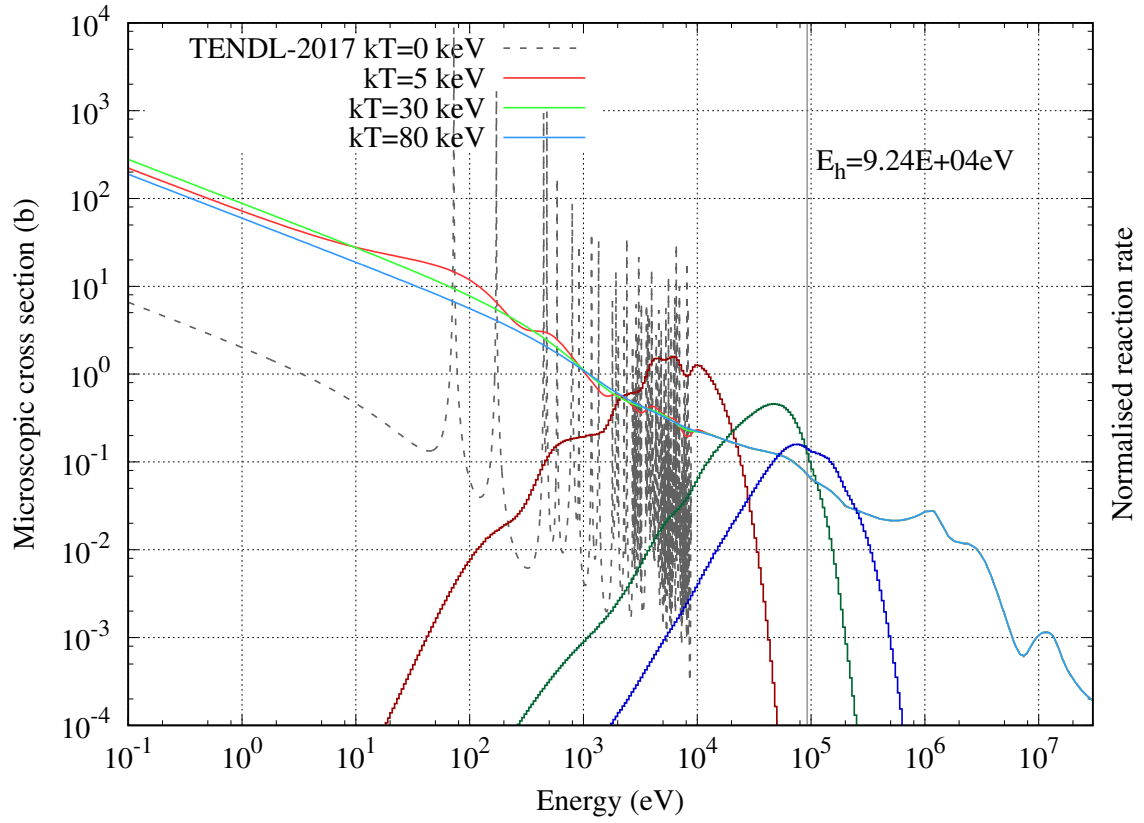
$^{178}\text{Hf}_{72}$ [Stable]



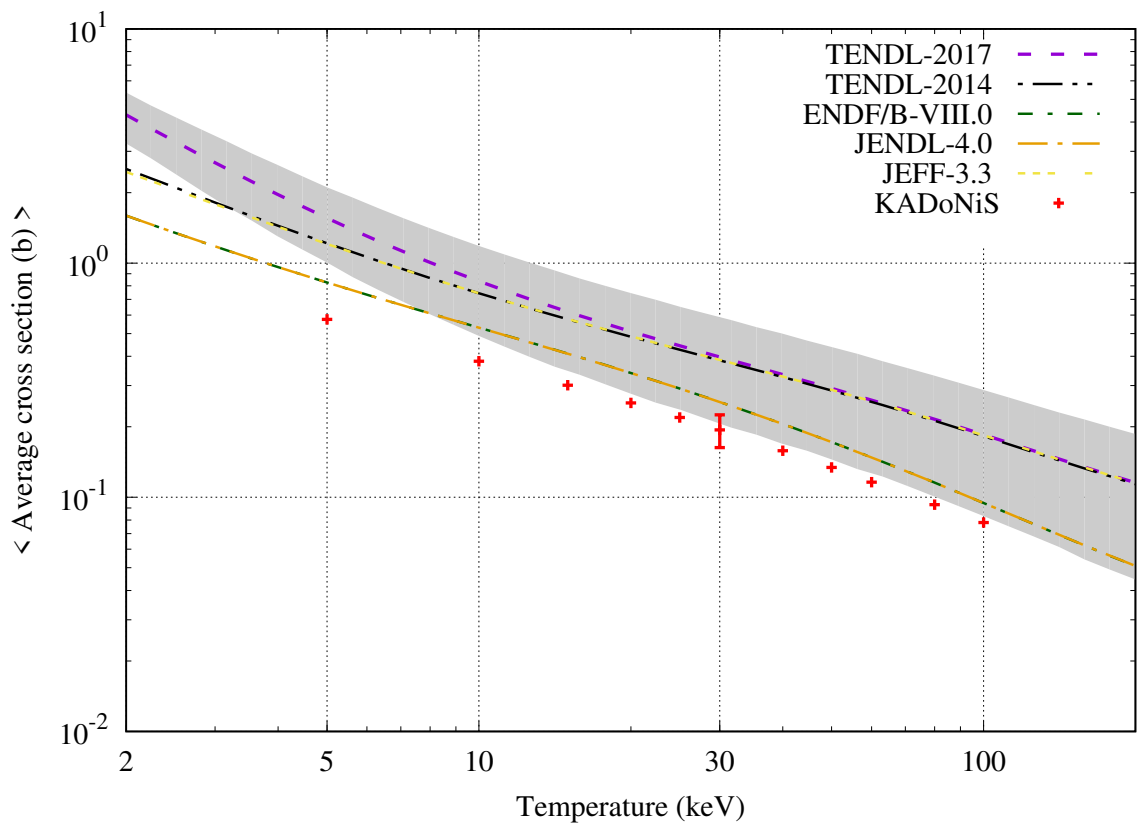
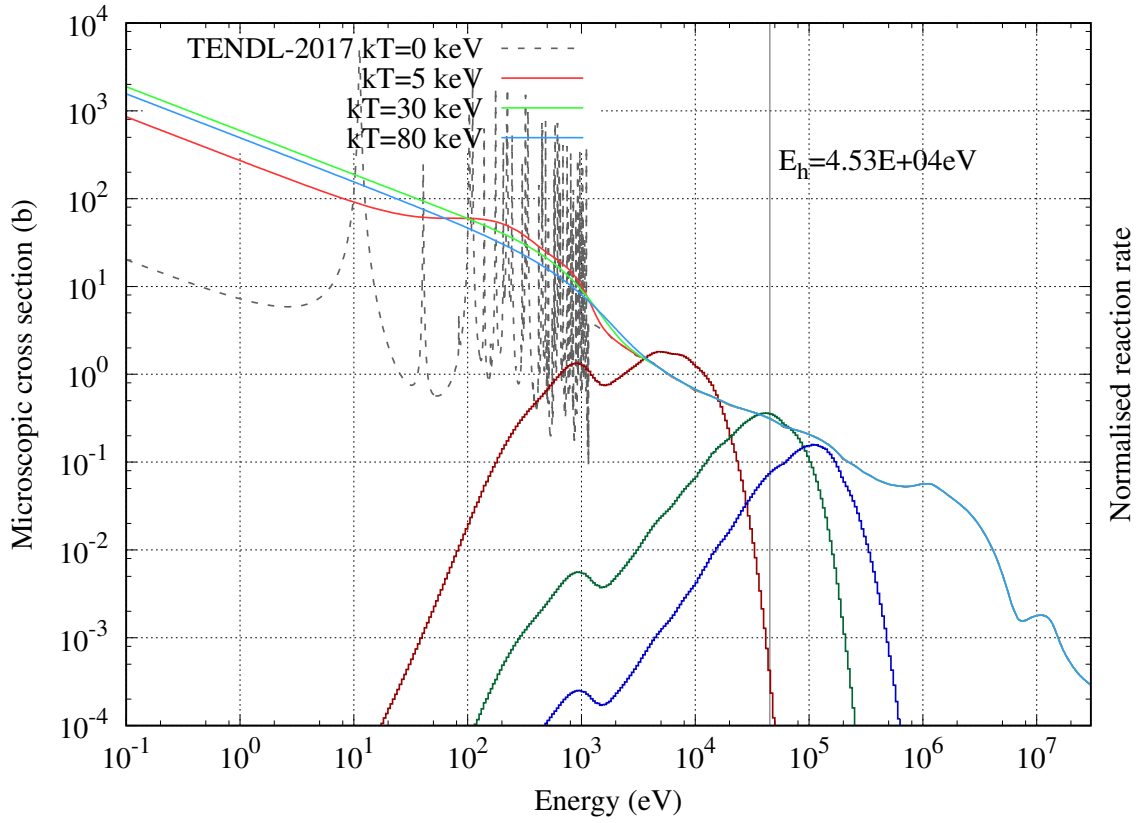
$^{179}\text{Hf}_{72}$ [Stable]



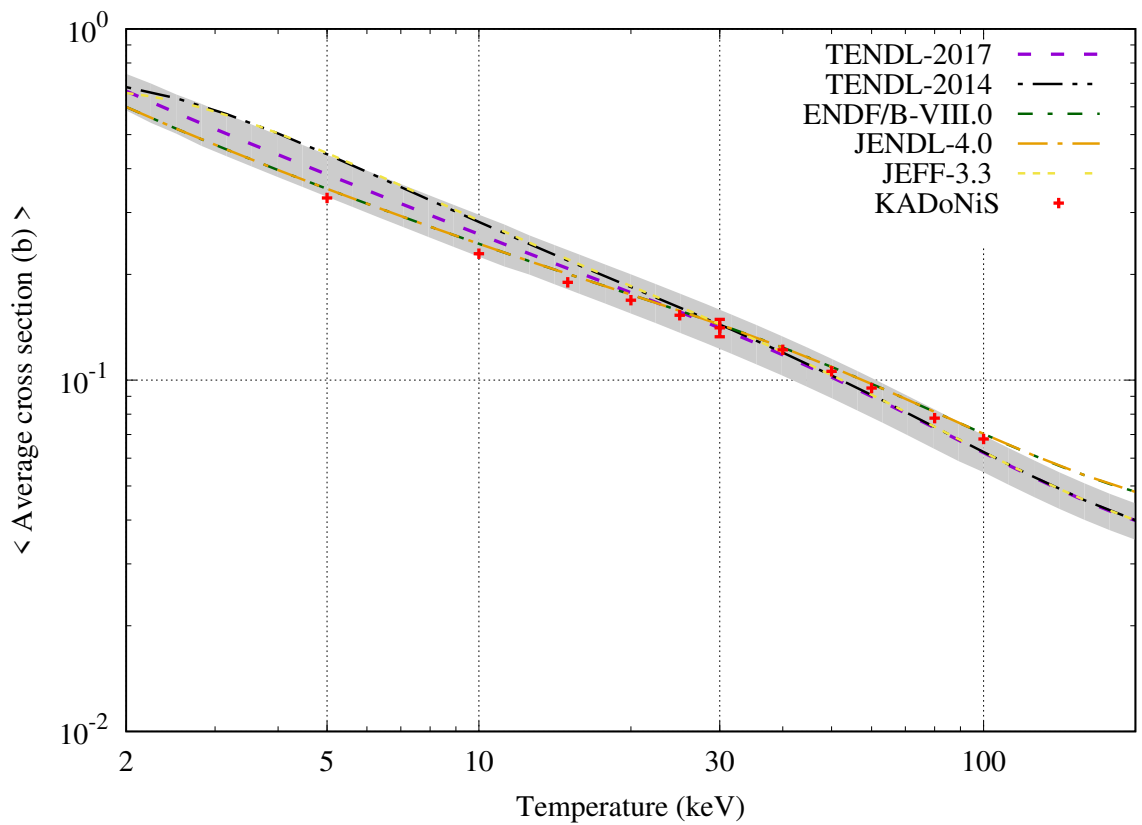
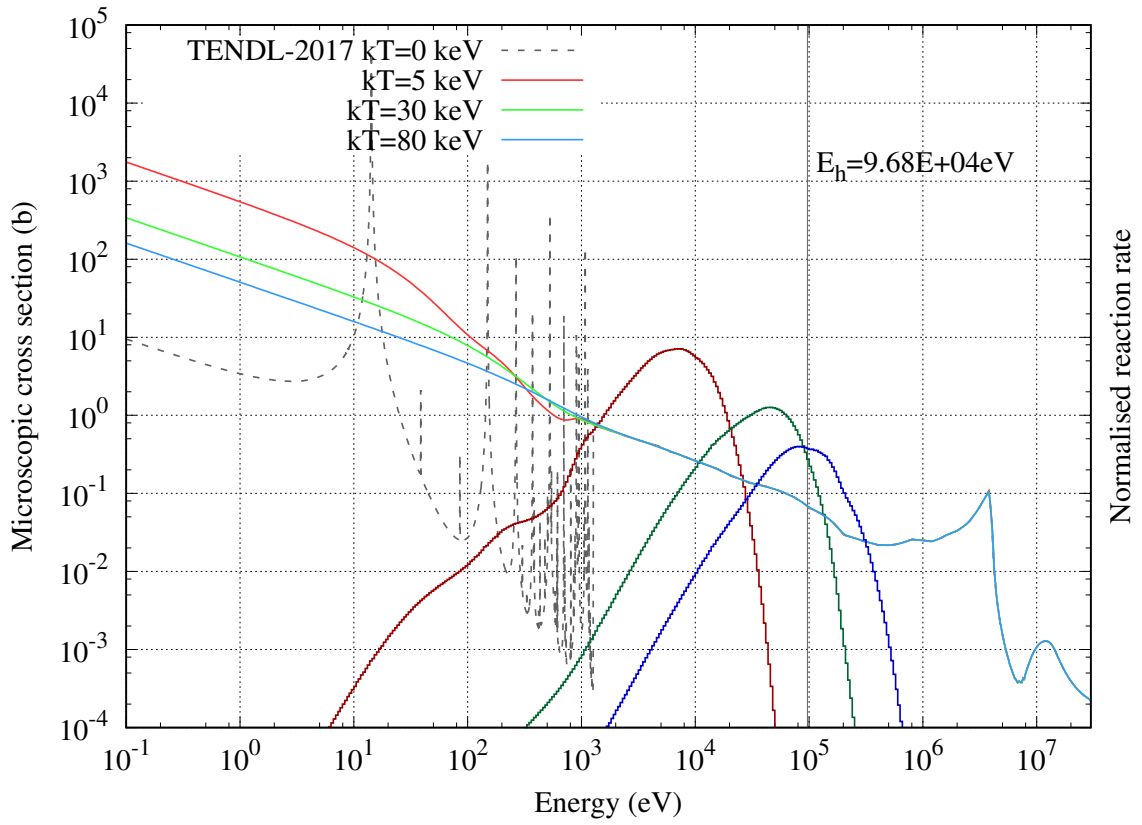
$^{180}\text{Hf}_{72}$ [Stable]



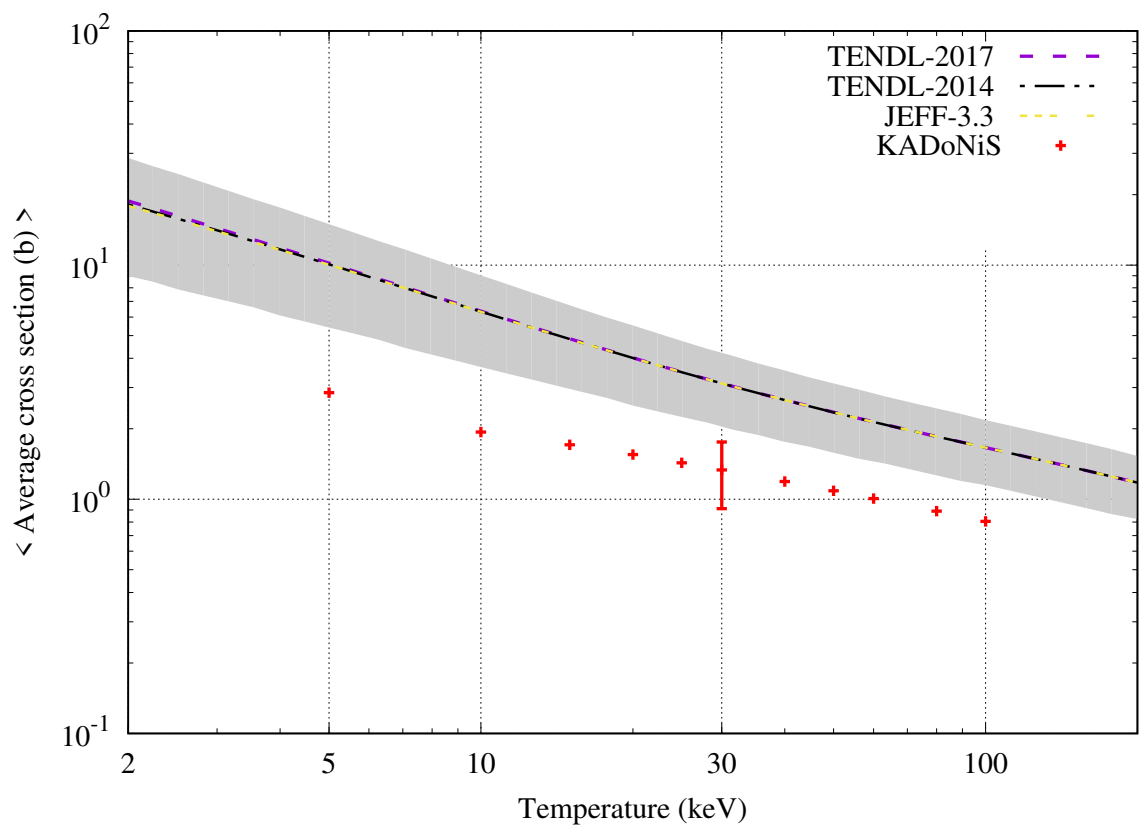
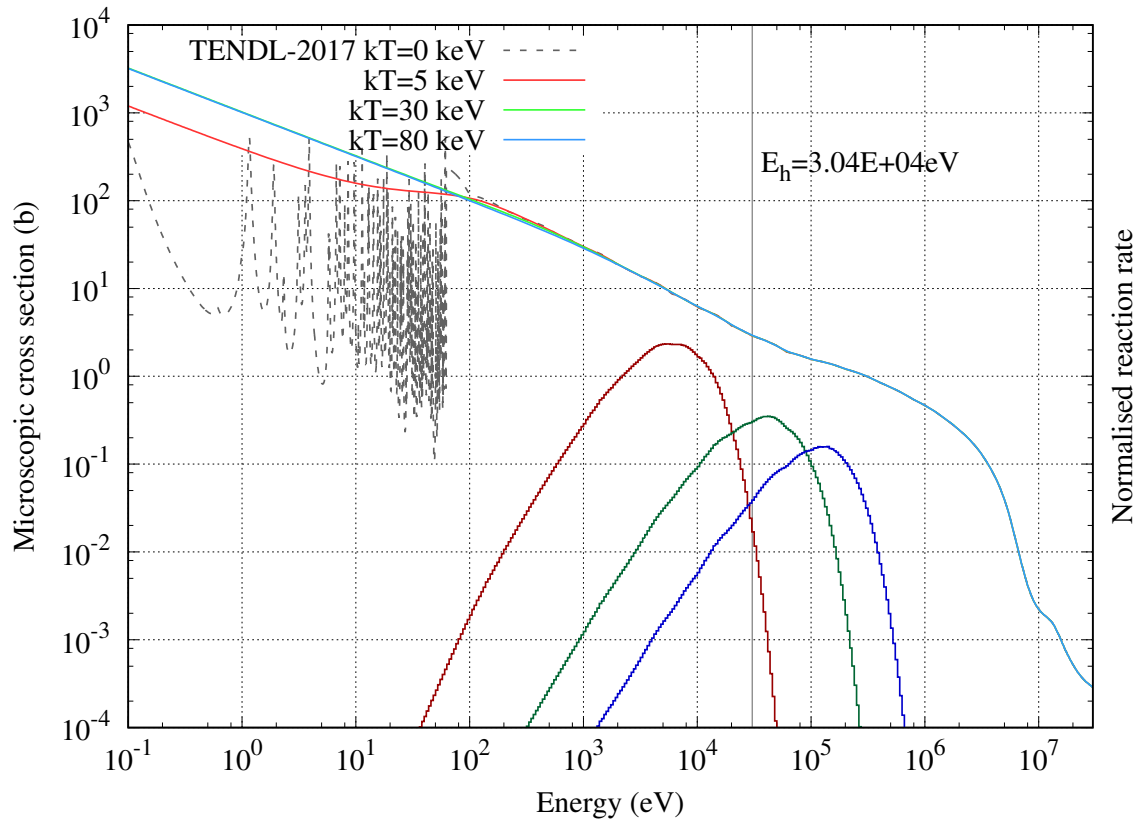
$^{181}\text{Hf}_{72}$ [$T_{1/2} = 42.38$ days] (KADoNiS=SMC)



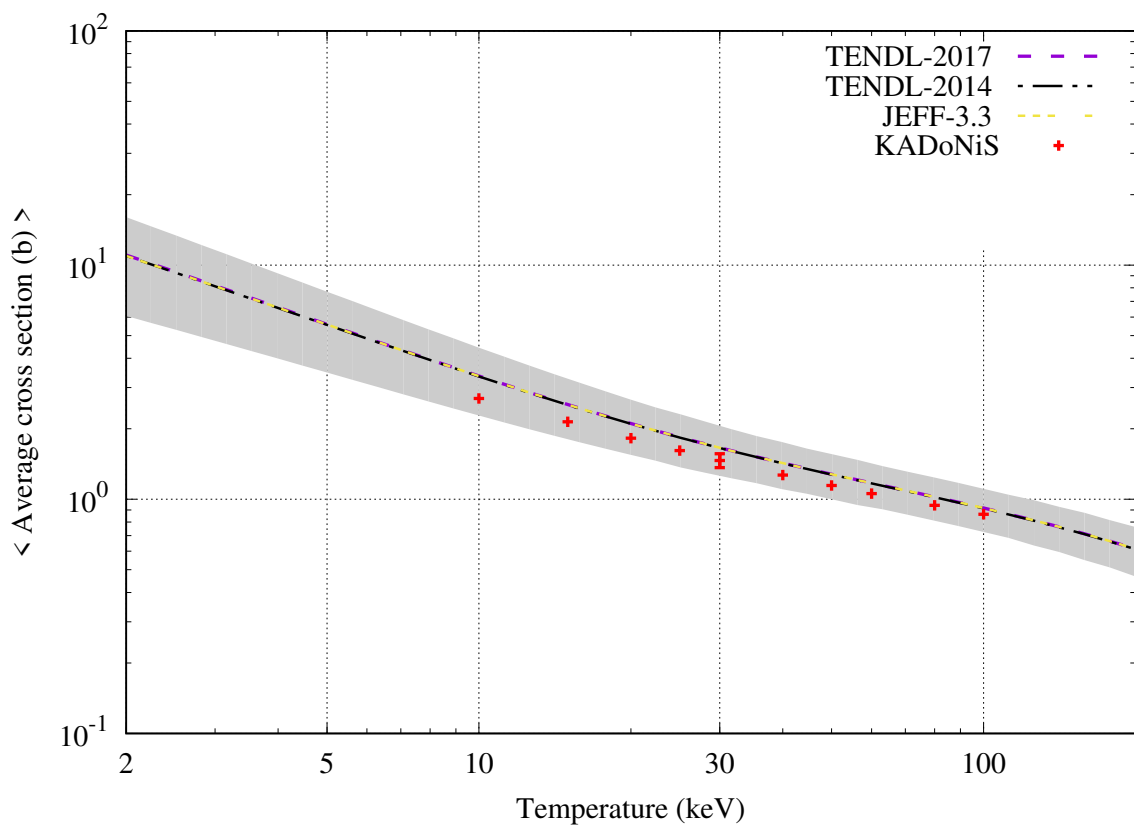
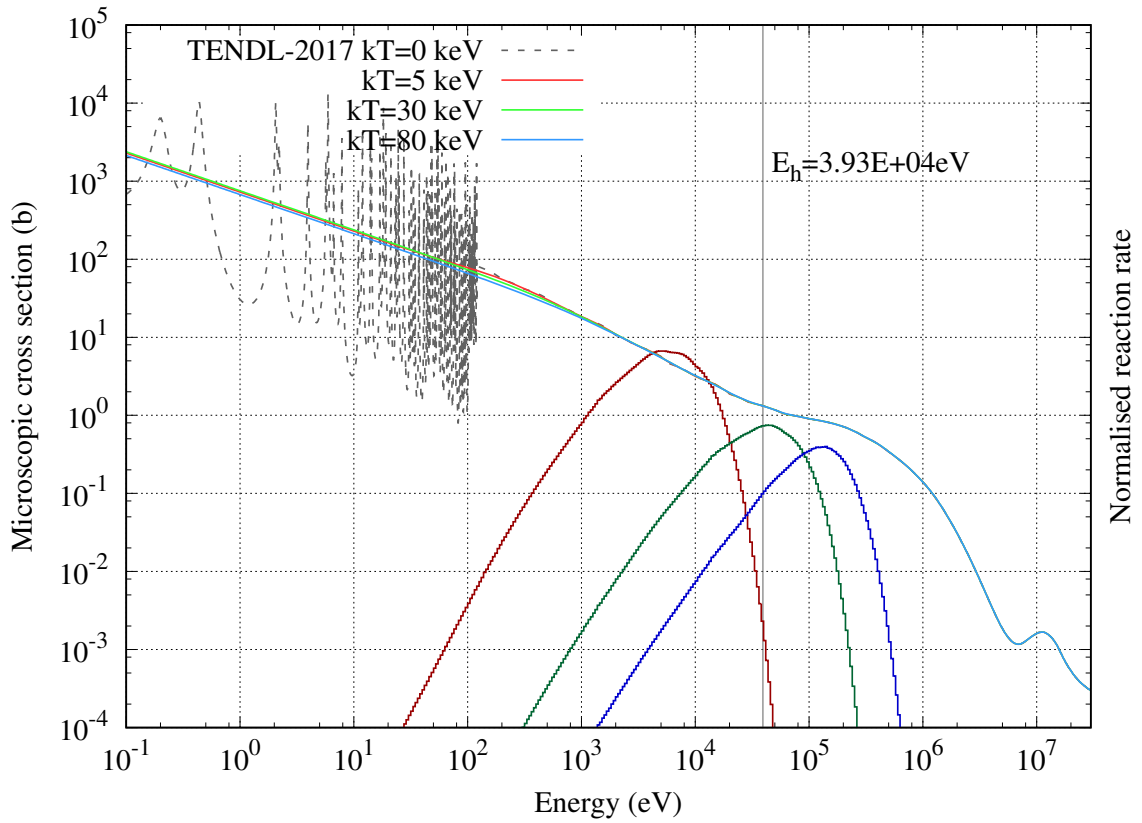
$^{182}\text{Hf}_{72}$ [$T_{1/2} = 9.00 \times 10^6$ years]



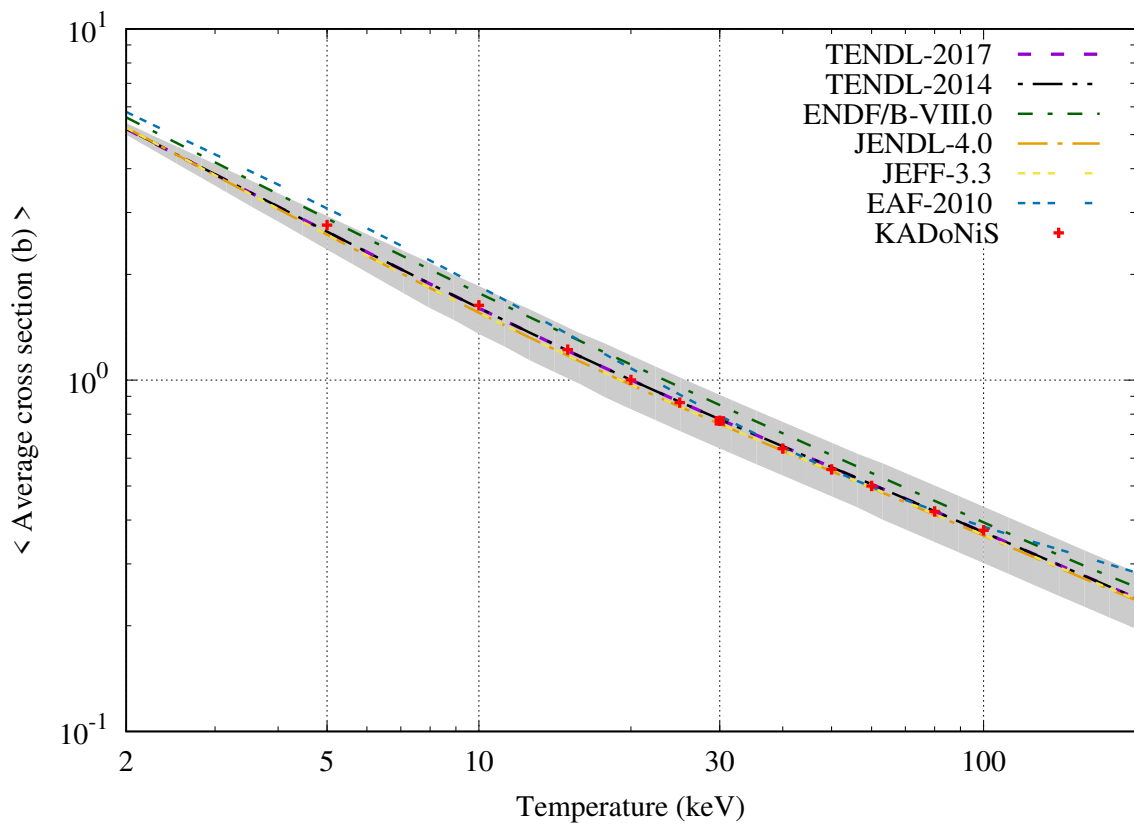
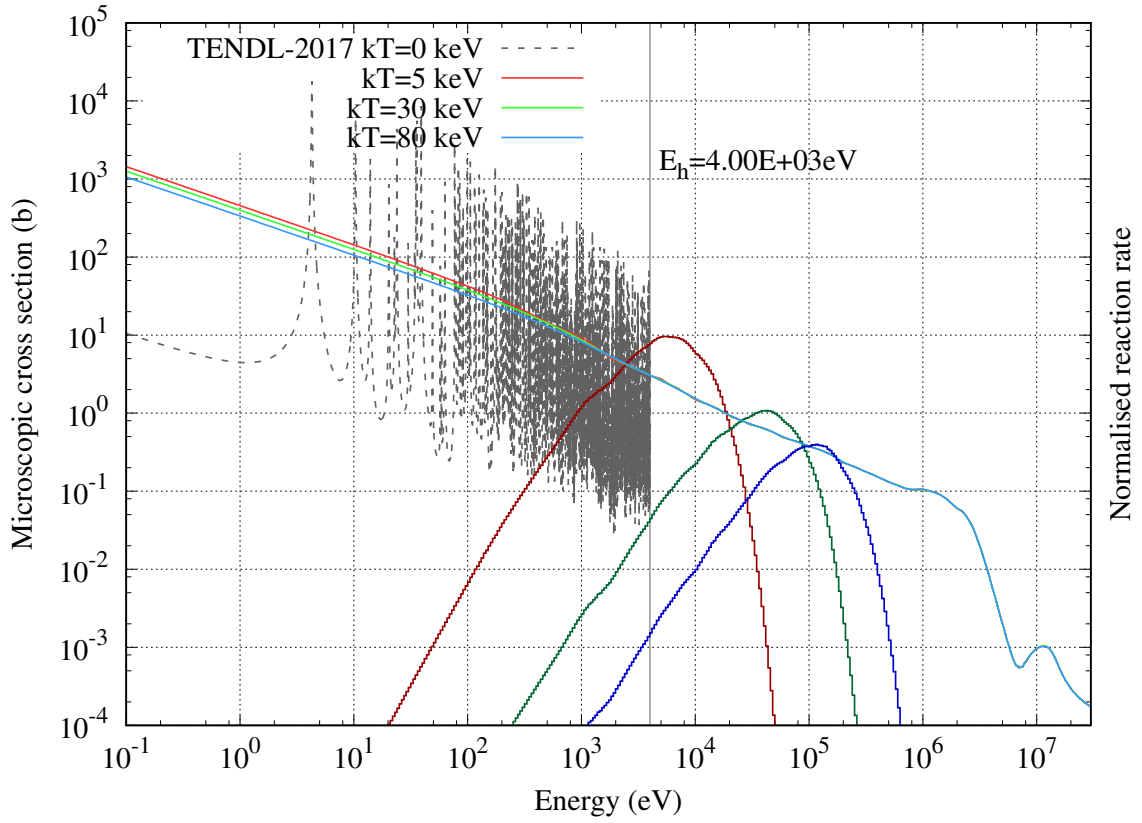
$^{179}\text{Ta}_{73}$ [$T_{1/2} = 1.61$ years] (KADoNiS=SMC)



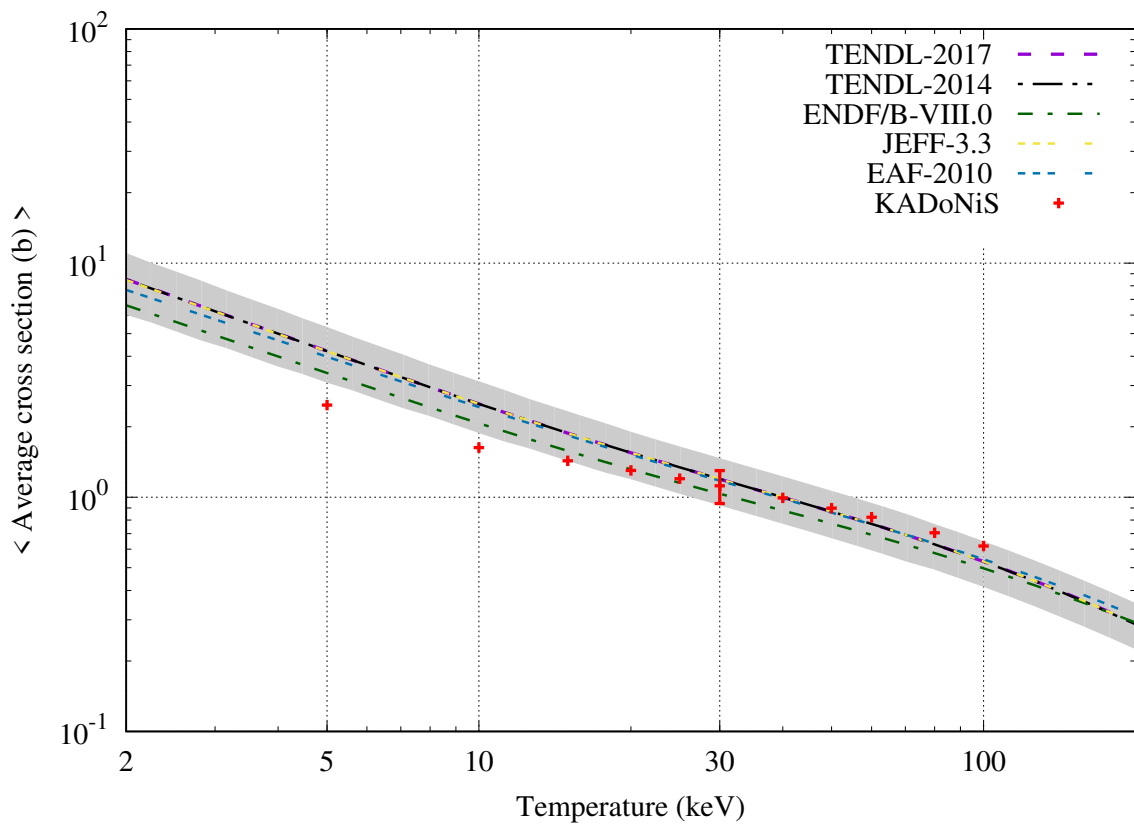
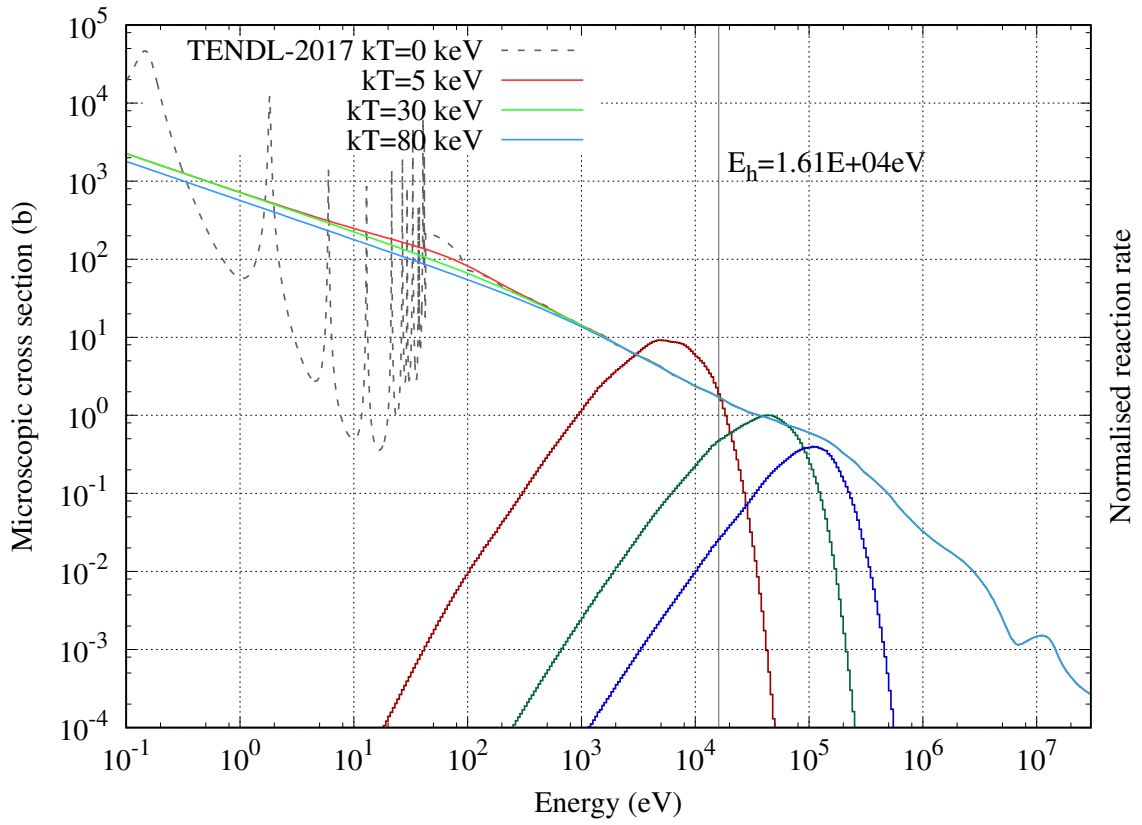
$^{180m}\text{Ta}_{73}$ [$T_{1/2} = 1.80 \times 10^{15}$ years]



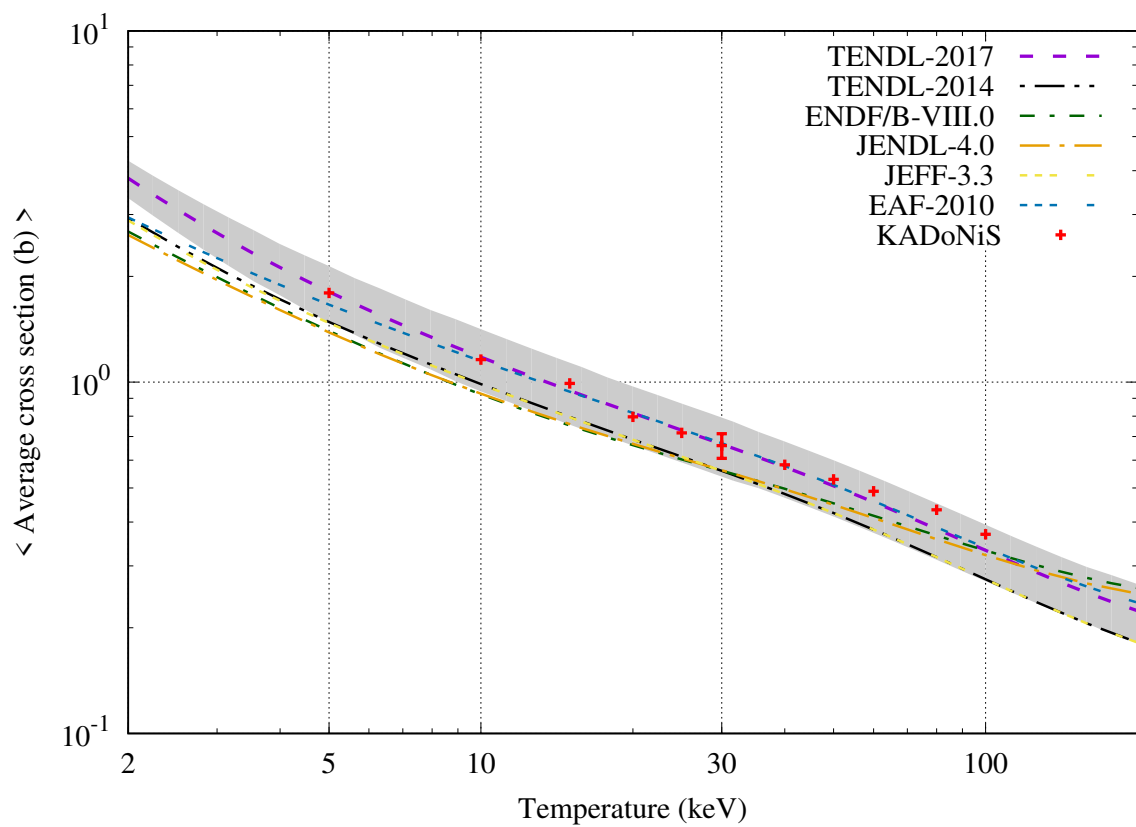
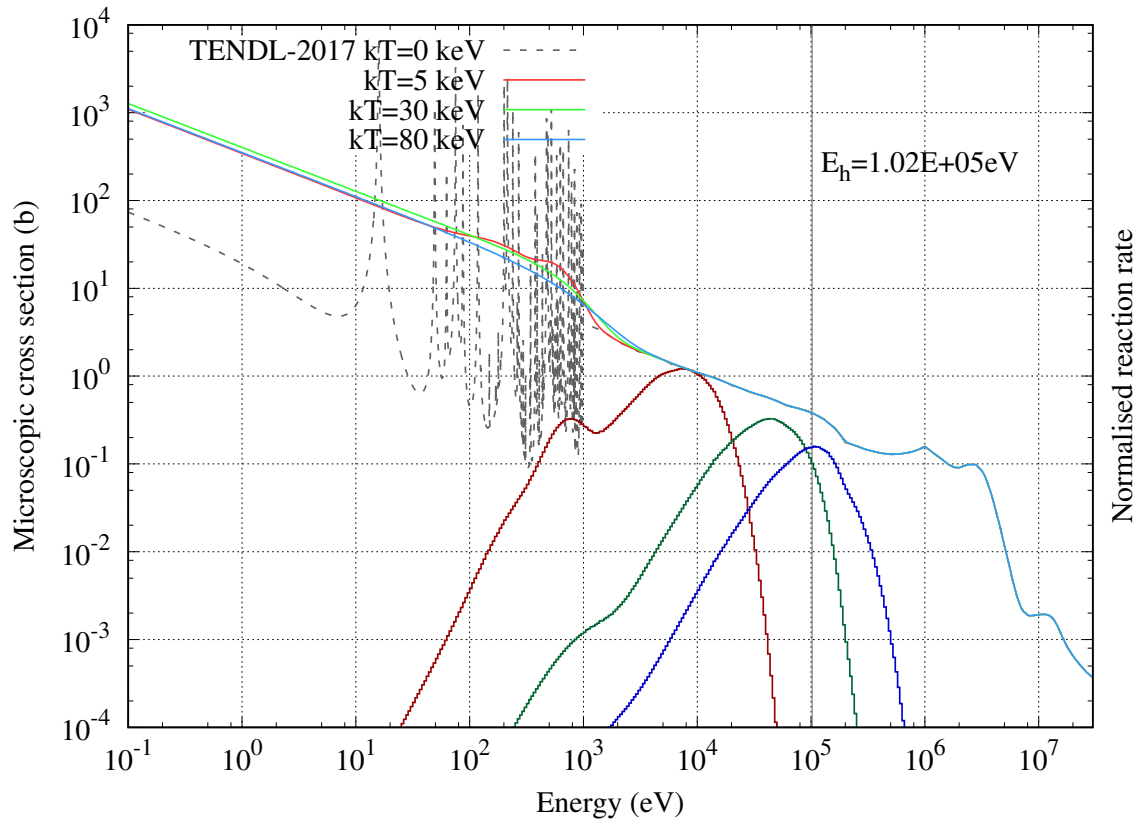
$^{181}\text{Ta}_{73}$ [Stable]



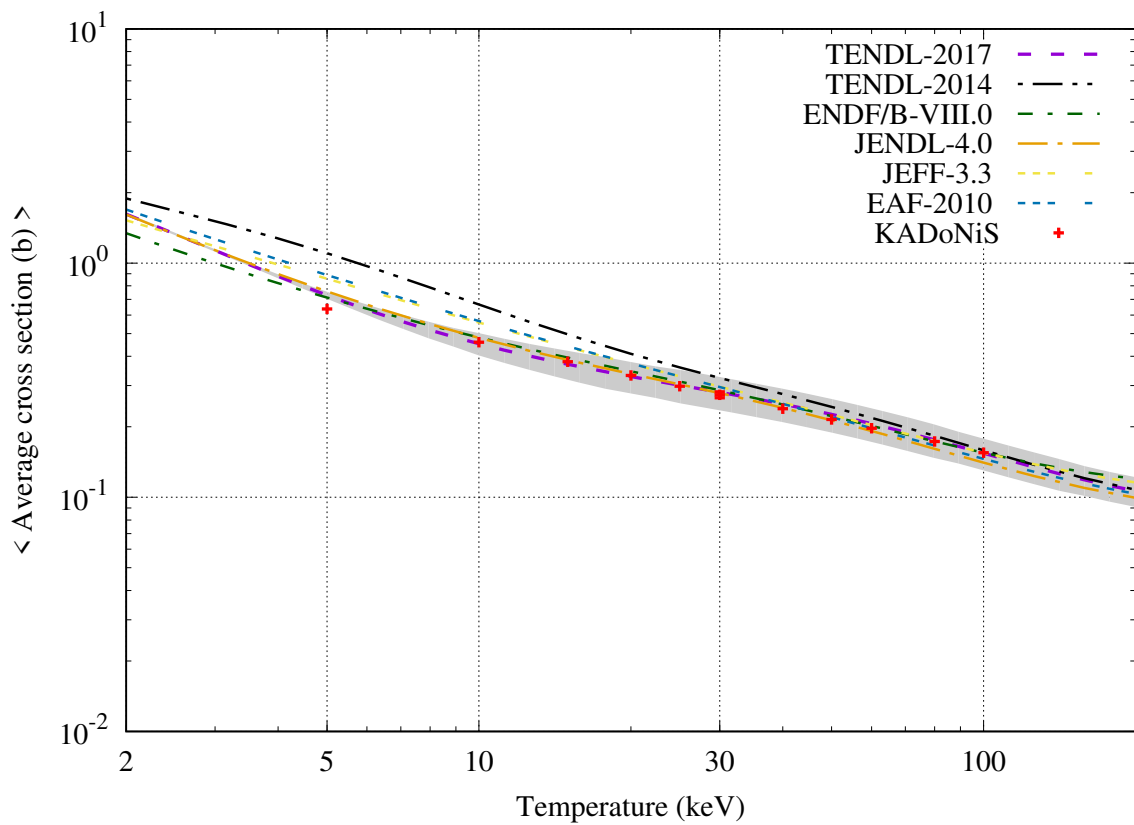
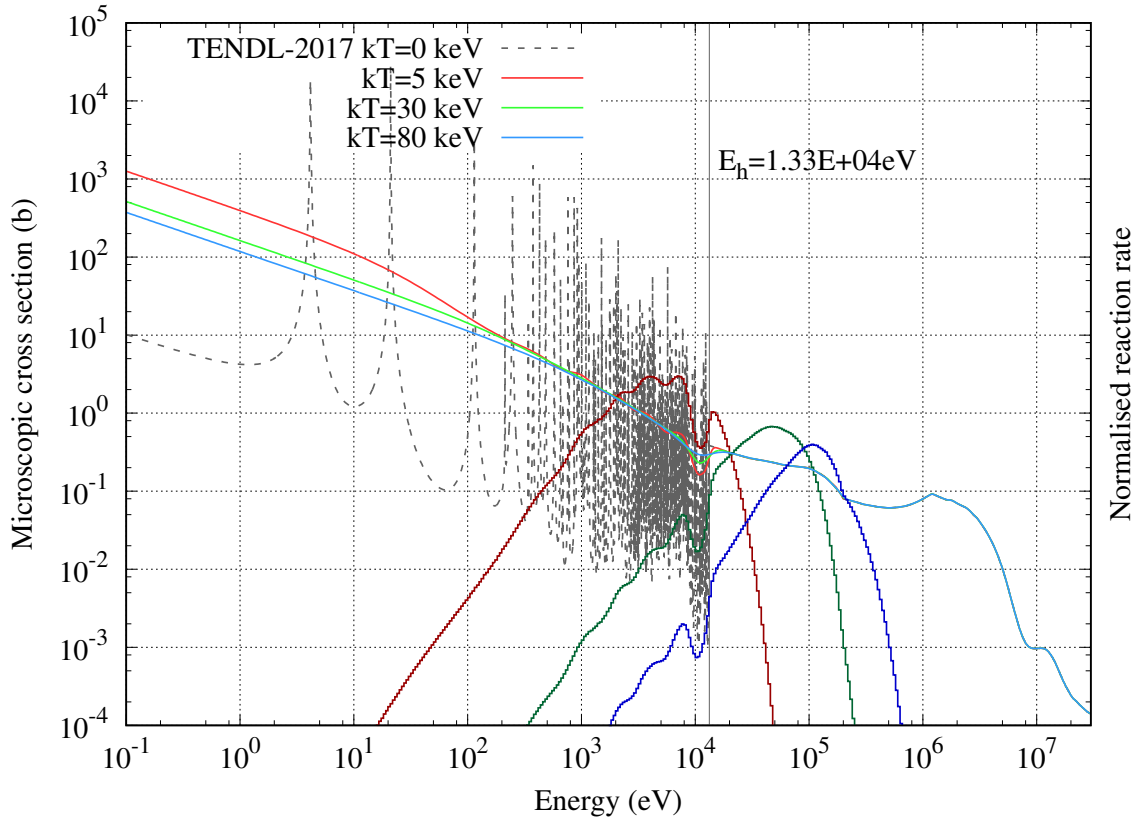
$^{182}\text{Ta}_{73}$ [$T_{1/2} = 114.70$ days] (KADoNiS=SMC)



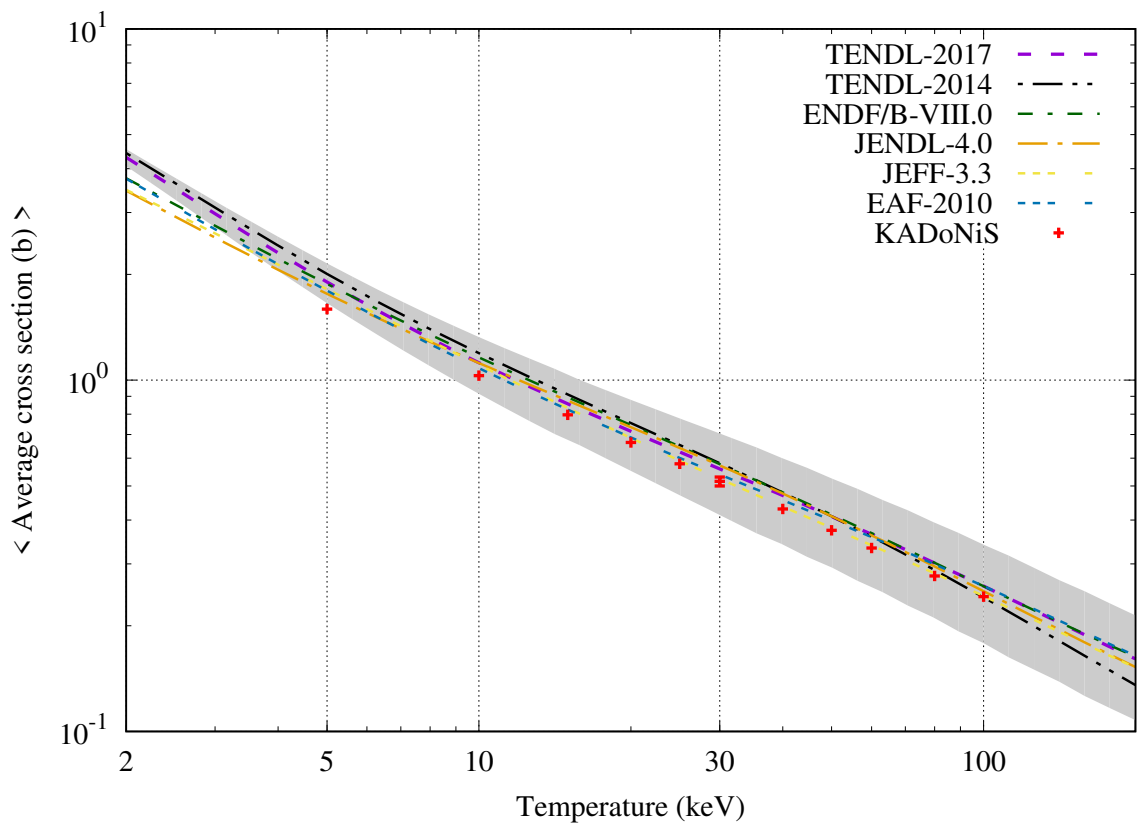
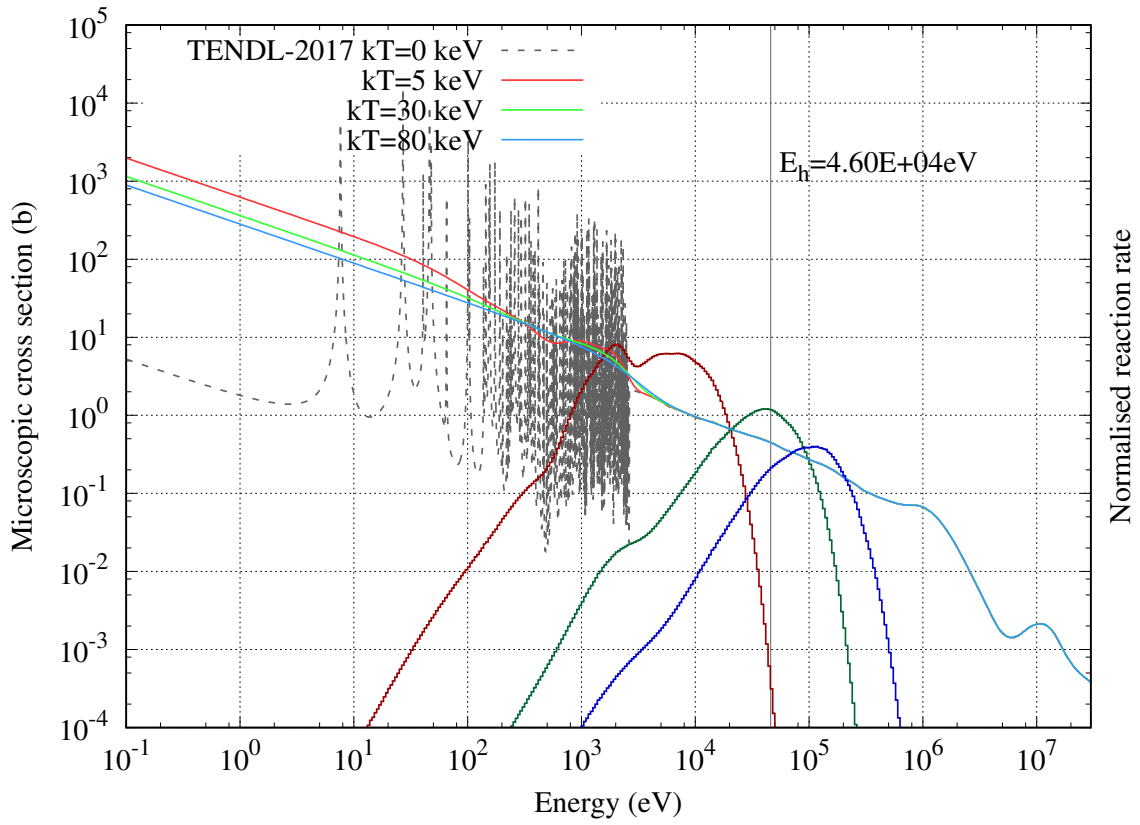
$^{180}\text{W}_{74}$ [Stable]



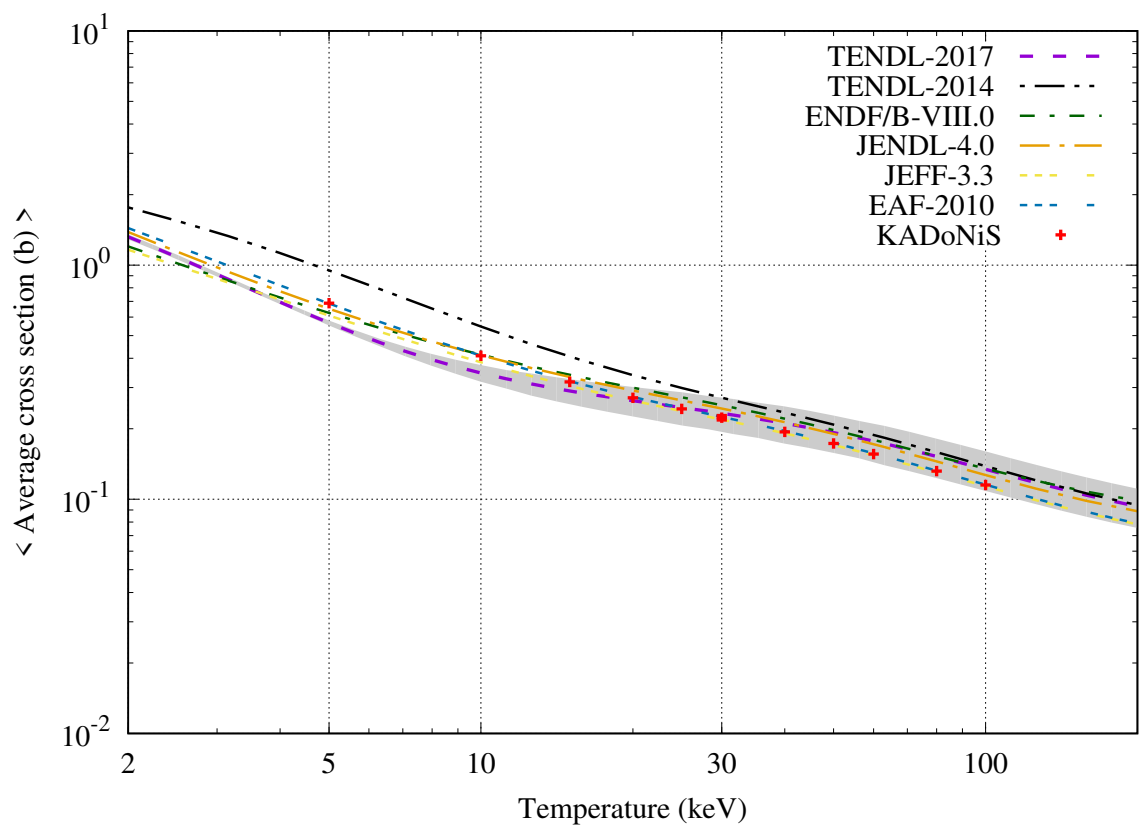
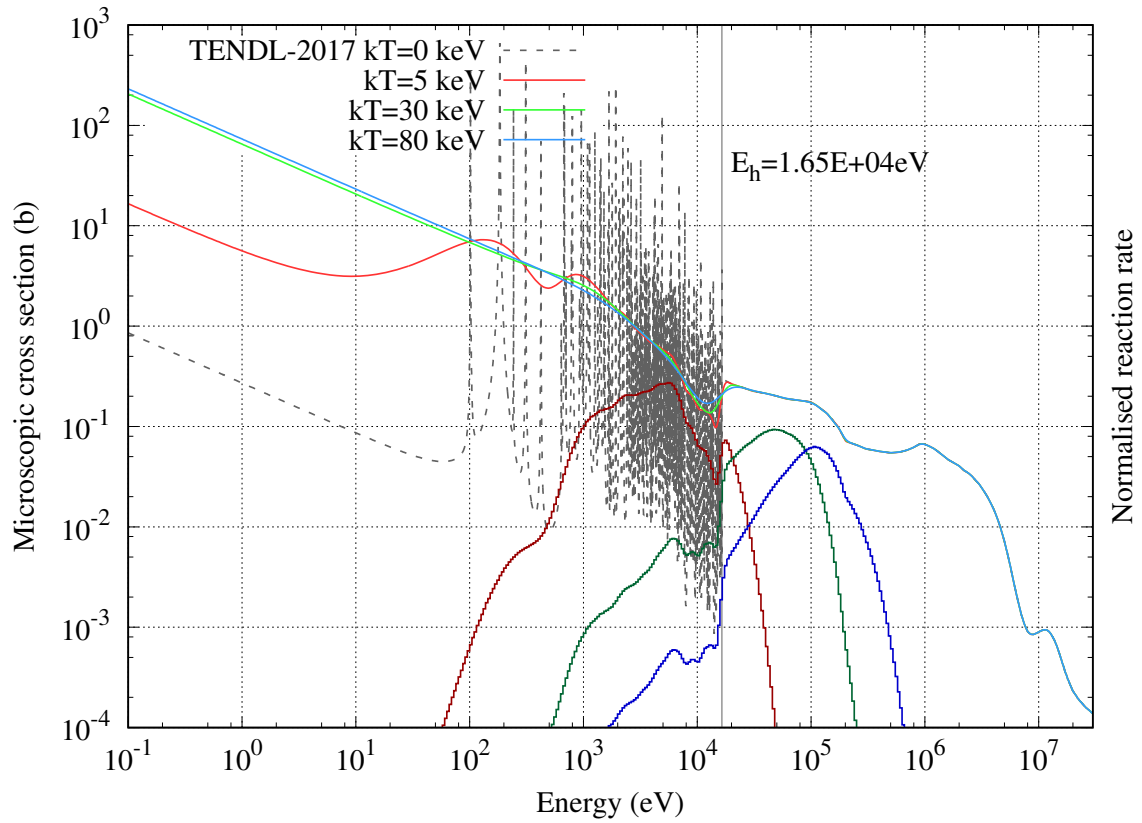
$^{182}\text{W}_{74}$ [Stable]



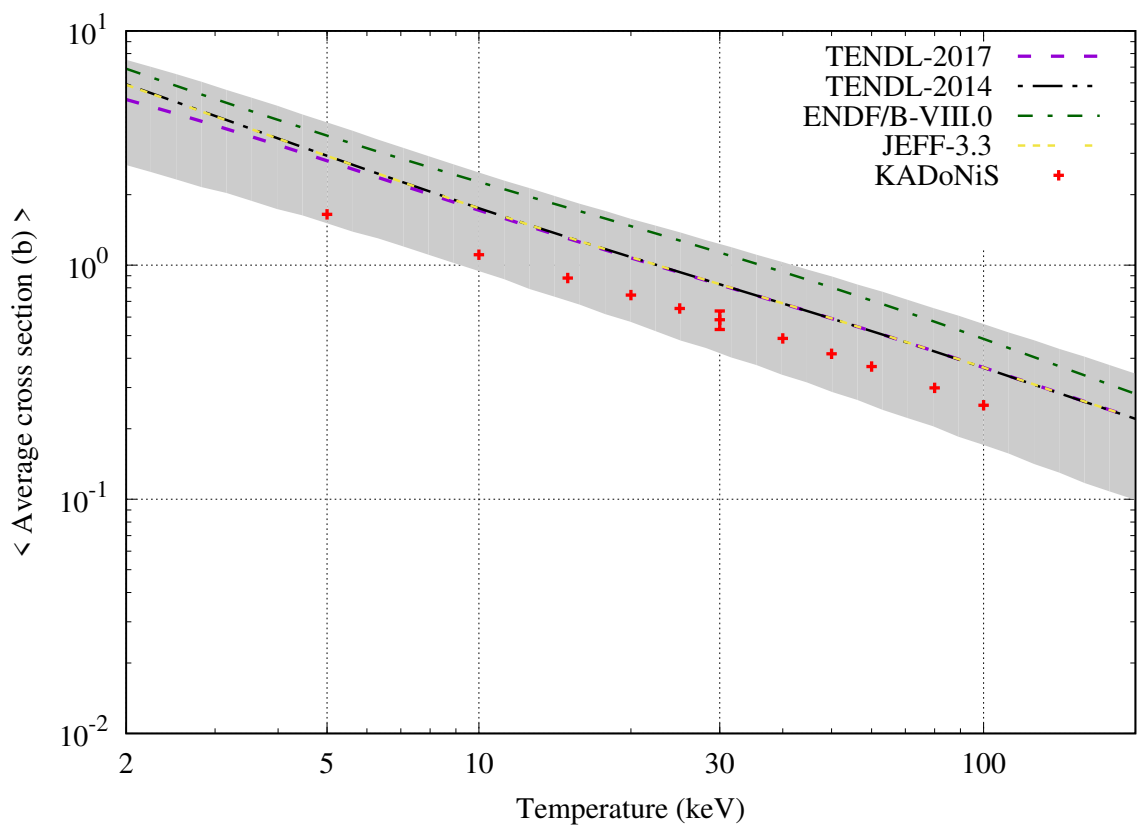
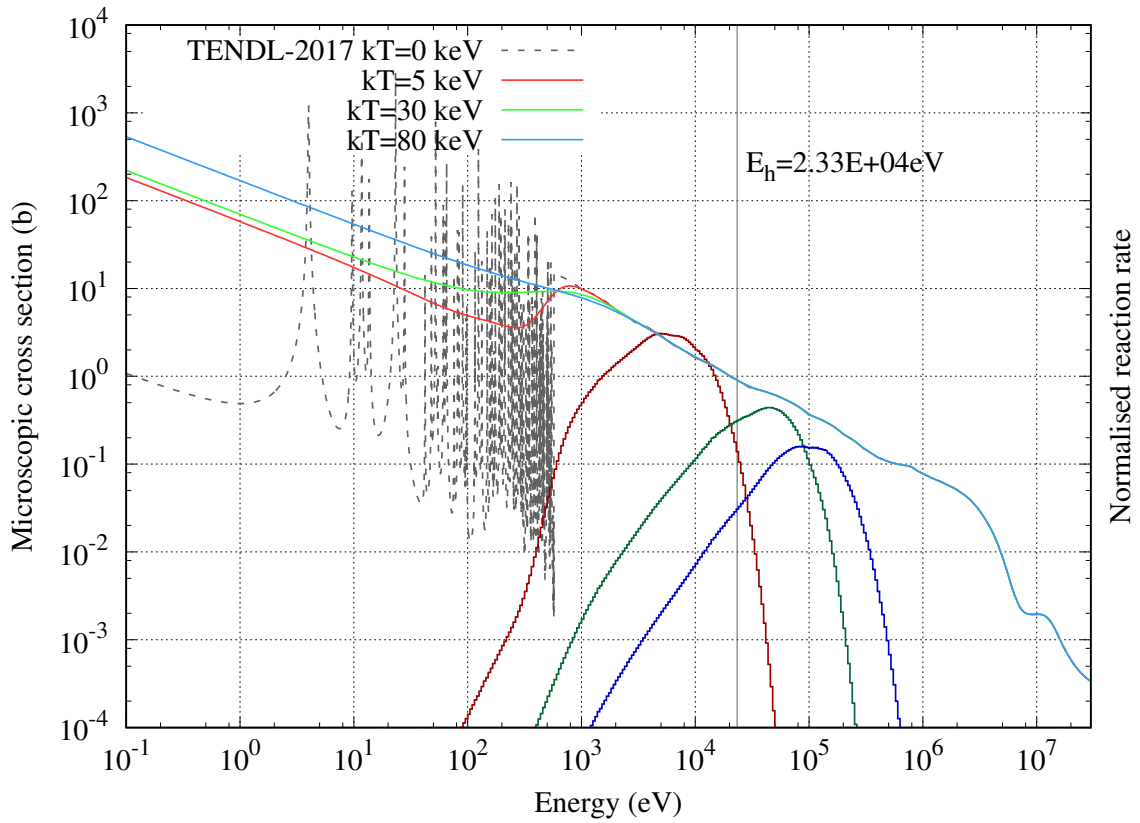
$^{183}\text{W}_{74}$ [$T_{1/2} = 1.10 \times 10^{17}$ years]



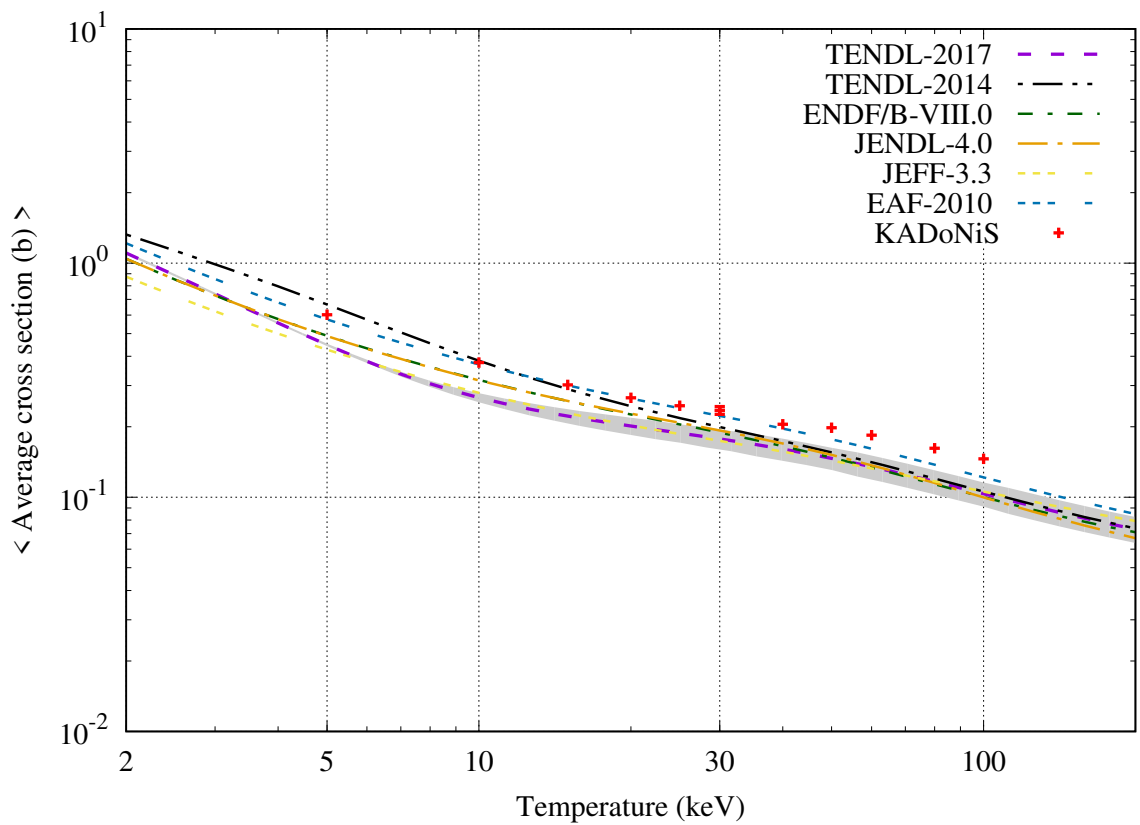
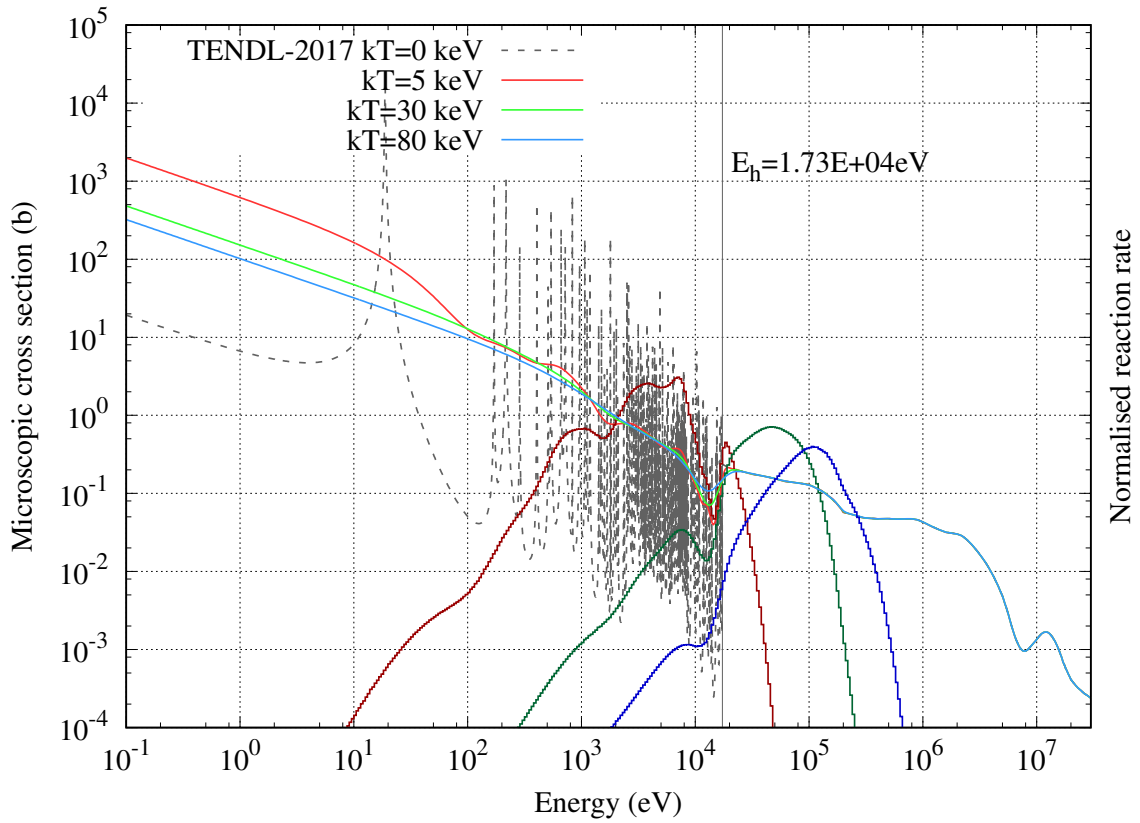
$^{184}\text{W}_{74}$ [$T_{1/2} = 4.00 \times 10^{17}$ years]



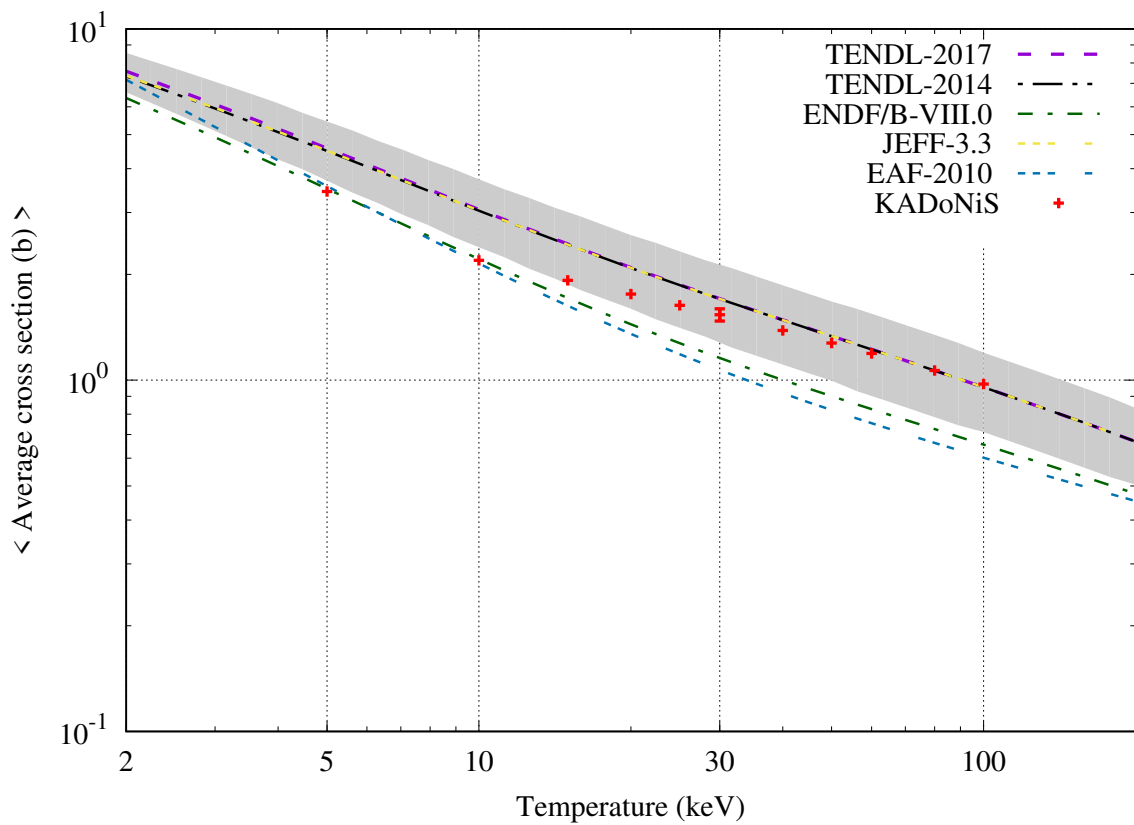
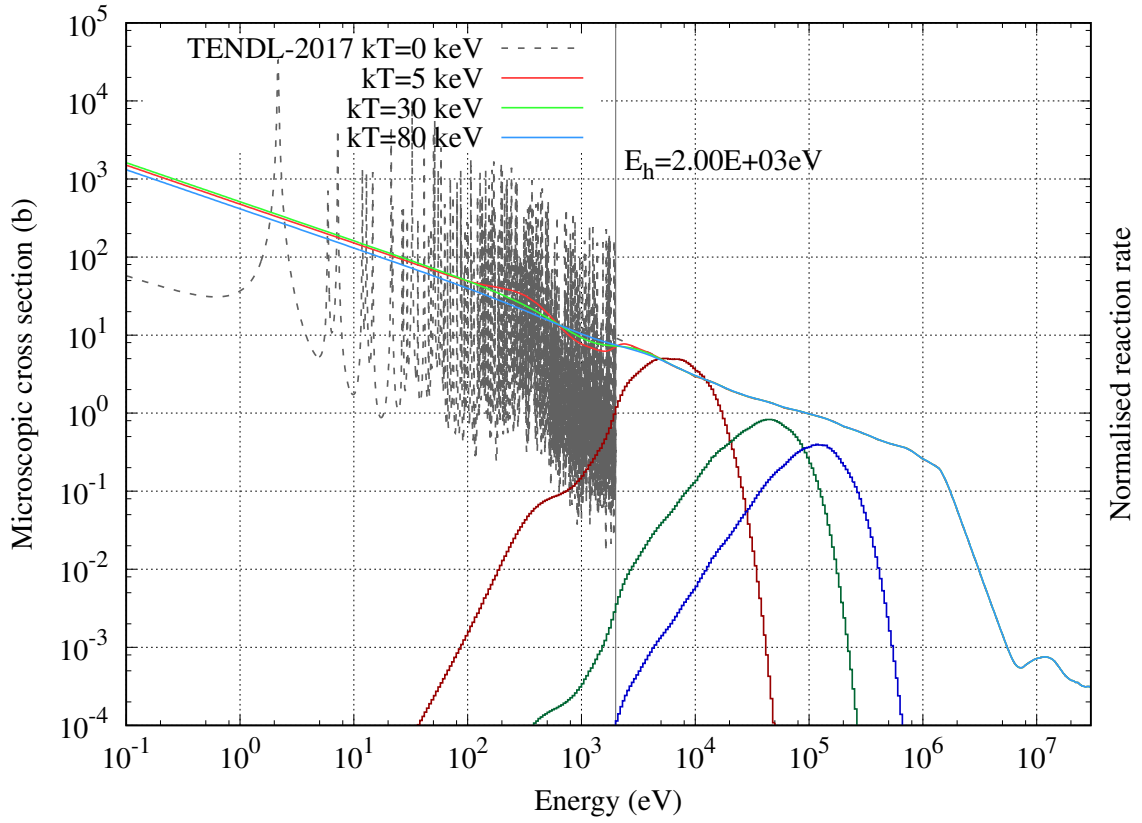
$^{185}\text{W}_{74}$ [$T_{1/2} = 75.10$ days]



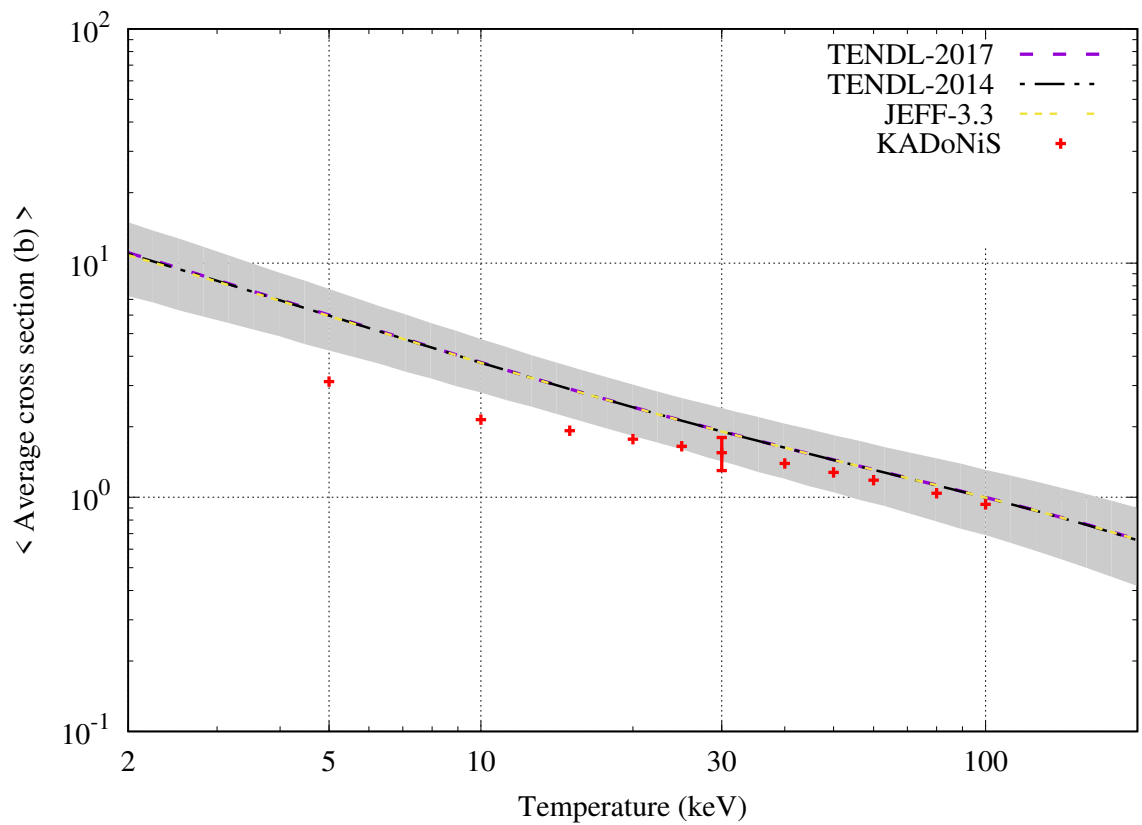
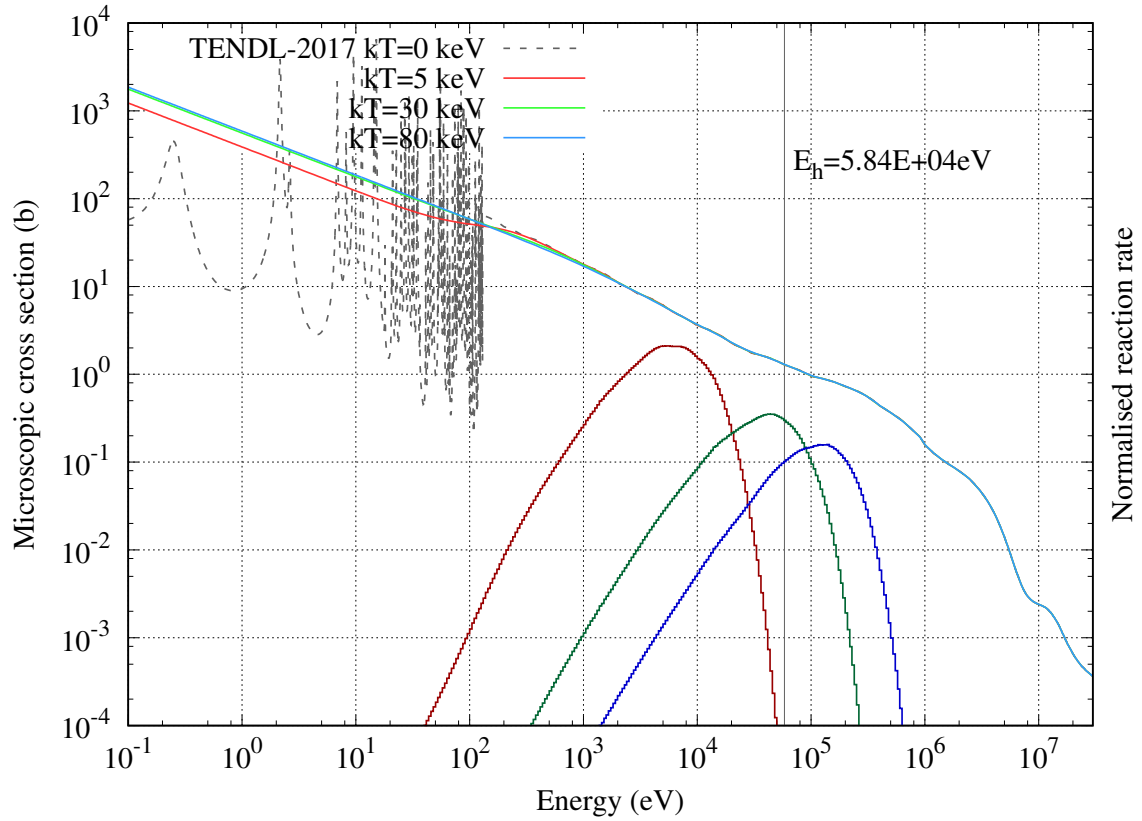
$^{186}\text{W}_{74}$ [$T_{1/2} = 5.90 \times 10^{17}$ years]



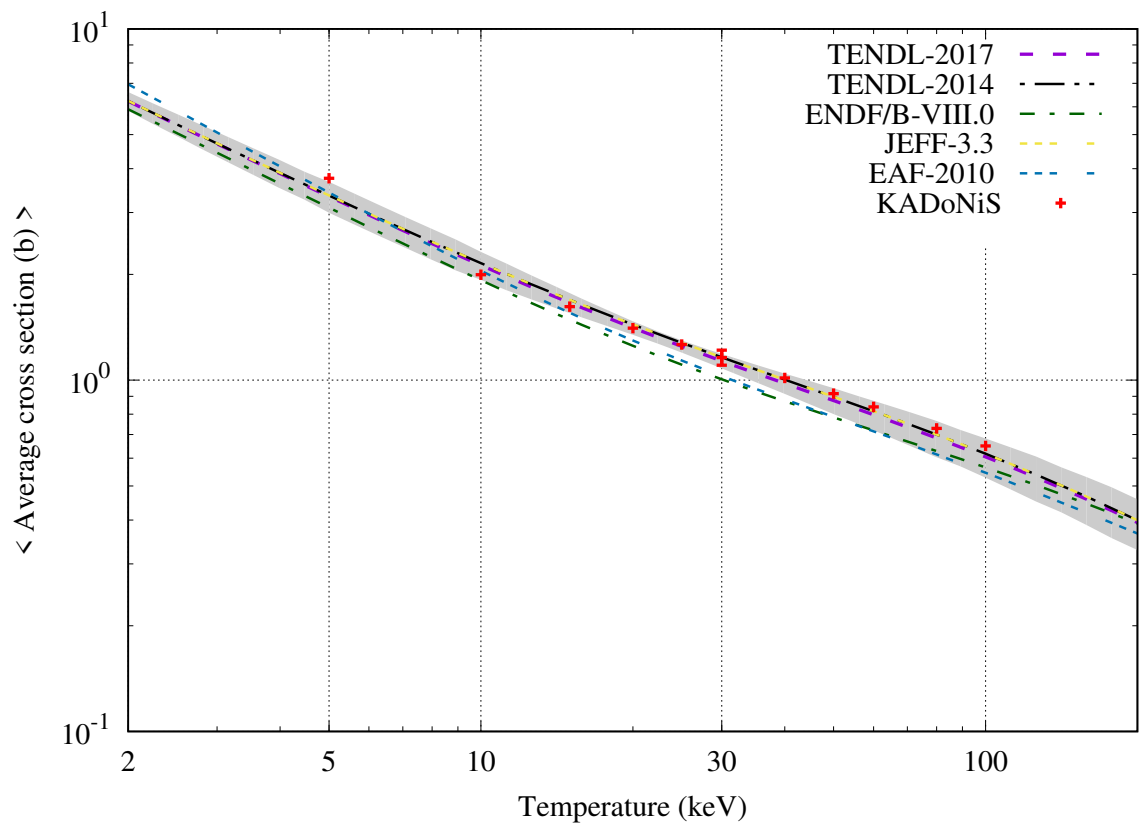
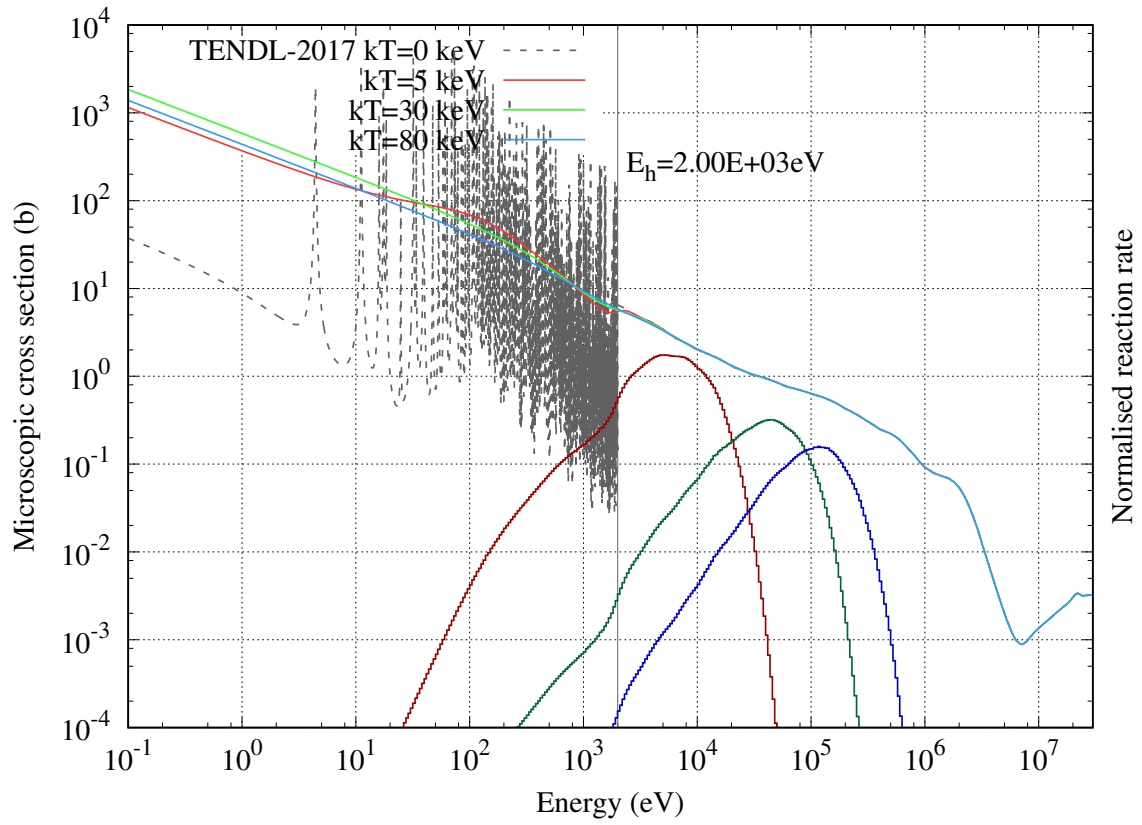
$^{185}\text{Re}_{75}$ [Stable]



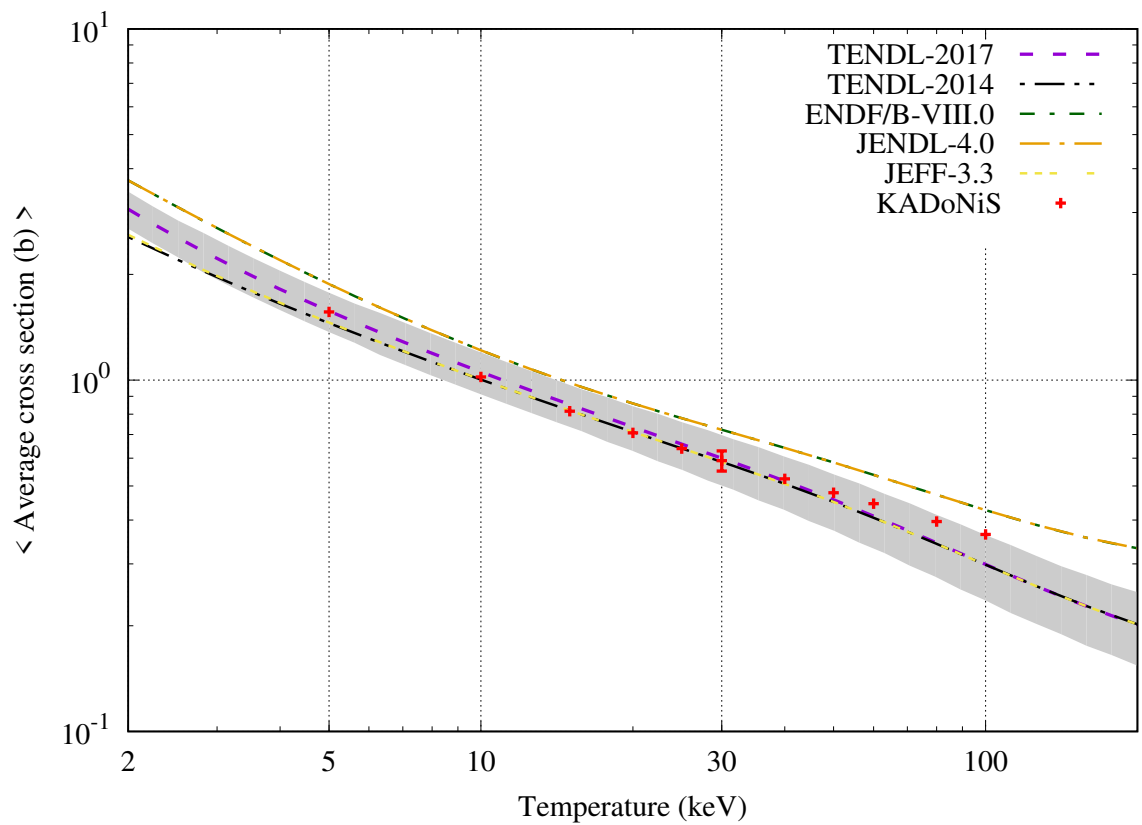
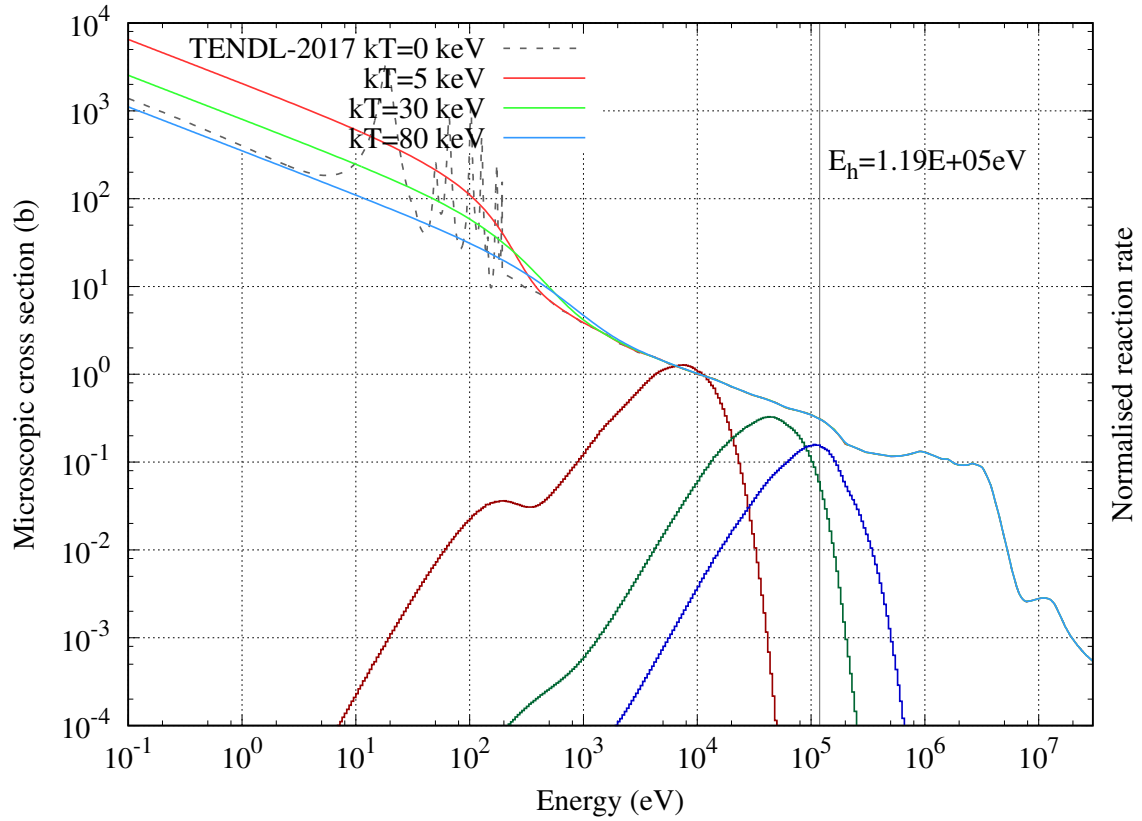
$^{186}\text{Re}_{75}$ [$T_{1/2} = 3.75$ days] (KADoNiS=SMC)



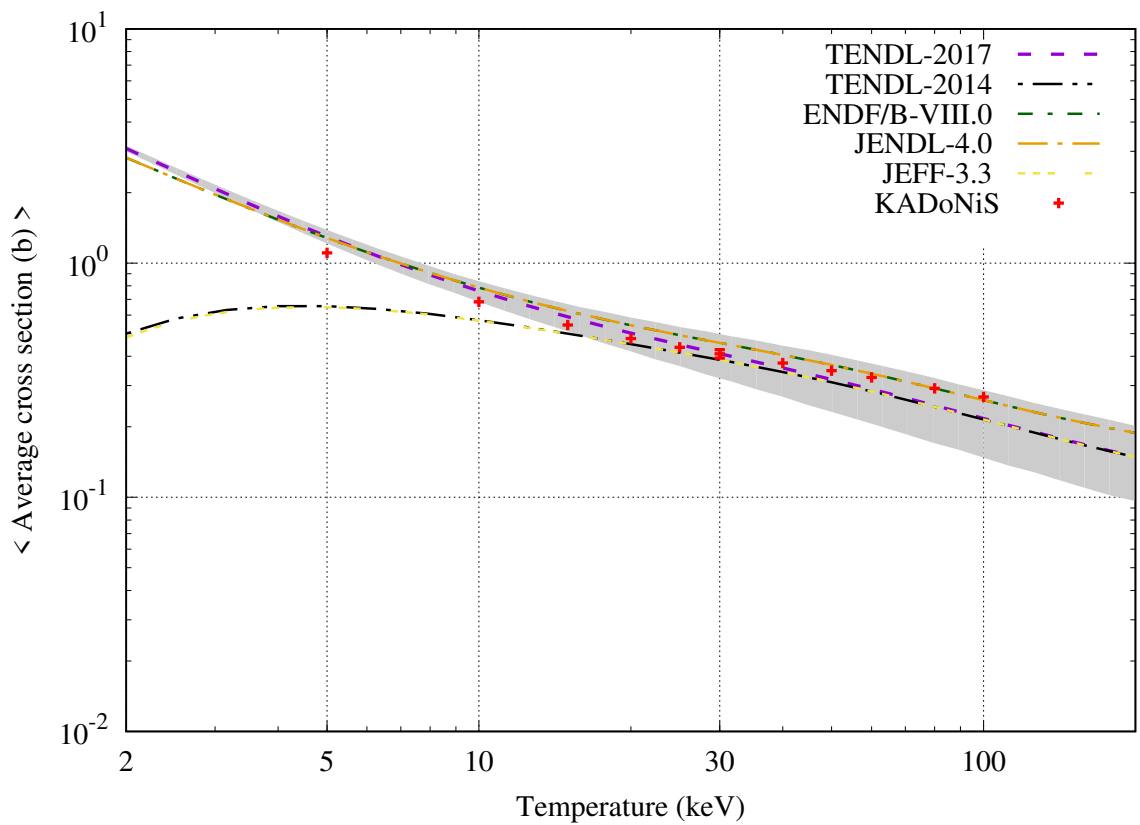
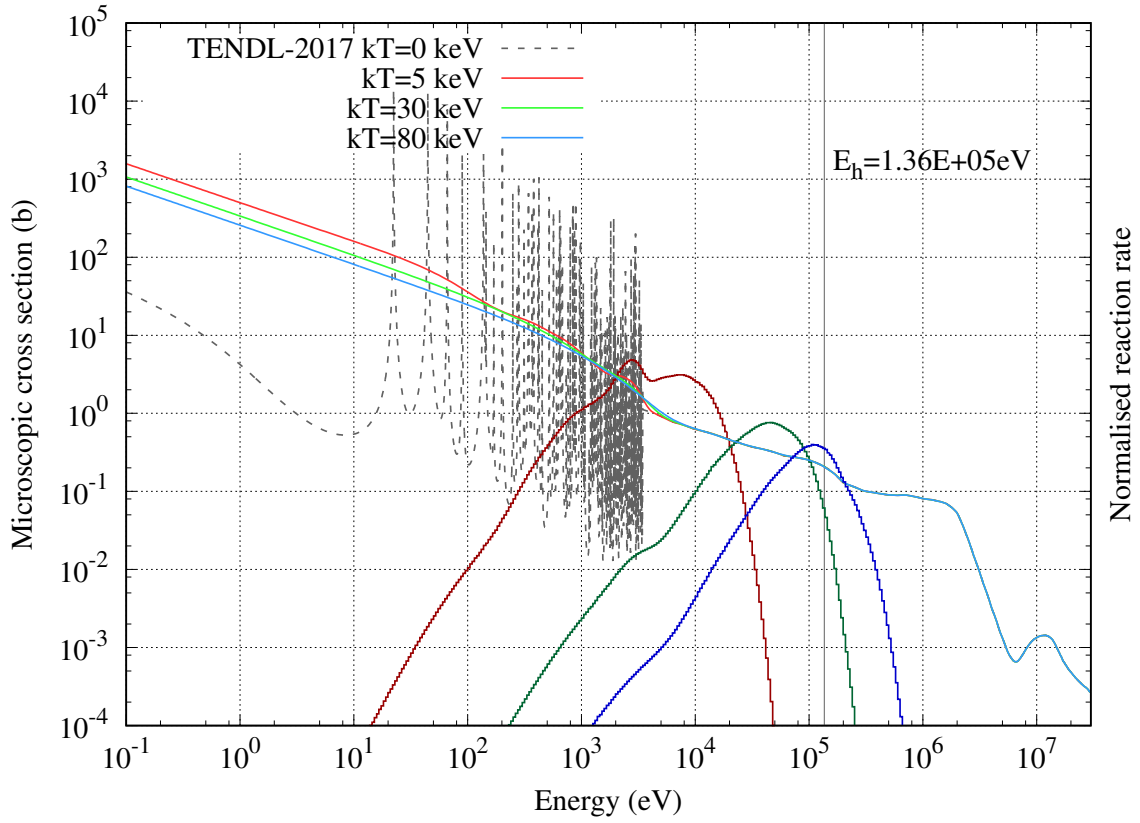
$^{187}\text{Re}_{75}$ [$T_{1/2} = 4.35 \times 10^{10}$ years]



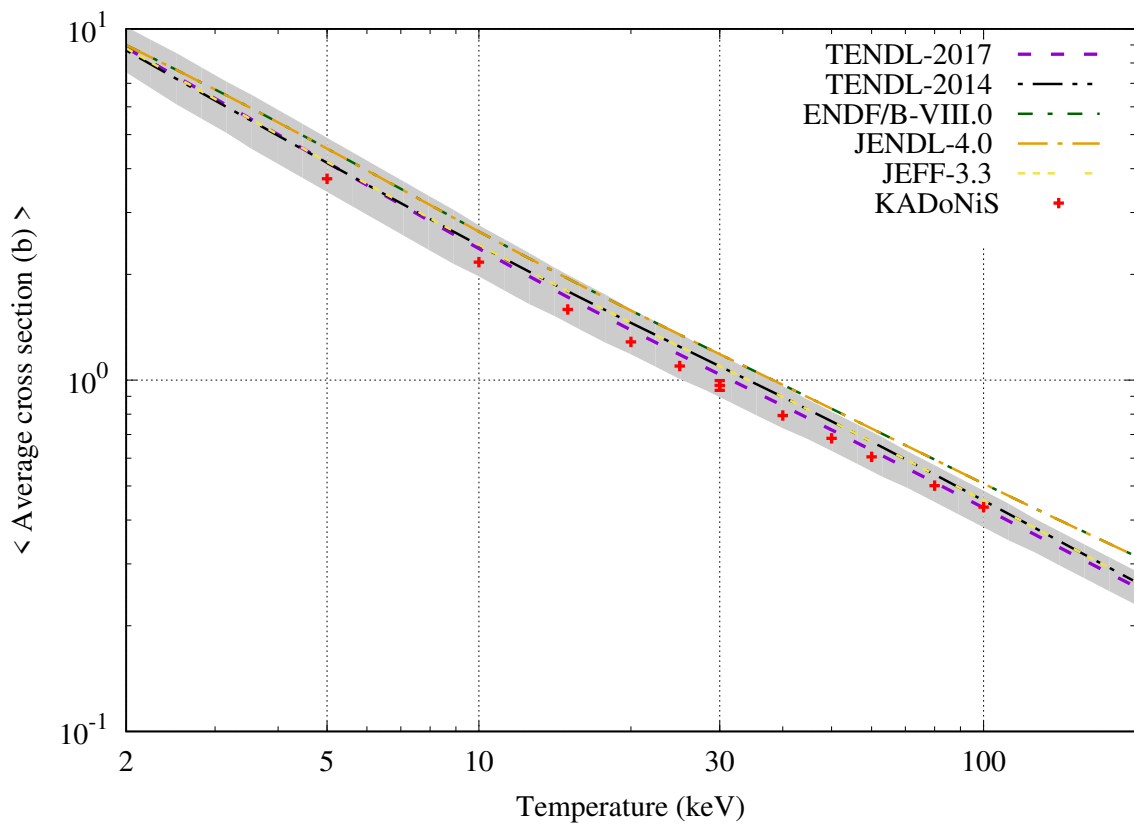
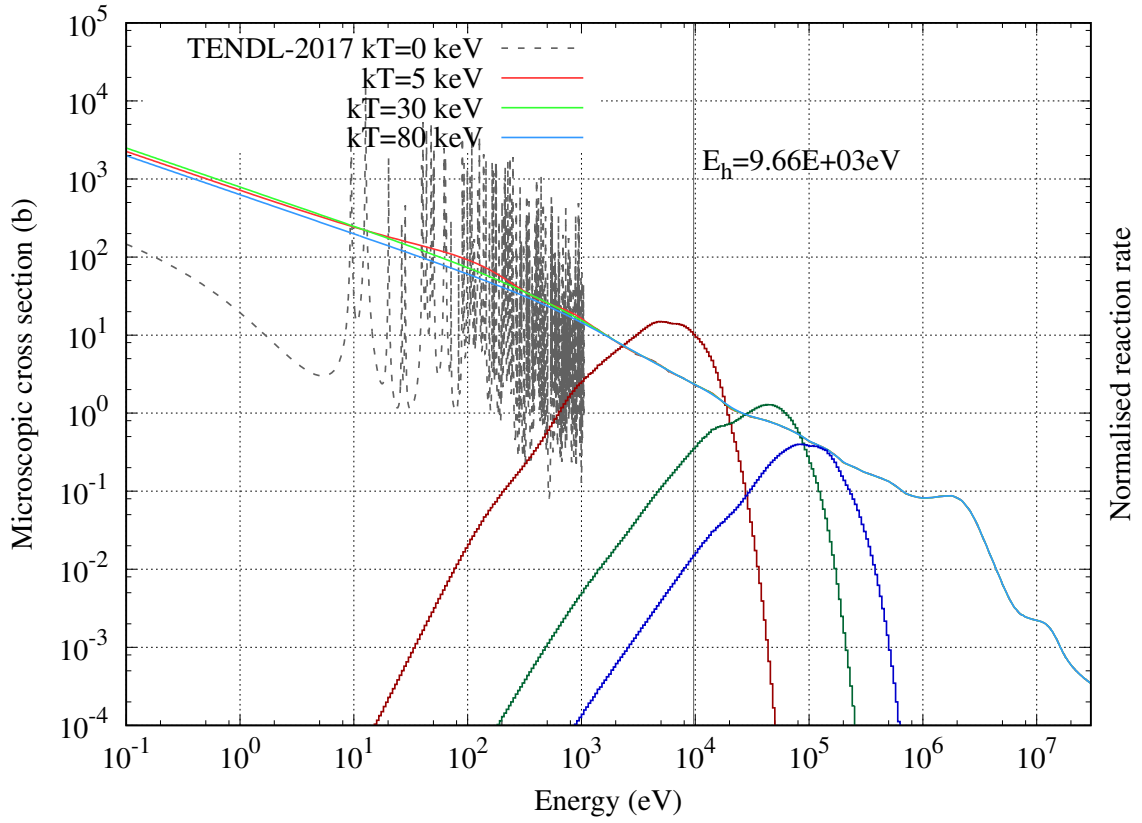
$^{184}\text{Os}_{76}$ [$T_{1/2} = 5.60 \times 10^{13}$ years]



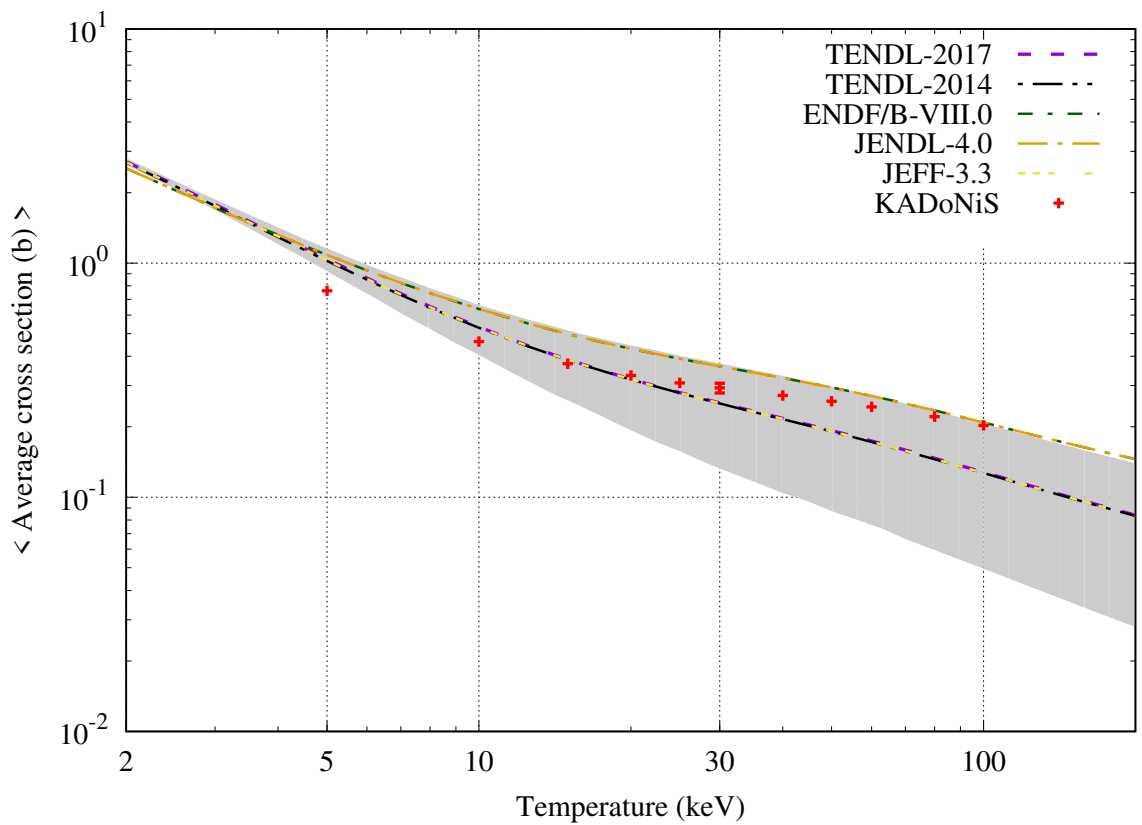
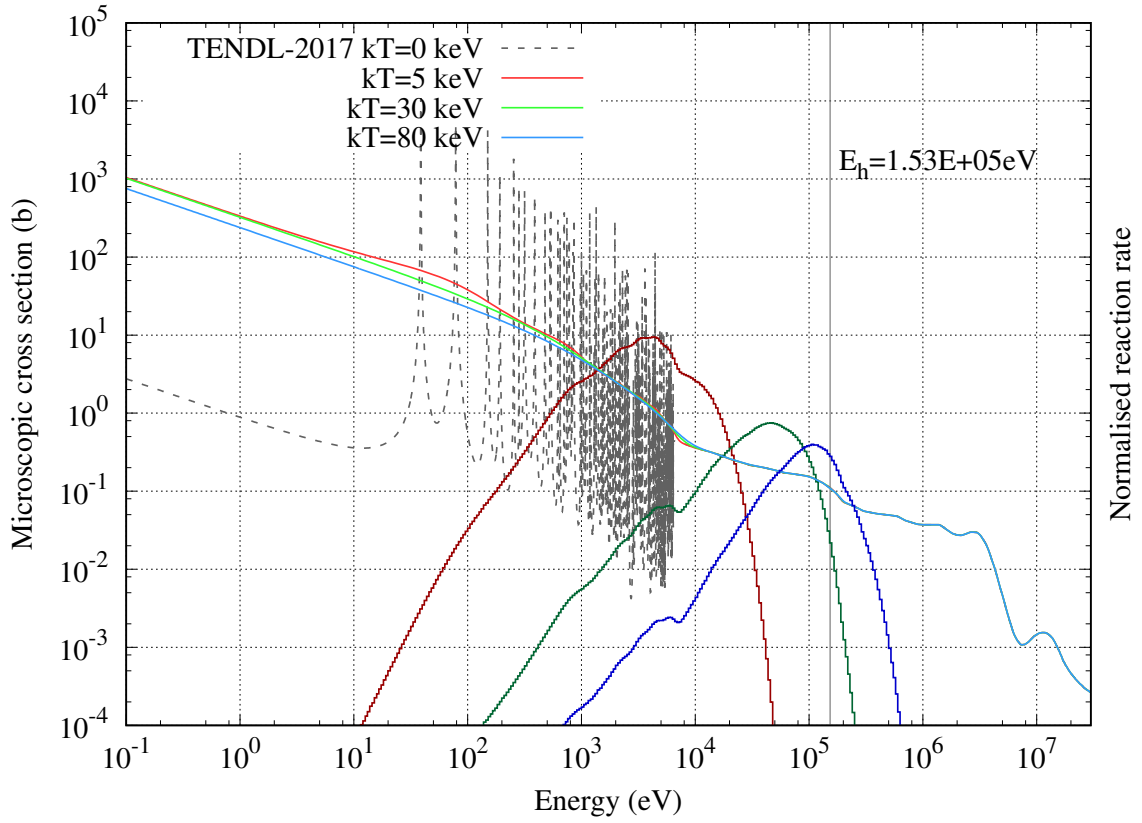
$^{186}\text{Os}_{76}$ [$T_{1/2} = 2.00 \times 10^{15}$ years]



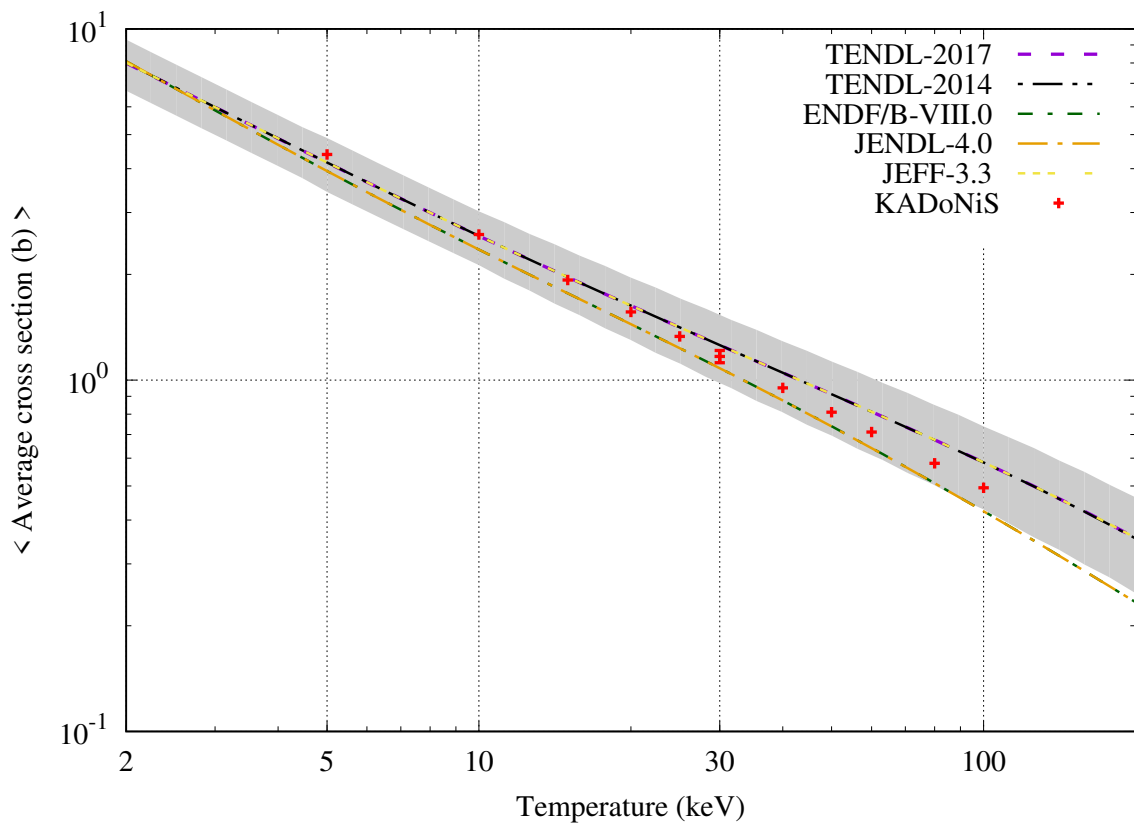
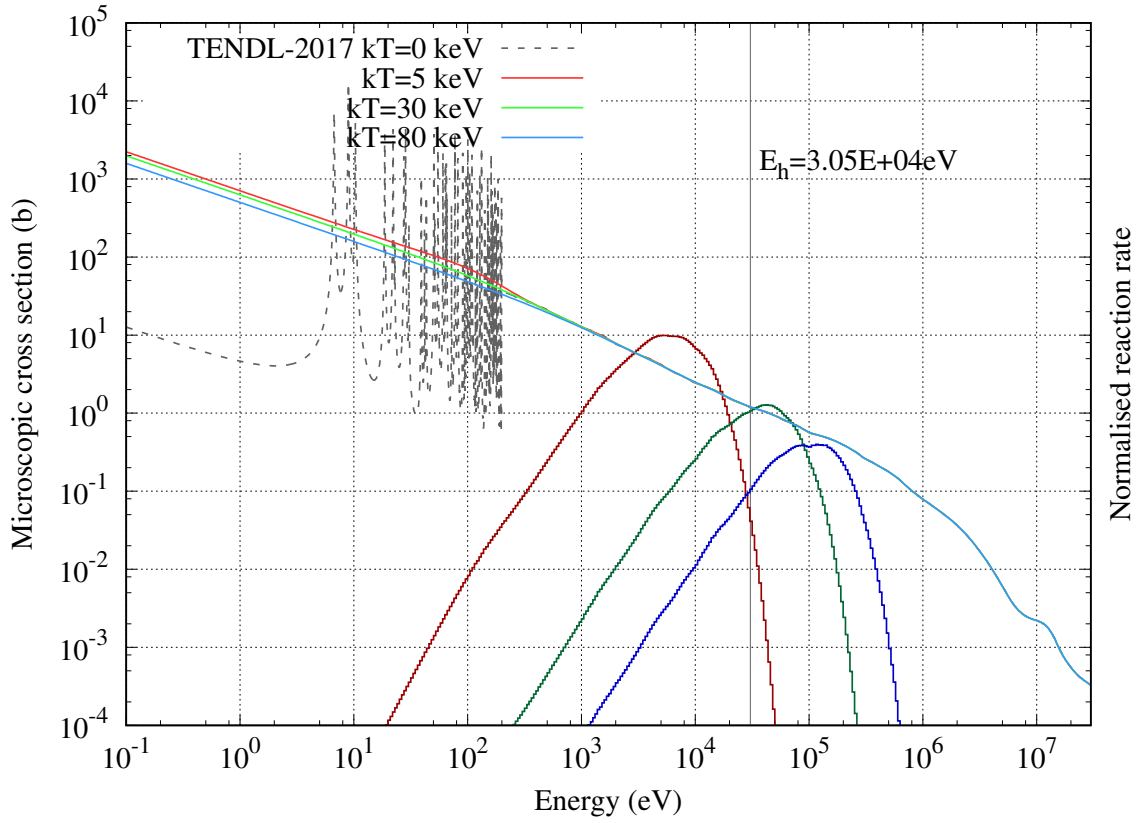
$^{187}\text{Os}_{76}$ [Stable]



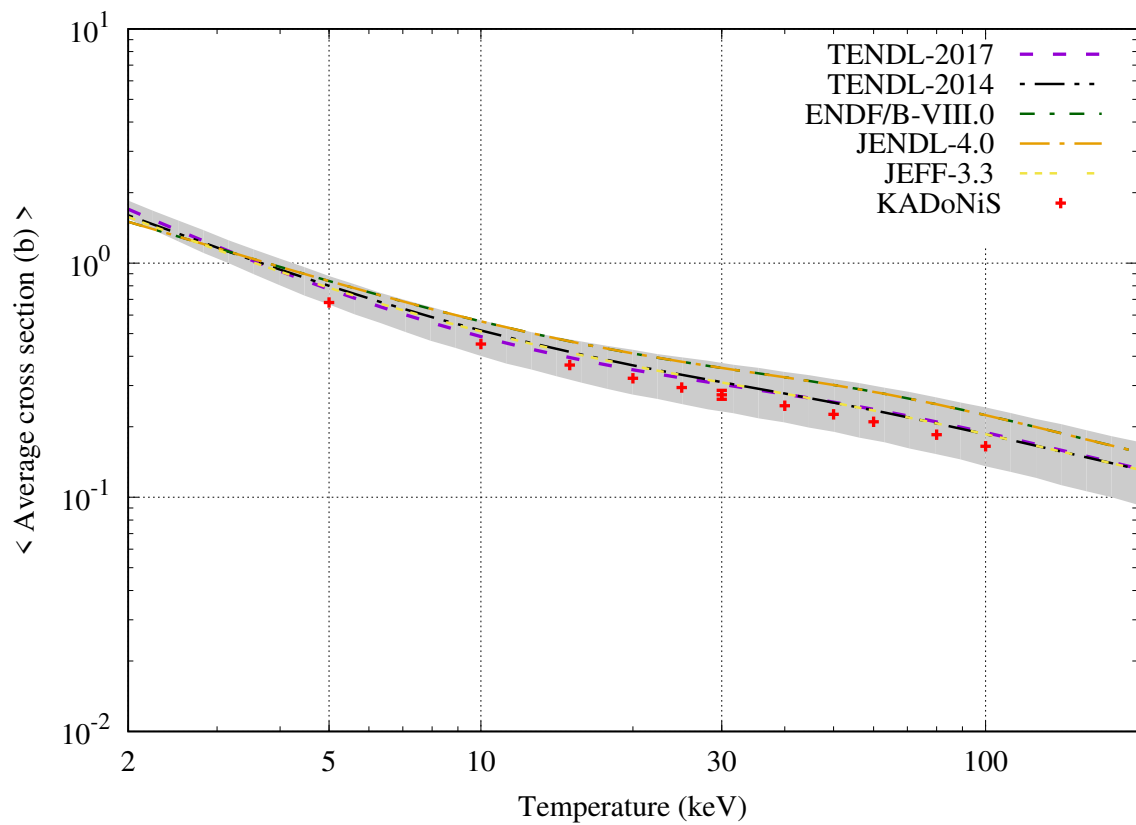
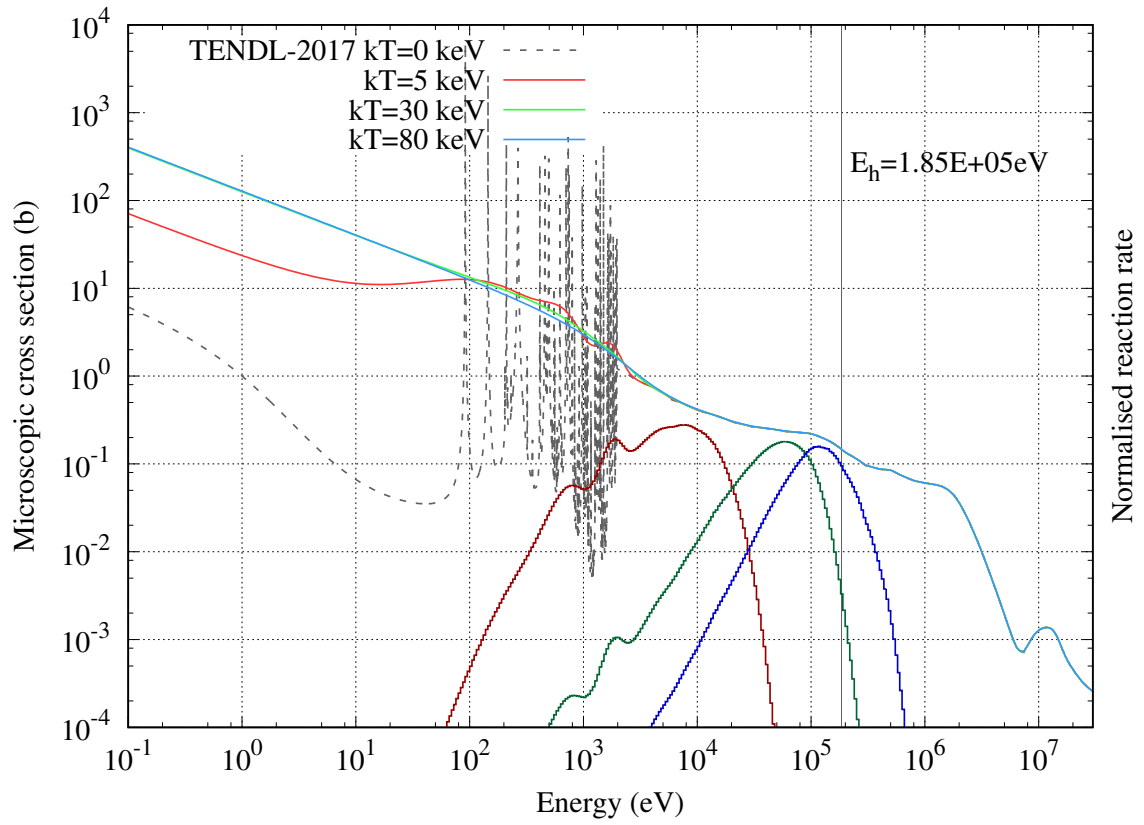
$^{188}\text{Os}_{76}$ [Stable]



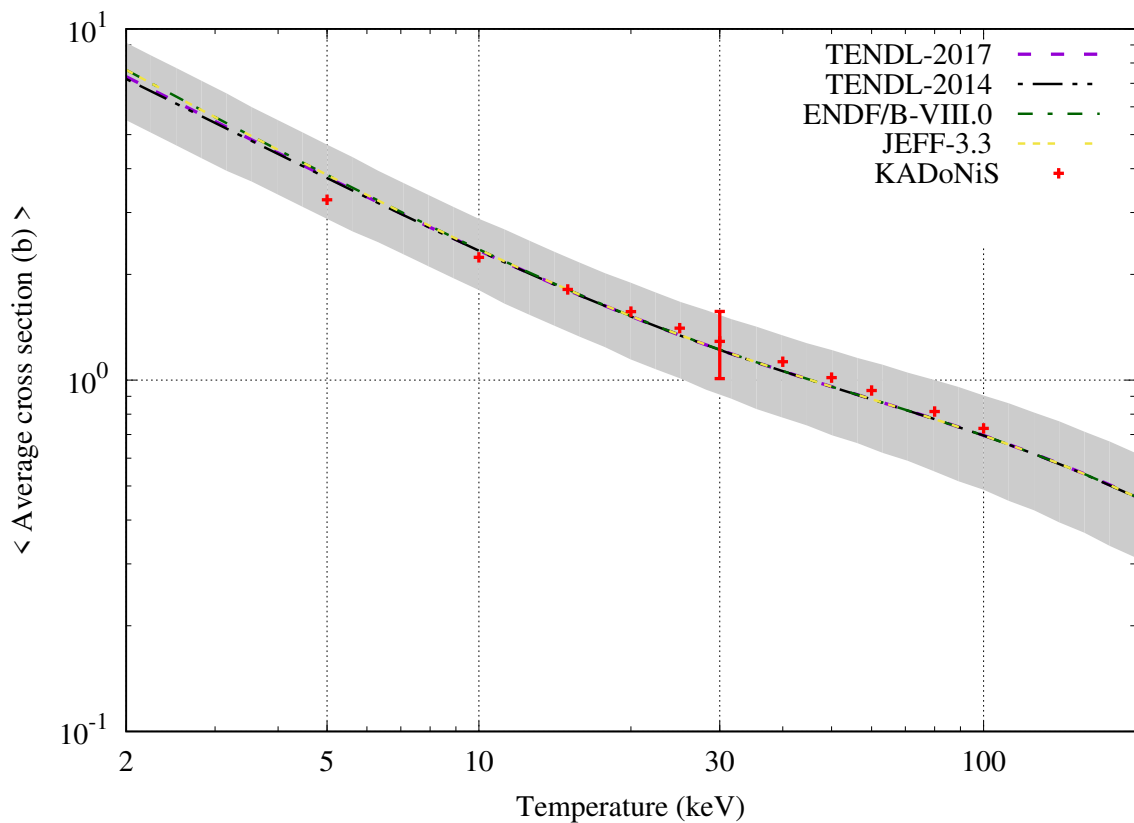
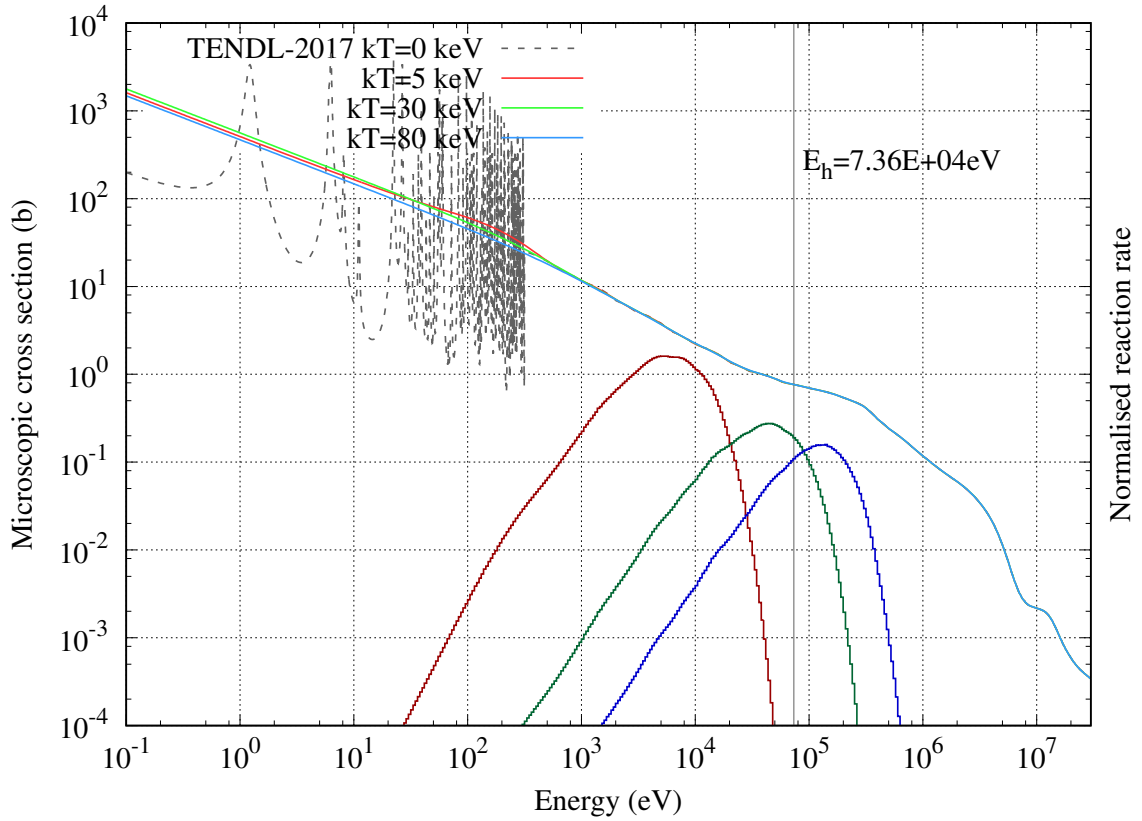
$^{189}\text{Os}_{76}$ [Stable]



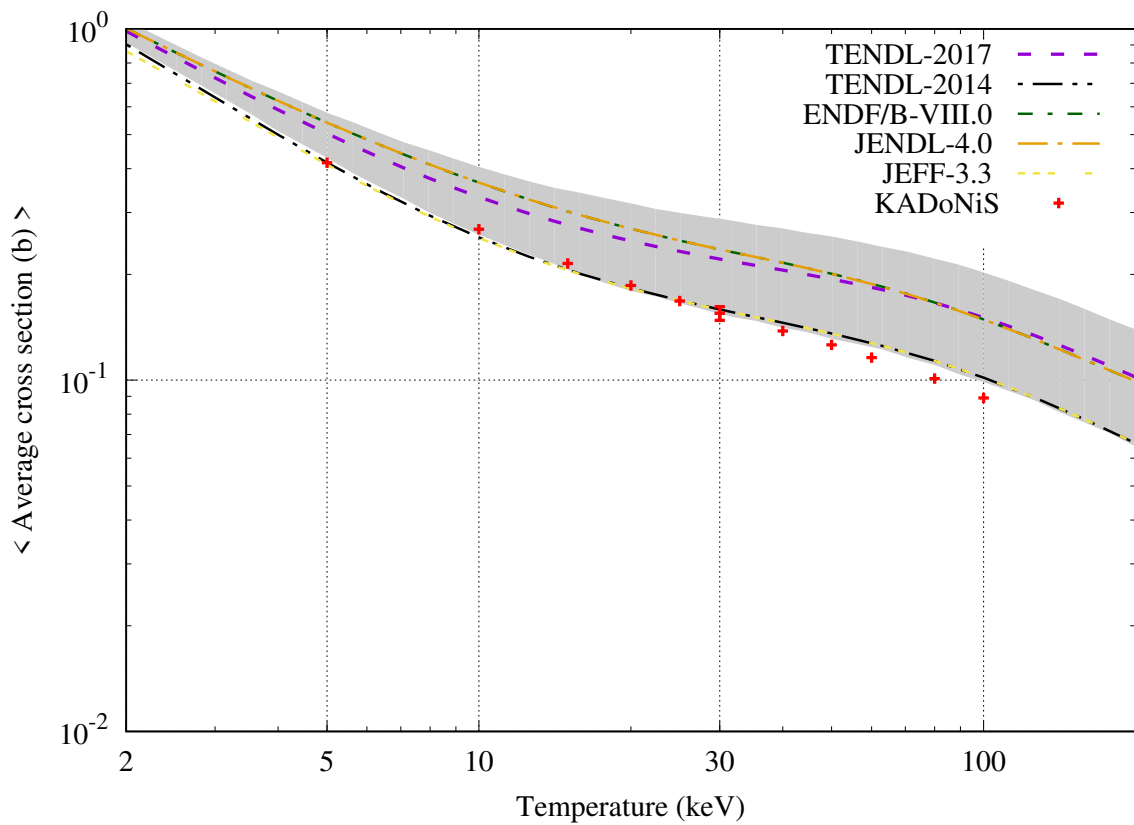
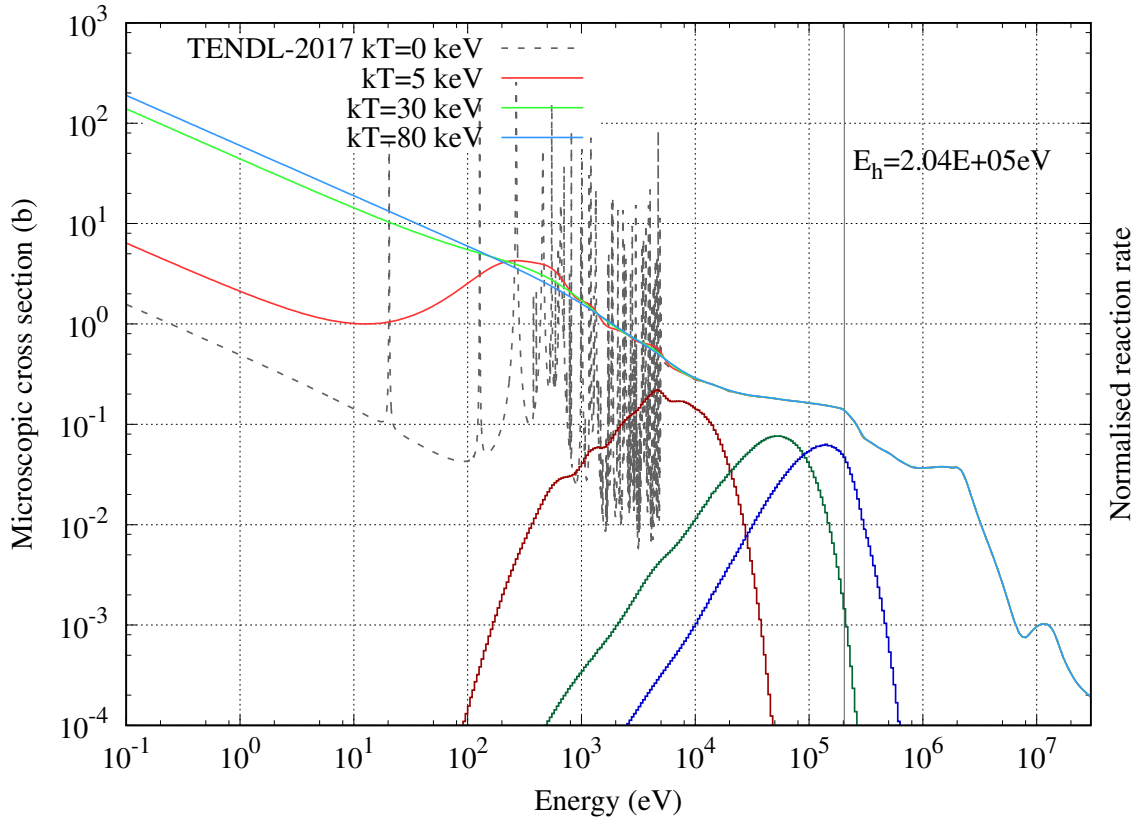
$^{190}\text{Os}_{76}$ [Stable]



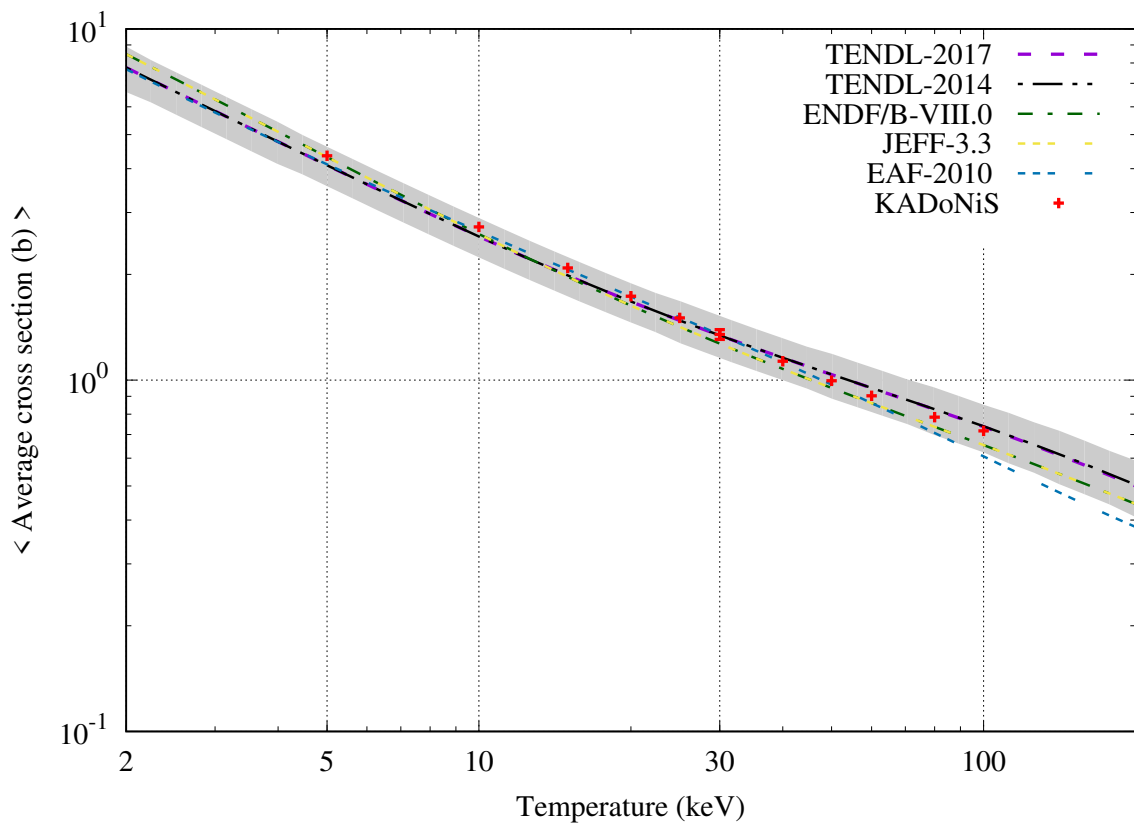
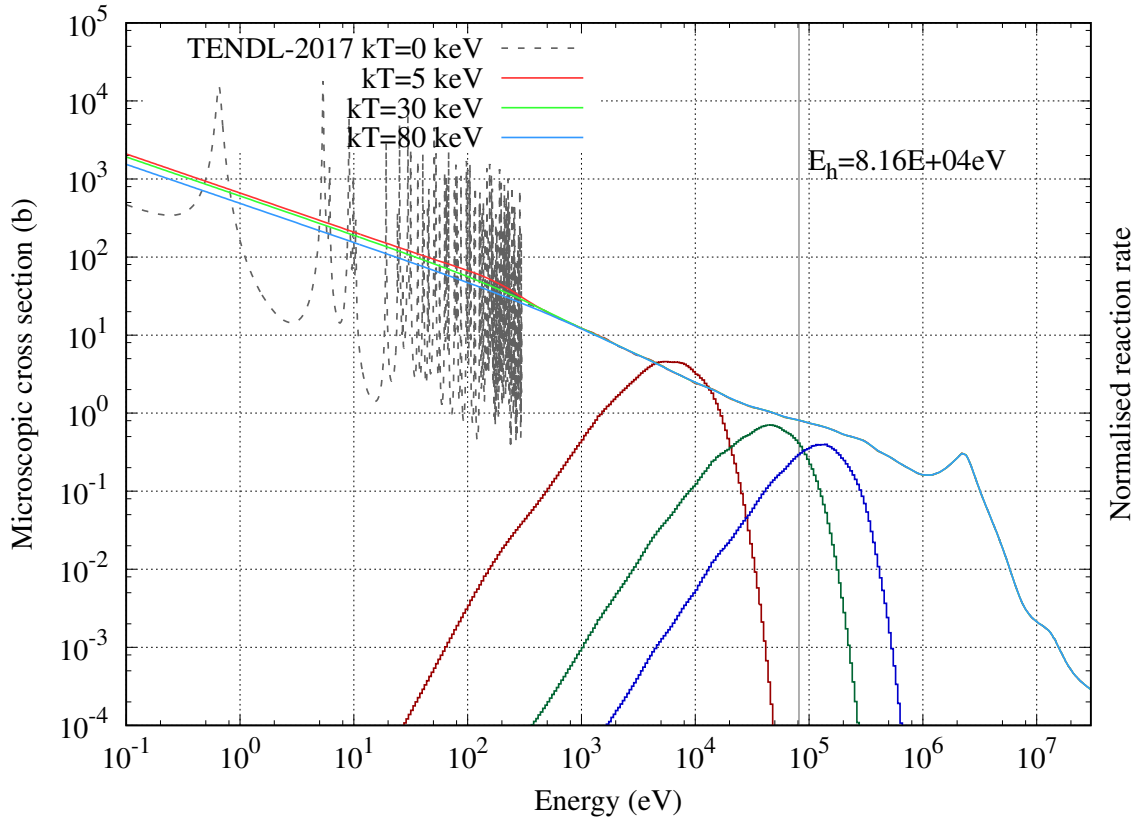
$^{191}\text{Os}_{76}$ [$T_{1/2} = 15.30$ days] (KADoNiS=SMC)



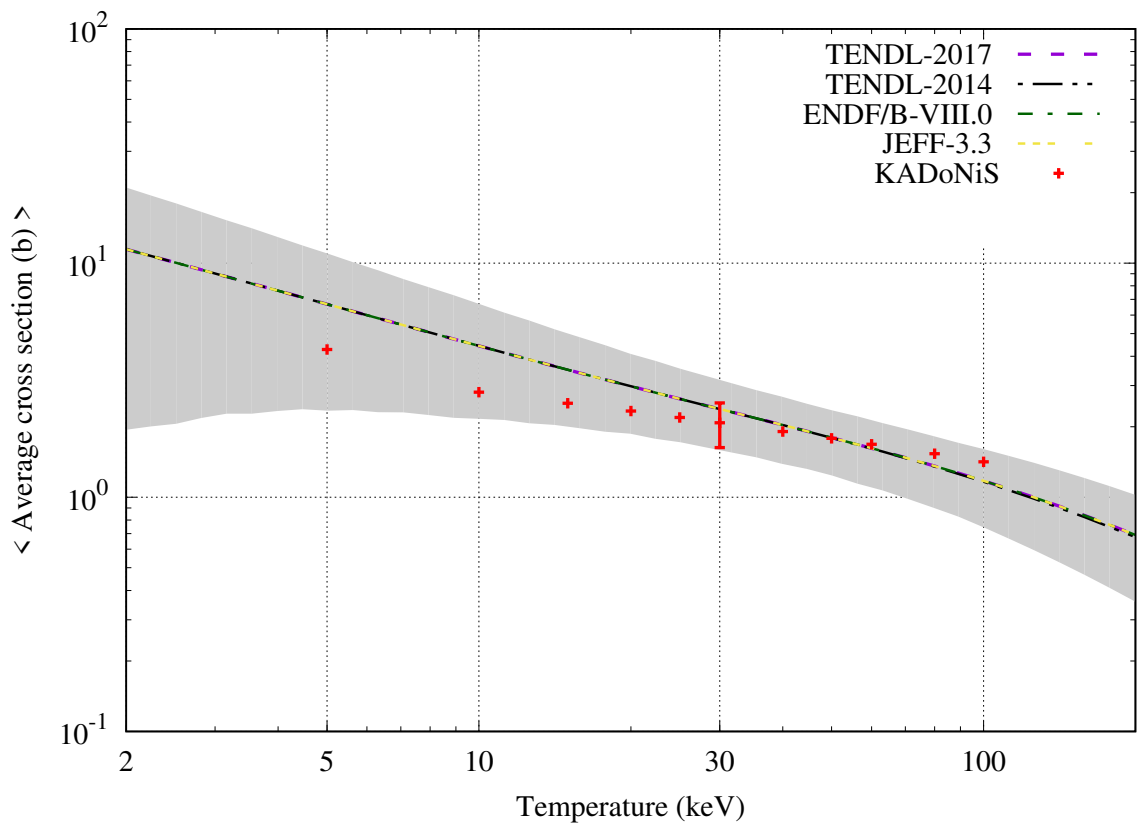
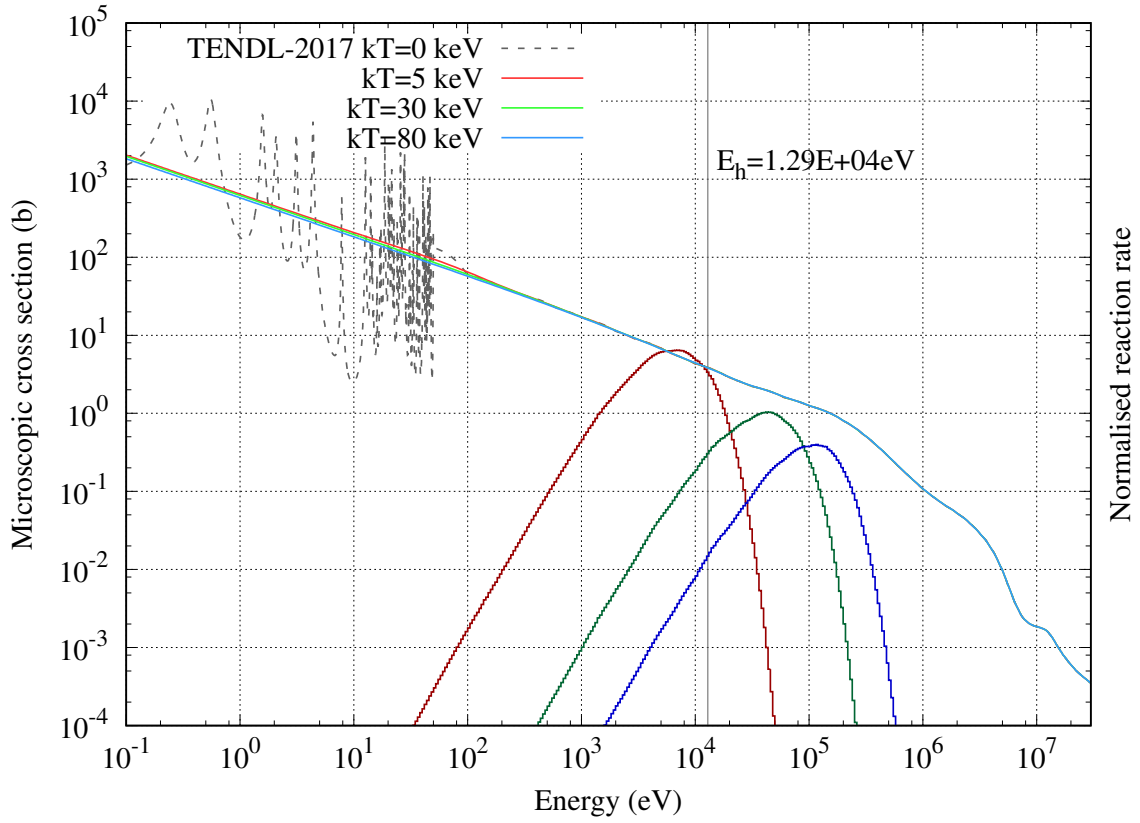
$^{192}\text{Os}_{76}$ [Stable]



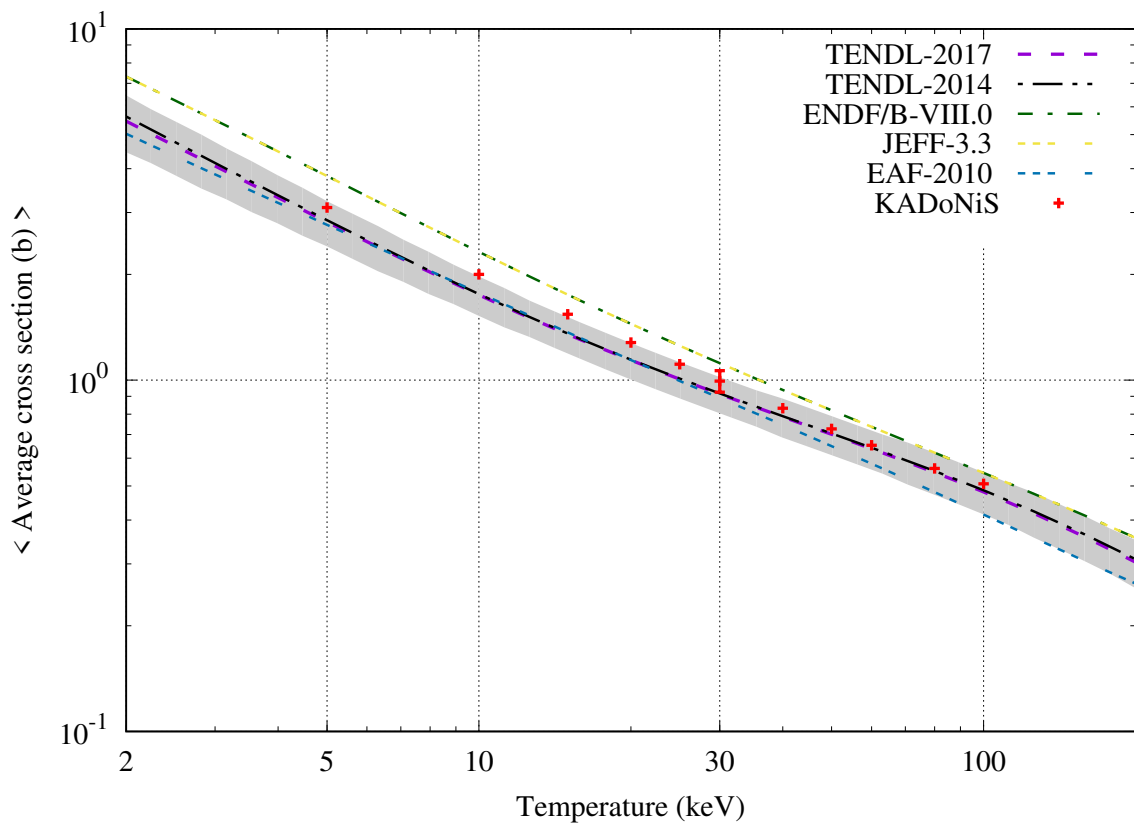
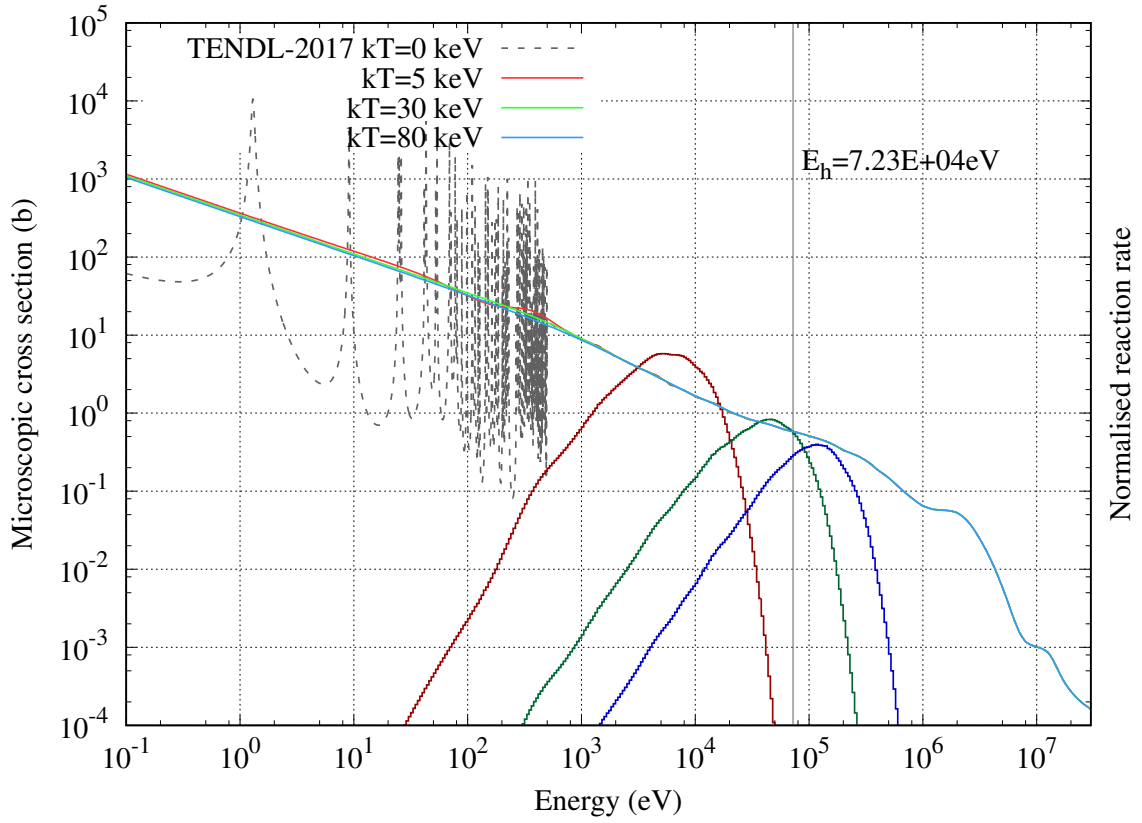
$^{191}\text{Ir}_{77}$ [Stable]



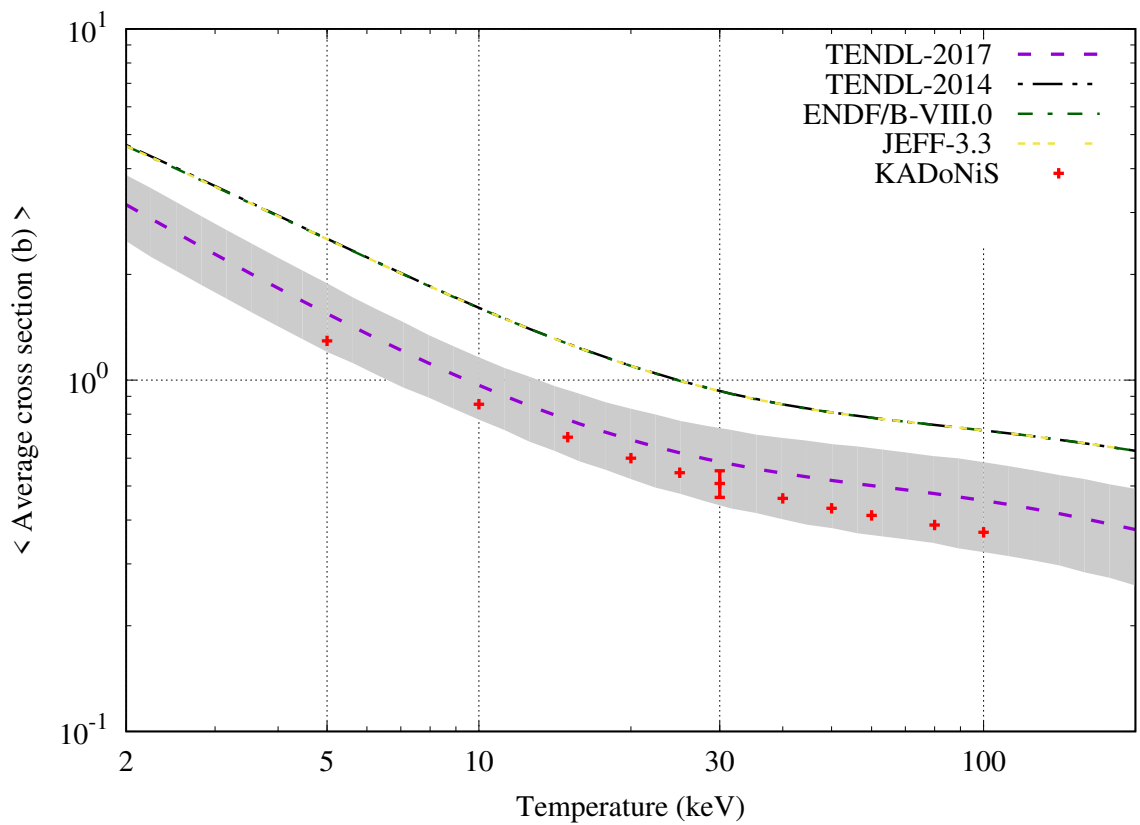
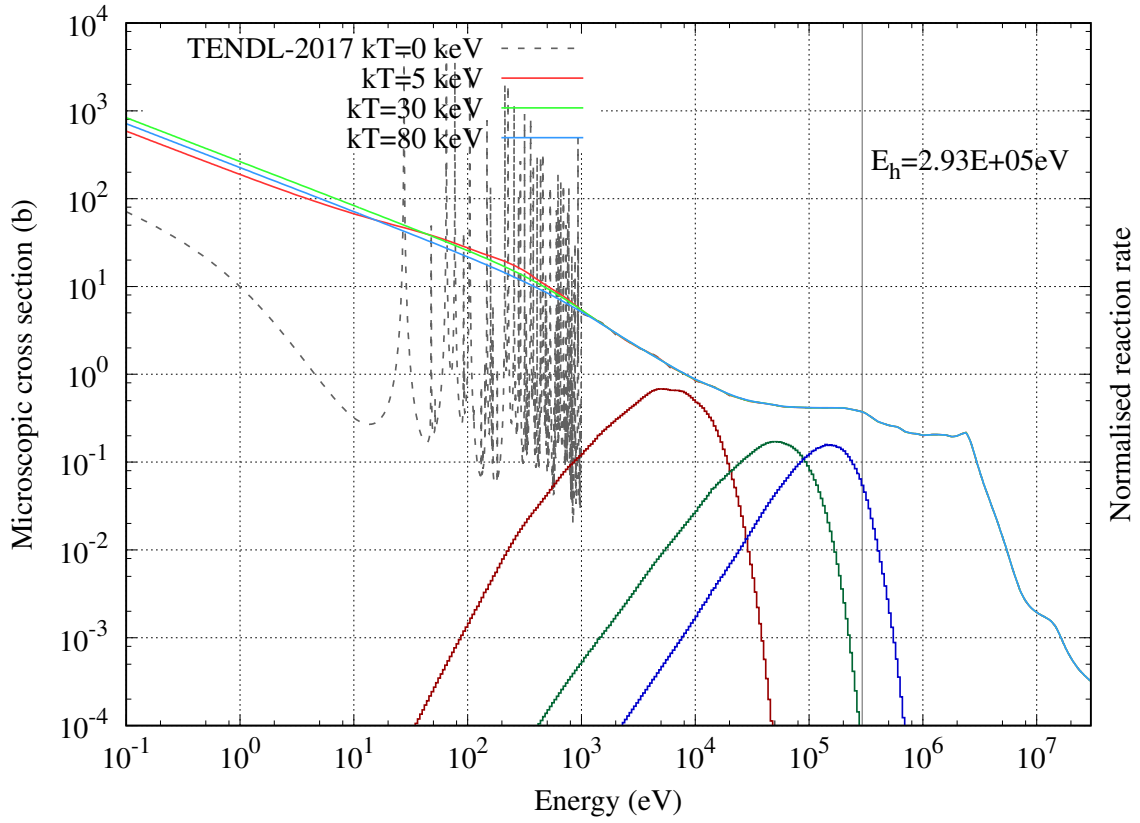
$^{192}\text{Ir}_{77}$ [$T_{1/2} = 73.82$ days] (KADoNiS=SMC)



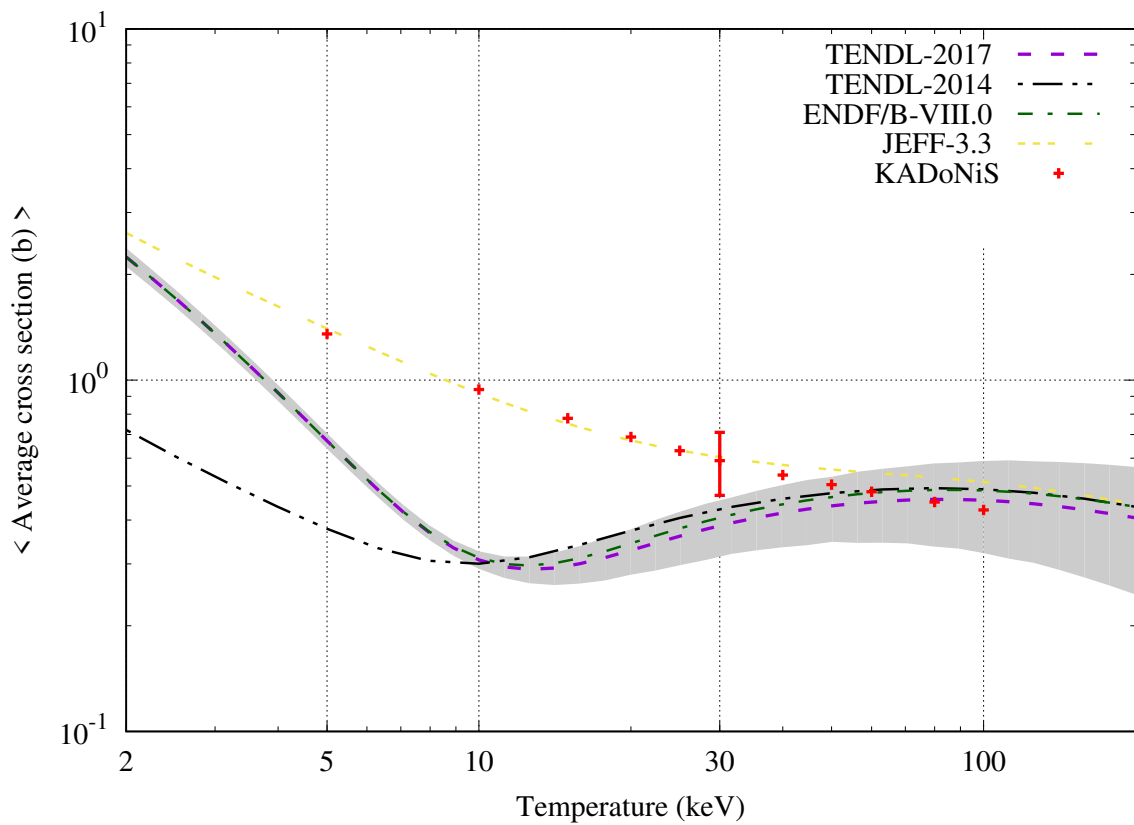
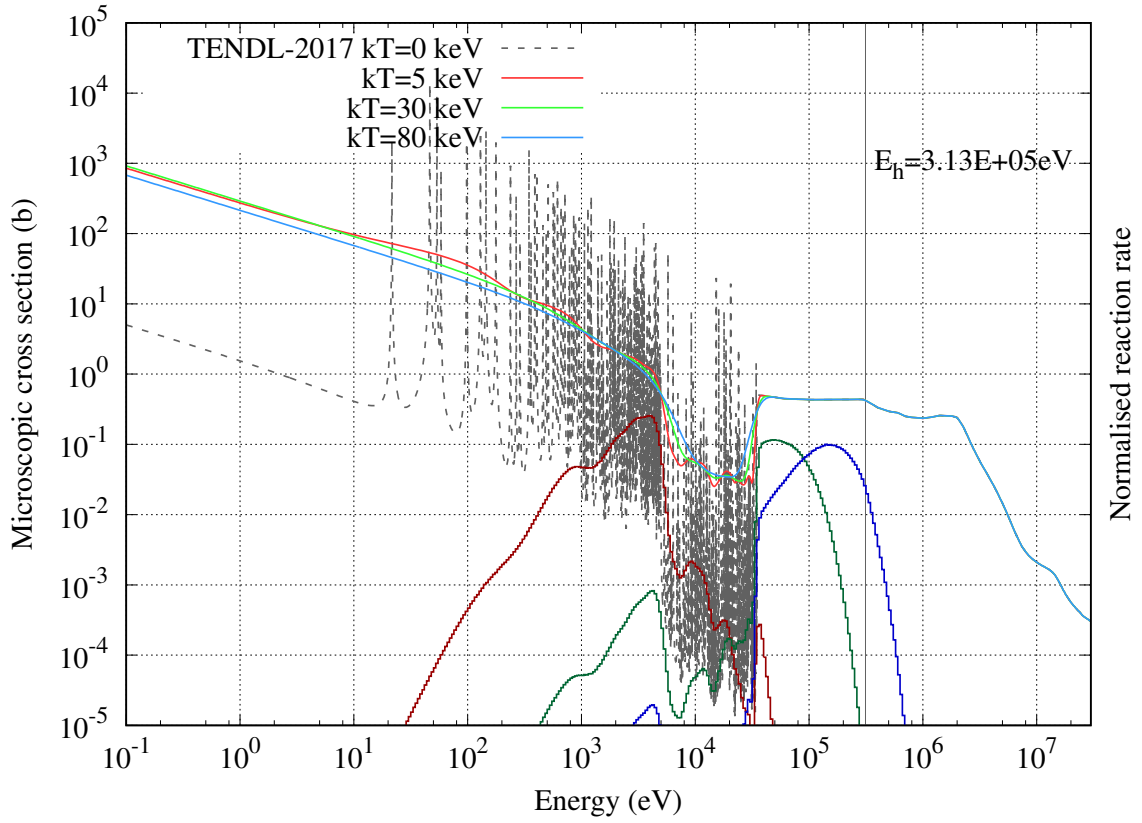
$^{193}\text{Ir}_{77}$ [Stable]



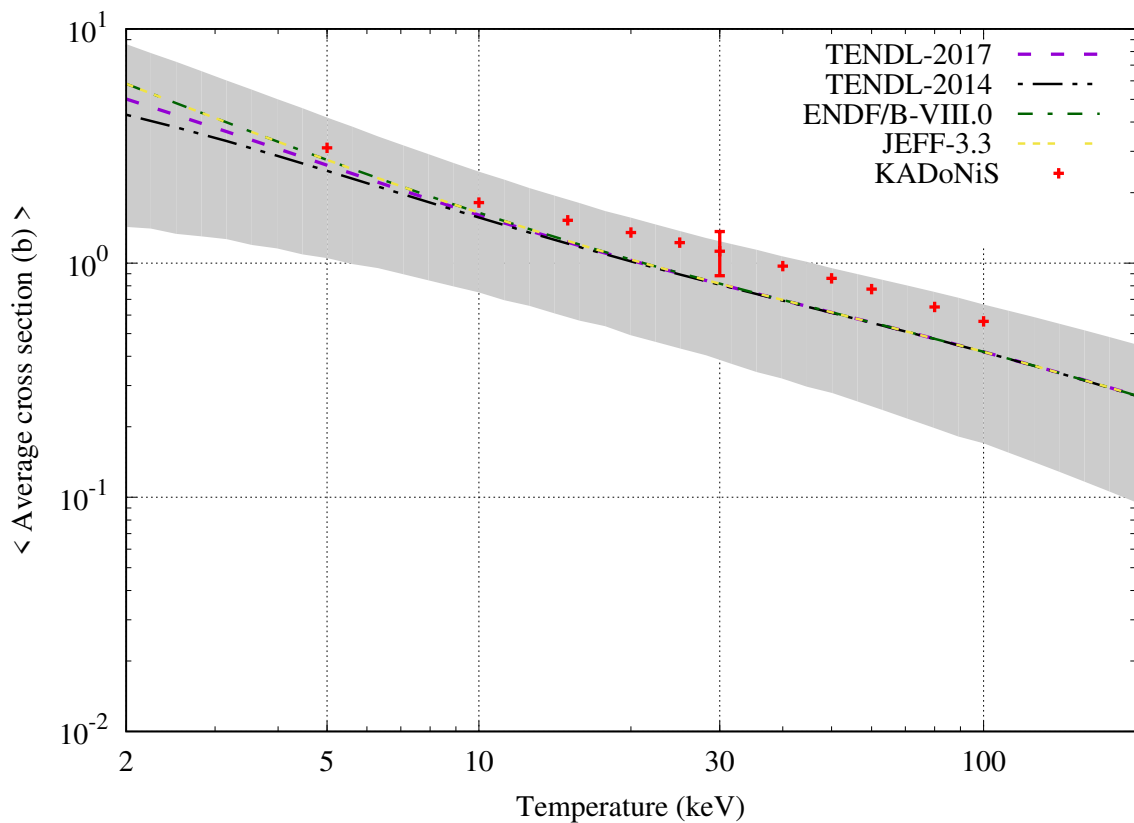
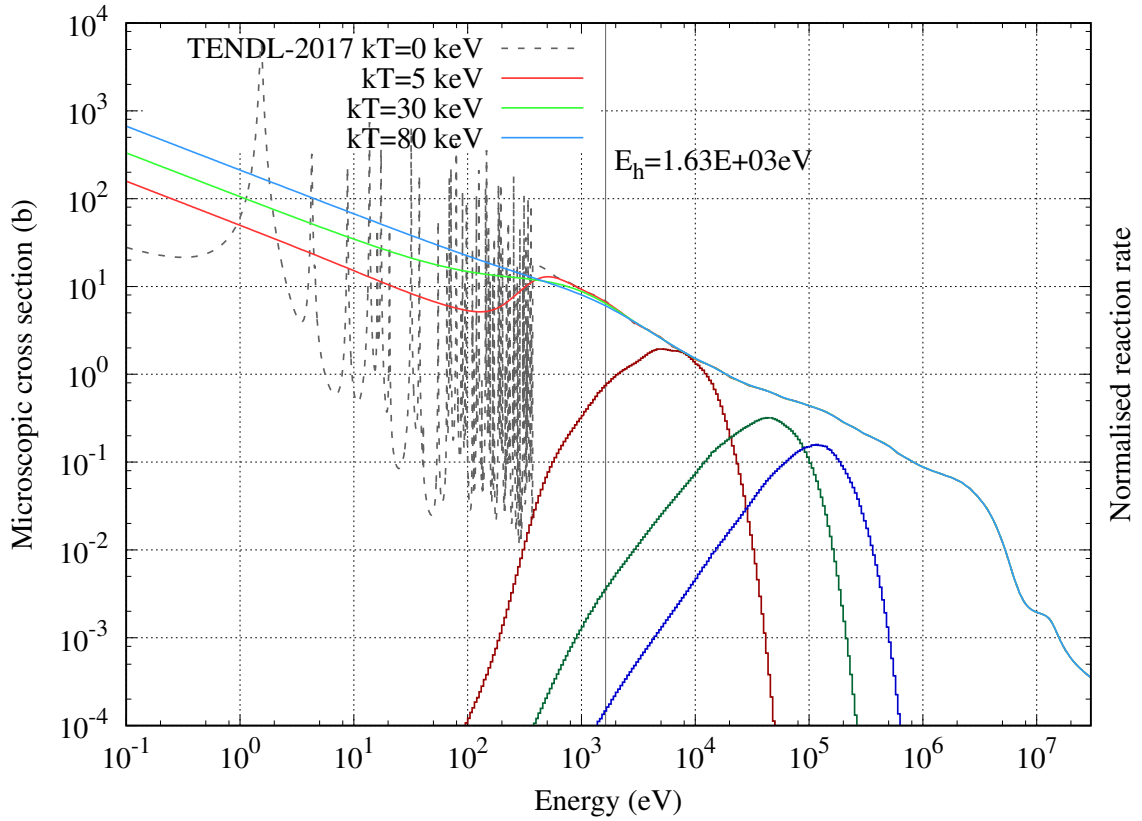
$^{190}\text{Pt}_{78}$ [$T_{1/2} = 6.50 \times 10^{11}$ years]



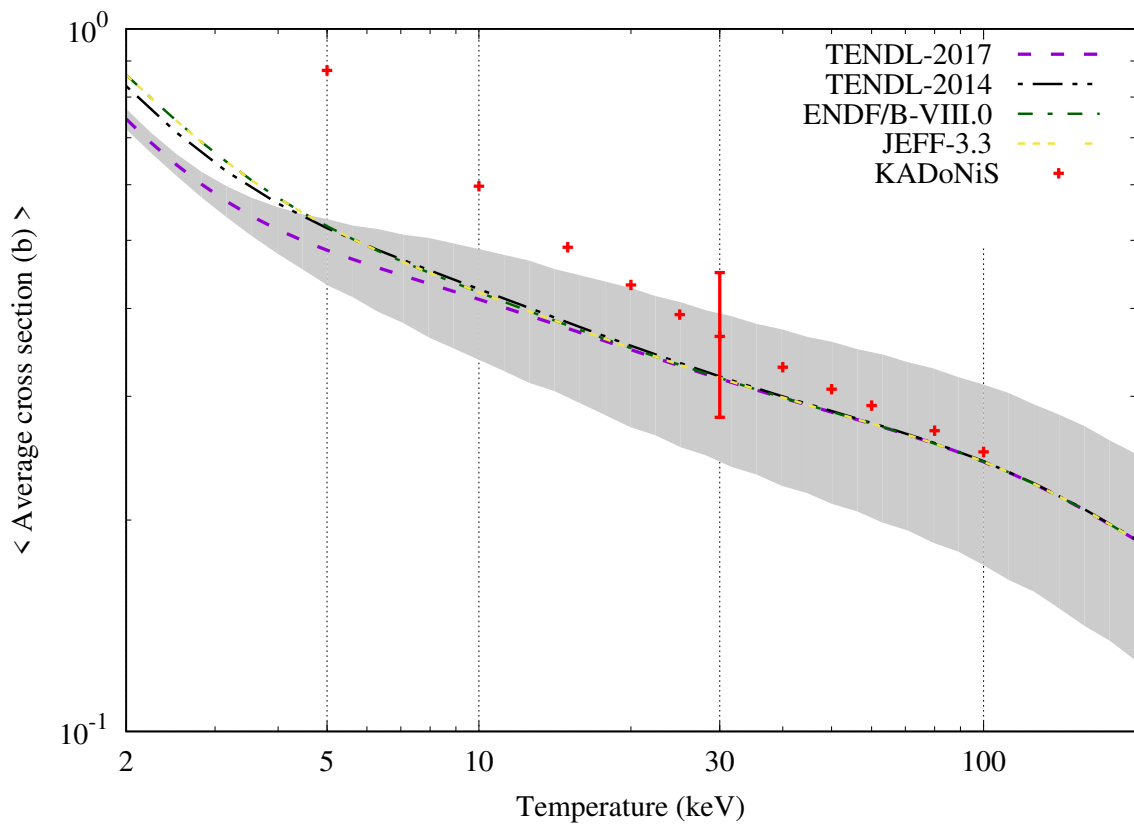
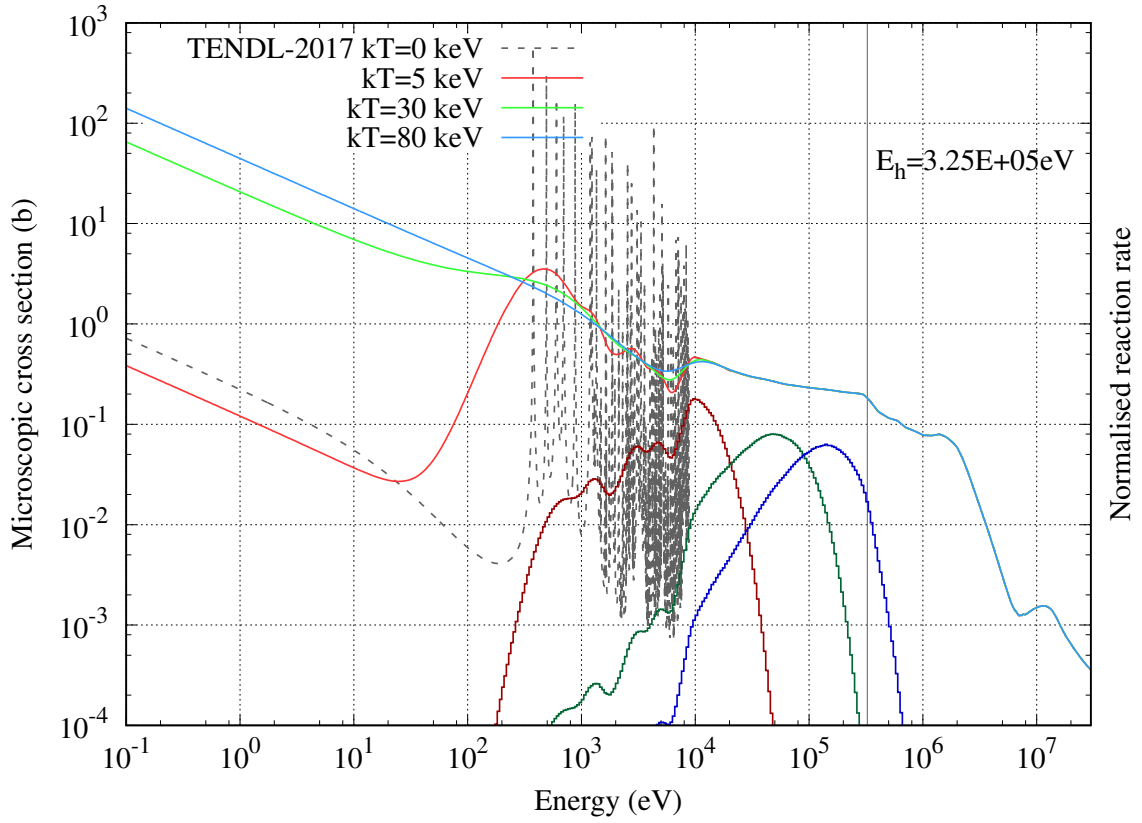
$^{192}\text{Pt}_{78}$ [Stable]



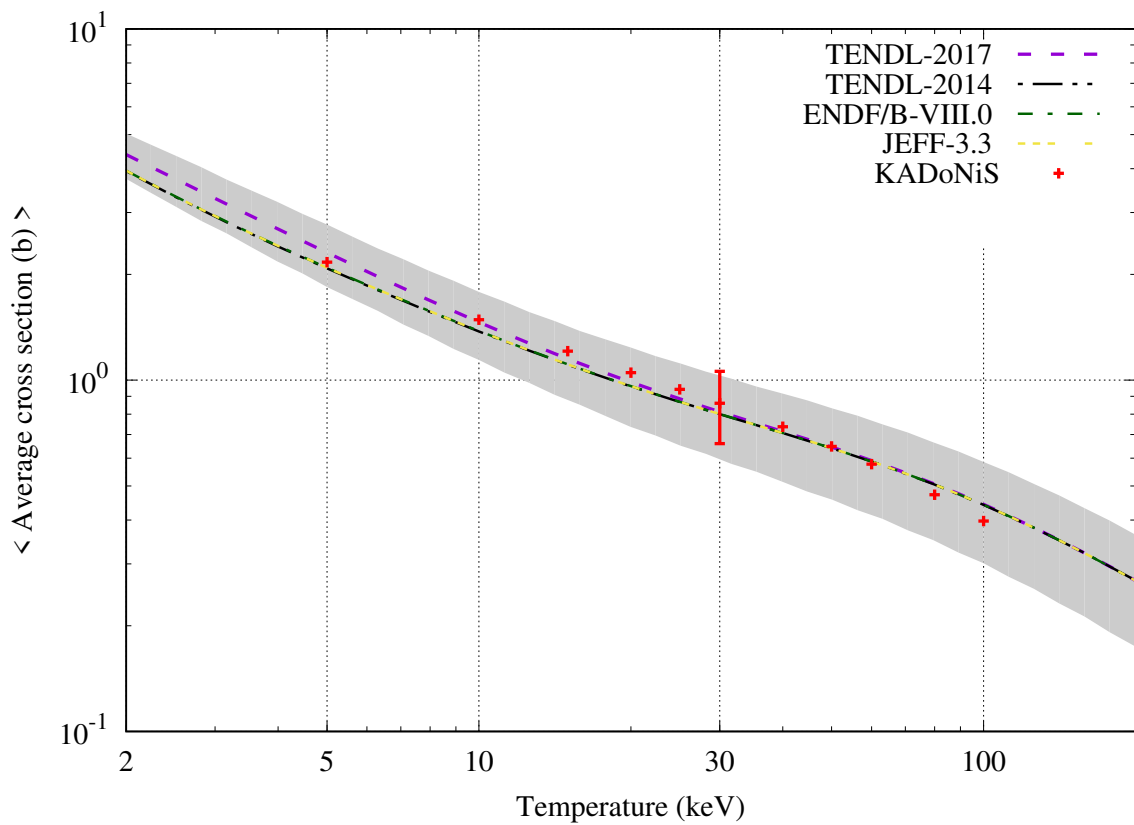
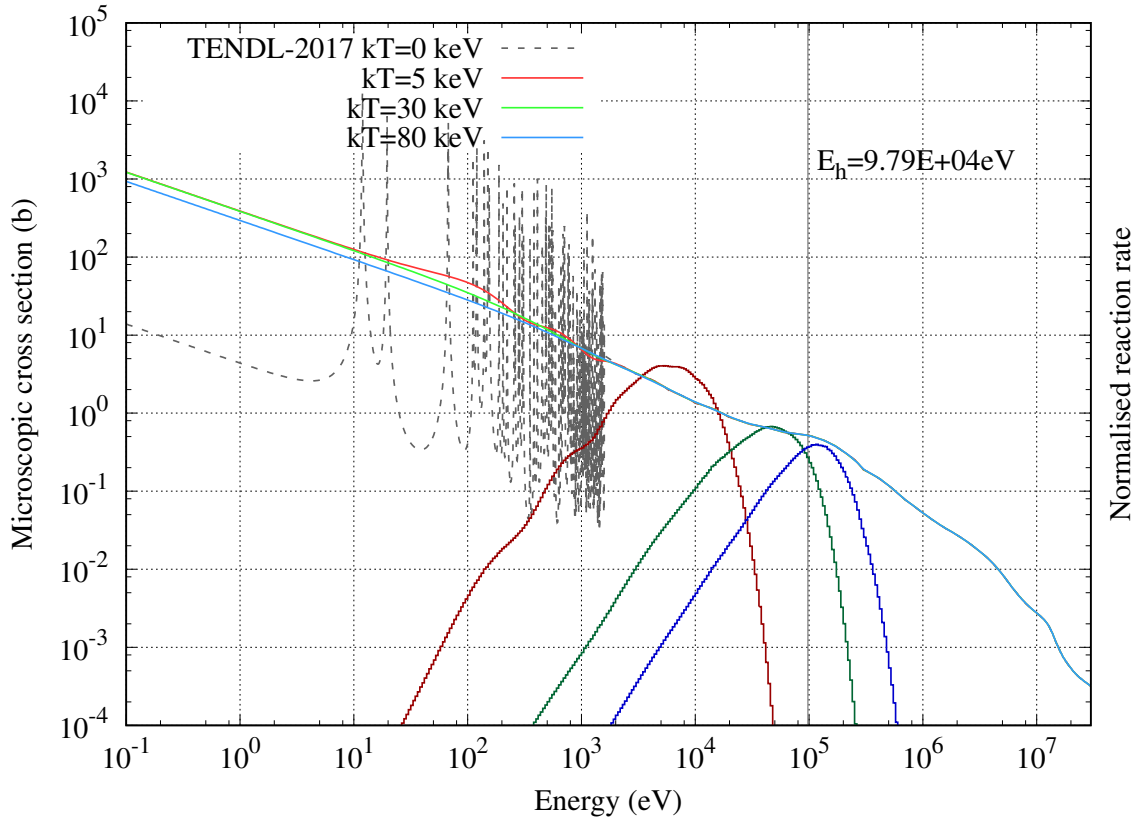
$^{193}\text{Pt}_{78}$ [$T_{1/2} = 50.00$ years] (KADoNiS=SMC)



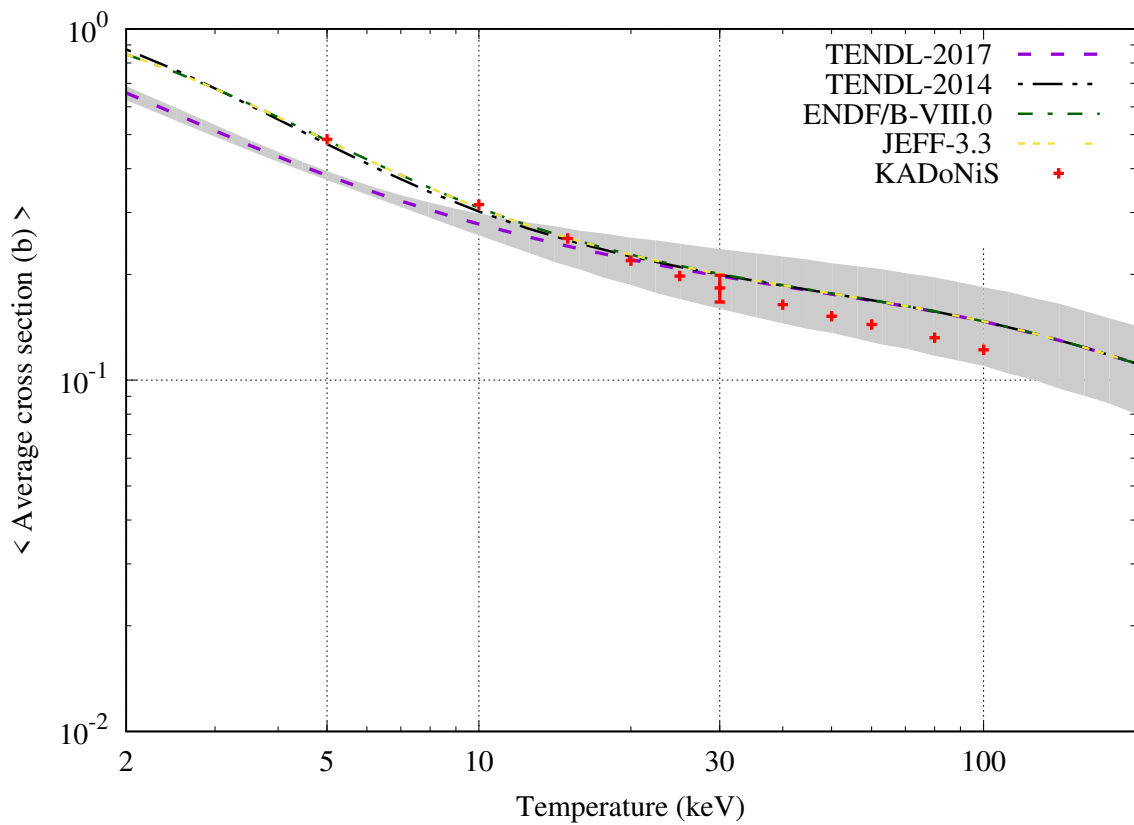
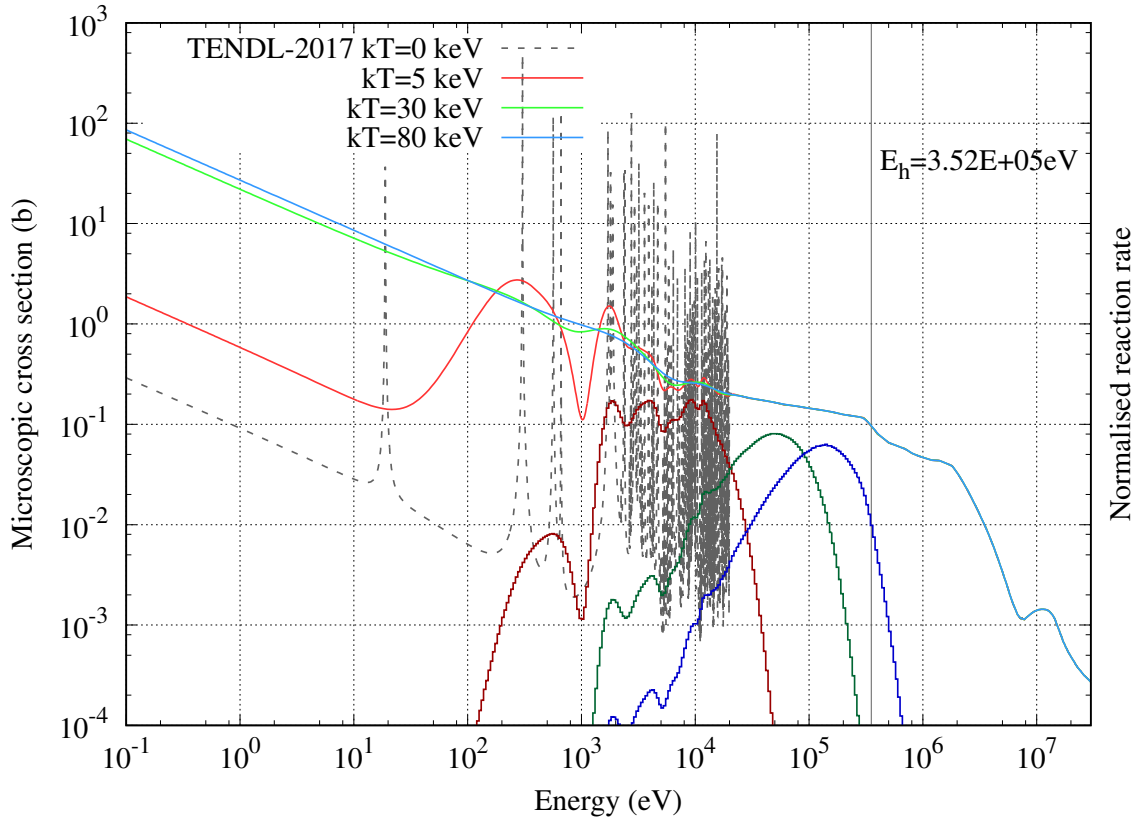
$^{194}\text{Pt}_{78}$ [Stable]



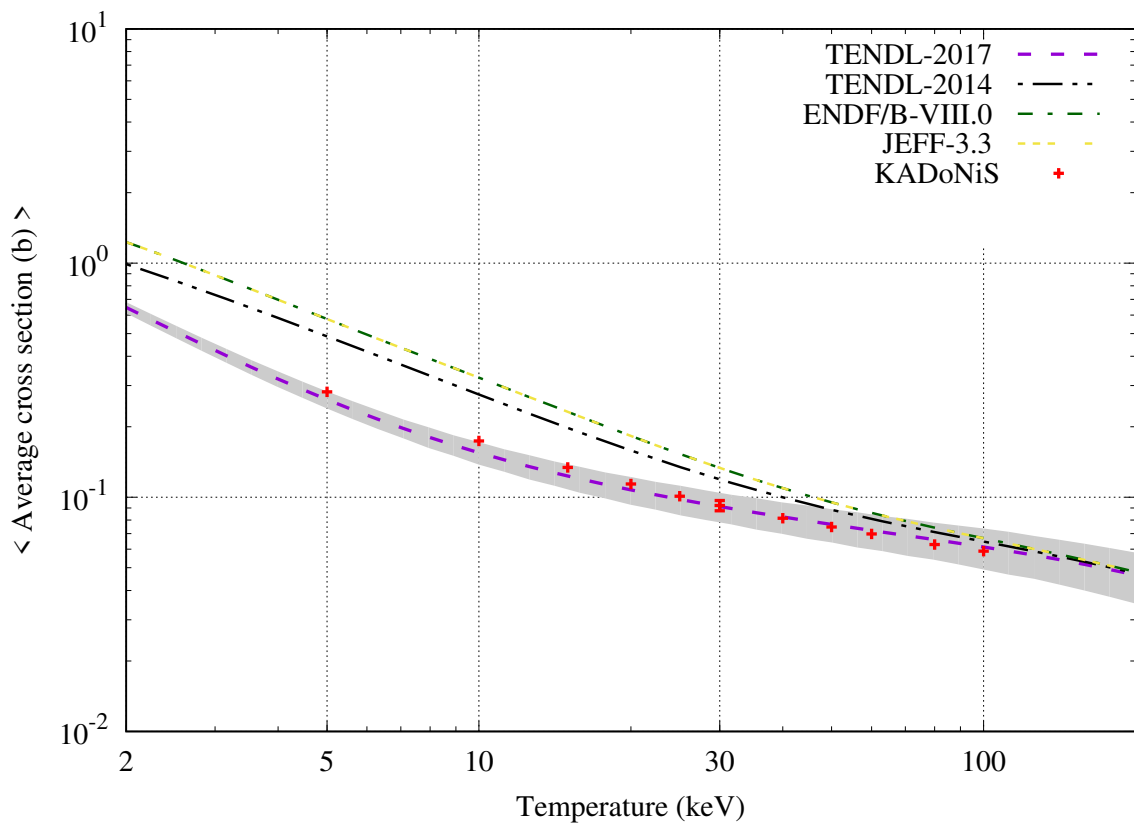
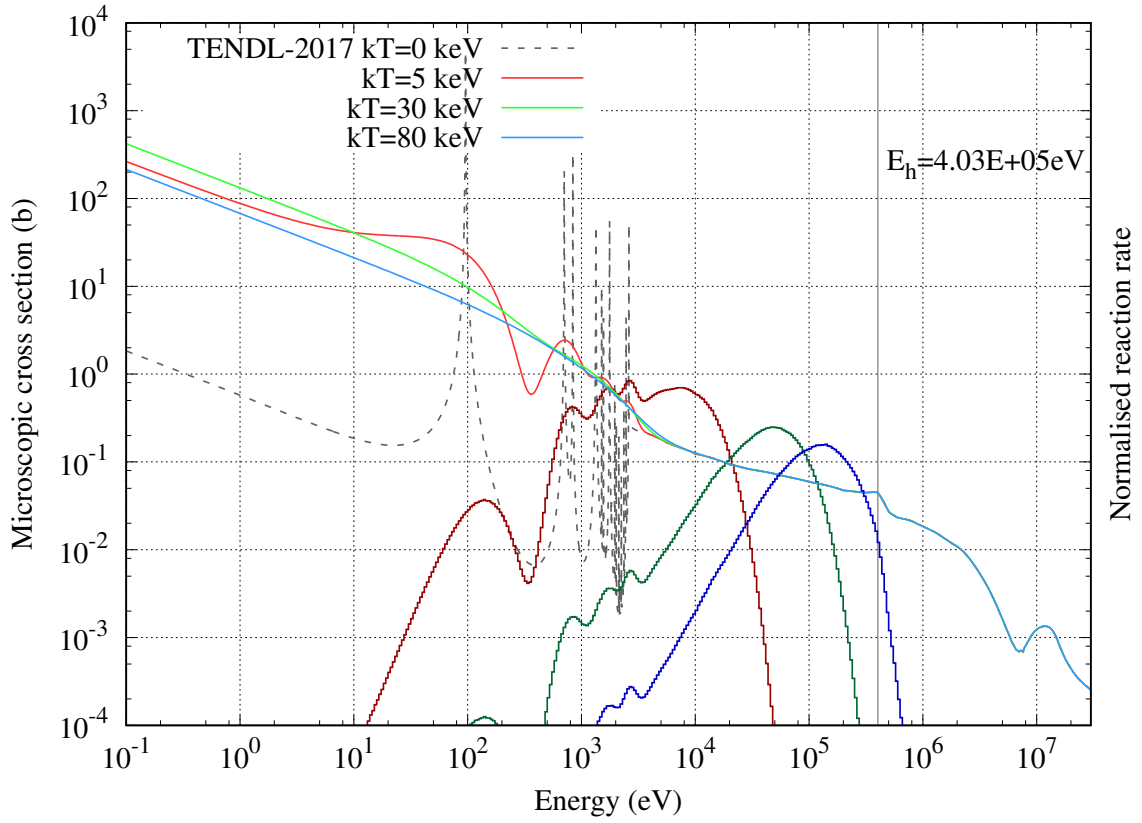
$^{195}\text{Pt}_{78}$ [Stable]



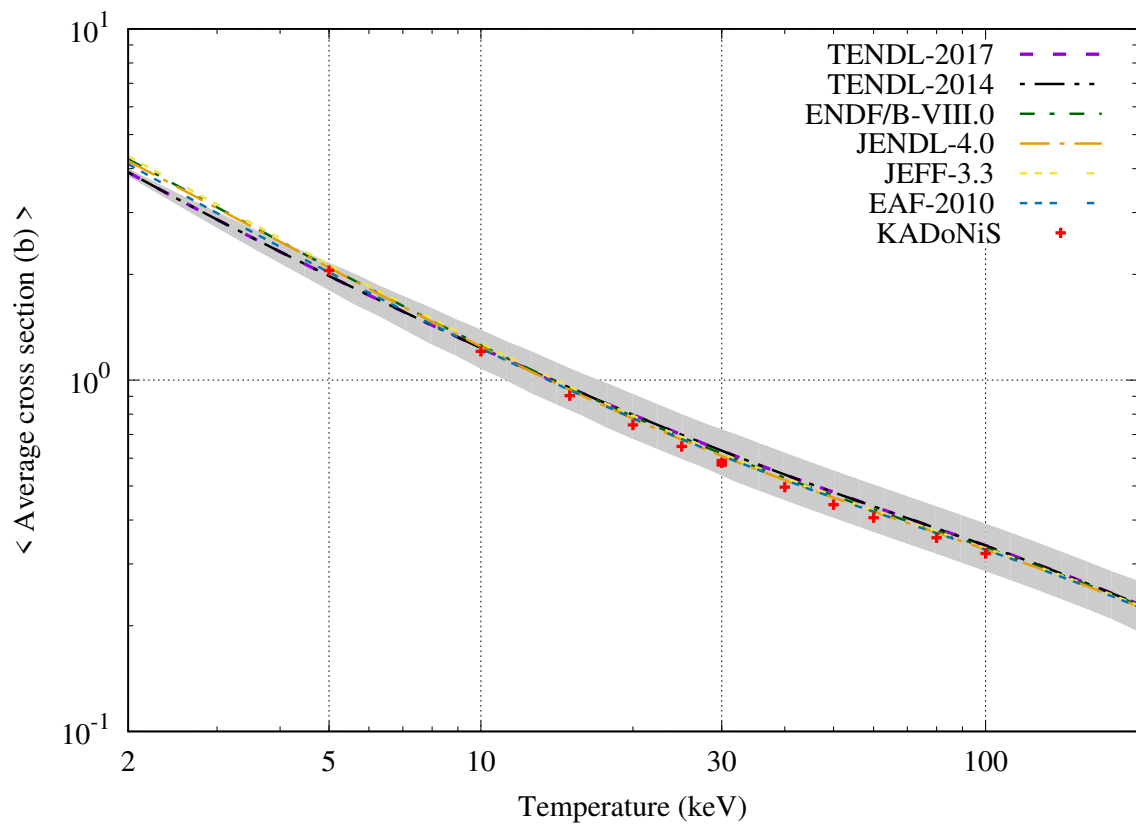
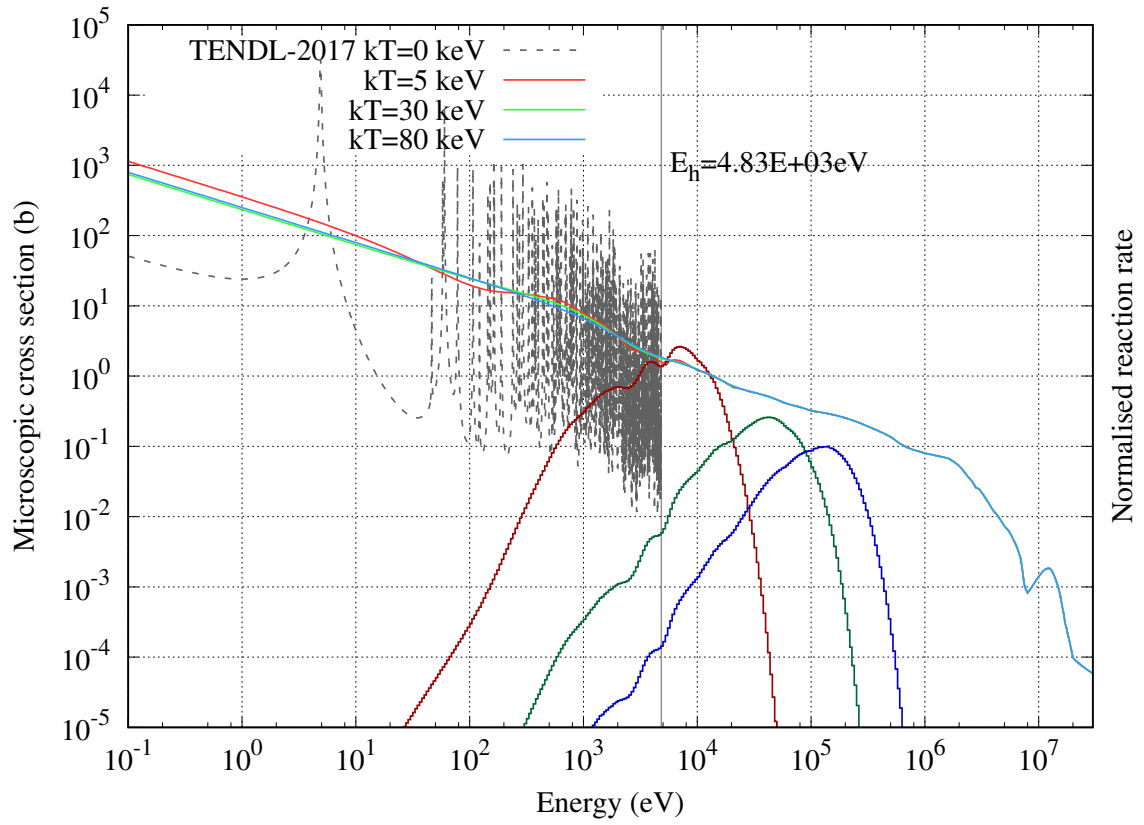
$^{196}\text{Pt}_{78}$ [Stable]



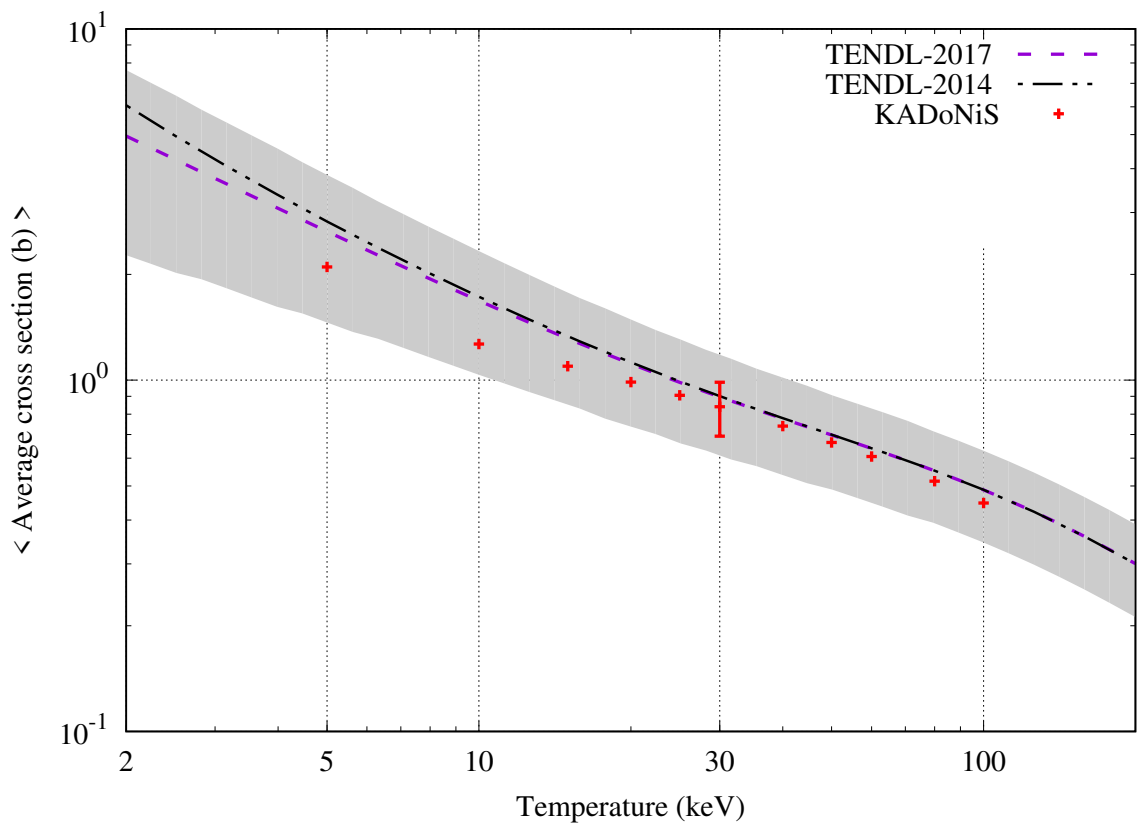
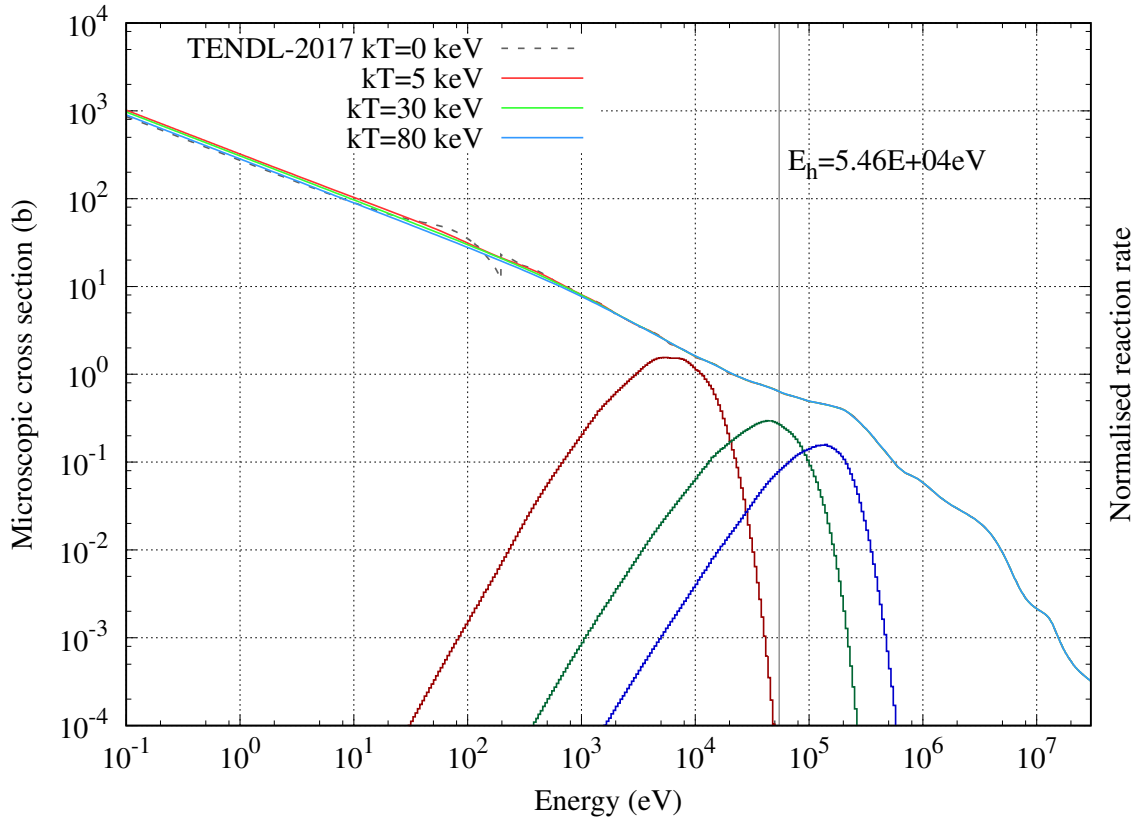
$^{198}\text{Pt}_{78}$ [Stable]



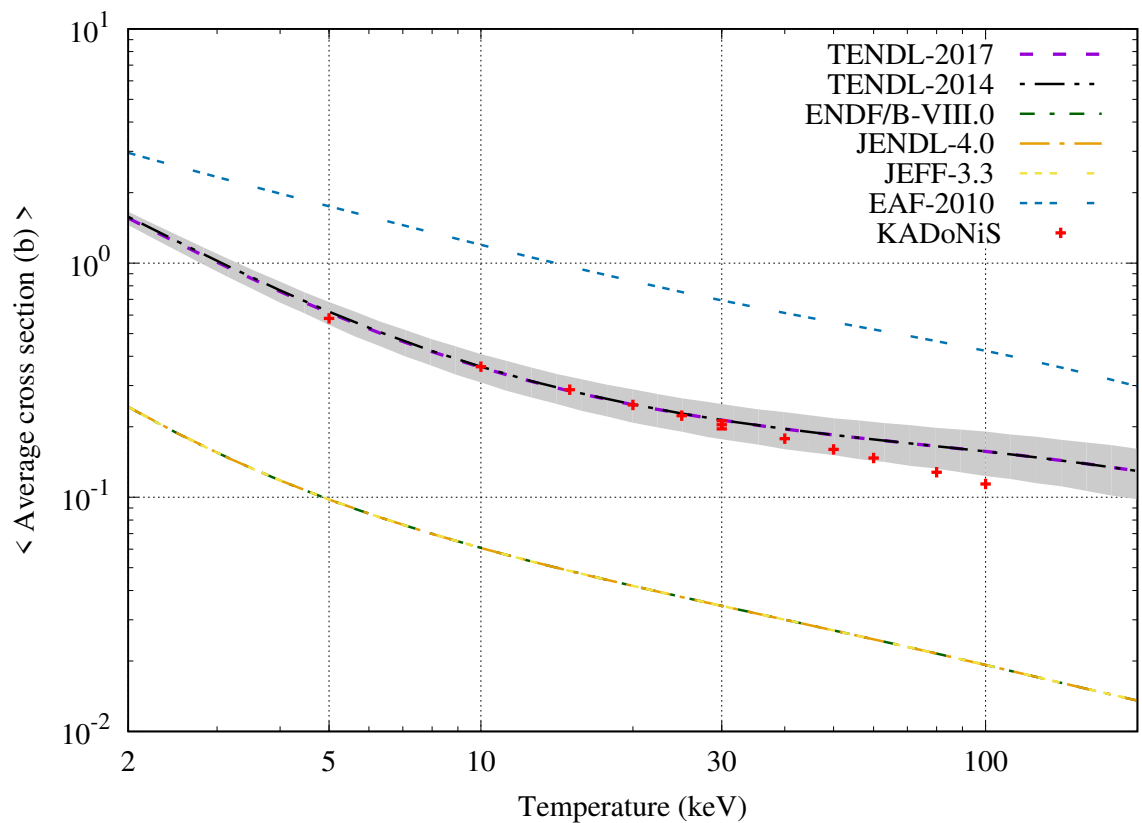
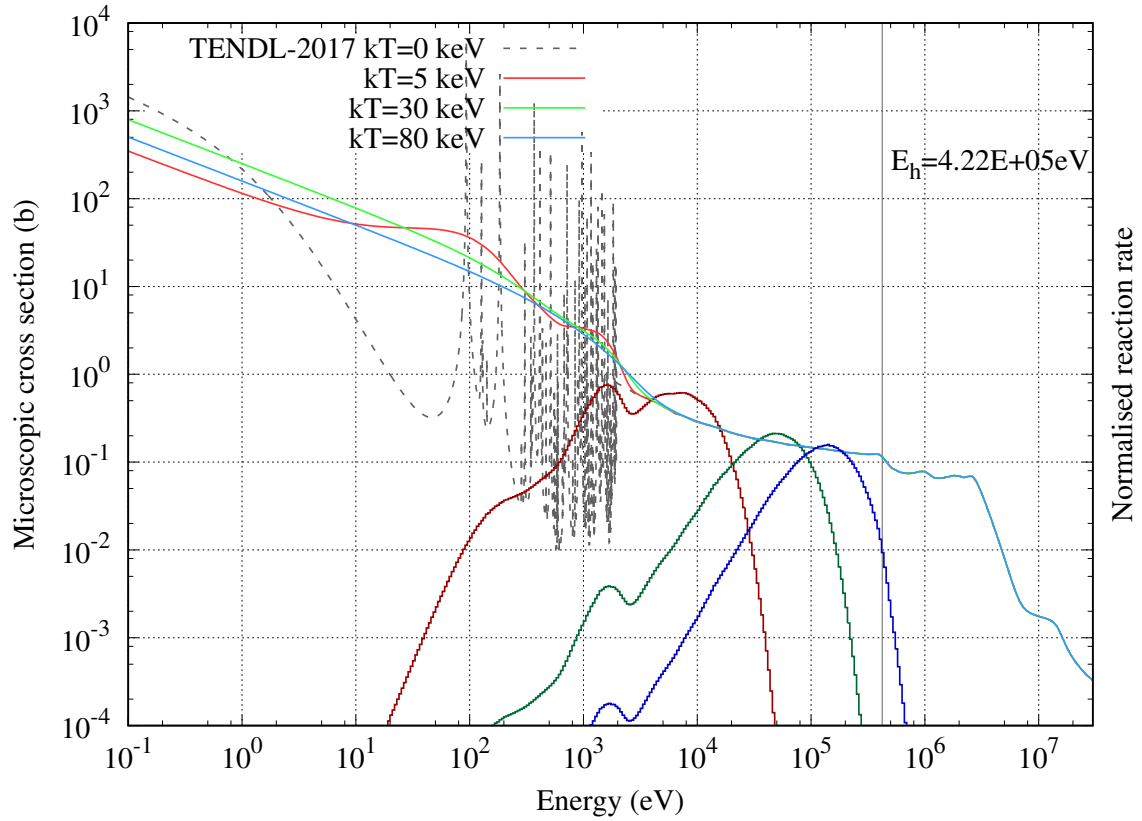
$^{197}\text{Au}_{79}$ [Stable]



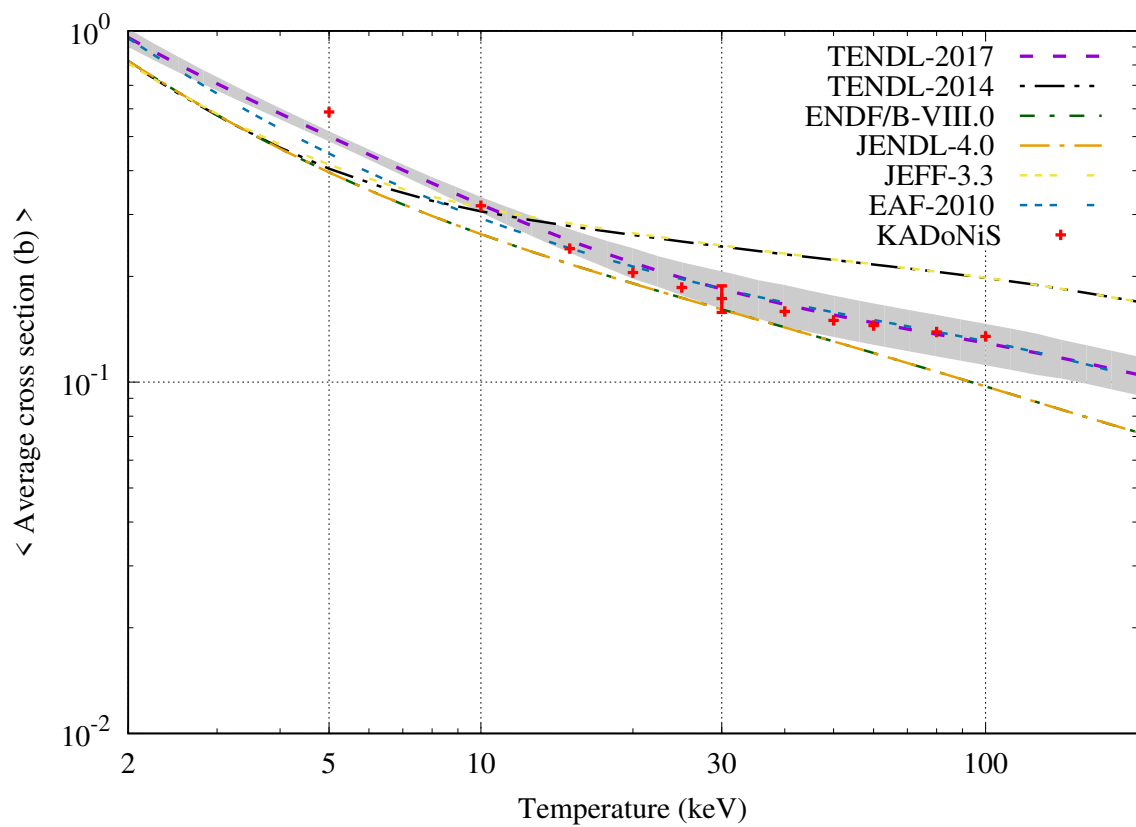
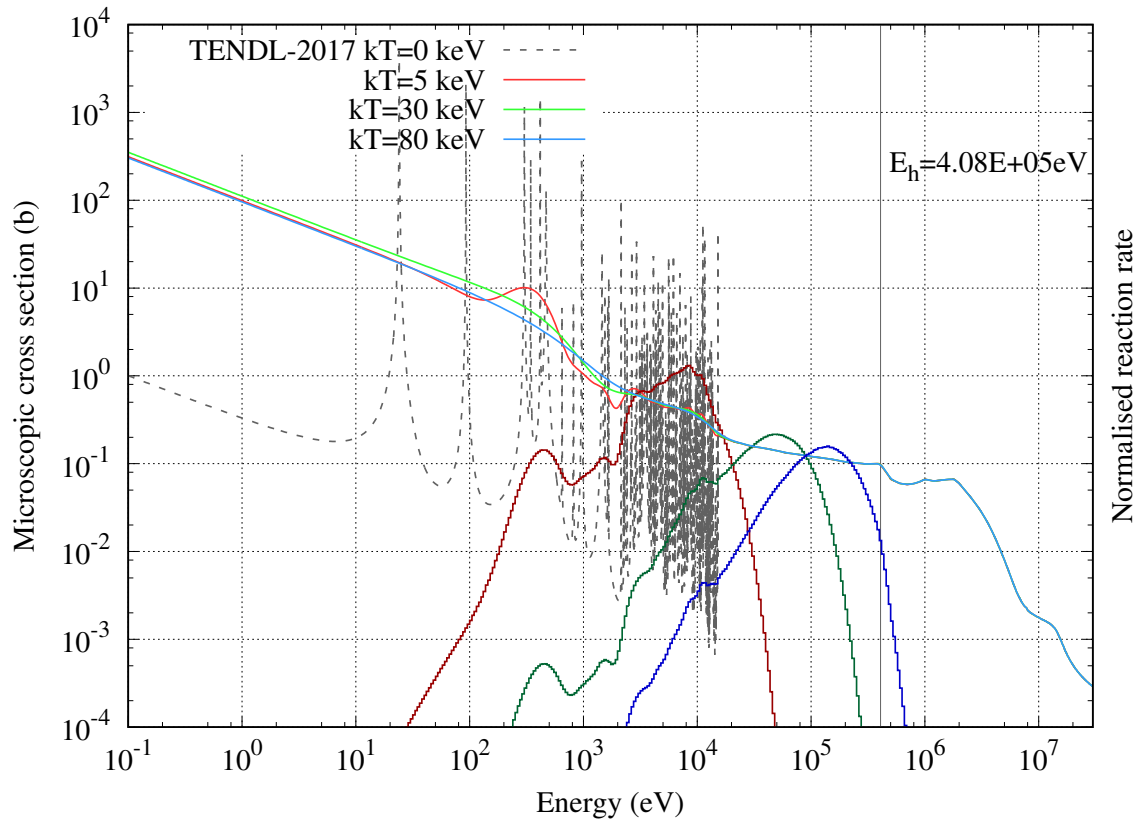
$^{198}\text{Au}_{79}$ [$T_{1/2} = 2.30$ days] (KADoNiS=SMC)



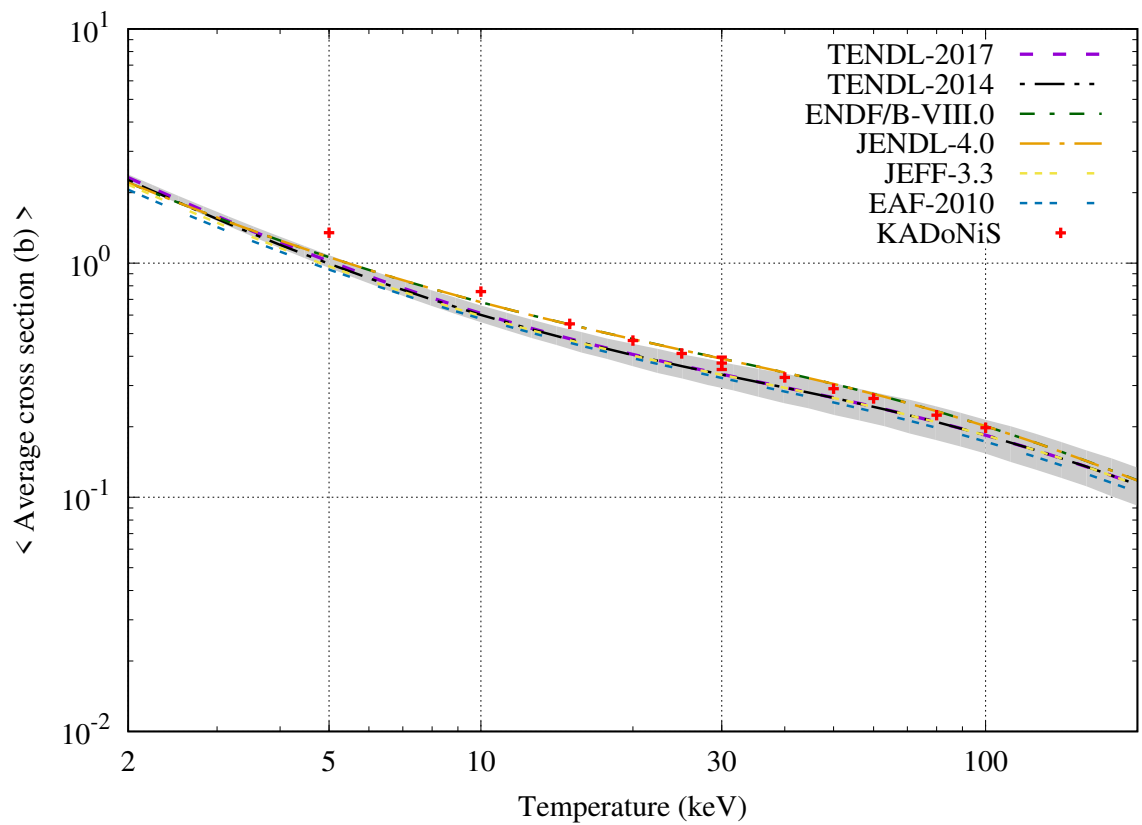
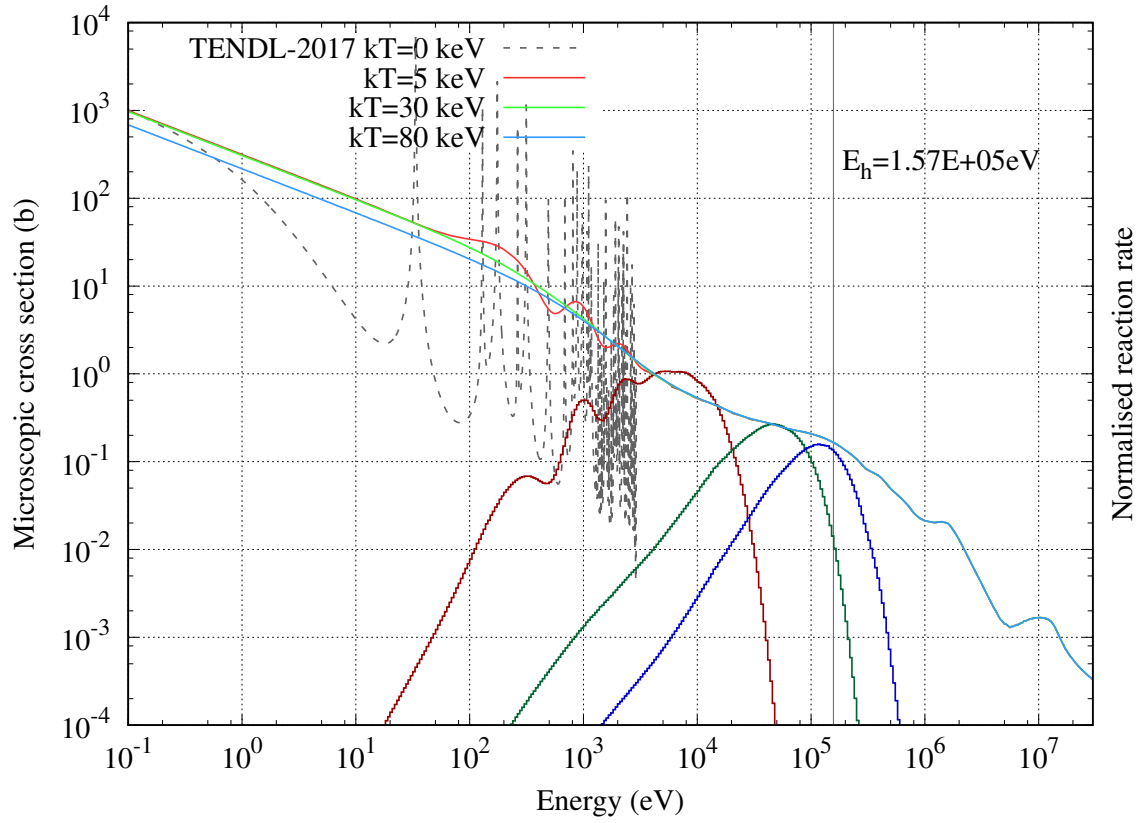
$^{196}\text{Hg}_{80}$ [$T_{1/2} = 2.50 \times 10^{18}$ years]



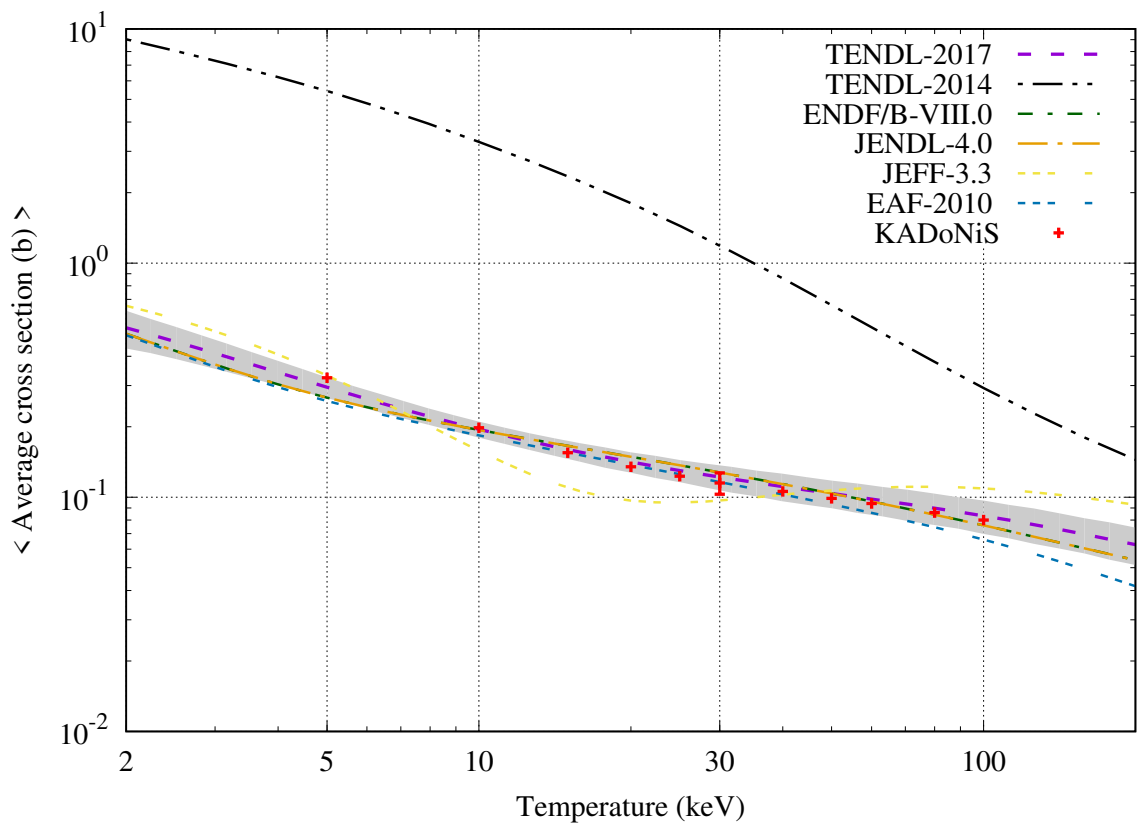
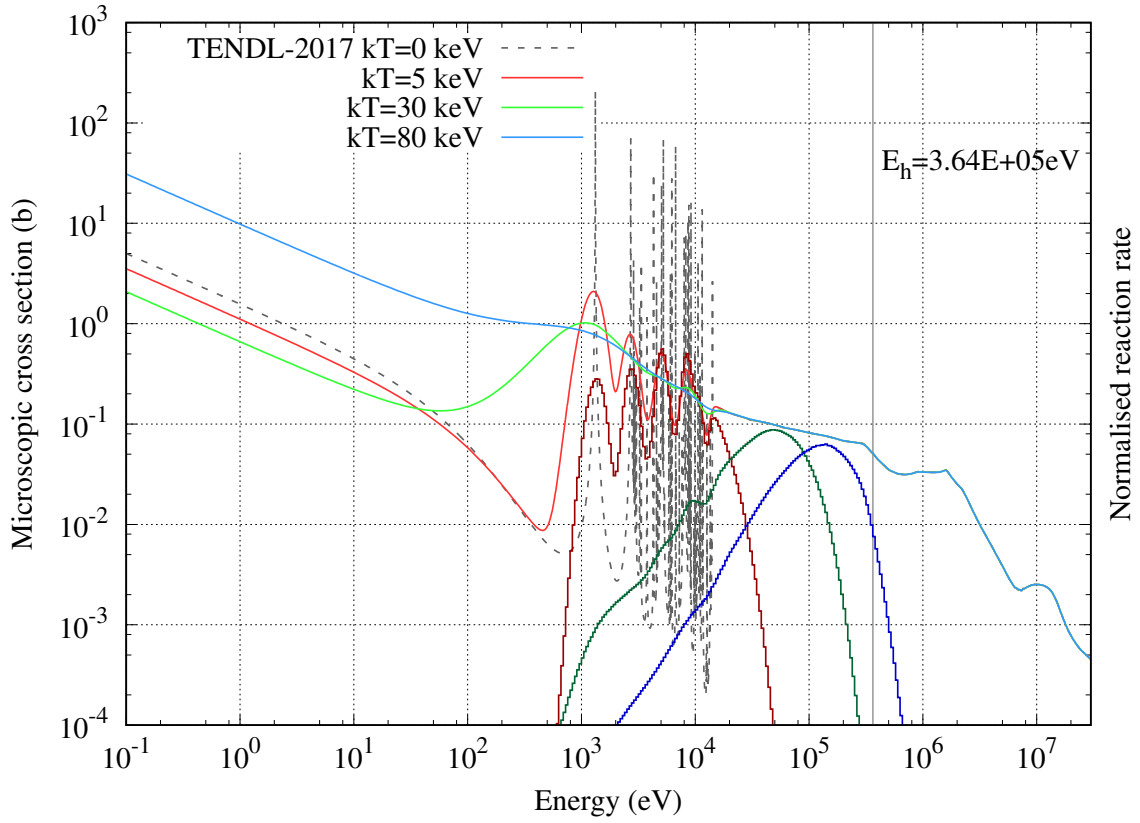
$^{198}\text{Hg}_{80}$ [Stable]



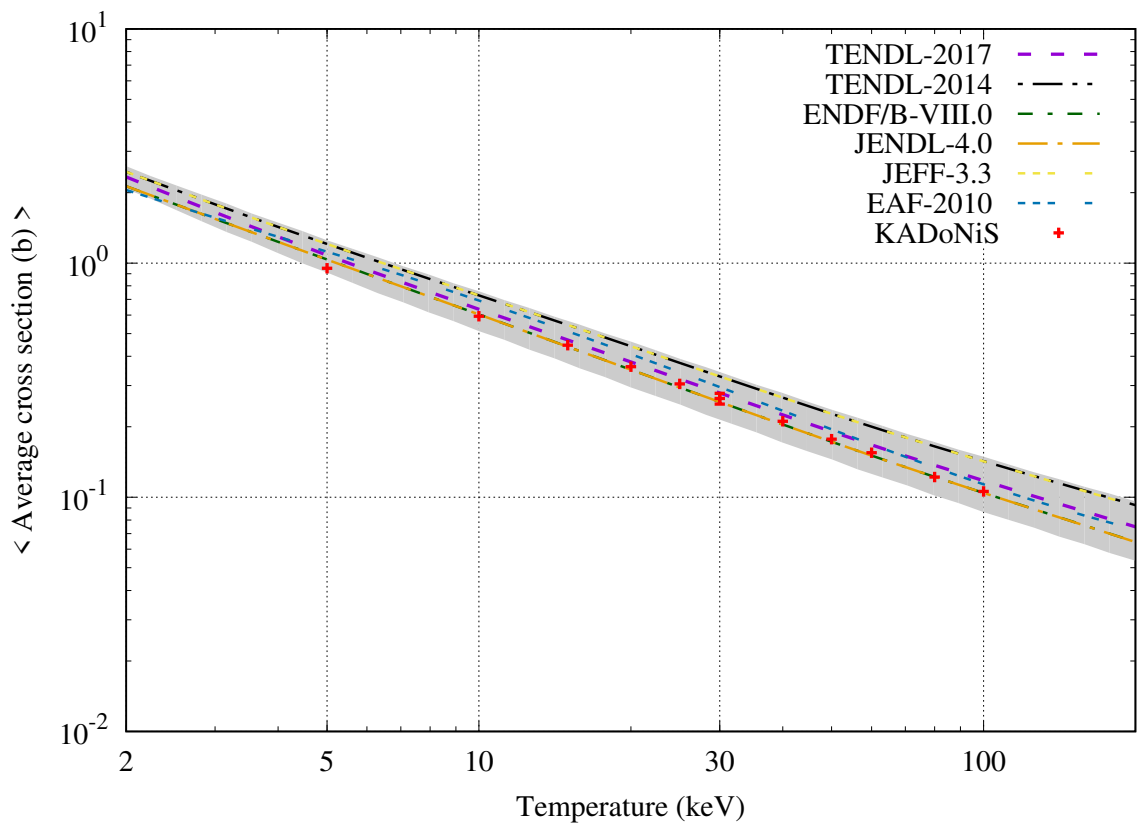
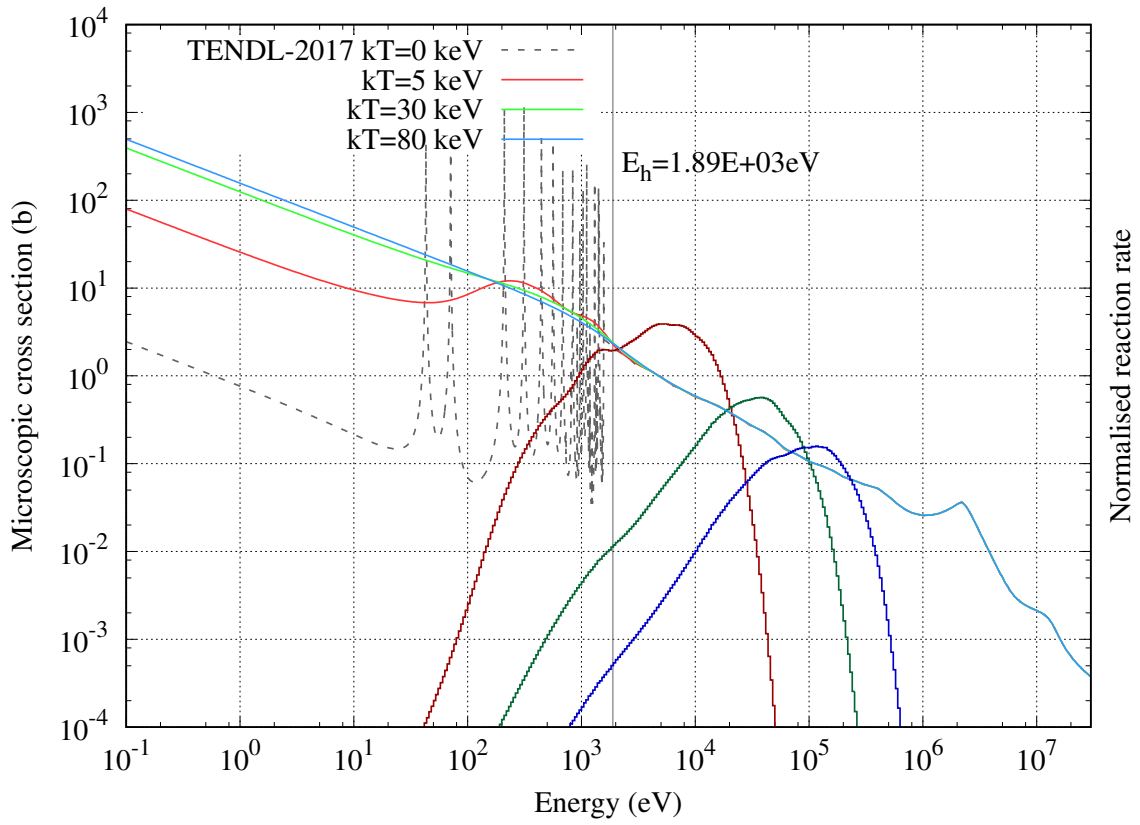
$^{199}\text{Hg}_{80}$ [Stable]



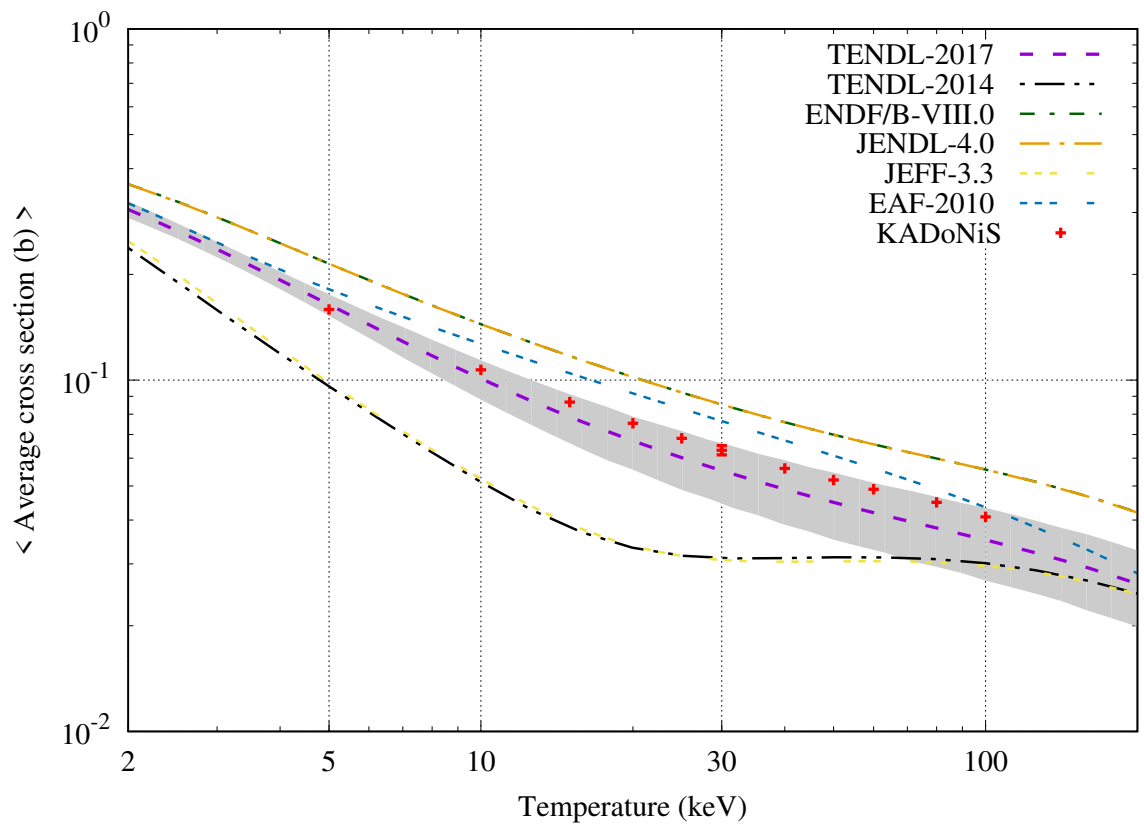
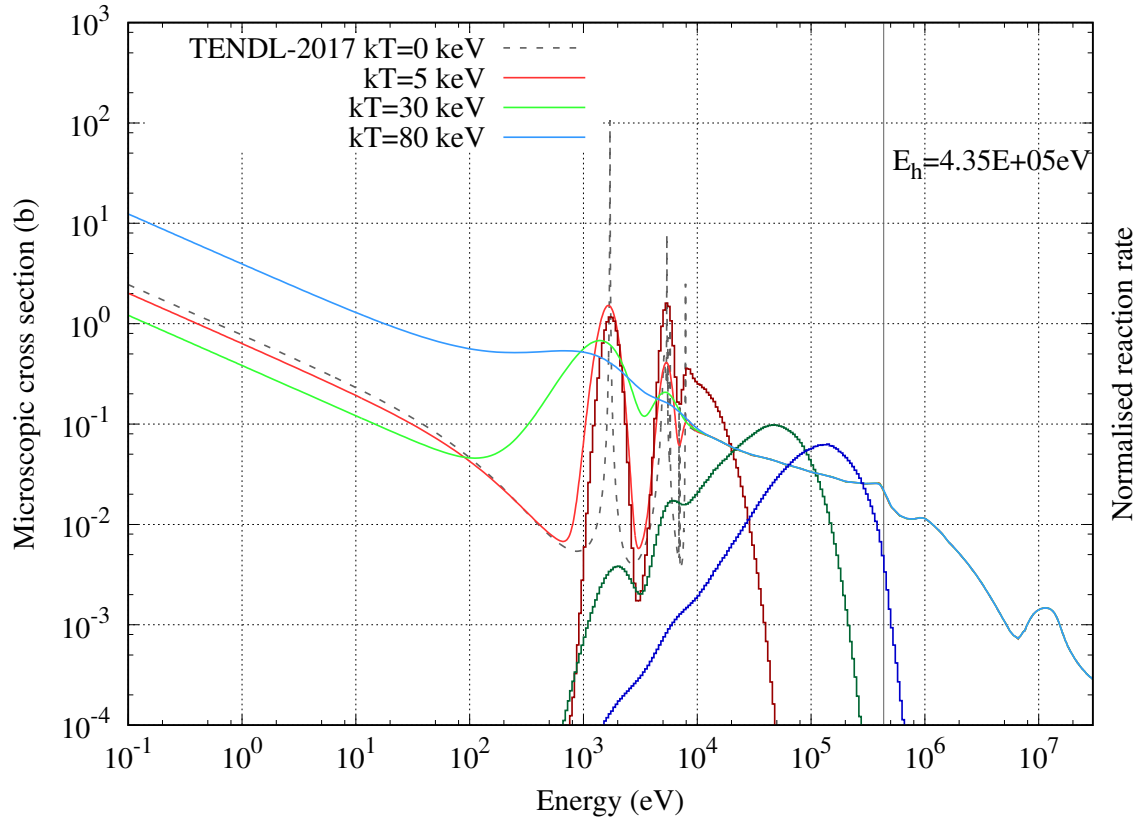
$^{200}\text{Hg}_{80}$ [Stable]



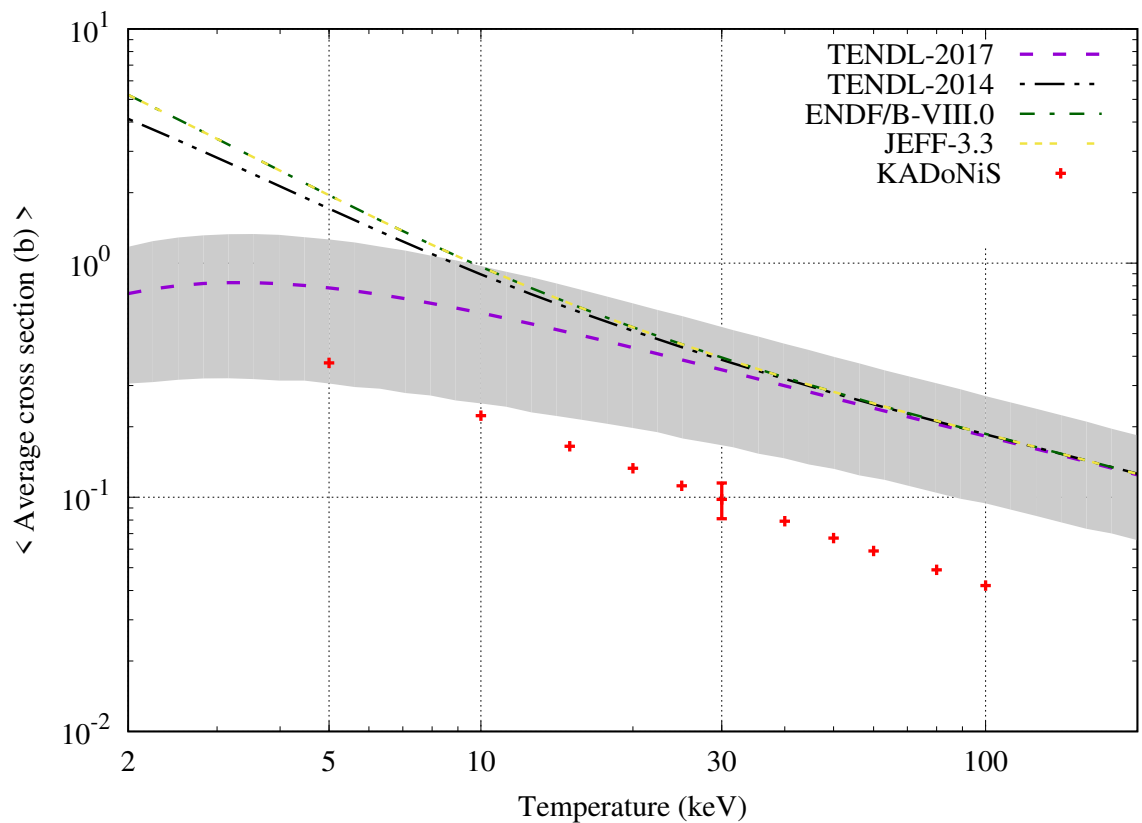
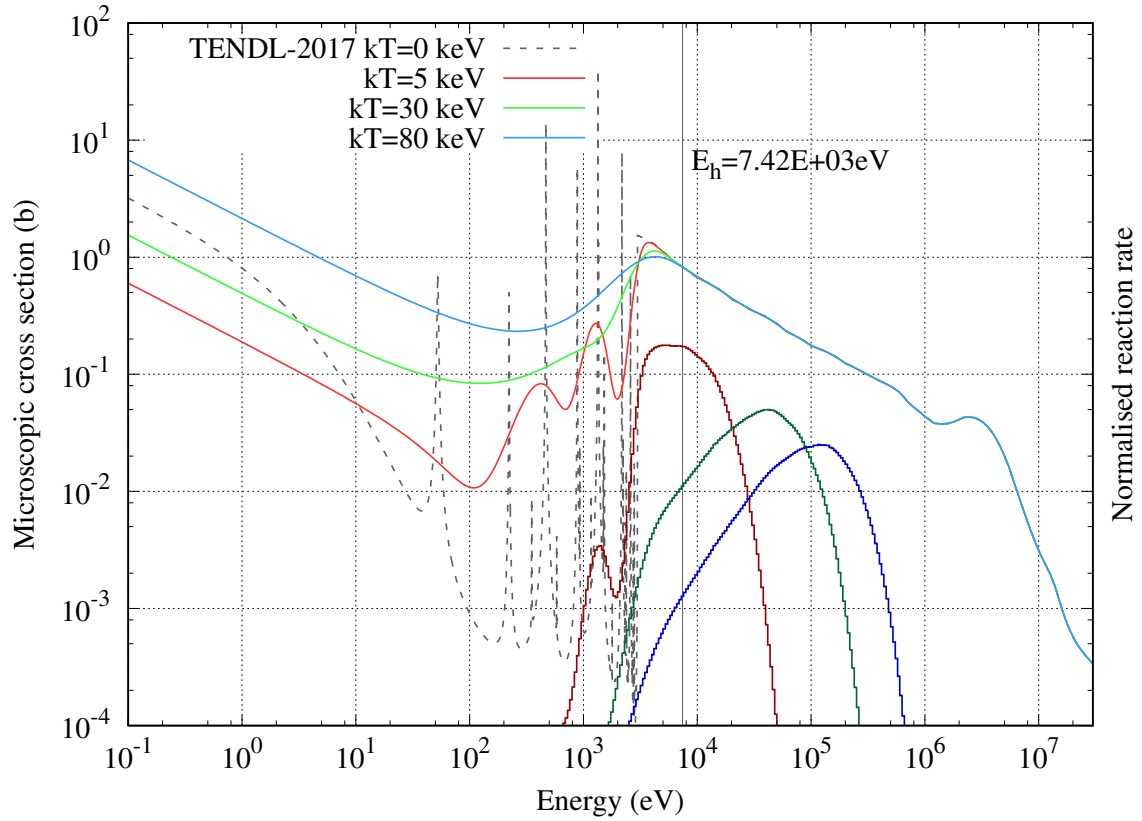
$^{201}\text{Hg}_{80}$ [Stable]



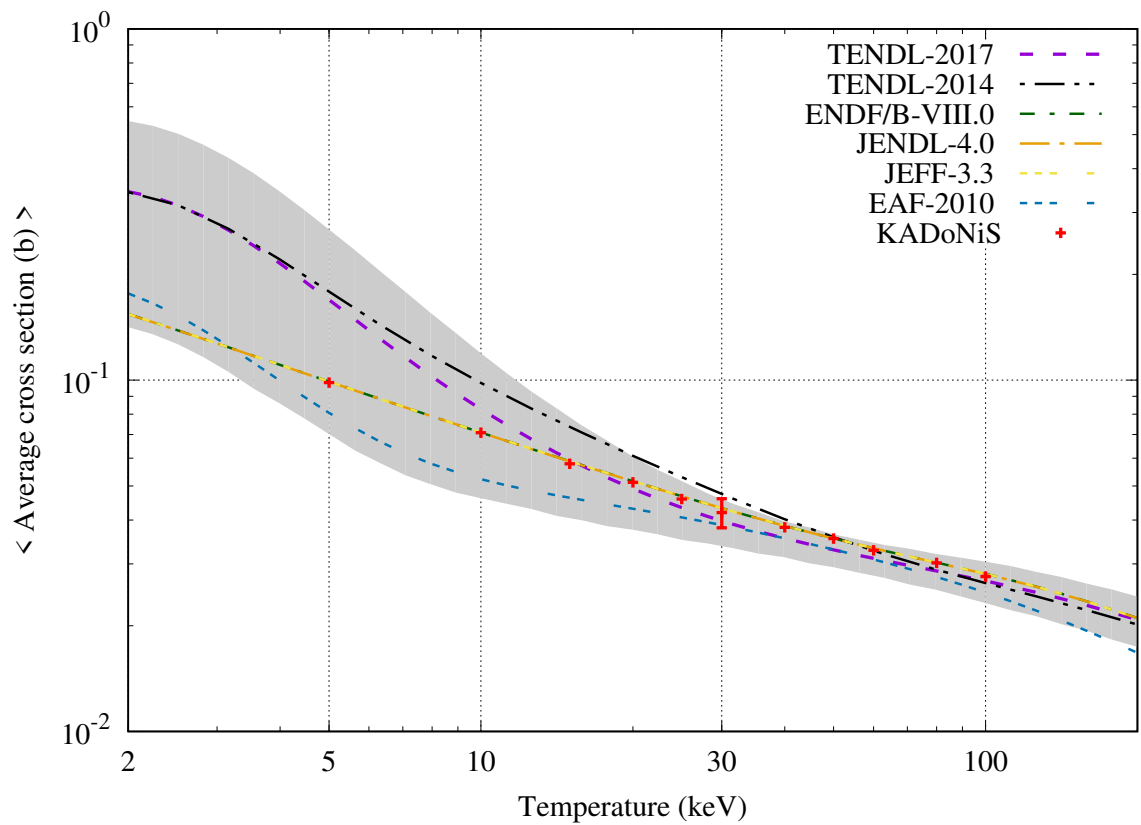
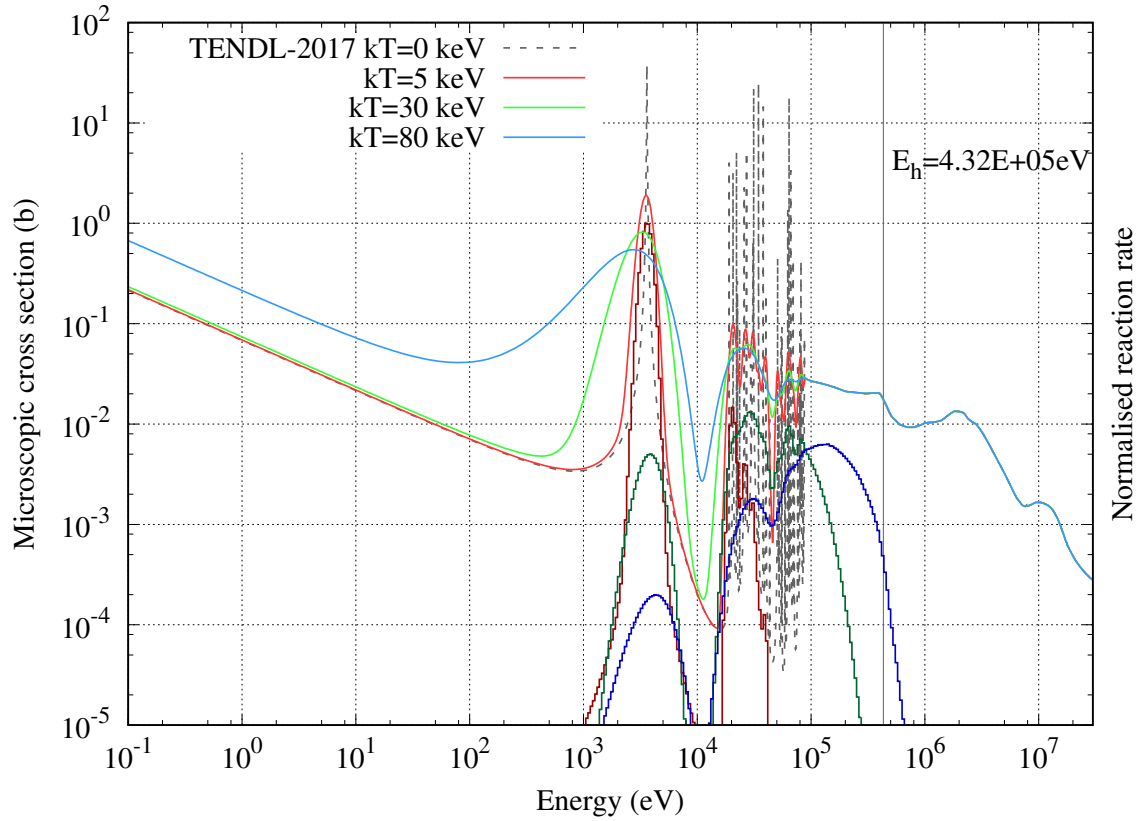
$^{202}\text{Hg}_{80}$ [Stable]



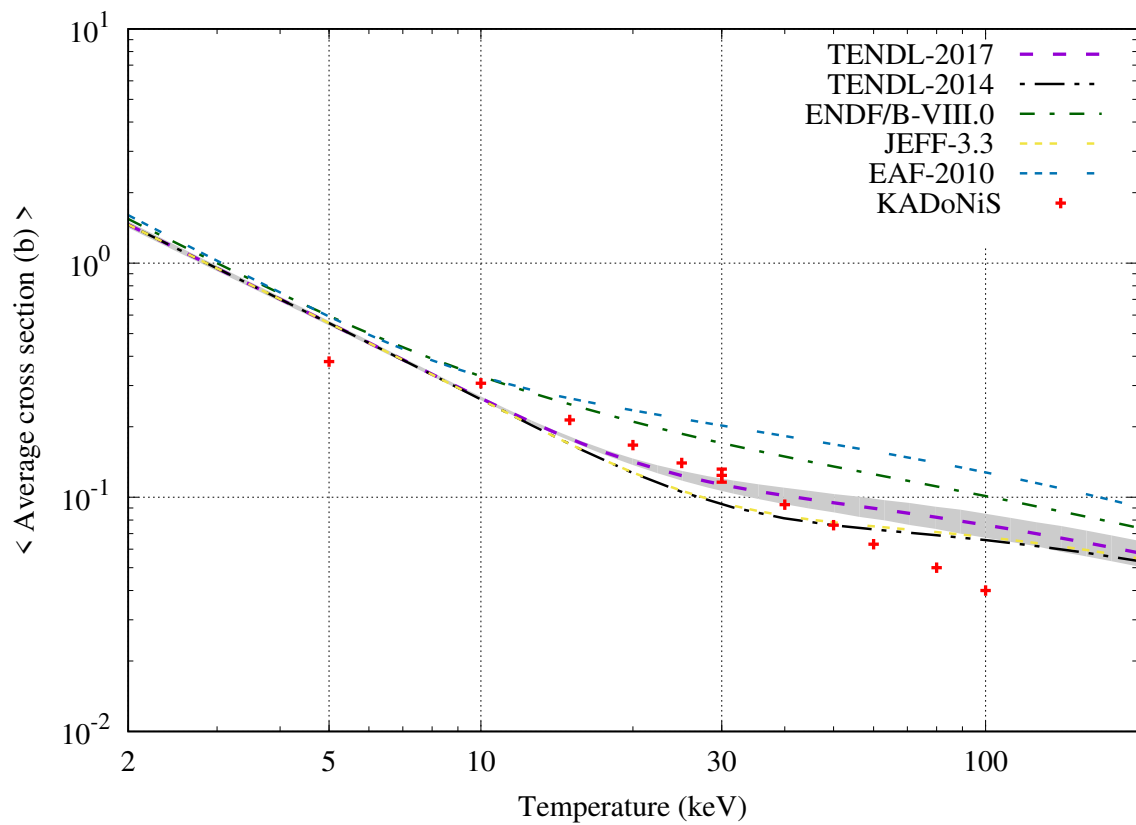
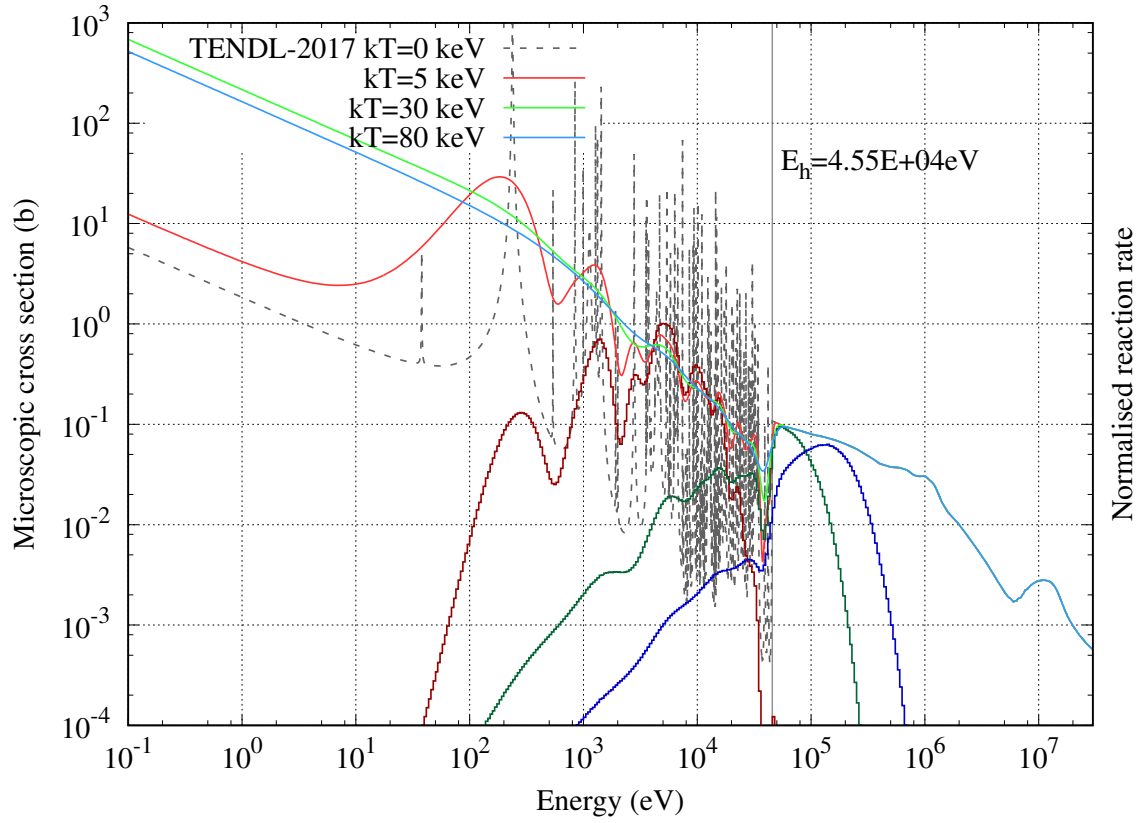
$^{203}\text{Hg}_{80}$ [$T_{1/2} = 46.60$ days] (KADoNiS=SMC)



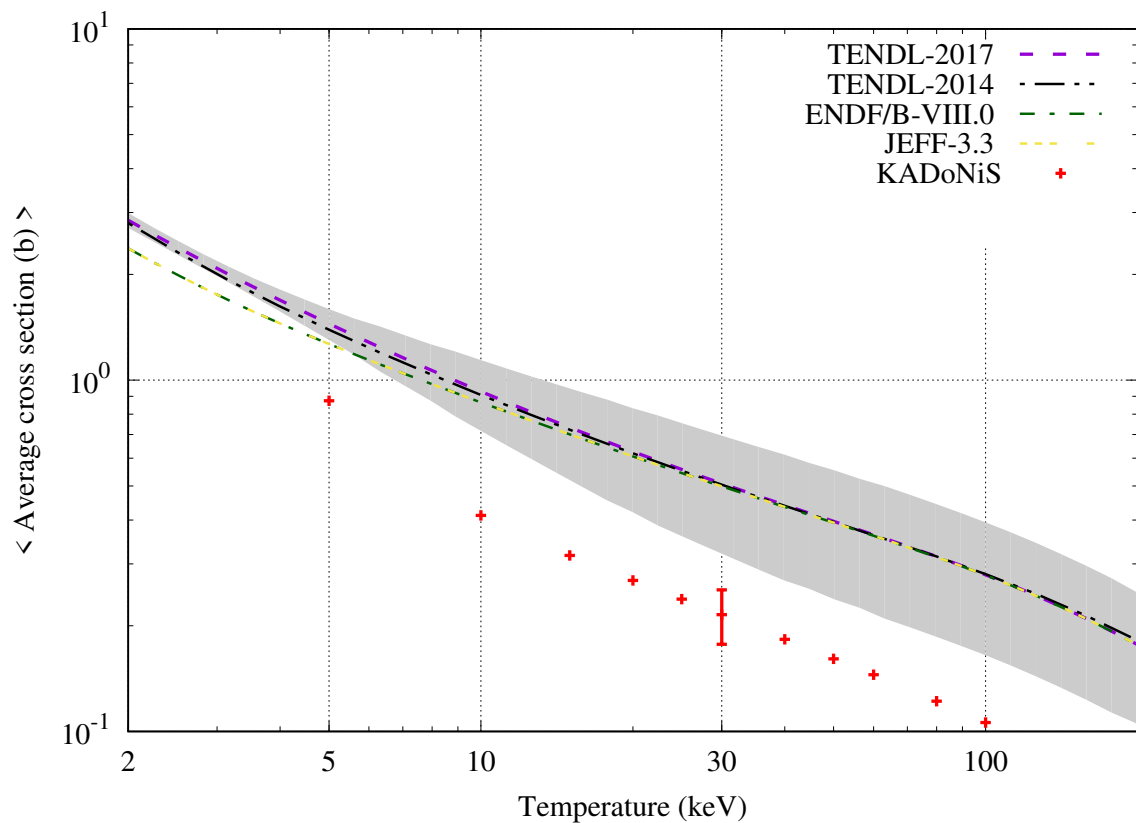
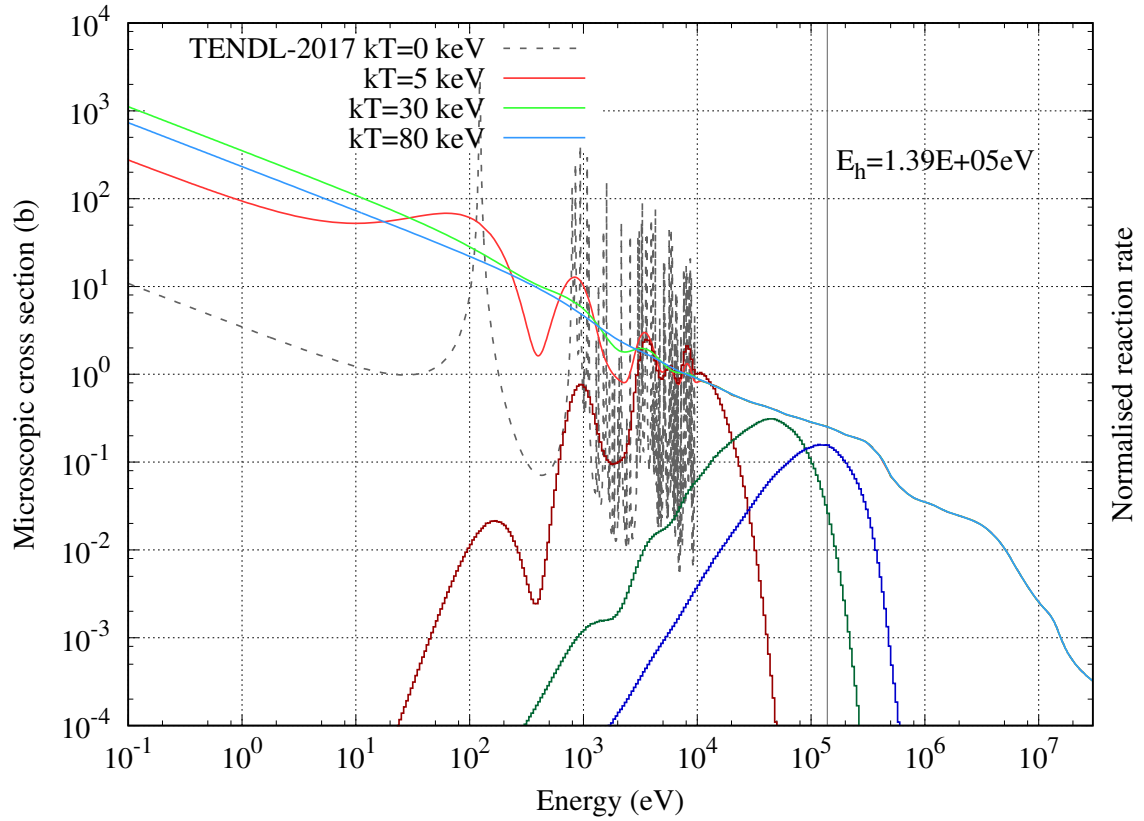
$^{204}\text{Hg}_{80}$ [Stable]



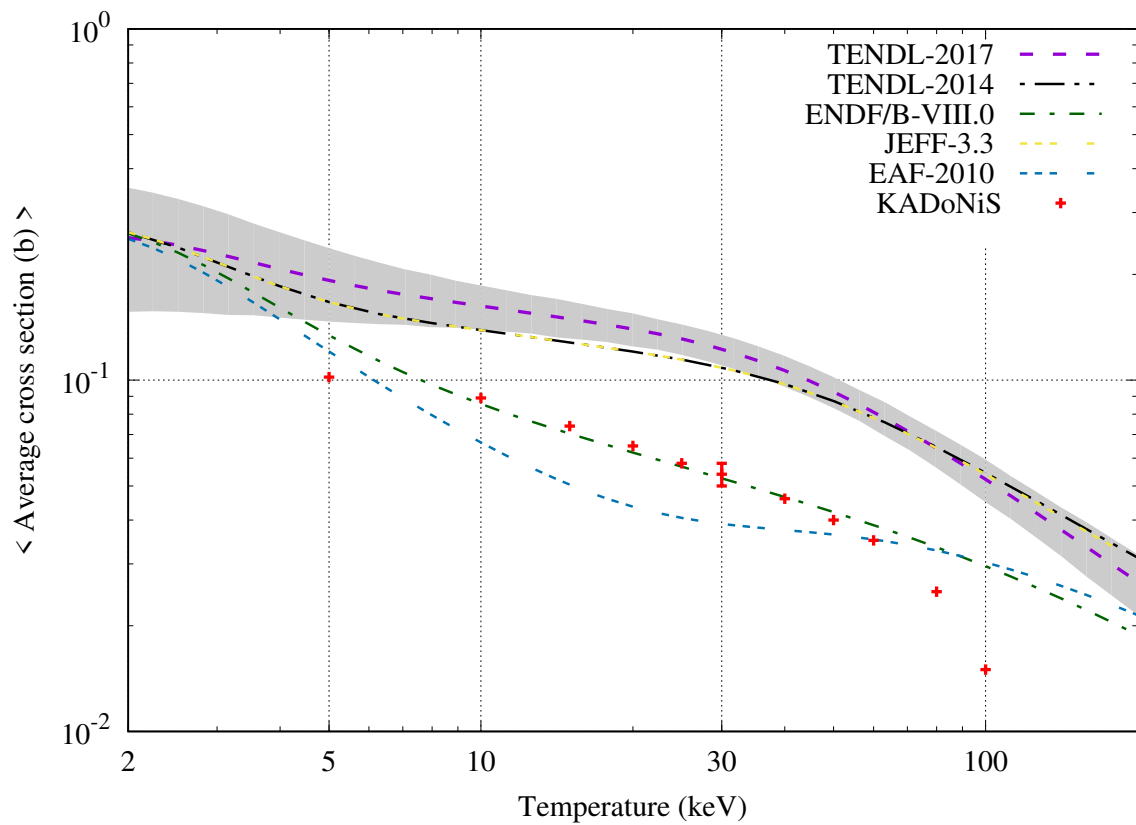
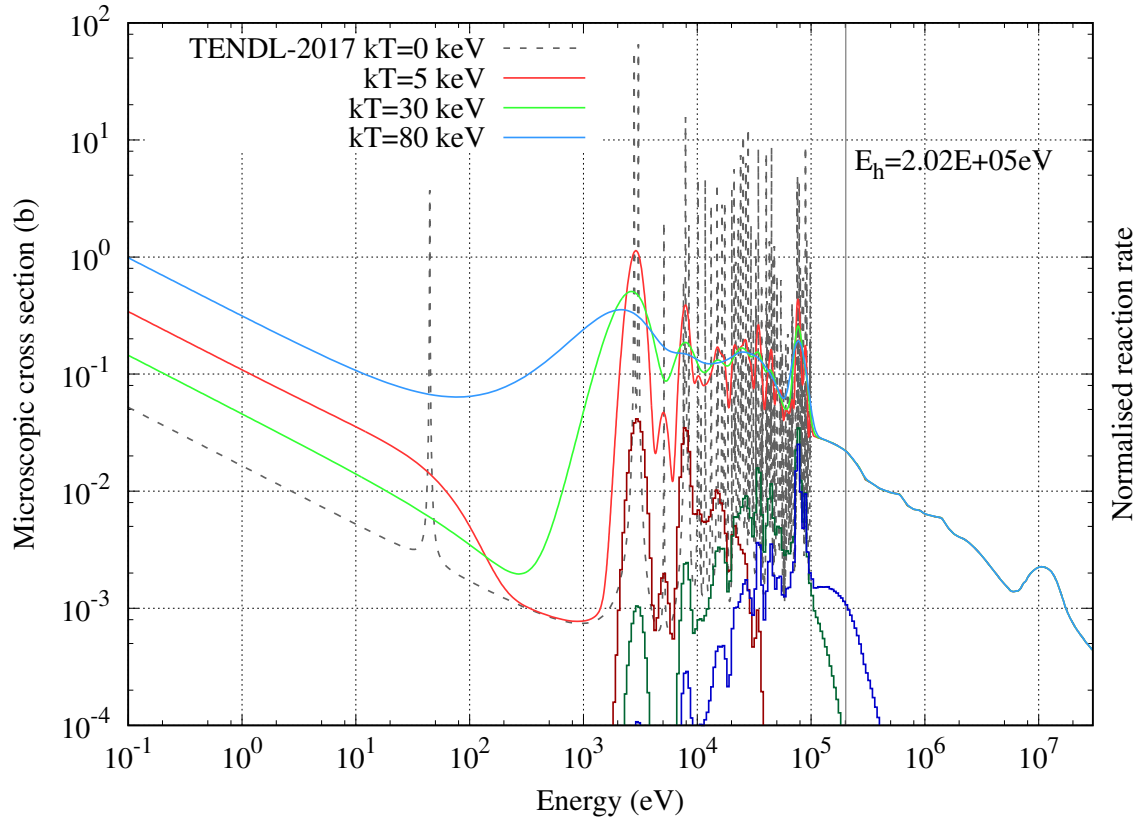
$^{203}\text{Tl}_{81}$ [Stable]



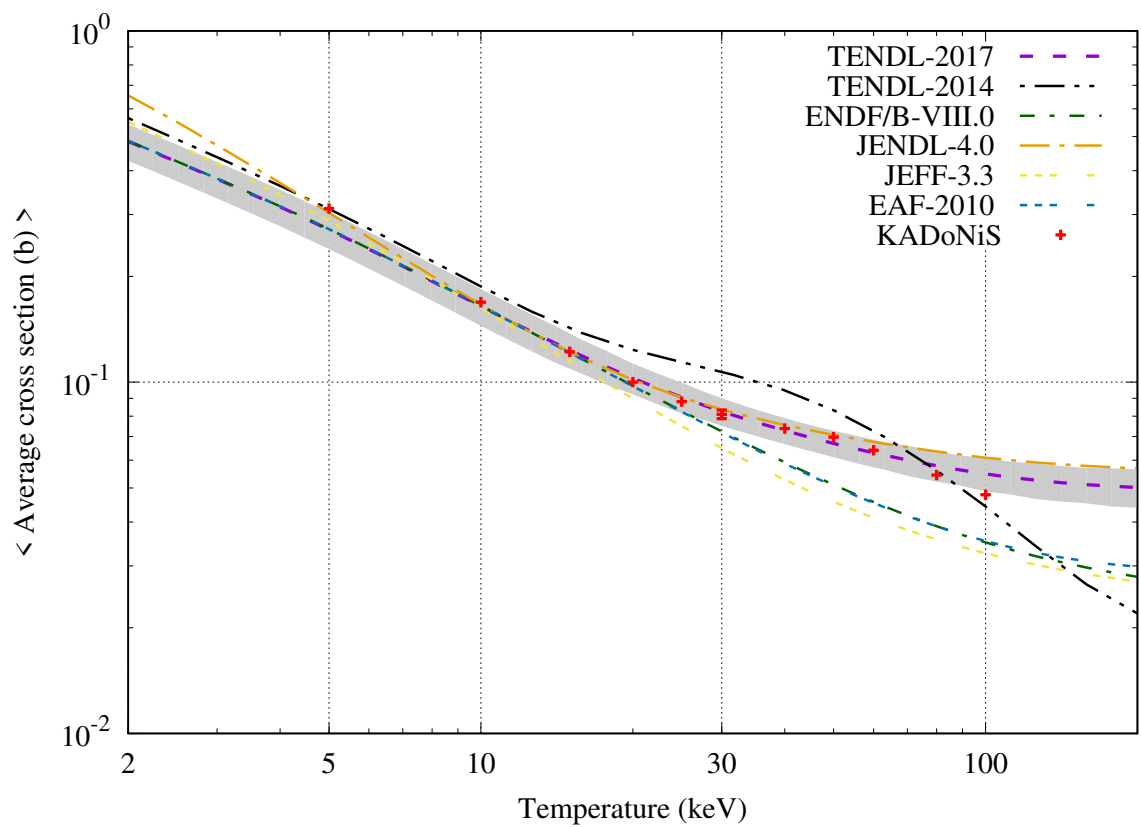
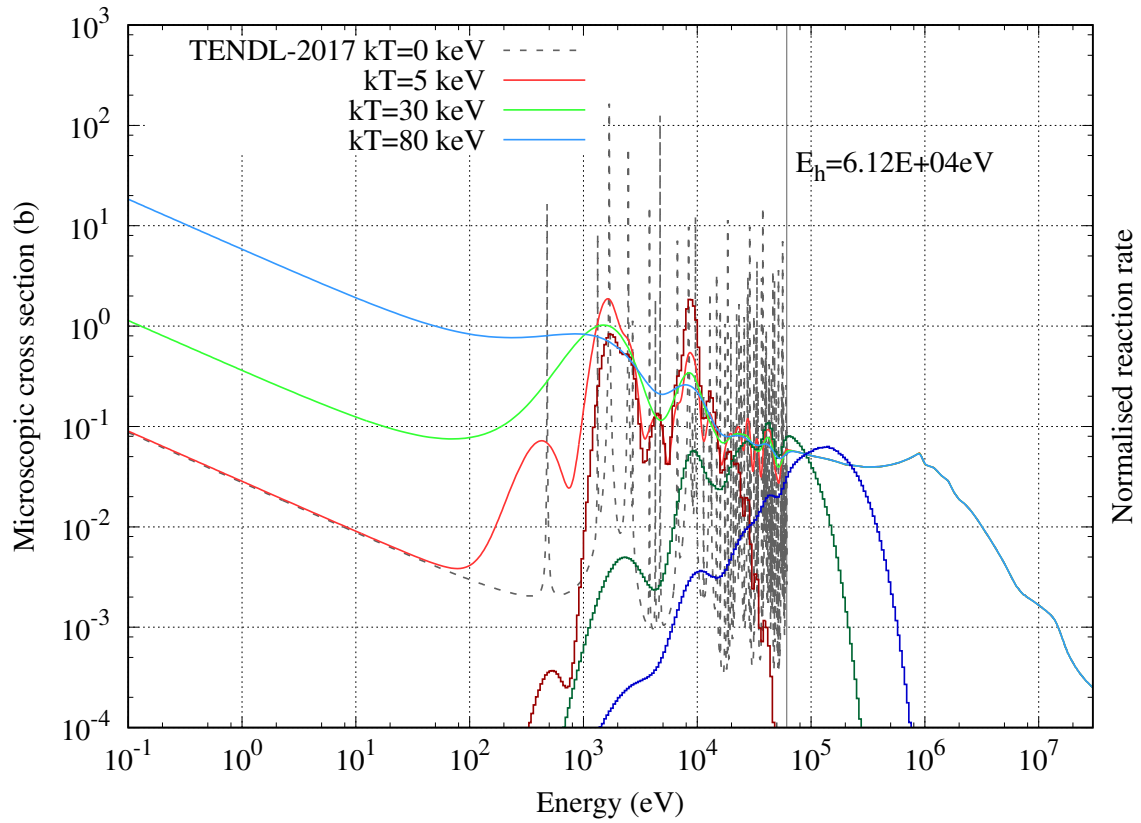
$^{204}\text{Tl}_{81}$ [$T_{1/2} = 3.79$ years] (KADoNiS=SMC)



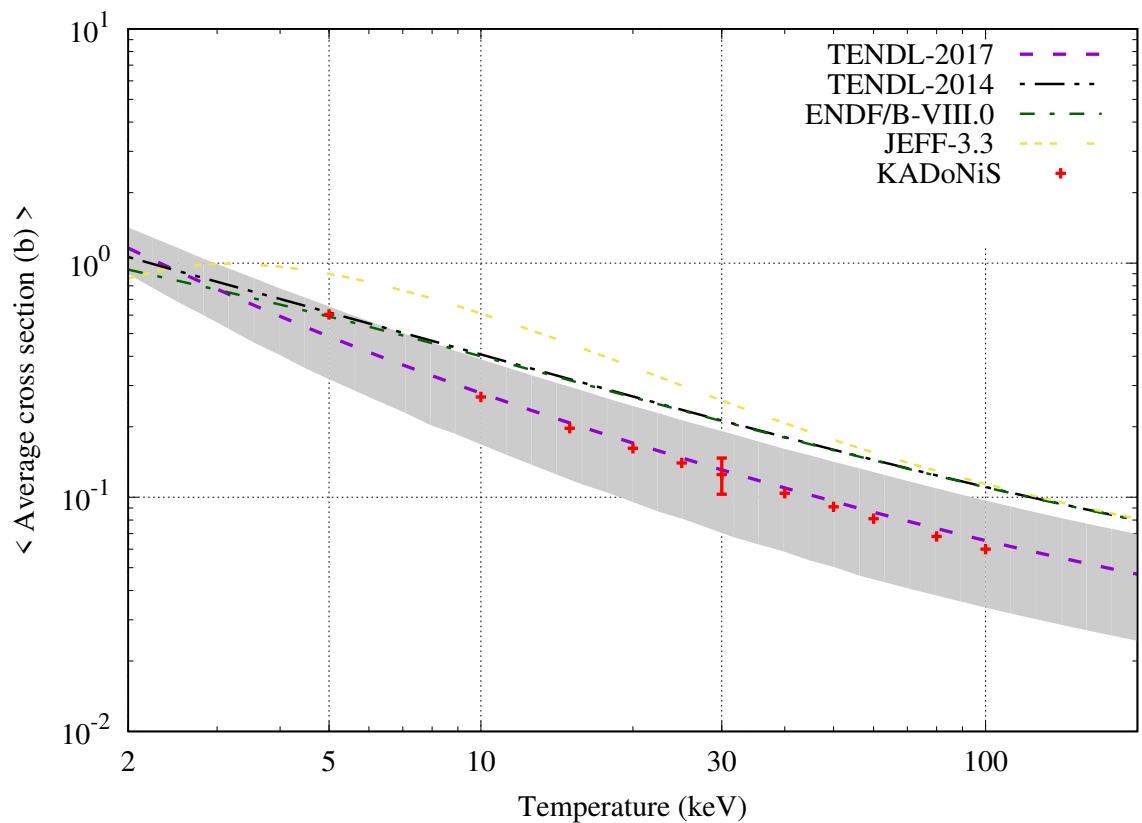
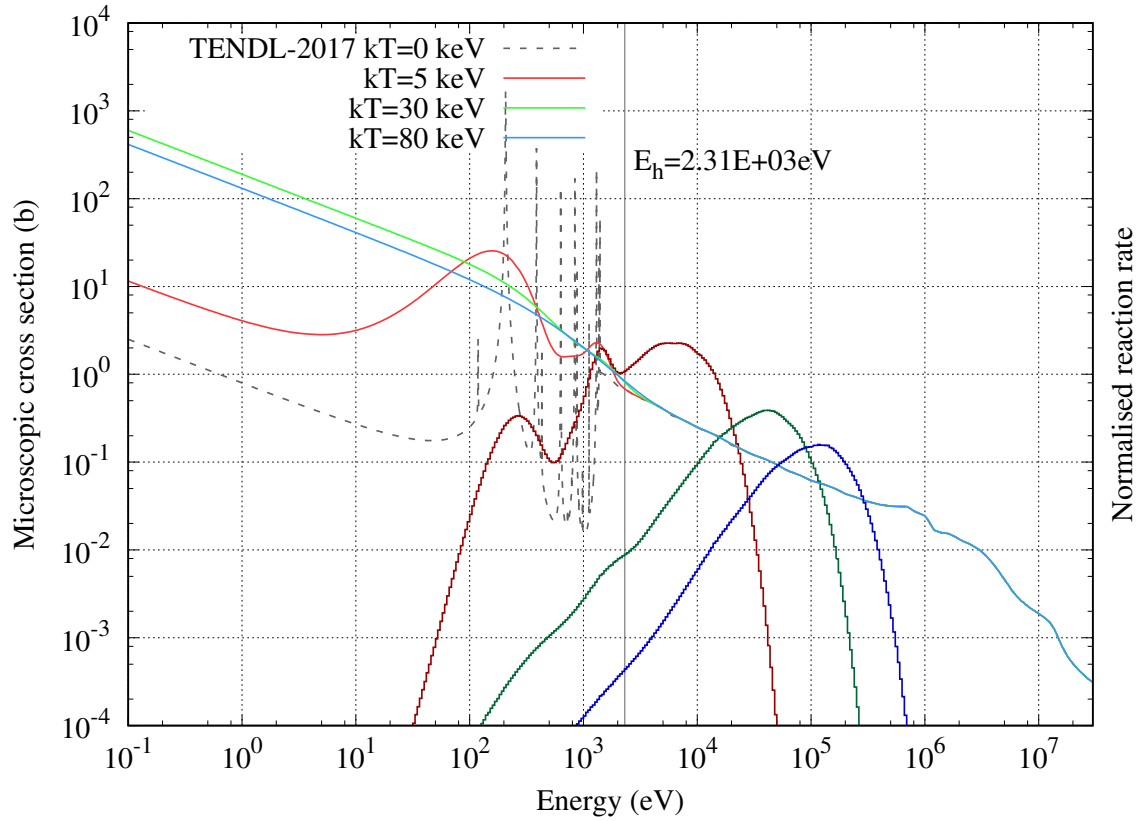
$^{205}\text{Tl}_{81}$ [Stable]



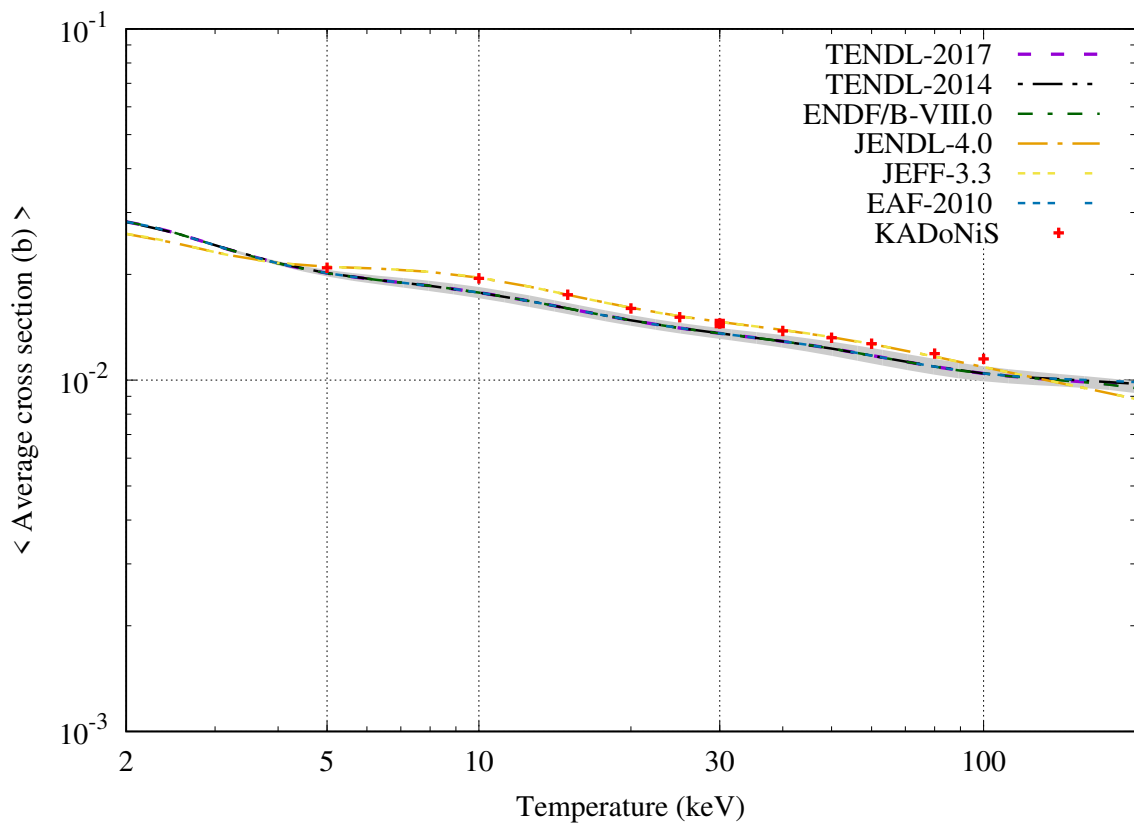
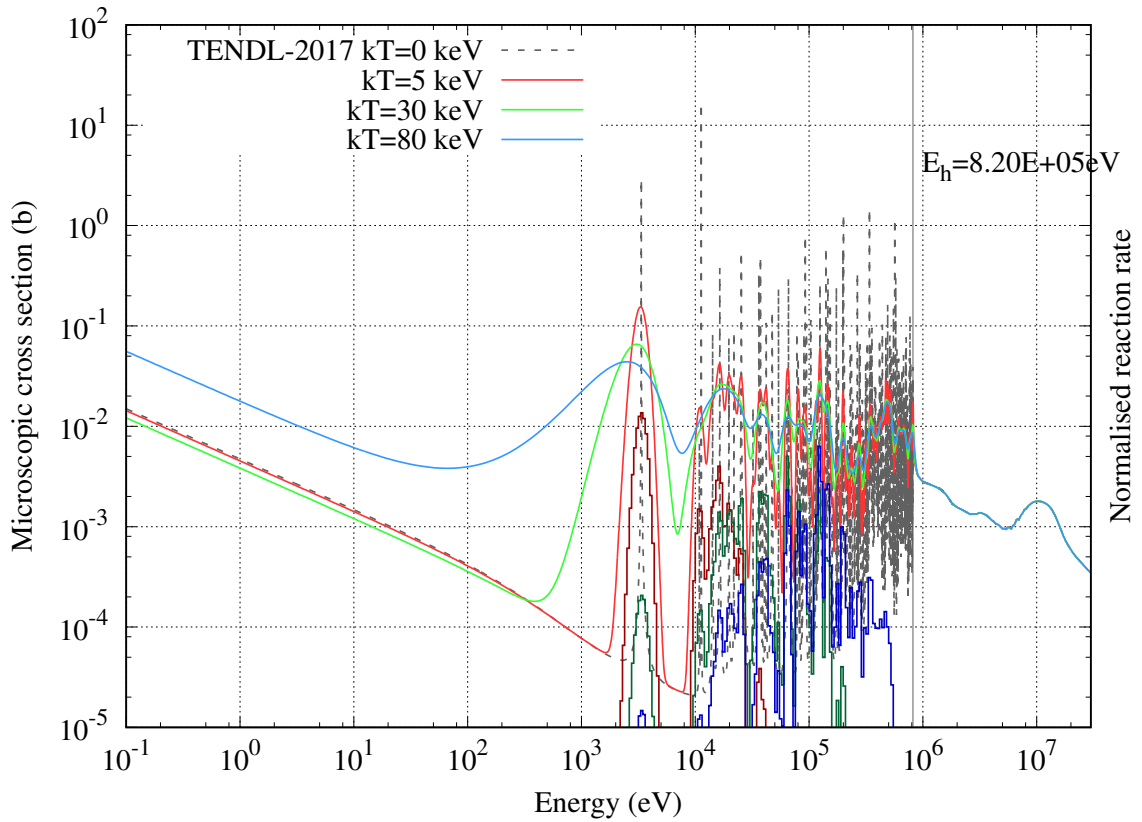
$^{204}\text{Pb}_{82}$ [$T_{1/2} = 1.40 \times 10^{17}$ years]



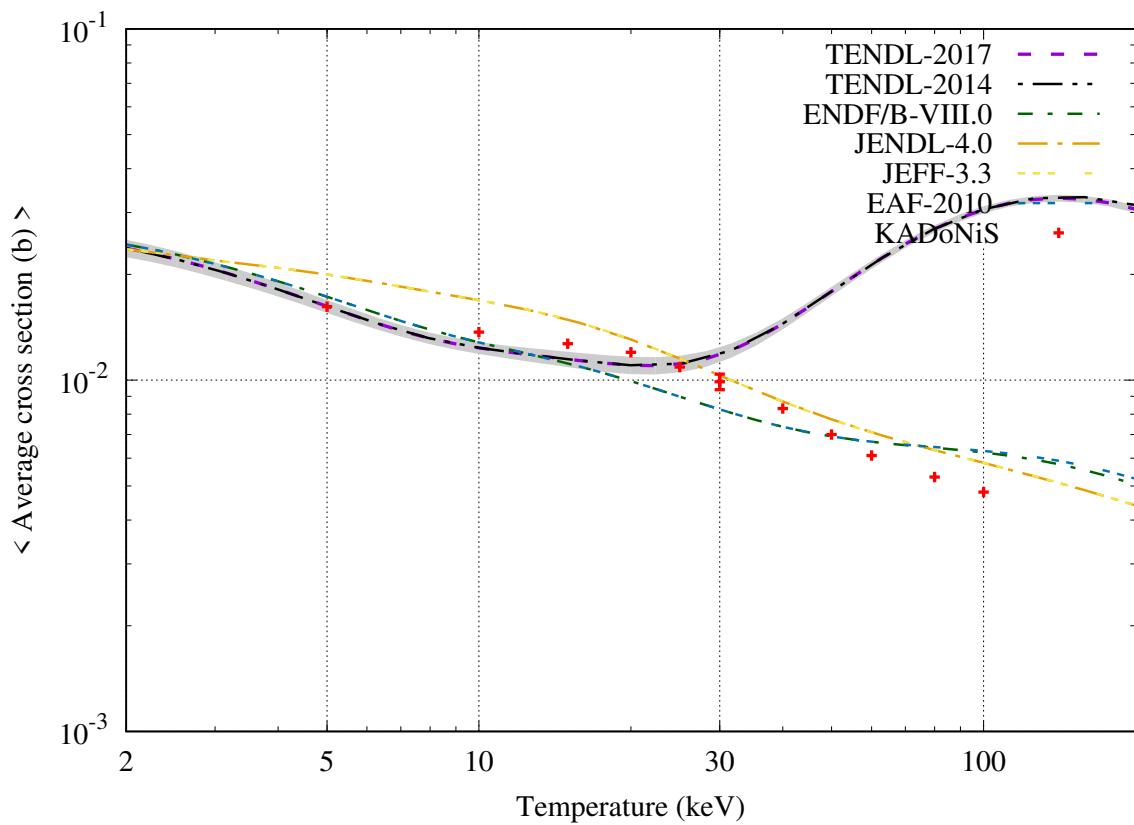
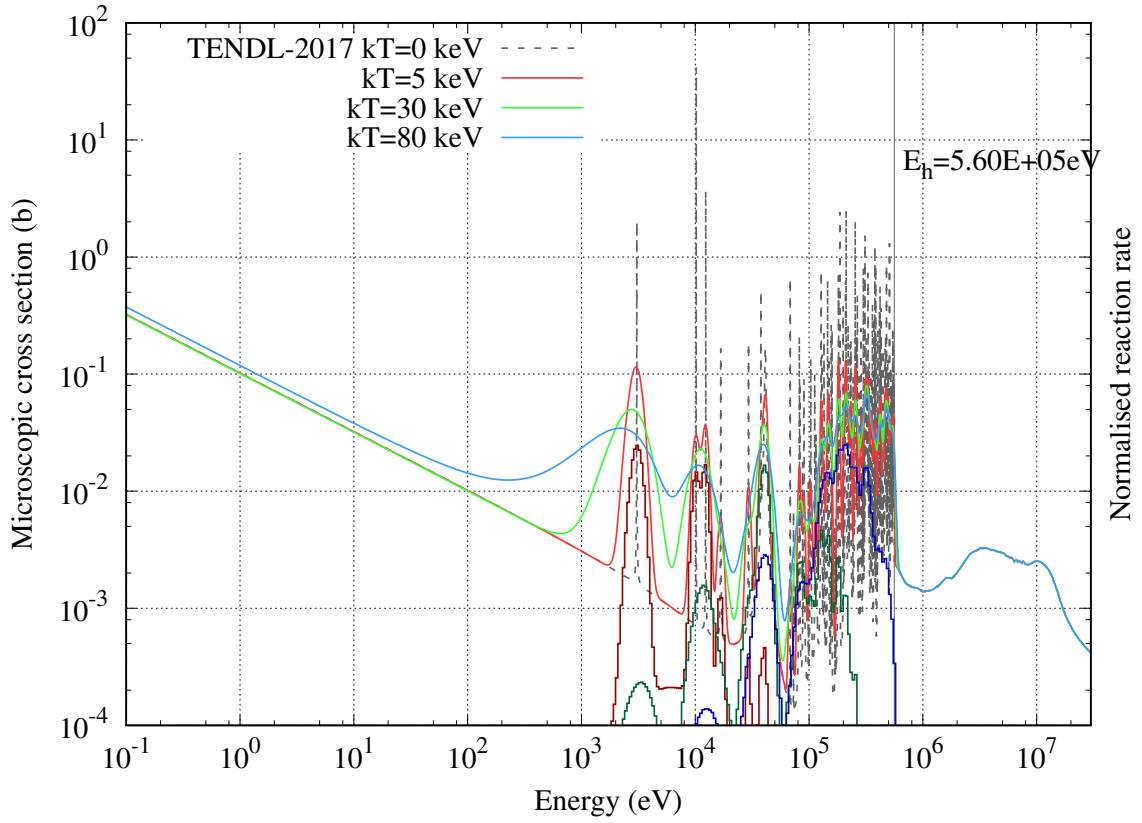
$^{205}\text{Pb}_{82}$ [$T_{1/2} = 1.53 \times 10^7$ years] (KADoNiS=SMC)



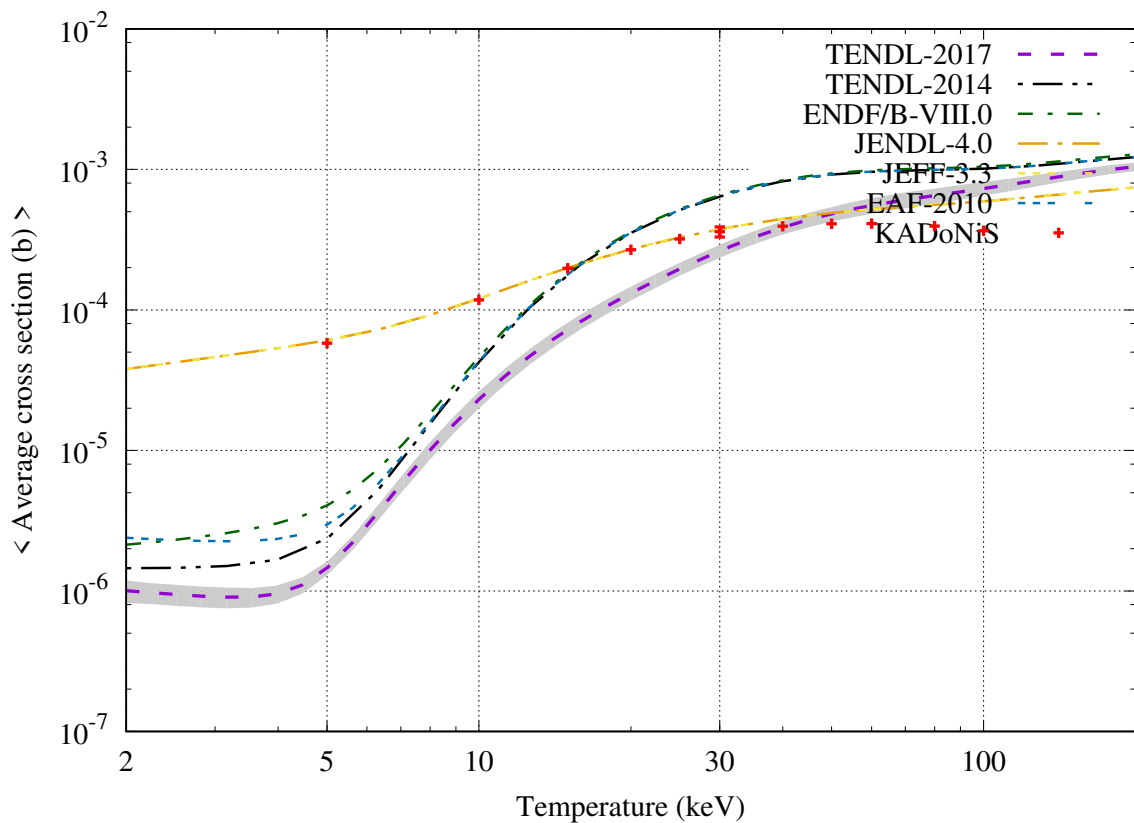
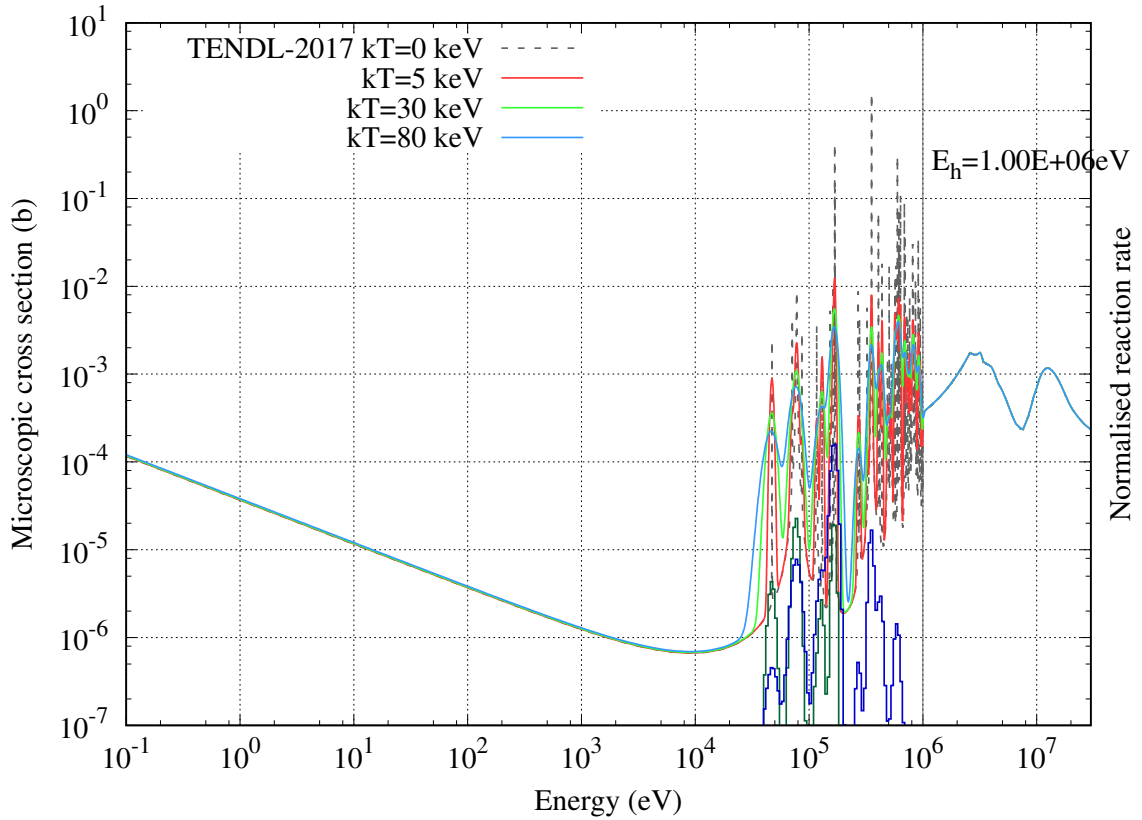
$^{206}\text{Pb}_{82}$ [Stable]



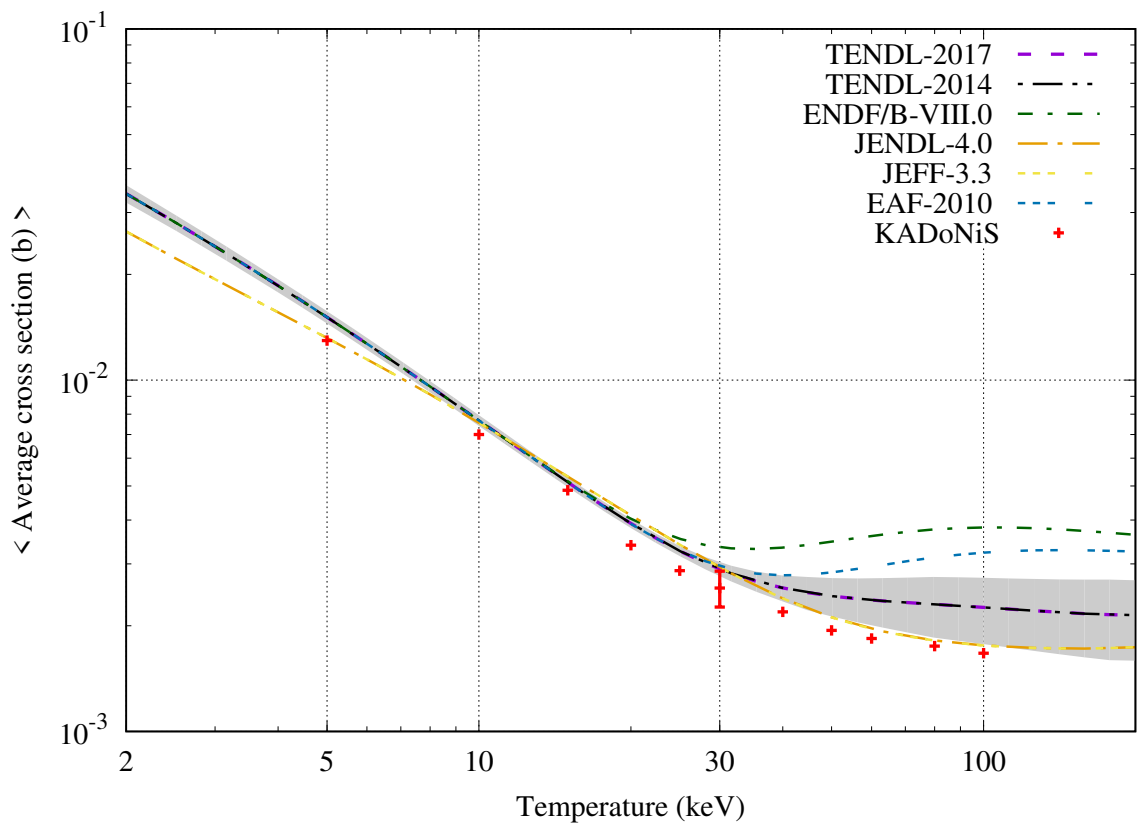
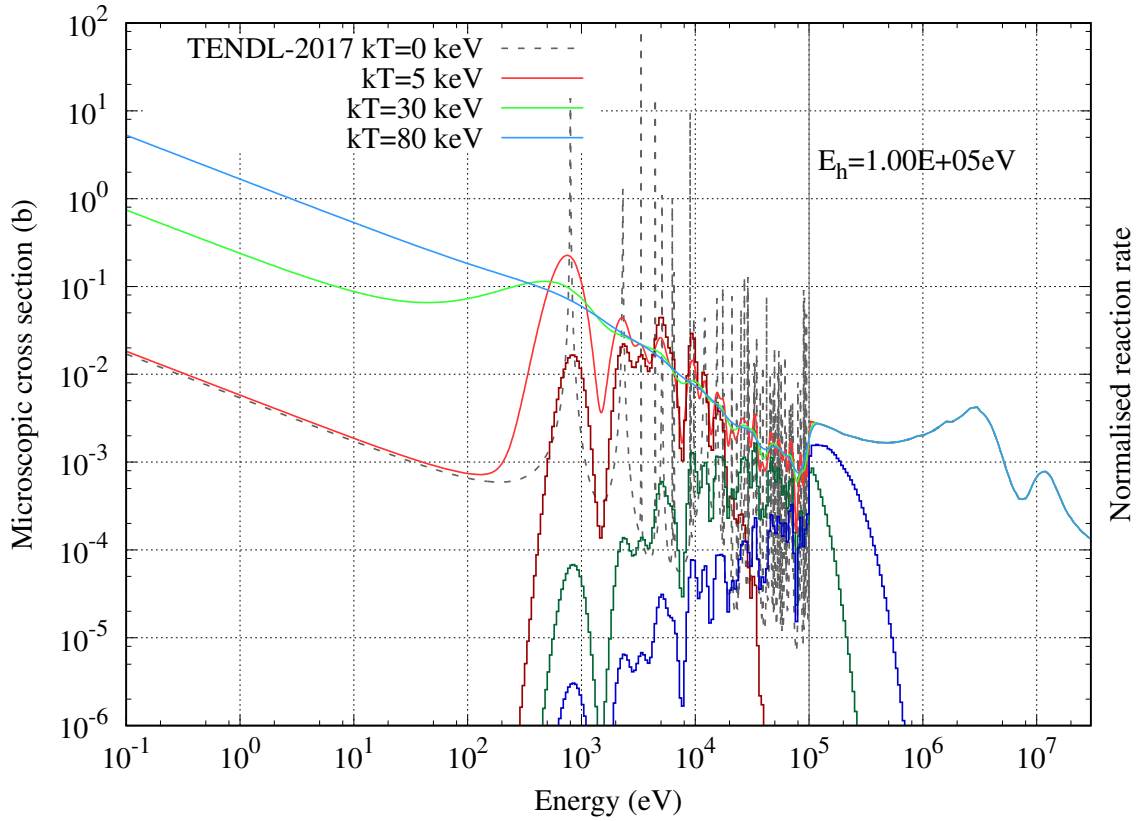
$^{207}\text{Pb}_{82}$ [Stable]



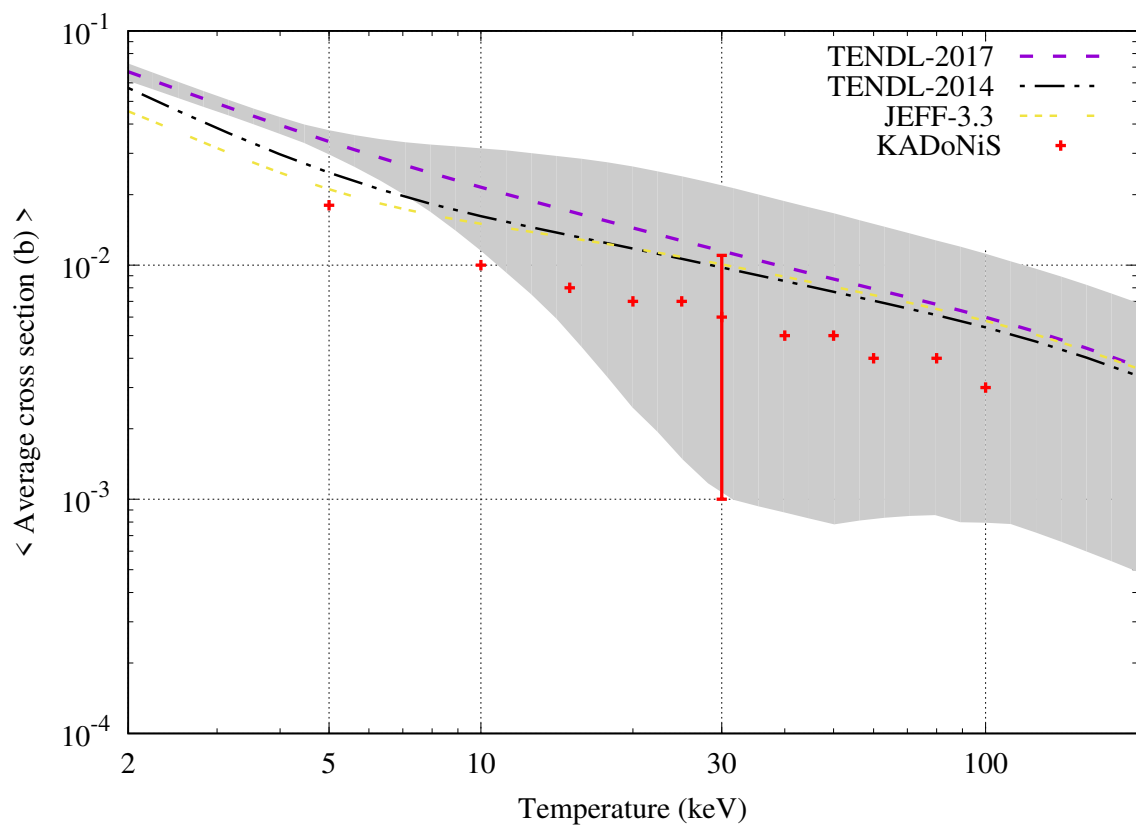
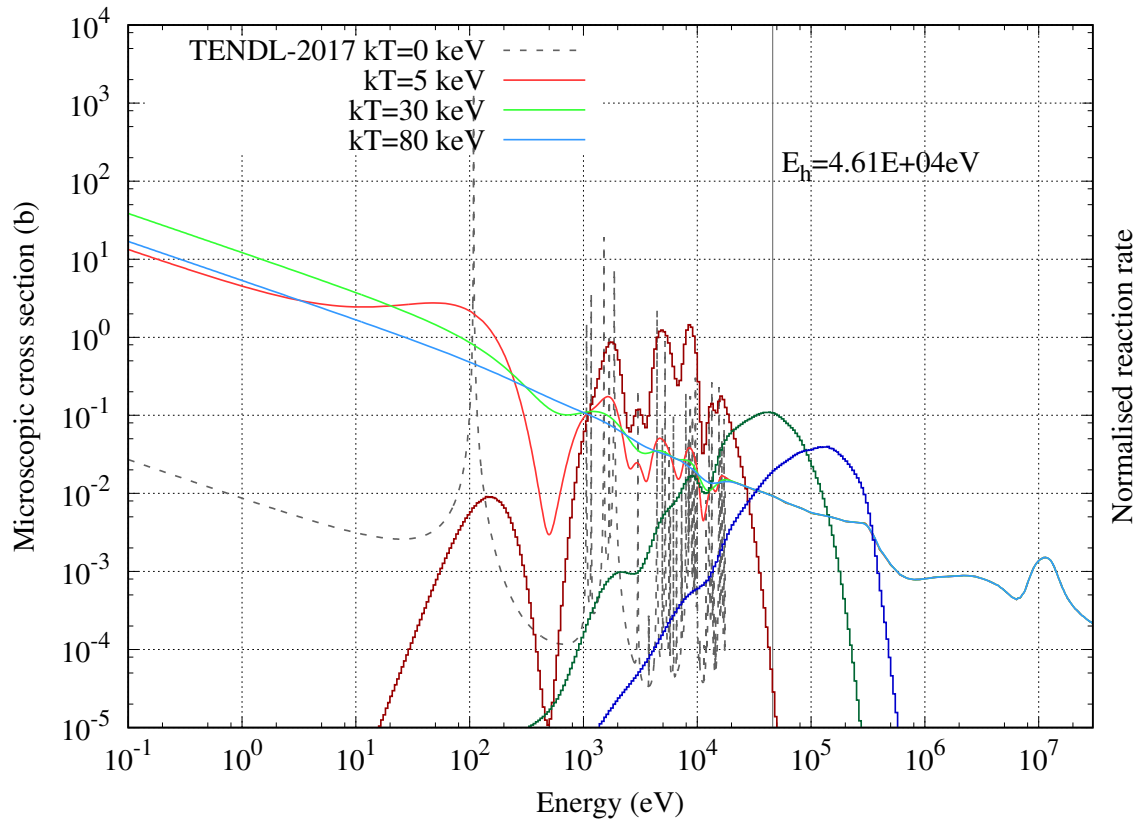
$^{208}\text{Pb}_{82}$ [Stable]



$^{209}\text{Bi}_{83}$ [$T_{1/2} = 1.90 \times 10^{19}$ years]



$^{210}\text{Bi}_{83}$ [$T_{1/2} = 5.01$ days] (KADoNiS=SMC)



6 Discussion

Comparisons of all 30 keV values computed with `maxwav` with KADoNiS values are shown in Figures 6 and 7. Those nuclides with $|C/E|$ values greater than 10 are identified in the first and removed in the second, which identifies a few nuclides which show considerable difference. A library comparison of C/E values for 30 keV MACS is shown in Figure 8, where missing nuclides are tallied into the $C/E < 1/10$ bin. Setting aside the KADoNiS nuclides which are only contained in TENDL-2017, the global performance of TENDL-2017 is still superior to the other libraries. The JENDL-4.0 distribution shows a strong peak around $C/E=1$ which suggests that handmade renormalisations and/or resonance parameter selections with knowledge of astrophysical MACS has formed part of the evaluation process for that library.

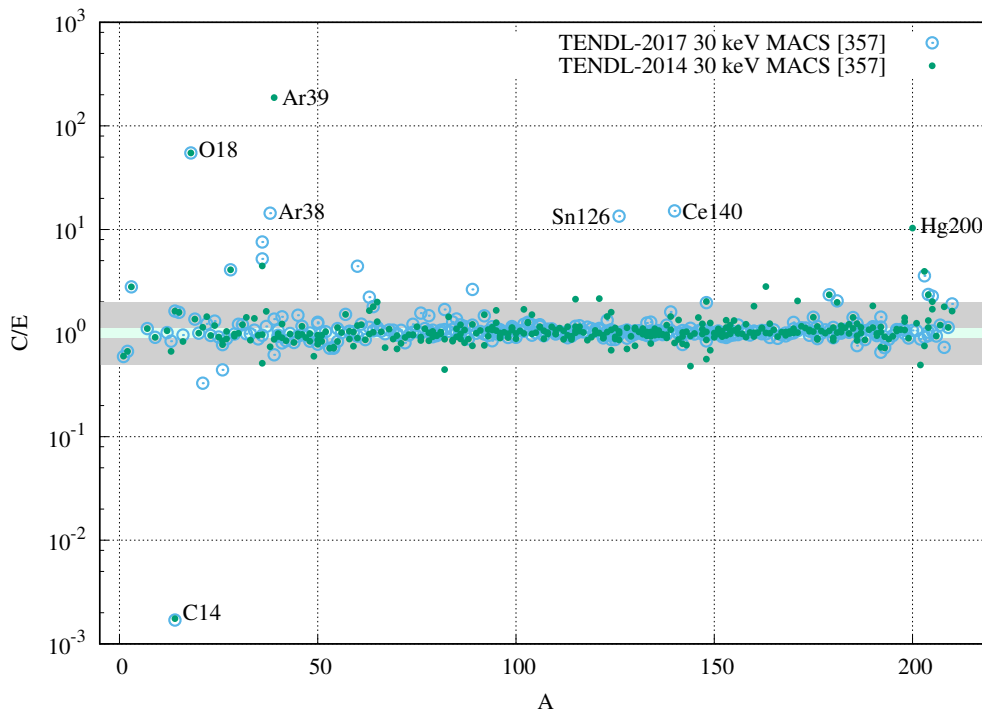


Figure 6: Comparison of all 357 KADoNiS 30 keV cross sections with TENDL-2017 and -2014 values calculated with `maxwav`. A few nuclides are isolated which require an adjustment of over one order of magnitude.

The temperature dependent Maxwellian-averaged cross section (MACS) data assembled for stellar nucleosynthesis offers a wealth of experimental information which can be used to probe differential cross section data up to a few hundred keV. For the well-known nuclides, where considerable efforts have been made to characterise the resolved resonance range over these energies, all nuclear data libraries generally agree with each other and the experiments. For nuclides which do not benefit from continuous resolved resonances over several hundred keV, results are more scattered. The multiple methods

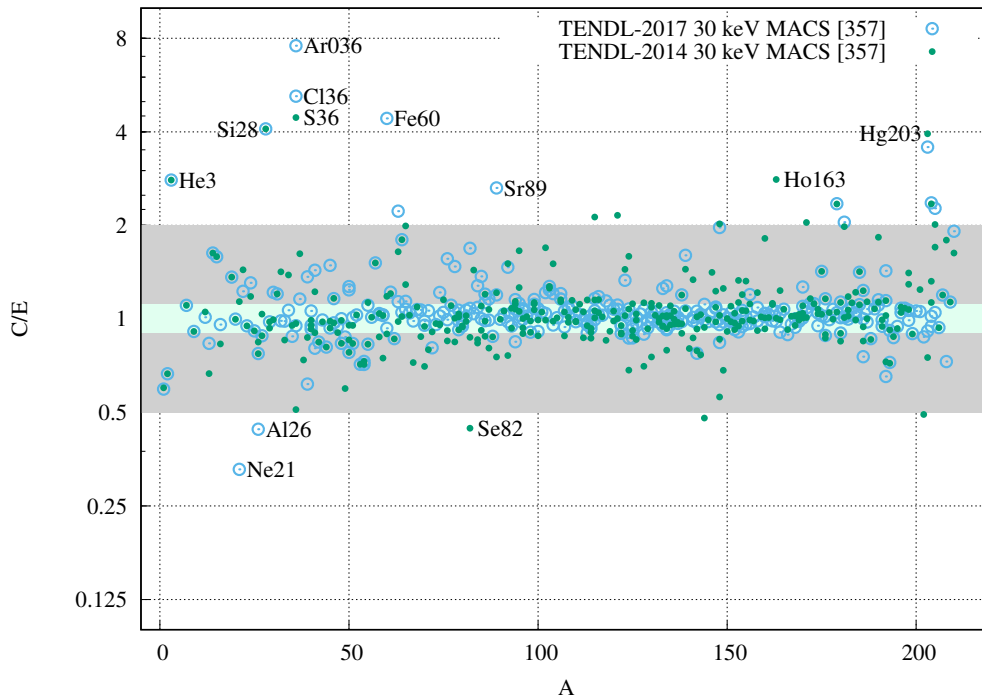


Figure 7: Comparison of all 357 KADoNiS 30 keV cross sections with TENDL-2017 and -2014 values calculated with maxwav, where nuclides with more than one order of magnitude difference are removed. The band shows the region between $C/E=[0.5,2]$.

employed to treat resolved and unresolved resonance ranges, particularly with gross average parameters in the latter, produce variation in Doppler broadened data. Statistically resolved parameters are required to account for the full broadening effects, taking into account remaining structure which would otherwise be lost. An attempt to address this issue has been made with the high-fidelity resonance (HFR) method within TENDL-2017, which generates statistically sampled resonances married with optical model parameters taken from TALYS. For many nuclides within KADoNiS, this allows considerable improvement in the agreement with KADoNiS SMC and experiment.

For these isotopes the average parameters including; scattering radius r , average level spacing D , average reduced neutron width Γ_{n_0} and average radiation width Γ_γ are taken directly from TALYS with with the Koning-Delaroche optical model potential [32] and the level density from [33]. The resolved resonances are based on the TALYS unresolved resonance range extended to eV, adjusted to systematics from Kopecky and Nierop [34, 35]. CALENDF is then used to produce a set of statistical resonances, consistent with the average parameters from TALYS. This energy limit can be arbitrarily chosen, but in practice it can result in many millions of resonances and must be chosen thoughtfully with application demands in mind.

In cases where limited information is available for the reconstruction of unresolved res-

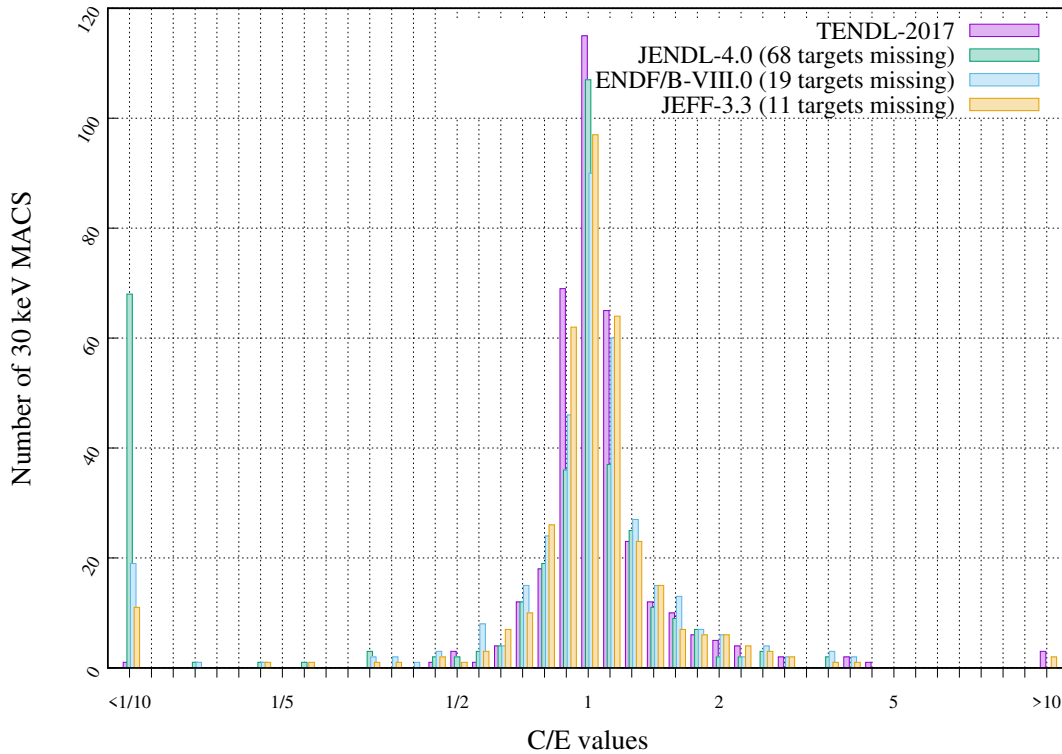


Figure 8: Comparison of C/E distributions overall all 357 KADoNiS 30 keV cross sections with TENDL-2017, JENDL-4.0 and ENDF/B-VIII.0 values calculated with maxwav. C/E values for missing nuclides in JENDL-4.0 and ENDF/B-VIII.0 are tallied in the $<1/10$ bin.

onance ranges or where a choice of resonance parameters may be questionable, MACS may prove invaluable. Analysis of the collapsed cross sections and their energy dependent contributions alongside the differential data provides another tool for evaluation. This will be particularly useful for future TENDL releases, informing TARES parameter selection and the specific processes for HFR parameter selection from TALYS. While the HFR methodology produces a surfeit of data, for various applications such as stellar nucleosynthesis this data is required for accurate calculations and should be applied fully over an appropriate energy range, which for astrophysical MACS must be at least 150 keV.

The resonance parameters chosen by different libraries, such as ENDF/B-VIII.0, JENDL-4.0u, and JEFF-3.3, are not unique and the capability of TARES to intelligently select from the various databases should be strengthened to address the occasional superiority of legacy library results. As noted earlier and as demonstrated in Figure 8, JENDL-4.0 in particular takes advantage of astrophysical MACS measurements in its evaluation process, yielding a strongly peaked C/E distribution around 1 – for those

nuclides with n-incident files. Some nuclides which may deserve investigation, taking data from the following libraries, are (those in red are based on comparisons with statistical model KADoNiS):

TENDL-2014: ^{21}Ne , ^{26}Al , $^{36,38}\text{Ar}$, ^{60}Fe , ^{63}Ni , $^{74,76}\text{Ge}$, ^{78}Se , ^{126}Sn

JENDL-4.0: ^{140}Ce , $^{206,207,208}\text{Pb}$

ENDF/B-VIII.0: ^{139}La , ^{205}Tl

JEFF-3.3: ^{192}Pt

EAF-2010: ^{28}Si , ^{36}S

In addition, the ^{14}C and ^{18}O evaluations appear to retain order-of-magnitude errors in the capture channel that were also present in the TENDL-2014 library.

Appendix

A Summary of 5, 30 and 80 keV MACS

A few temperatures were selected which cover the range of KADoNiS values in order to provide more specific information. The 5, 30 and 80 keV MACS from KADoNiS are presented against the TENDL-2017, ENDF/B-VIII.0, JENDL-4.0u, and JEFF-3.3 collapsed cross sections using 0 Kelvin pointwise files and the maxwav code in Table 1. The calculated value from TENDL-2017 is shown alongside C/E values for all libraries. Uncertainties are only available for 30 keV files in the KADoNiS v0.3 database and all calculation-derived cross sections within KADoNiS are indicated in red and with (SMC).

Note that some nuclides have 30 keV measurements but no 5 and/or 80 keV data (to prevent mixing of experimental and theoretical results), which is indicated by a dashed entry, but values from TENDL-2017 are kept for reference. Whenever files are absent from ENDF/B-VIII.0, JENDL-4.0, or JEFF-3.3, the entries in the table are replaced by a red dash. The astrophysical reaction rates are also provided for TENDL-2017.

Table 1: Comparison of KADoNiS 5, 30 and 80 keV MACS against collapsed nuclear data values. Only 30 keV uncertainties are provided and all statistical model calculations are indicated in red with (SMC).

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	$R(\text{cm}^3/\text{s})$	C/E	C/E	C/E	C/E
H1								
5keV	8.70E-04		4.83E-04	4.04E+04	0.56	0.56	0.56	0.56
30keV	2.54E-04	7.9	1.51E-04	3.10E+04	0.59	0.59	0.60	0.60
80keV	1.62E-04		7.60E-05	2.54E+04	0.47	0.47	0.47	0.47
H2								
5keV	3.60E-06		1.29E-06	9.38E+01	0.36	0.36	0.50	0.36
30keV	3.00E-06	6.7	2.00E-06	3.55E+02	0.67	0.67	0.79	0.66
80keV	3.40E-06		3.17E-06	9.18E+02	0.93	0.93	1.00	0.93
He3								
5keV	—		8.72E-06	5.96E+02	—	—	—	—
30keV	7.60E-06	7.9	2.13E-05	3.56E+03	2.80	2.80	2.16	2.80
80keV	—		3.51E-05	9.61E+03	—	—	—	—
Li7								
5keV	1.02E-04		1.16E-04	7.31E+03	1.13	1.13	0.94	1.13
30keV	4.20E-05	7.1	4.64E-05	7.20E+03	1.11	1.11	0.93	1.11
80keV	3.10E-05		3.12E-05	7.89E+03	1.01	1.01	0.77	1.01
Be9								

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
5keV	1.66E-05		2.18E-05	1.36E+03	1.32	1.32	1.09	1.25
30keV	1.02E-05	15.7	9.29E-06	1.42E+03	0.91	0.91	0.72	1.24
80keV	9.90E-06		6.01E-06	1.50E+03	0.61	0.61	0.46	1.25
C12								
5keV	1.26E-05		1.35E-05	8.31E+02	1.07	1.07	1.09	—
30keV	1.54E-05	6.5	1.56E-05	2.35E+03	1.01	1.01	1.05	—
80keV	2.20E-05		2.13E-05	5.24E+03	0.97	0.97	0.95	—
C13								
5keV	7.30E-06		4.11E-06	2.52E+02	0.56	0.56	—	0.41
30keV	2.10E-05	19.0	1.75E-05	2.64E+03	0.83	0.83	—	0.67
80keV	5.00E-05		4.18E-05	1.03E+04	0.84	0.84	—	0.68
C14								
5keV	3.62E-06		7.12E-09	4.36E-01	0.00	—	—	—
30keV	8.48E-06	6.7	1.44E-08	2.16E+00	0.00	—	—	—
80keV	1.27E-05		1.67E-07	4.09E+01	0.01	—	—	—
N14								
5keV	1.83E-04		1.63E-04	1.00E+04	0.89	0.89	0.89	0.89
30keV	4.10E-05	146.3	6.68E-05	1.00E+04	1.63	1.63	1.64	1.63
80keV	1.90E-05		4.23E-05	1.04E+04	2.23	2.23	2.47	2.23
N15								
5keV	2.50E-06		3.47E-06	2.12E+02	1.39	1.39	1.27	1.39
30keV	5.80E-06	10.3	9.19E-06	1.38E+03	1.58	1.58	1.25	1.59
80keV	8.70E-06		1.33E-05	3.26E+03	1.53	1.53	1.26	1.53
O16								
5keV	1.60E-05		1.42E-05	8.64E+02	0.89	0.89	0.82	0.82
30keV	3.80E-05	10.5	3.64E-05	5.44E+03	0.96	0.96	0.83	0.83
80keV	6.20E-05		7.26E-05	1.77E+04	1.17	1.17	1.18	1.18
O18								
5keV	3.70E-06		1.70E-05	1.04E+03	4.60	0.09	—	4.60
30keV	8.90E-06	9.0	4.89E-04	7.28E+04	54.93	0.02	—	54.92
80keV	2.23E-05		3.39E-04	8.25E+04	15.21	0.01	—	15.20
F19								
5keV	1.20E-03		1.62E-03	9.84E+04	1.35	1.35	1.59	1.35
30keV	3.20E-03	3.1	4.36E-03	6.49E+05	1.36	1.36	1.79	1.36
80keV	1.20E-03		1.65E-03	4.01E+05	1.38	1.38	1.99	1.38
Ne20								
5keV	8.80E-05		7.40E-05	4.49E+03	0.84	0.84	—	0.84
30keV	1.19E-04	9.2	1.19E-04	1.76E+04	1.00	1.00	—	1.00
80keV	2.72E-04		2.63E-04	6.37E+04	0.97	0.96	—	0.96
Ne21								
5keV	—		6.16E-04	3.73E+04	—	—	—	—
30keV	1.50E-03	60.0	4.92E-04	7.29E+04	0.33	1.50	—	1.50

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
80keV	—		2.88E-04	6.97E+04	—	—	—	—	
Ne22									
5keV	1.33E-04		3.86E-04	2.34E+04	2.90	3.47	—	3.47	
30keV	5.80E-05	6.9	7.12E-05	1.06E+04	1.23	1.44	—	1.44	
80keV	8.50E-05		2.07E-05	5.01E+03	0.24	0.21	—	0.21	
Na23									
5keV	1.40E-02		1.36E-02	8.20E+05	0.97	0.99	0.95	0.96	
30keV	2.10E-03	9.5	2.00E-03	2.95E+05	0.95	0.87	0.83	0.97	
80keV	1.30E-03		1.40E-03	3.39E+05	1.08	0.84	0.68	1.08	
Mg24									
5keV	1.10E-04		1.90E-04	1.15E+04	1.73	1.50	1.50	1.50	
30keV	3.30E-03	12.1	4.31E-03	6.38E+05	1.31	1.15	1.15	1.15	
80keV	2.70E-03		3.26E-03	7.86E+05	1.21	1.05	1.05	1.05	
Mg25									
5keV	4.80E-03		3.33E-03	2.01E+05	0.69	0.47	0.47	0.47	
30keV	6.40E-03	6.2	5.86E-03	8.65E+05	0.92	0.82	0.82	0.82	
80keV	4.40E-03		3.93E-03	9.49E+05	0.89	0.70	0.70	0.70	
Mg26									
5keV	1.03E-04		7.54E-05	4.55E+03	0.73	0.63	0.63	0.63	
30keV	1.26E-04	7.1	9.75E-05	1.44E+04	0.77	0.69	0.69	0.69	
80keV	2.26E-04		4.65E-04	1.12E+05	2.06	2.05	2.05	2.05	
Al26 (SMC)									
5keV	1.00E-02		1.25E-02	7.55E+05	1.25	—	—	1.04	
30keV	3.70E-03	0.0	1.63E-03	2.41E+05	0.44	—	—	0.78	
80keV	1.90E-03		7.47E-04	1.80E+05	0.39	—	—	0.55	
Al27									
5keV	1.12E-02		9.44E-03	5.69E+05	0.84	0.84	0.98	0.84	
30keV	3.74E-03	8.0	3.30E-03	4.87E+05	0.88	0.88	0.89	0.88	
80keV	2.50E-03		1.87E-03	4.50E+05	0.75	0.75	0.89	0.75	
Si28									
5keV	1.40E-04		2.66E-04	1.60E+04	1.90	2.99	2.99	2.99	
30keV	1.42E-03	9.2	5.80E-03	8.56E+05	4.09	2.54	2.54	2.54	
80keV	1.08E-03		2.95E-03	7.09E+05	2.73	2.19	2.19	2.19	
Si29									
5keV	8.58E-03		7.83E-03	4.71E+05	0.91	1.26	1.26	1.26	
30keV	6.58E-03	10.0	6.44E-03	9.49E+05	0.98	1.18	1.18	1.18	
80keV	1.92E-03		2.12E-03	5.11E+05	1.11	1.19	1.19	1.19	
Si30									
5keV	3.47E-02		9.99E-03	6.01E+05	0.29	2.63	2.63	2.63	
30keV	1.82E-03	18.1	2.22E-03	3.26E+05	1.22	2.44	2.44	2.44	
80keV	3.60E-04		1.26E-03	3.02E+05	3.49	3.42	3.42	3.42	
P31									

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
5keV	8.00E-04		7.10E-04	4.27E+04	0.89	10.61	0.50	0.89
30keV	1.74E-03	5.2	2.10E-03	3.08E+05	1.20	4.16	0.94	1.20
80keV	1.90E-03		2.11E-03	5.08E+05	1.11	2.80	0.93	1.11
S32								
5keV	1.30E-03		1.06E-03	6.38E+04	0.82	1.00	1.00	0.85
30keV	4.10E-03	4.9	4.04E-03	5.95E+05	0.99	1.38	1.38	1.42
80keV	3.30E-03		2.99E-03	7.18E+05	0.90	1.14	1.14	1.09
S33								
5keV	6.30E-03		7.59E-03	4.56E+05	1.21	0.63	0.63	1.20
30keV	7.40E-03	20.3	7.28E-03	1.07E+06	0.98	0.31	0.31	0.78
80keV	3.90E-03		3.11E-03	7.46E+05	0.80	0.21	0.21	0.46
S34								
5keV	3.67E-04		1.45E-05	8.70E+02	0.04	0.58	0.58	0.04
30keV	2.26E-04	4.4	2.41E-04	3.54E+04	1.07	1.03	1.03	1.38
80keV	2.69E-04		6.64E-04	1.59E+05	2.47	1.67	1.67	3.26
S36								
5keV	4.20E-04		4.11E-04	2.47E+04	0.98	3.11	3.10	1.63
30keV	1.71E-04	8.2	1.63E-04	2.39E+04	0.95	3.70	3.70	13.55
80keV	1.10E-04		4.76E-04	1.14E+05	4.33	3.84	3.84	12.79
Cl35								
5keV	2.52E-02		2.58E-02	1.55E+06	1.02	0.84	1.03	0.84
30keV	9.70E-03	2.2	8.52E-03	1.25E+06	0.88	0.78	0.88	0.78
80keV	4.60E-03		3.87E-03	9.29E+05	0.84	0.71	0.86	0.71
Cl36 (SMC)								
5keV	3.90E-02		2.91E-01	1.75E+07	7.47	1.44	—	1.44
30keV	1.20E-02	8.3	6.25E-02	9.18E+06	5.21	0.98	—	0.58
80keV	6.00E-03		1.72E-02	4.14E+06	2.87	1.52	—	0.60
Cl37								
5keV	6.85E-03		7.63E-03	4.58E+05	1.11	0.80	1.11	0.80
30keV	2.12E-03	3.3	2.46E-03	3.61E+05	1.16	0.96	1.16	0.96
80keV	7.90E-04		9.47E-04	2.27E+05	1.20	1.52	1.46	1.52
Ar36 (SMC)								
5keV	2.37E-02		3.39E-01	2.03E+07	14.31	0.30	—	1.88
30keV	9.00E-03	16.7	6.81E-02	1.00E+07	7.57	0.98	—	0.92
80keV	4.90E-03		4.43E-02	1.06E+07	9.03	1.28	—	0.82
Ar38 (SMC)								
5keV	1.06E-02		3.81E-03	2.29E+05	0.36	0.05	—	1.92
30keV	3.00E-03	10.0	4.31E-02	6.33E+06	14.37	0.05	—	0.92
80keV	1.80E-03		1.56E-02	3.75E+06	8.68	0.33	—	0.61
Ar39 (SMC)								
5keV	3.50E-02		4.89E-02	2.93E+06	1.40	2.10	—	1.40
30keV	8.00E-03	25.0	4.94E-03	7.25E+05	0.62	2.49	—	0.62

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
80keV	3.80E-03		2.00E-03	4.79E+05	0.53	2.48	—	0.53
Ar40								
5keV	3.34E-03		2.07E-03	1.24E+05	0.62	0.56	0.56	0.56
30keV	2.55E-03	3.9	2.37E-03	3.47E+05	0.93	0.88	0.88	0.88
80keV	1.85E-03		2.44E-03	5.86E+05	1.32	1.32	1.32	1.32
K39								
5keV	2.42E-02		3.05E-02	1.83E+06	1.26	0.94	2.36	0.78
30keV	1.18E-02	3.4	1.61E-02	2.37E+06	1.37	0.90	1.57	0.87
80keV	6.10E-03		9.21E-03	2.21E+06	1.51	0.88	1.34	0.93
K40 (SMC)								
5keV	1.30E-01		1.47E-01	8.83E+06	1.13	0.47	0.47	0.76
30keV	3.10E-02	22.6	3.29E-02	4.82E+06	1.06	0.63	0.63	0.94
80keV	1.30E-02		1.42E-02	3.39E+06	1.09	0.69	0.69	1.04
K41								
5keV	8.80E-02		5.77E-02	3.45E+06	0.66	0.88	1.83	0.87
30keV	2.20E-02	3.2	1.77E-02	2.60E+06	0.80	0.92	1.43	0.90
80keV	1.35E-02		1.03E-02	2.47E+06	0.76	0.80	1.19	0.79
Ca40								
5keV	1.20E-02		1.06E-02	6.34E+05	0.88	1.67	0.90	0.89
30keV	5.73E-03	5.9	5.46E-03	8.01E+05	0.95	1.74	0.90	0.95
80keV	3.91E-03		5.04E-03	1.21E+06	1.29	1.43	0.90	1.29
Ca41 (SMC)								
5keV	1.11E-01		2.86E-01	1.71E+07	2.57	1.11	—	1.36
30keV	3.00E-02	23.3	4.30E-02	6.31E+06	1.43	1.28	—	1.27
80keV	1.50E-02		1.71E-02	4.10E+06	1.14	1.28	—	1.15
Ca42								
5keV	3.03E-02		2.92E-02	1.75E+06	0.96	0.96	0.96	0.96
30keV	1.56E-02	12.8	1.31E-02	1.93E+06	0.84	0.79	0.79	0.84
80keV	9.40E-03		9.33E-03	2.23E+06	0.99	0.67	0.69	0.99
Ca43								
5keV	2.30E-01		2.09E-01	1.25E+07	0.91	0.67	0.98	0.91
30keV	5.10E-02	11.8	5.06E-02	7.42E+06	0.99	0.69	0.74	1.35
80keV	2.37E-02		2.77E-02	6.64E+06	1.17	0.70	0.86	1.68
Ca44								
5keV	9.90E-03		9.34E-03	5.59E+05	0.94	0.98	0.98	0.94
30keV	9.40E-03	13.8	7.63E-03	1.12E+06	0.81	0.82	0.82	0.81
80keV	5.00E-03		5.10E-03	1.22E+06	1.02	0.78	0.78	1.02
Ca45 (SMC)								
5keV	7.10E-02		2.31E-01	1.38E+07	3.26	0.54	—	0.54
30keV	1.75E-02	20.0	2.60E-02	3.81E+06	1.49	1.16	—	1.16
80keV	8.10E-03		1.03E-02	2.46E+06	1.27	1.20	—	1.20
Ca46								

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
5keV	7.20E-03		1.24E-01	7.42E+06	17.24	0.37	1.03	17.23	
30keV	5.30E-03	9.4	6.16E-03	9.02E+05	1.16	0.35	0.49	1.18	
80keV	2.40E-03		1.98E-03	4.75E+05	0.83	0.51	0.64	0.53	
Ca48									
5keV	2.13E-03		2.99E-03	1.79E+05	1.40	0.48	0.48	1.40	
30keV	8.70E-04	10.3	8.71E-04	1.28E+05	1.00	0.12	0.12	0.99	
80keV	5.30E-04		3.23E-04	7.71E+04	0.61	0.12	0.12	0.37	
Sc45									
5keV	2.26E-01		1.85E-01	1.11E+07	0.82	0.84	0.82	0.82	
30keV	6.90E-02	7.2	6.45E-02	9.45E+06	0.93	0.99	0.95	0.93	
80keV	3.10E-02		3.21E-02	7.69E+06	1.04	1.15	1.11	1.04	
Ti46									
5keV	2.99E-02		2.86E-02	1.71E+06	0.96	0.93	0.93	0.96	
30keV	2.68E-02	11.9	2.60E-02	3.81E+06	0.97	0.95	0.95	0.97	
80keV	1.73E-02		1.68E-02	4.01E+06	0.97	0.90	0.90	0.97	
Ti47									
5keV	2.13E-01		2.24E-01	1.34E+07	1.05	0.86	0.86	1.03	
30keV	6.44E-02	12.0	6.09E-02	8.92E+06	0.95	0.76	0.65	0.90	
80keV	3.08E-02		2.97E-02	7.09E+06	0.96	0.97	0.70	0.87	
Ti48									
5keV	4.26E-02		4.95E-02	2.96E+06	1.16	1.16	1.21	1.16	
30keV	3.18E-02	16.0	2.65E-02	3.88E+06	0.83	0.83	0.88	0.83	
80keV	1.29E-02		1.08E-02	2.59E+06	0.84	0.83	0.86	0.84	
Ti49									
5keV	5.21E-02		5.22E-02	3.12E+06	1.00	0.77	0.77	0.82	
30keV	2.21E-02	9.5	1.93E-02	2.83E+06	0.87	0.72	0.72	0.60	
80keV	1.19E-02		9.18E-03	2.19E+06	0.77	0.54	0.52	0.40	
Ti50									
5keV	2.00E-03		1.86E-03	1.11E+05	0.93	0.62	0.62	1.17	
30keV	3.60E-03	11.1	4.58E-03	6.70E+05	1.27	0.85	0.85	0.95	
80keV	2.40E-03		4.70E-03	1.12E+06	1.96	0.88	0.88	0.97	
V50 (SMC)									
5keV	2.33E-01		4.96E-01	2.97E+07	2.13	0.60	0.60	1.65	
30keV	5.00E-02	18.0	6.20E-02	9.07E+06	1.24	0.43	0.43	0.86	
80keV	2.60E-02		1.81E-02	4.33E+06	0.70	0.38	0.38	0.49	
V51									
5keV	2.26E-01		1.33E-01	7.97E+06	0.59	0.59	0.59	0.59	
30keV	3.80E-02	10.5	3.17E-02	4.64E+06	0.83	0.84	0.84	0.83	
80keV	1.80E-02		1.46E-02	3.49E+06	0.81	0.79	0.78	0.79	
Cr50									
5keV	2.29E-01		1.90E-01	1.14E+07	0.83	0.83	0.83	0.83	
30keV	4.90E-02	26.5	3.82E-02	5.60E+06	0.78	0.78	0.75	0.78	

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
80keV	2.30E-02		2.09E-02	4.99E+06	0.91	0.91	0.71	0.91
Cr51 (SMC)								
5keV	4.38E-01		3.01E-01	1.80E+07	0.69	1.09	—	1.09
30keV	8.70E-02	18.4	8.79E-02	1.29E+07	1.01	0.97	—	0.97
80keV	4.60E-02		4.66E-02	1.11E+07	1.01	0.98	—	0.98
Cr52								
5keV	1.03E-02		1.09E-02	6.53E+05	1.06	0.95	0.95	0.95
30keV	8.80E-03	26.1	9.06E-03	1.33E+06	1.03	0.91	0.91	0.91
80keV	7.10E-03		7.80E-03	1.86E+06	1.10	0.88	0.88	0.88
Cr53								
5keV	3.50E-01		2.34E-01	1.40E+07	0.67	0.48	0.48	0.48
30keV	5.80E-02	17.2	4.15E-02	6.06E+06	0.71	0.45	0.45	0.45
80keV	2.70E-02		1.72E-02	4.10E+06	0.64	0.39	0.40	0.39
Cr54								
5keV	1.60E-02		7.66E-03	4.57E+05	0.48	0.48	0.57	0.48
30keV	6.70E-03	23.9	4.78E-03	6.99E+05	0.71	0.71	0.70	0.71
80keV	4.50E-03		5.32E-03	1.27E+06	1.18	1.18	0.74	1.18
Mn55								
5keV	2.51E-01		1.83E-01	1.09E+07	0.73	0.73	0.73	0.73
30keV	3.96E-02	7.6	3.28E-02	4.80E+06	0.83	0.83	0.82	0.83
80keV	1.90E-02		1.57E-02	3.76E+06	0.83	0.83	0.80	0.85
Fe54								
5keV	1.19E-01		8.87E-02	5.30E+06	0.75	0.76	0.75	0.75
30keV	2.96E-02	4.4	2.16E-02	3.16E+06	0.73	0.92	0.73	0.73
80keV	1.74E-02		1.50E-02	3.58E+06	0.86	0.82	0.86	0.86
Fe55 (SMC)								
5keV	3.67E-01		3.70E-01	2.21E+07	1.01	1.04	—	1.04
30keV	7.50E-02	16.0	8.30E-02	1.21E+07	1.11	1.21	—	1.21
80keV	4.00E-02		4.12E-02	9.85E+06	1.03	1.07	—	1.07
Fe56								
5keV	1.18E-02		1.10E-02	6.57E+05	0.93	1.27	0.93	0.93
30keV	1.17E-02	4.3	1.18E-02	1.73E+06	1.01	1.16	1.01	0.98
80keV	8.63E-03		9.32E-03	2.23E+06	1.08	1.13	1.08	1.06
Fe57								
5keV	1.24E-01		1.70E-01	1.02E+07	1.37	1.09	0.84	0.84
30keV	4.00E-02	10.0	6.06E-02	8.85E+06	1.51	0.90	0.76	0.76
80keV	1.90E-02		2.34E-02	5.58E+06	1.23	0.78	0.55	0.59
Fe58								
5keV	3.01E-02		4.28E-02	2.55E+06	1.42	1.16	1.42	1.16
30keV	1.35E-02	5.2	1.40E-02	2.05E+06	1.04	1.12	1.04	1.12
80keV	9.60E-03		7.93E-03	1.89E+06	0.83	1.02	0.82	0.99
Fe60 (SMC)								

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
5keV	—		1.10E-01	6.56E+06	—	—	—	—
30keV	5.15E-03	27.4	2.28E-02	3.32E+06	4.42	—	—	2.36
80keV	3.00E-03		6.23E-03	1.49E+06	2.08	—	—	1.49
Co59								
5keV	1.15E-01		1.54E-01	9.18E+06	1.34	1.41	1.50	1.41
30keV	3.96E-02	6.8	4.06E-02	5.93E+06	1.03	0.86	0.99	0.87
80keV	1.25E-02		2.18E-02	5.21E+06	1.75	1.50	1.64	1.54
Ni58								
5keV	3.83E-02		4.04E-02	2.41E+06	1.05	1.01	1.05	1.05
30keV	3.87E-02	3.9	4.00E-02	5.85E+06	1.03	0.87	1.03	1.03
80keV	2.70E-02		2.78E-02	6.63E+06	1.03	0.80	1.03	1.03
Ni59 (SMC)								
5keV	4.05E-01		3.85E-01	2.29E+07	0.95	0.85	0.84	0.99
30keV	8.70E-02	16.1	8.96E-02	1.31E+07	1.03	0.59	0.52	1.00
80keV	4.60E-02		4.68E-02	1.12E+07	1.02	0.48	0.41	1.01
Ni60								
5keV	6.96E-02		6.11E-02	3.64E+06	0.88	0.92	0.88	0.89
30keV	2.99E-02	2.3	2.79E-02	4.08E+06	0.93	0.89	0.93	0.94
80keV	1.67E-02		1.67E-02	3.99E+06	1.00	0.91	1.00	1.02
Ni61								
5keV	2.65E-01		3.64E-01	2.17E+07	1.37	1.35	1.35	1.35
30keV	8.20E-02	9.8	9.99E-02	1.46E+07	1.22	1.13	1.17	1.10
80keV	4.20E-02		4.01E-02	9.56E+06	0.95	0.90	0.93	0.90
Ni62								
5keV	1.90E-01		1.64E-01	9.80E+06	0.86	0.99	0.86	0.86
30keV	2.23E-02	7.2	1.93E-02	2.81E+06	0.86	1.07	0.86	0.86
80keV	1.03E-02		8.93E-03	2.13E+06	0.87	0.81	0.87	0.87
Ni63 (SMC)								
5keV	1.12E-01		5.08E-01	3.03E+07	4.53	1.49	—	1.48
30keV	3.10E-02	19.4	6.89E-02	1.01E+07	2.22	1.65	—	0.94
80keV	1.30E-02		2.02E-02	4.83E+06	1.56	2.07	—	0.98
Ni64								
5keV	1.18E-02		6.68E-02	3.98E+06	5.66	6.53	6.53	6.53
30keV	8.00E-03	8.8	1.44E-02	2.10E+06	1.80	2.51	2.51	2.51
80keV	5.10E-03		4.50E-03	1.07E+06	0.88	1.32	1.34	1.32
Cu63								
5keV	1.98E-01		2.83E-01	1.69E+07	1.43	1.24	1.43	1.44
30keV	5.57E-02	3.9	6.33E-02	9.25E+06	1.14	1.06	1.37	1.28
80keV	3.90E-02		3.32E-02	7.92E+06	0.85	0.95	1.09	1.00
Cu65								
5keV	1.11E-01		1.20E-01	7.18E+06	1.08	1.07	1.09	1.04
30keV	2.98E-02	4.4	3.39E-02	4.96E+06	1.14	1.13	1.25	1.30

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
80keV	1.96E-02		1.74E-02	4.16E+06	0.89	1.02	1.06	1.20
Zn64								
5keV	1.39E-01		1.94E-01	1.16E+07	1.40	1.39	1.39	1.40
30keV	5.90E-02	8.5	6.19E-02	9.04E+06	1.05	1.03	1.03	1.02
80keV	4.00E-02		3.90E-02	9.29E+06	0.97	0.91	0.91	0.78
Zn65 (SMC)								
5keV	5.12E-01		7.02E-01	4.18E+07	1.37	1.07	1.07	4.39
30keV	1.62E-01	16.7	1.74E-01	2.54E+07	1.07	1.03	1.03	1.67
80keV	8.70E-02		8.79E-02	2.10E+07	1.01	1.06	1.06	1.14
Zn66								
5keV	8.40E-02		8.61E-02	5.13E+06	1.03	1.02	1.02	1.03
30keV	3.50E-02	8.6	3.66E-02	5.34E+06	1.05	1.04	1.04	1.03
80keV	2.50E-02		2.27E-02	5.40E+06	0.91	0.98	0.98	0.81
Zn67								
5keV	5.03E-01		5.96E-01	3.55E+07	1.19	1.10	1.10	1.19
30keV	1.53E-01	9.8	1.51E-01	2.20E+07	0.98	0.76	0.76	0.72
80keV	8.20E-02		8.14E-02	1.94E+07	0.99	0.83	0.83	0.51
Zn68								
5keV	9.30E-02		7.12E-02	4.24E+06	0.77	0.67	0.67	0.77
30keV	1.92E-02	12.5	2.06E-02	3.00E+06	1.07	1.08	1.08	1.09
80keV	1.20E-02		1.20E-02	2.86E+06	1.00	1.24	1.24	1.03
Zn70 (SMC)								
5keV	5.70E-02		7.90E-02	4.71E+06	1.39	0.42	0.42	1.37
30keV	2.15E-02	9.3	2.05E-02	2.99E+06	0.95	0.54	0.54	0.95
80keV	1.37E-02		1.16E-02	2.75E+06	0.84	0.51	0.51	0.80
Ga69								
5keV	3.31E-01		4.16E-01	2.48E+07	1.26	1.06	1.11	0.87
30keV	1.39E-01	4.3	1.49E-01	2.17E+07	1.07	0.85	0.86	0.91
80keV	8.70E-02		8.53E-02	2.03E+07	0.98	0.81	0.81	0.93
Ga71								
5keV	3.98E-01		3.48E-01	2.07E+07	0.87	0.99	0.90	0.63
30keV	1.23E-01	6.5	1.31E-01	1.91E+07	1.06	0.99	0.83	0.79
80keV	6.90E-02		7.75E-02	1.85E+07	1.12	1.02	0.85	0.92
Ge70								
5keV	2.01E-01		2.06E-01	1.23E+07	1.03	1.03	1.03	0.57
30keV	8.80E-02	5.7	8.65E-02	1.26E+07	0.98	1.01	1.01	0.64
80keV	5.50E-02		6.08E-02	1.45E+07	1.11	1.02	1.02	1.03
Ge72 (SMC)								
5keV	1.99E-01		1.12E-01	6.68E+06	0.56	0.51	0.51	0.53
30keV	7.30E-02	9.6	5.89E-02	8.60E+06	0.81	0.73	0.73	0.89
80keV	4.70E-02		4.40E-02	1.05E+07	0.94	0.83	0.83	0.99
Ge73 (SMC)								

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
5keV	7.72E-01		8.69E-01	5.18E+07	1.13	0.74	0.74	1.08
30keV	2.43E-01	19.3	2.33E-01	3.40E+07	0.96	0.86	0.86	0.96
80keV	1.19E-01		1.16E-01	2.77E+07	0.98	0.90	0.90	0.99
Ge74								
5keV	1.06E-01		1.20E-01	7.14E+06	1.13	1.13	1.13	0.94
30keV	3.76E-02	10.4	4.57E-02	6.67E+06	1.22	1.21	1.21	0.86
80keV	2.34E-02		2.60E-02	6.19E+06	1.11	1.13	1.13	0.92
Ge76								
5keV	5.80E-02		1.01E-01	6.01E+06	1.74	0.56	0.56	1.59
30keV	2.15E-02	8.4	3.36E-02	4.90E+06	1.56	0.79	0.79	0.93
80keV	1.30E-02		1.56E-02	3.72E+06	1.20	1.00	1.00	0.75
As75								
5keV	1.12E+00		1.16E+00	6.91E+07	1.03	1.21	1.20	1.08
30keV	3.62E-01	5.2	3.80E-01	5.54E+07	1.05	1.24	1.23	1.13
80keV	2.11E-01		2.20E-01	5.23E+07	1.04	1.18	1.21	1.14
Se74								
5keV	6.87E-01		7.19E-01	4.28E+07	1.05	0.93	1.11	0.96
30keV	2.71E-01	5.5	2.77E-01	4.04E+07	1.02	0.77	1.03	0.96
80keV	1.73E-01		1.79E-01	4.28E+07	1.04	0.72	1.07	0.98
Se76								
5keV	3.63E-01		4.19E-01	2.50E+07	1.16	0.82	0.99	0.83
30keV	1.64E-01	4.9	1.63E-01	2.38E+07	0.99	0.58	1.03	0.85
80keV	1.14E-01		1.02E-01	2.42E+07	0.89	0.52	0.99	0.85
Se77 (SMC)								
5keV	9.99E-01		1.30E+00	7.72E+07	1.30	1.14	1.40	1.19
30keV	4.18E-01	17.0	4.63E-01	6.75E+07	1.11	1.06	1.20	1.09
80keV	2.40E-01		2.76E-01	6.57E+07	1.15	1.04	1.16	1.14
Se78								
5keV	1.60E-01		2.29E-01	1.37E+07	1.43	1.21	1.17	1.26
30keV	6.00E-02	16.0	8.84E-02	1.29E+07	1.47	1.51	1.39	1.00
80keV	3.80E-02		5.09E-02	1.21E+07	1.34	1.56	1.48	1.17
Se79 (SMC)								
5keV	7.41E-01		8.47E-01	5.04E+07	1.14	1.53	2.11	1.06
30keV	2.63E-01	17.5	2.80E-01	4.09E+07	1.07	1.58	1.92	1.06
80keV	1.38E-01		1.47E-01	3.50E+07	1.07	1.56	1.92	1.06
Se80								
5keV	1.16E-01		1.90E-01	1.13E+07	1.64	1.44	1.42	1.64
30keV	4.20E-02	7.1	3.98E-02	5.80E+06	0.95	0.94	0.91	1.01
80keV	2.50E-02		2.48E-02	5.91E+06	0.99	0.94	0.88	1.13
Se82 (SMC)								
5keV	2.50E-02		4.16E-02	2.47E+06	1.66	1.40	0.88	1.20
30keV	9.00E-03	88.9	1.52E-02	2.21E+06	1.69	3.46	0.93	0.45

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
80keV	5.00E-03		6.83E-03	1.62E+06	1.37	4.88	1.11	0.39	
Br79									
5keV	1.77E+00		1.71E+00	1.02E+08	0.96	1.08	1.14	1.09	
30keV	6.28E-01	5.4	6.18E-01	9.02E+07	0.98	1.09	1.11	1.01	
80keV	3.71E-01		3.66E-01	8.70E+07	0.99	1.06	1.10	0.99	
Br81									
5keV	7.33E-01		6.85E-01	4.08E+07	0.94	0.91	1.06	0.92	
30keV	2.39E-01	2.9	2.42E-01	3.53E+07	1.01	0.96	1.19	0.98	
80keV	1.43E-01		1.42E-01	3.37E+07	0.99	0.91	1.13	0.98	
Kr78									
5keV	3.32E-01		9.23E-01	5.50E+07	2.78	2.59	3.32	1.54	
30keV	3.21E-01	8.1	3.38E-01	4.93E+07	1.05	0.99	1.32	0.87	
80keV	2.43E-01		2.20E-01	5.25E+07	0.91	0.81	1.08	0.79	
Kr79 (SMC)									
5keV	1.71E+00		1.99E+00	1.18E+08	1.16	0.73	—	—	
30keV	9.59E-01	16.9	8.85E-01	1.29E+08	0.92	0.45	—	—	
80keV	5.76E-01		5.51E-01	1.31E+08	0.96	0.39	—	—	
Kr80									
5keV	9.35E-01		7.08E-01	4.21E+07	0.76	0.79	0.83	0.67	
30keV	2.67E-01	5.2	2.58E-01	3.76E+07	0.97	1.10	1.06	0.94	
80keV	1.80E-01		1.63E-01	3.88E+07	0.91	1.00	0.99	0.90	
Kr81 (SMC)									
5keV	1.39E+00		1.78E+00	1.06E+08	1.28	1.24	—	—	
30keV	6.07E-01	17.3	6.47E-01	9.44E+07	1.07	1.03	—	—	
80keV	3.42E-01		3.50E-01	8.34E+07	1.02	0.98	—	—	
Kr82									
5keV	1.20E-01		4.52E-01	2.69E+07	3.76	2.55	2.40	2.03	
30keV	9.00E-02	6.7	9.74E-02	1.42E+07	1.08	1.14	1.06	0.95	
80keV	6.20E-02		5.76E-02	1.37E+07	0.93	1.02	0.99	0.89	
Kr83									
5keV	9.02E-01		8.56E-01	5.10E+07	0.95	0.99	1.07	1.07	
30keV	2.43E-01	6.2	2.53E-01	3.68E+07	1.04	1.10	1.09	1.45	
80keV	1.20E-01		1.27E-01	3.03E+07	1.06	1.12	1.11	1.56	
Kr84									
5keV	2.60E-01		1.90E-01	1.13E+07	0.73	0.58	0.44	0.62	
30keV	3.80E-02	10.5	4.86E-02	7.09E+06	1.28	0.69	1.02	0.82	
80keV	1.90E-02		2.78E-02	6.63E+06	1.47	1.07	1.31	1.03	
Kr85 (SMC)									
5keV	1.74E-01		6.80E-01	4.05E+07	3.91	2.17	3.29	1.21	
30keV	5.50E-02	81.8	7.53E-02	1.10E+07	1.37	2.22	3.59	1.01	
80keV	2.90E-02		3.09E-02	7.36E+06	1.07	2.32	3.72	0.96	
Kr86									

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
5keV	2.10E-03		2.92E-03	1.74E+05	1.39	1.55	1.55	1.39	
30keV	3.40E-03	8.8	4.08E-03	5.95E+05	1.20	1.49	1.50	1.20	
80keV	1.80E-03		2.35E-03	5.59E+05	1.30	1.38	1.90	1.30	
Rb85									
5keV	7.05E-01		7.11E-01	4.23E+07	1.01	1.07	1.12	1.18	
30keV	2.34E-01	3.0	2.34E-01	3.42E+07	1.00	1.20	1.24	1.09	
80keV	1.26E-01		1.22E-01	2.90E+07	0.97	1.19	1.26	0.98	
Rb86 (SMC)									
5keV	4.50E-01		1.50E+00	8.93E+07	3.34	2.20	2.11	1.46	
30keV	2.02E-01	80.7	2.28E-01	3.32E+07	1.13	1.57	1.80	0.97	
80keV	1.22E-01		1.09E-01	2.59E+07	0.89	1.48	1.75	0.86	
Rb87									
5keV	3.58E-02		5.10E-02	3.03E+06	1.42	1.34	1.40	1.47	
30keV	1.57E-02	5.1	1.82E-02	2.65E+06	1.16	1.48	1.63	1.11	
80keV	1.07E-02		9.57E-03	2.28E+06	0.89	1.28	1.35	0.88	
Sr84									
5keV	7.21E-01		8.59E-01	5.11E+07	1.19	0.98	1.03	0.64	
30keV	3.00E-01	5.7	3.27E-01	4.76E+07	1.09	1.06	1.03	0.87	
80keV	1.73E-01		2.04E-01	4.85E+07	1.18	1.18	1.12	1.10	
Sr86									
5keV	2.11E-01		2.35E-01	1.40E+07	1.11	0.97	1.11	1.10	
30keV	6.40E-02	4.7	6.32E-02	9.21E+06	0.99	0.96	1.03	0.89	
80keV	3.40E-02		3.92E-02	9.33E+06	1.15	1.27	1.23	1.16	
Sr87									
5keV	3.45E-01		2.77E-01	1.65E+07	0.80	0.72	0.73	0.77	
30keV	9.20E-02	4.3	9.11E-02	1.33E+07	0.99	0.87	0.92	0.81	
80keV	4.50E-02		4.91E-02	1.17E+07	1.09	0.92	1.00	0.88	
Sr88									
5keV	1.09E-02		8.84E-03	5.26E+05	0.81	0.81	0.81	0.81	
30keV	6.13E-03	1.8	5.39E-03	7.86E+05	0.88	0.88	0.87	0.88	
80keV	3.56E-03		3.34E-03	7.94E+05	0.94	0.83	0.79	0.99	
Sr89 (SMC)									
5keV	6.90E-02		1.95E-01	1.16E+07	2.83	0.79	1.99	0.98	
30keV	1.90E-02	73.7	5.01E-02	7.31E+06	2.64	0.76	2.14	0.82	
80keV	1.00E-02		1.75E-02	4.15E+06	1.75	0.74	2.04	0.87	
Y89									
5keV	6.80E-02		7.35E-02	4.37E+06	1.08	1.05	1.06	1.05	
30keV	1.90E-02	3.2	2.27E-02	3.31E+06	1.19	1.12	1.06	1.12	
80keV	1.10E-02		1.37E-02	3.26E+06	1.25	1.21	1.13	1.21	
Zr90									
5keV	4.44E-02		4.43E-02	2.64E+06	1.00	1.02	1.00	1.00	
30keV	1.93E-02	4.7	1.93E-02	2.81E+06	1.00	0.97	0.99	1.00	

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
80keV	1.24E-02		1.31E-02	3.12E+06	1.06	0.90	1.02	0.99	
Zr91									
5keV	2.33E-01		2.48E-01	1.48E+07	1.07	1.11	1.01	1.19	
30keV	6.20E-02	5.5	6.43E-02	9.36E+06	1.04	1.06	1.00	1.19	
80keV	3.25E-02		3.19E-02	7.58E+06	0.98	1.01	0.97	1.10	
Zr92									
5keV	1.19E-01		1.67E-01	9.92E+06	1.40	1.08	1.39	1.39	
30keV	3.01E-02	5.6	4.42E-02	6.43E+06	1.47	1.38	1.34	1.44	
80keV	2.10E-02		2.28E-02	5.42E+06	1.08	1.42	1.01	1.15	
Zr93									
5keV	3.40E-01		4.16E-01	2.48E+07	1.22	1.13	1.04	1.13	
30keV	9.50E-02	10.5	9.01E-02	1.31E+07	0.95	1.06	1.04	1.06	
80keV	4.40E-02		4.33E-02	1.03E+07	0.98	1.14	1.13	1.14	
Zr94									
5keV	7.40E-02		8.26E-02	4.91E+06	1.12	1.06	1.05	1.11	
30keV	2.60E-02	3.8	3.00E-02	4.37E+06	1.15	1.07	1.00	1.07	
80keV	2.10E-02		1.73E-02	4.13E+06	0.83	0.99	0.73	0.77	
Zr95 (SMC)									
5keV	2.96E-01		4.27E-01	2.54E+07	1.44	1.62	1.62	1.44	
30keV	7.90E-02	15.2	7.77E-02	1.13E+07	0.98	1.63	1.64	1.07	
80keV	3.90E-02		3.80E-02	9.04E+06	0.97	1.52	1.60	1.07	
Zr96									
5keV	5.60E-02		6.99E-02	4.16E+06	1.25	0.91	1.12	1.18	
30keV	1.07E-02	4.7	1.15E-02	1.68E+06	1.08	0.85	1.13	0.96	
80keV	4.40E-03		6.97E-03	1.66E+06	1.59	1.70	1.81	1.76	
Nb93									
5keV	8.87E-01		8.79E-01	5.23E+07	0.99	0.94	0.98	0.97	
30keV	2.66E-01	1.9	2.77E-01	4.04E+07	1.04	1.01	1.00	1.08	
80keV	1.30E-01		1.38E-01	3.29E+07	1.06	1.07	1.04	1.10	
Nb94 (SMC)									
5keV	9.25E-01		1.14E+00	6.76E+07	1.23	1.04	1.35	1.35	
30keV	4.82E-01	19.1	4.07E-01	5.93E+07	0.84	0.66	0.87	0.87	
80keV	2.45E-01		1.82E-01	4.32E+07	0.74	0.56	0.79	0.79	
Nb95 (SMC)									
5keV	8.92E-01		9.81E-01	5.83E+07	1.10	1.25	1.69	1.69	
30keV	3.10E-01	21.0	3.19E-01	4.65E+07	1.03	1.30	1.81	1.81	
80keV	1.59E-01		1.68E-01	4.00E+07	1.06	1.36	1.94	1.94	
Mo100									
5keV	2.81E-01		2.64E-01	1.57E+07	0.94	0.92	0.92	0.92	
30keV	1.08E-01	13.0	9.85E-02	1.43E+07	0.91	0.80	0.79	0.79	
80keV	7.90E-02		6.72E-02	1.60E+07	0.85	0.65	0.71	0.71	
Mo92									

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
5keV	2.77E-01		1.79E-01	1.07E+07	0.65	0.64	0.65	0.65	
30keV	7.00E-02	14.3	6.86E-02	9.99E+06	0.98	0.99	0.96	0.96	
80keV	4.50E-02		4.22E-02	1.00E+07	0.94	0.95	0.90	0.90	
Mo94									
5keV	3.21E-01		2.74E-01	1.63E+07	0.85	0.82	0.92	0.92	
30keV	1.02E-01	19.6	1.10E-01	1.60E+07	1.08	1.08	0.99	0.99	
80keV	7.10E-02		6.92E-02	1.65E+07	0.97	0.99	0.86	0.86	
Mo95									
5keV	7.85E-01		9.26E-01	5.51E+07	1.18	1.33	1.39	1.33	
30keV	2.92E-01	4.1	3.27E-01	4.77E+07	1.12	1.29	1.32	1.29	
80keV	1.64E-01		1.56E-01	3.72E+07	0.95	1.28	1.25	1.29	
Mo96									
5keV	4.09E-01		2.89E-01	1.72E+07	0.71	0.68	0.68	0.68	
30keV	1.12E-01	7.1	1.12E-01	1.63E+07	1.00	0.92	0.94	0.94	
80keV	7.00E-02		6.66E-02	1.59E+07	0.95	0.90	0.93	0.93	
Mo97									
5keV	9.52E-01		1.05E+00	6.27E+07	1.11	1.13	1.15	1.15	
30keV	3.39E-01	4.1	3.46E-01	5.04E+07	1.02	1.15	1.14	1.14	
80keV	1.85E-01		1.79E-01	4.26E+07	0.97	1.13	1.14	1.14	
Mo98									
5keV	2.98E-01		2.95E-01	1.75E+07	0.99	0.98	0.99	0.99	
30keV	9.90E-02	7.1	8.98E-02	1.31E+07	0.91	0.96	0.86	0.86	
80keV	6.00E-02		5.61E-02	1.33E+07	0.93	1.02	0.86	0.86	
Mo99 (SMC)									
5keV	7.03E-01		8.16E-01	4.85E+07	1.16	1.67	1.46	1.14	
30keV	2.40E-01	16.7	2.68E-01	3.90E+07	1.11	2.00	1.47	1.11	
80keV	1.07E-01		1.27E-01	3.02E+07	1.19	2.26	1.58	1.19	
Tc99									
5keV	1.85E+00		2.19E+00	1.30E+08	1.19	1.09	0.99	1.03	
30keV	7.81E-01	6.0	9.02E-01	1.31E+08	1.16	1.37	1.02	1.14	
80keV	4.45E-01		4.88E-01	1.16E+08	1.10	1.32	0.98	1.13	
Ru100									
5keV	5.25E-01		4.90E-01	2.91E+07	0.93	0.93	1.10	0.66	
30keV	2.06E-01	6.3	2.22E-01	3.24E+07	1.08	0.99	1.00	0.89	
80keV	1.26E-01		1.31E-01	3.10E+07	1.04	0.99	1.00	0.98	
Ru101									
5keV	2.40E+00		2.44E+00	1.45E+08	1.01	0.93	0.83	1.01	
30keV	9.96E-01	4.0	1.05E+00	1.53E+08	1.05	0.98	0.92	1.05	
80keV	6.15E-01		5.74E-01	1.37E+08	0.93	0.90	0.87	0.93	
Ru102									
5keV	4.56E-01		4.85E-01	2.88E+07	1.06	1.12	1.12	1.12	
30keV	1.51E-01	4.6	1.83E-01	2.67E+07	1.21	1.26	1.26	1.26	

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
80keV	8.30E-02		1.17E-01	2.79E+07	1.41	1.41	1.39	1.41	
Ru103 (SMC)									
5keV	1.11E+00		1.49E+00	8.89E+07	1.35	1.48	1.48	1.47	
30keV	3.43E-01	15.2	4.36E-01	6.35E+07	1.27	1.69	1.68	1.68	
80keV	1.58E-01		1.98E-01	4.72E+07	1.26	1.82	1.82	1.82	
Ru104									
5keV	4.54E-01		5.52E-01	3.28E+07	1.22	1.06	1.06	1.06	
30keV	1.56E-01	3.8	1.88E-01	2.74E+07	1.21	1.06	1.06	1.06	
80keV	8.70E-02		1.10E-01	2.61E+07	1.26	1.16	1.15	1.16	
Ru96									
5keV	4.14E-01		5.23E-01	3.11E+07	1.26	1.65	1.65	1.40	
30keV	2.07E-01	3.9	2.20E-01	3.21E+07	1.06	1.28	1.28	0.90	
80keV	1.19E-01		1.32E-01	3.13E+07	1.11	1.36	1.36	1.05	
Ru98 (SMC)									
5keV	4.61E-01		5.23E-01	3.11E+07	1.13	1.35	1.36	1.02	
30keV	1.73E-01	20.8	1.77E-01	2.58E+07	1.02	1.37	1.37	0.99	
80keV	9.70E-02		1.06E-01	2.52E+07	1.09	1.50	1.50	1.08	
Ru99 (SMC)									
5keV	1.23E+00		1.85E+00	1.10E+08	1.51	1.40	1.40	1.40	
30keV	6.31E-01	15.7	6.82E-01	9.93E+07	1.08	1.13	1.13	1.07	
80keV	3.37E-01		3.49E-01	8.31E+07	1.04	1.17	1.17	1.03	
Rh103									
5keV	1.89E+00		2.07E+00	1.23E+08	1.09	0.95	0.98	0.97	
30keV	8.11E-01	1.7	1.00E+00	1.46E+08	1.24	0.99	1.08	1.06	
80keV	4.72E-01		6.00E-01	1.43E+08	1.27	1.00	1.12	1.12	
Pd102									
5keV	8.84E-01		8.65E-01	5.14E+07	0.98	1.15	0.84	0.70	
30keV	3.69E-01	4.6	3.84E-01	5.60E+07	1.04	1.24	0.78	0.99	
80keV	2.33E-01		2.34E-01	5.56E+07	1.00	1.29	0.77	0.98	
Pd104									
5keV	6.85E-01		7.48E-01	4.44E+07	1.09	1.10	1.00	1.10	
30keV	2.89E-01	10.0	2.76E-01	4.02E+07	0.96	0.97	0.93	0.97	
80keV	1.76E-01		1.64E-01	3.90E+07	0.93	1.02	0.97	1.02	
Pd105									
5keV	2.54E+00		2.70E+00	1.61E+08	1.06	0.98	1.04	0.98	
30keV	1.20E+00	5.0	1.21E+00	1.76E+08	1.01	0.99	1.02	0.99	
80keV	7.95E-01		7.01E-01	1.67E+08	0.88	0.92	0.95	0.92	
Pd106									
5keV	7.00E-01		9.44E-01	5.61E+07	1.35	0.84	0.95	0.84	
30keV	2.52E-01	9.9	2.92E-01	4.25E+07	1.16	0.94	1.01	0.94	
80keV	1.44E-01		1.79E-01	4.25E+07	1.24	1.10	1.12	1.10	
Pd107									

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
5keV	2.73E+00		2.98E+00	1.77E+08	1.09	1.05	1.04	1.05	
30keV	1.34E+00	4.5	1.42E+00	2.07E+08	1.06	0.97	0.97	0.97	
80keV	8.00E-01		8.38E-01	1.99E+08	1.05	1.01	0.99	1.01	
Pd108									
5keV	5.55E-01		6.96E-01	4.14E+07	1.25	1.02	1.10	1.02	
30keV	2.03E-01	9.9	2.18E-01	3.18E+07	1.07	1.03	1.12	1.03	
80keV	1.18E-01		1.30E-01	3.09E+07	1.10	1.18	1.22	1.18	
Pd110									
5keV	4.49E-01		4.25E-01	2.52E+07	0.95	0.81	0.98	0.71	
30keV	1.46E-01	13.7	1.51E-01	2.19E+07	1.03	1.07	1.09	1.06	
80keV	7.90E-02		9.37E-02	2.23E+07	1.19	1.30	1.28	1.34	
Ag107									
5keV	1.60E+00		1.63E+00	9.66E+07	1.02	1.04	1.09	1.02	
30keV	7.92E-01	3.8	7.46E-01	1.09E+08	0.94	1.05	1.06	0.88	
80keV	4.86E-01		4.56E-01	1.08E+08	0.94	1.05	1.06	0.81	
Ag109									
5keV	1.67E+00		1.73E+00	1.03E+08	1.04	1.05	1.09	1.17	
30keV	7.88E-01	3.8	8.67E-01	1.26E+08	1.10	1.15	1.01	1.20	
80keV	4.81E-01		5.25E-01	1.25E+08	1.09	1.09	1.00	1.29	
Ag110 (SMC)									
5keV	2.03E+00		2.62E+00	1.56E+08	1.30	—	—	1.34	
30keV	1.17E+00	16.0	1.15E+00	1.67E+08	0.98	—	—	0.98	
80keV	7.38E-01		6.28E-01	1.49E+08	0.85	—	—	0.85	
Cd106									
5keV	6.85E-01		1.04E+00	6.17E+07	1.52	1.68	1.65	1.61	
30keV	3.02E-01	7.9	3.64E-01	5.30E+07	1.21	1.64	1.64	1.81	
80keV	1.98E-01		2.17E-01	5.15E+07	1.09	1.39	1.56	1.73	
Cd108									
5keV	4.96E-01		7.27E-01	4.32E+07	1.47	1.83	1.80	1.83	
30keV	2.02E-01	4.5	2.20E-01	3.21E+07	1.09	1.98	1.74	1.98	
80keV	1.25E-01		1.32E-01	3.15E+07	1.06	1.97	1.77	1.97	
Cd110									
5keV	—		6.29E-01	3.74E+07	—	—	—	—	
30keV	2.37E-01	0.8	2.44E-01	3.55E+07	1.03	0.99	0.95	0.99	
80keV	1.40E-01		1.50E-01	3.56E+07	1.07	1.10	1.01	1.10	
Cd111									
5keV	—		1.74E+00	1.03E+08	—	—	—	—	
30keV	7.54E-01	1.6	7.79E-01	1.13E+08	1.03	1.23	0.96	0.96	
80keV	4.56E-01		4.62E-01	1.10E+08	1.01	1.22	0.94	1.01	
Cd112									
5keV	—		5.65E-01	3.35E+07	—	—	—	—	
30keV	1.88E-01	0.9	1.85E-01	2.70E+07	0.99	1.16	0.96	1.21	

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
80keV	1.15E-01		1.17E-01	2.79E+07	1.02	1.30	1.00	1.32	
Cd113									
5keV	—		8.58E-01	5.10E+07	—	—	—	—	
30keV	6.67E-01	1.6	6.38E-01	9.29E+07	0.96	1.02	0.89	0.89	
80keV	4.09E-01		4.24E-01	1.01E+08	1.04	1.05	0.87	0.87	
Cd114									
5keV	—		4.25E-01	2.52E+07	—	—	—	—	
30keV	1.29E-01	1.0	1.24E-01	1.80E+07	0.96	1.16	1.05	1.16	
80keV	8.00E-02		7.67E-02	1.82E+07	0.96	1.19	1.06	1.19	
Cd115 (SMC)									
5keV	7.08E-01		8.28E-01	4.92E+07	1.17	—	—	—	
30keV	2.90E-01	21.4	2.88E-01	4.20E+07	0.99	—	—	—	
80keV	1.76E-01		1.60E-01	3.81E+07	0.91	—	—	—	
Cd115m (SMC)									
5keV	—		1.83E+00	1.09E+08	—	—	—	—	
30keV	6.01E-01	33.3	6.99E-01	1.02E+08	1.16	0.37	—	0.37	
80keV	—		3.91E-01	9.30E+07	—	—	—	—	
Cd116									
5keV	—		2.46E-01	1.46E+07	—	—	—	—	
30keV	7.48E-02	1.2	8.83E-02	1.28E+07	1.18	1.21	1.02	1.23	
80keV	4.80E-02		5.72E-02	1.36E+07	1.19	1.23	1.01	1.24	
In113									
5keV	2.31E+00		1.61E+00	9.59E+07	0.70	0.95	0.75	0.75	
30keV	7.87E-01	8.9	7.10E-01	1.03E+08	0.90	1.17	0.88	0.88	
80keV	4.37E-01		4.18E-01	9.94E+07	0.96	1.30	0.93	0.93	
In114m									
5keV	—		4.23E+00	2.51E+08	—	—	—	—	
30keV	2.60E+00	50.1	2.42E+00	3.52E+08	0.93	—	—	—	
80keV	—		1.69E+00	4.03E+08	—	—	—	—	
In115									
5keV	1.62E+00		1.77E+00	1.05E+08	1.09	1.11	1.09	1.09	
30keV	7.06E-01	9.9	7.49E-01	1.09E+08	1.06	1.09	1.11	1.11	
80keV	4.45E-01		4.35E-01	1.03E+08	0.98	1.05	1.05	1.05	
Sn112									
5keV	4.79E-01		7.93E-01	4.71E+07	1.66	1.07	1.14	1.14	
30keV	2.10E-01	5.7	2.10E-01	3.05E+07	1.00	0.93	0.96	0.96	
80keV	1.28E-01		1.25E-01	2.96E+07	0.97	0.99	1.01	1.01	
Sn114									
5keV	4.05E-01		5.08E-01	3.02E+07	1.25	1.02	0.85	0.85	
30keV	1.34E-01	1.3	1.38E-01	2.00E+07	1.02	1.14	0.91	0.91	
80keV	8.40E-02		8.40E-02	2.00E+07	1.00	1.19	0.96	0.96	
Sn115									

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
5keV	7.48E-01		9.80E-01	5.82E+07	1.31	1.29	1.29	1.29	
30keV	3.42E-01	2.5	3.54E-01	5.15E+07	1.03	1.14	1.08	1.08	
80keV	2.19E-01		2.13E-01	5.06E+07	0.97	1.11	1.03	1.03	
Sn116									
5keV	2.81E-01		2.42E-01	1.44E+07	0.86	0.84	0.85	0.85	
30keV	9.16E-02	0.7	9.44E-02	1.37E+07	1.03	1.09	1.00	1.00	
80keV	5.80E-02		6.08E-02	1.44E+07	1.05	1.17	1.03	1.03	
Sn117									
5keV	7.46E-01		8.38E-01	4.98E+07	1.12	0.97	1.13	1.13	
30keV	3.19E-01	1.5	3.28E-01	4.77E+07	1.03	0.97	1.08	1.08	
80keV	1.82E-01		1.79E-01	4.25E+07	0.98	0.98	1.06	1.06	
Sn118									
5keV	2.26E-01		2.02E-01	1.20E+07	0.89	0.82	0.85	0.85	
30keV	6.21E-02	1.0	7.09E-02	1.03E+07	1.14	1.05	1.15	1.15	
80keV	4.00E-02		4.42E-02	1.05E+07	1.11	1.08	1.18	1.18	
Sn119									
5keV	5.58E-01		6.86E-01	4.07E+07	1.23	1.27	1.27	1.27	
30keV	1.80E-01	5.6	1.99E-01	2.90E+07	1.11	1.25	1.25	1.25	
80keV	8.80E-02		9.31E-02	2.21E+07	1.06	1.26	1.22	1.22	
Sn120									
5keV	1.30E-01		1.13E-01	6.69E+06	0.87	0.87	0.91	0.91	
30keV	3.60E-02	0.8	3.75E-02	5.45E+06	1.04	1.05	1.05	1.05	
80keV	2.30E-02		2.43E-02	5.77E+06	1.06	1.04	1.11	1.11	
Sn121 (SMC)									
5keV	4.79E-01		5.71E-01	3.39E+07	1.19	—	—	2.13	
30keV	1.67E-01	18.0	1.79E-01	2.61E+07	1.07	—	—	2.15	
80keV	8.60E-02		9.10E-02	2.16E+07	1.06	—	—	2.24	
Sn122									
5keV	7.30E-02		6.49E-02	3.86E+06	0.89	0.77	1.53	0.89	
30keV	2.19E-02	6.8	1.97E-02	2.86E+06	0.90	0.69	1.39	0.90	
80keV	1.31E-02		9.39E-03	2.23E+06	0.72	0.58	1.40	0.73	
Sn124									
5keV	7.25E-02		4.24E-02	2.52E+06	0.58	0.47	0.85	1.74	
30keV	1.20E-02	15.0	1.04E-02	1.51E+06	0.87	0.96	1.63	1.59	
80keV	5.80E-03		5.47E-03	1.30E+06	0.94	0.92	1.85	1.21	
Sn125 (SMC)									
5keV	2.11E-01		2.14E-01	1.27E+07	1.01	1.24	—	1.39	
30keV	5.90E-02	15.3	5.60E-02	8.15E+06	0.95	1.66	—	1.17	
80keV	3.00E-02		2.87E-02	6.81E+06	0.96	2.28	—	1.17	
Sn126 (SMC)									
5keV	2.60E-02		6.77E-01	4.02E+07	26.03	1.05	0.57	0.37	
30keV	1.00E-02	40.0	1.35E-01	1.96E+07	13.45	1.08	1.07	1.21	

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
80keV	5.50E-03		3.30E-02	7.84E+06	6.00	1.38	1.35	2.11
Sb121								
5keV	1.30E+00		1.18E+00	7.03E+07	0.91	0.85	1.08	1.08
30keV	5.32E-01	3.0	5.90E-01	8.58E+07	1.11	0.96	0.98	0.98
80keV	3.06E-01		3.19E-01	7.59E+07	1.04	0.99	0.87	0.87
Sb122 (SMC)								
5keV	1.93E+00		2.22E+00	1.32E+08	1.15	1.50	—	1.14
30keV	8.94E-01	18.1	8.50E-01	1.24E+08	0.95	1.26	—	0.95
80keV	4.96E-01		4.10E-01	9.73E+07	0.83	1.11	—	0.83
Sb123								
5keV	8.05E-01		9.03E-01	5.37E+07	1.12	0.98	1.11	1.11
30keV	3.03E-01	3.0	4.04E-01	5.87E+07	1.33	1.06	1.05	1.05
80keV	1.76E-01		2.29E-01	5.45E+07	1.30	1.13	0.99	0.99
Sb125 (SMC)								
5keV	7.70E-01		7.24E-01	4.30E+07	0.94	1.55	1.55	0.99
30keV	2.60E-01	26.9	2.26E-01	3.29E+07	0.87	2.02	2.02	0.87
80keV	1.50E-01		1.25E-01	2.96E+07	0.83	2.11	2.11	0.83
Te120								
5keV	1.22E+00		1.09E+00	6.49E+07	0.89	0.59	0.59	0.79
30keV	5.19E-01	5.0	5.57E-01	8.11E+07	1.07	0.56	0.56	0.98
80keV	3.55E-01		3.64E-01	8.64E+07	1.02	0.56	0.57	1.00
Te122								
5keV	8.74E-01		6.14E-01	3.65E+07	0.70	0.59	0.76	0.69
30keV	2.95E-01	1.0	2.81E-01	4.08E+07	0.95	0.80	0.90	0.89
80keV	1.93E-01		2.11E-01	5.01E+07	1.09	0.92	0.95	1.07
Te123								
5keV	2.00E+00		2.09E+00	1.24E+08	1.05	0.91	1.00	1.14
30keV	8.32E-01	1.0	8.67E-01	1.26E+08	1.04	0.97	0.98	1.44
80keV	5.02E-01		5.38E-01	1.28E+08	1.07	1.03	1.03	1.59
Te124								
5keV	4.77E-01		3.99E-01	2.37E+07	0.84	0.66	0.84	0.73
30keV	1.55E-01	1.3	1.60E-01	2.32E+07	1.03	0.87	0.95	0.68
80keV	1.01E-01		1.11E-01	2.63E+07	1.10	0.97	0.99	0.95
Te125								
5keV	1.19E+00		1.05E+00	6.24E+07	0.88	0.85	0.85	0.84
30keV	4.31E-01	0.9	3.99E-01	5.81E+07	0.93	0.97	0.97	0.91
80keV	2.21E-01		2.09E-01	4.96E+07	0.95	1.05	1.05	0.94
Te126								
5keV	2.50E-01		1.83E-01	1.09E+07	0.73	0.65	1.00	0.71
30keV	8.13E-02	1.7	7.89E-02	1.15E+07	0.97	0.98	1.11	0.83
80keV	5.10E-02		5.41E-02	1.29E+07	1.06	1.13	1.17	0.83
Te128								

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
5keV	9.10E-02		1.15E-01	6.84E+06	1.27	0.80	1.02	0.58	
30keV	4.44E-02	2.9	3.97E-02	5.77E+06	0.89	0.83	0.90	0.80	
80keV	3.20E-02		2.43E-02	5.77E+06	0.76	0.87	0.89	1.13	
Te130									
5keV	3.50E-02		3.77E-02	2.24E+06	1.08	1.06	1.03	1.07	
30keV	1.47E-02	19.0	1.44E-02	2.09E+06	0.98	0.97	0.97	0.70	
80keV	9.60E-03		9.69E-03	2.30E+06	1.01	1.03	1.10	0.80	
I127									
5keV	1.66E+00		1.72E+00	1.02E+08	1.04	1.12	1.04	1.04	
30keV	6.35E-01	4.7	6.59E-01	9.58E+07	1.04	1.14	1.04	1.11	
80keV	3.45E-01		3.55E-01	8.44E+07	1.03	1.14	1.04	1.13	
I129									
5keV	1.13E+00		9.82E-01	5.83E+07	0.87	0.94	0.96	0.91	
30keV	4.41E-01	5.0	4.36E-01	6.34E+07	0.99	0.99	1.00	0.86	
80keV	2.50E-01		2.40E-01	5.71E+07	0.96	1.01	1.01	0.81	
Xe124									
5keV	1.78E+00		1.66E+00	9.85E+07	0.93	1.10	1.22	0.93	
30keV	6.44E-01	12.9	6.93E-01	1.01E+08	1.08	1.20	1.43	1.08	
80keV	4.65E-01		4.76E-01	1.13E+08	1.02	1.08	1.36	1.02	
Xe126									
5keV	9.00E-01		9.09E-01	5.40E+07	1.01	1.41	1.20	1.06	
30keV	3.59E-01	14.2	3.64E-01	5.29E+07	1.01	1.87	1.53	1.04	
80keV	2.55E-01		2.46E-01	5.84E+07	0.96	1.89	1.45	0.98	
Xe128									
5keV	—		5.52E-01	3.28E+07	—	—	—	—	
30keV	2.63E-01	1.4	2.81E-01	4.09E+07	1.07	1.07	0.98	0.98	
80keV	1.73E-01		1.95E-01	4.64E+07	1.13	1.15	0.98	0.98	
Xe129									
5keV	—		1.34E+00	7.99E+07	—	—	—	—	
30keV	6.17E-01	1.9	5.77E-01	8.40E+07	0.94	0.68	0.97	0.97	
80keV	3.26E-01		3.23E-01	7.67E+07	0.99	0.69	0.93	0.93	
Xe130									
5keV	—		3.53E-01	2.10E+07	—	—	—	—	
30keV	1.32E-01	1.6	1.34E-01	1.95E+07	1.02	1.15	1.01	1.15	
80keV	8.90E-02		9.16E-02	2.17E+07	1.03	1.18	0.93	1.18	
Xe131 (SMC)									
5keV	1.04E+00		1.27E+00	7.52E+07	1.22	0.74	1.11	0.81	
30keV	3.40E-01	19.1	3.58E-01	5.21E+07	1.05	0.90	1.19	1.02	
80keV	1.91E-01		1.98E-01	4.70E+07	1.04	0.91	1.15	1.11	
Xe132									
5keV	1.67E-01		1.65E-01	9.81E+06	0.99	0.72	1.38	0.72	
30keV	6.46E-02	8.2	6.50E-02	9.45E+06	1.01	0.73	0.95	0.73	

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
80keV	4.08E-02		4.32E-02	1.03E+07	1.06	0.80	0.92	0.80
Xe133 (SMC)								
5keV	3.72E-01		1.11E+00	6.59E+07	2.98	1.08	1.05	1.05
30keV	1.27E-01	26.8	1.59E-01	2.32E+07	1.25	1.00	0.99	0.99
80keV	7.40E-02		7.77E-02	1.85E+07	1.05	0.98	0.95	0.95
Xe134								
5keV	4.75E-02		8.76E-02	5.20E+06	1.85	0.74	1.79	0.74
30keV	2.02E-02	8.4	2.58E-02	3.75E+06	1.28	1.12	1.26	1.12
80keV	1.28E-02		1.56E-02	3.72E+06	1.22	1.36	1.14	1.36
Xe136								
5keV	5.60E-03		1.38E-02	8.20E+05	2.47	0.60	0.68	0.60
30keV	9.10E-04	8.8	9.64E-04	1.40E+05	1.06	1.30	0.96	1.30
80keV	4.10E-04		3.81E-04	9.05E+04	0.93	2.25	1.11	2.25
Cs133								
5keV	1.36E+00		1.47E+00	8.76E+07	1.08	0.97	1.02	0.97
30keV	5.09E-01	4.1	5.16E-01	7.51E+07	1.01	0.91	1.06	0.91
80keV	2.96E-01		2.86E-01	6.80E+07	0.97	0.92	0.99	0.93
Cs134 (SMC)								
5keV	2.42E+00		2.32E+00	1.38E+08	0.96	1.49	0.71	1.04
30keV	7.24E-01	9.0	6.68E-01	9.72E+07	0.92	1.60	0.75	1.01
80keV	3.72E-01		3.21E-01	7.61E+07	0.86	1.61	0.69	0.96
Cs135								
5keV	5.52E-01		5.39E-01	3.20E+07	0.98	1.16	0.96	0.96
30keV	1.60E-01	6.2	1.63E-01	2.37E+07	1.02	1.26	1.02	1.02
80keV	8.90E-02		9.03E-02	2.15E+07	1.02	1.28	1.01	1.01
Ba130								
5keV	1.70E+00		1.88E+00	1.11E+08	1.10	0.92	0.94	0.94
30keV	7.46E-01	4.6	7.83E-01	1.14E+08	1.05	0.99	0.99	0.99
80keV	5.34E-01		5.67E-01	1.35E+08	1.06	1.03	1.03	1.03
Ba132								
5keV	9.22E-01		1.04E+00	6.16E+07	1.13	1.15	1.14	1.14
30keV	3.97E-01	4.0	3.99E-01	5.80E+07	1.00	1.15	1.15	1.15
80keV	2.90E-01		2.83E-01	6.71E+07	0.97	1.15	1.15	1.15
Ba134								
5keV	3.60E-01		3.79E-01	2.25E+07	1.05	1.05	1.16	1.16
30keV	1.76E-01	3.2	1.84E-01	2.68E+07	1.05	1.29	1.31	1.31
80keV	1.17E-01		1.32E-01	3.13E+07	1.13	1.45	1.45	1.45
Ba135								
5keV	1.27E+00		1.17E+00	6.94E+07	0.92	0.93	1.22	1.22
30keV	4.55E-01	3.3	4.71E-01	6.85E+07	1.03	1.06	1.10	1.10
80keV	2.66E-01		2.92E-01	6.93E+07	1.10	1.13	1.14	1.14
Ba136								

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
5keV	1.80E-01		1.67E-01	9.94E+06	0.93	0.93	1.01	1.01
30keV	6.12E-02	3.3	6.20E-02	9.01E+06	1.01	1.14	1.16	1.16
80keV	3.93E-02		4.51E-02	1.07E+07	1.15	1.26	1.26	1.26
Ba137								
5keV	2.06E-01		1.60E-01	9.50E+06	0.78	0.66	0.99	0.99
30keV	7.63E-02	3.1	7.73E-02	1.12E+07	1.01	0.77	0.83	0.83
80keV	4.71E-02		4.74E-02	1.13E+07	1.01	0.82	0.83	0.83
Ba138								
5keV	1.34E-02		1.21E-02	7.21E+05	0.91	0.96	0.77	0.77
30keV	4.00E-03	5.0	3.94E-03	5.73E+05	0.99	0.93	1.08	1.08
80keV	2.52E-03		2.79E-03	6.63E+05	1.11	1.03	1.15	1.15
La138 (SMC)								
5keV	1.29E+00		1.62E+00	9.63E+07	1.25	0.67	0.67	1.24
30keV	4.19E-01	14.1	5.01E-01	7.28E+07	1.20	0.75	0.75	1.19
80keV	2.51E-01		2.79E-01	6.62E+07	1.11	0.71	0.71	1.11
La139								
5keV	1.11E-01		1.53E-01	9.07E+06	1.37	1.05	1.03	1.05
30keV	3.24E-02	9.6	5.19E-02	7.54E+06	1.60	1.12	1.16	1.12
80keV	1.84E-02		2.32E-02	5.51E+06	1.26	1.07	1.13	1.07
Ce132 (SMC)								
5keV	5.05E+00		4.51E+00	2.68E+08	0.89	—	—	—
30keV	1.57E+00	26.8	1.53E+00	2.23E+08	0.98	—	—	—
80keV	1.09E+00		1.05E+00	2.49E+08	0.96	—	—	—
Ce133 (SMC)								
5keV	7.29E+00		7.17E+00	4.26E+08	0.98	—	—	—
30keV	2.60E+00	15.4	2.47E+00	3.59E+08	0.95	—	—	—
80keV	1.57E+00		1.52E+00	3.62E+08	0.97	—	—	—
Ce134 (SMC)								
5keV	3.30E+00		2.59E+00	1.54E+08	0.79	—	—	—
30keV	9.67E-01	36.3	9.01E-01	1.31E+08	0.93	—	—	—
80keV	7.02E-01		6.47E-01	1.54E+08	0.92	—	—	—
Ce135 (SMC)								
5keV	4.08E+00		3.94E+00	2.34E+08	0.97	—	—	—
30keV	1.32E+00	19.7	1.26E+00	1.84E+08	0.96	—	—	—
80keV	7.76E-01		7.47E-01	1.77E+08	0.96	—	—	—
Ce136								
5keV	1.02E+00		7.83E-01	4.65E+07	0.77	0.94	—	0.79
30keV	3.00E-01	7.0	3.05E-01	4.43E+07	1.02	1.13	—	0.96
80keV	2.27E-01		2.22E-01	5.27E+07	0.98	1.02	—	0.92
Ce137 (SMC)								
5keV	3.17E+00		3.04E+00	1.81E+08	0.96	0.81	—	1.17
30keV	9.73E-01	26.3	9.41E-01	1.37E+08	0.97	0.80	—	0.99

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
80keV	6.03E-01		5.72E-01	1.36E+08	0.95	0.77	—	0.95
Ce138								
5keV	4.62E-01		4.25E-01	2.53E+07	0.92	1.29	—	0.67
30keV	1.79E-01	2.8	1.76E-01	2.55E+07	0.98	1.16	—	0.94
80keV	1.29E-01		1.27E-01	3.02E+07	0.99	1.14	—	0.98
Ce139 (SMC)								
5keV	7.69E-01		8.15E-01	4.84E+07	1.06	1.71	—	1.26
30keV	2.14E-01	56.1	2.27E-01	3.30E+07	1.06	1.90	—	1.08
80keV	1.34E-01		1.35E-01	3.21E+07	1.01	1.82	—	1.01
Ce140								
5keV	2.30E-02		5.04E-01	2.99E+07	21.90	0.68	0.83	0.51
30keV	1.10E-02	3.6	1.66E-01	2.42E+07	15.13	0.70	0.91	0.80
80keV	7.20E-03		4.42E-02	1.05E+07	6.14	0.71	0.89	1.15
Ce141 (SMC)								
5keV	2.60E-01		3.13E-01	1.86E+07	1.21	3.00	1.33	3.00
30keV	7.60E-02	43.4	7.49E-02	1.09E+07	0.99	3.62	1.33	3.62
80keV	4.30E-02		4.10E-02	9.74E+06	0.95	3.83	1.32	3.83
Ce142								
5keV	7.19E-02		5.74E-02	3.40E+06	0.80	0.93	1.02	1.02
30keV	2.80E-02	3.6	2.17E-02	3.16E+06	0.78	0.71	0.71	0.71
80keV	2.00E-02		1.52E-02	3.62E+06	0.76	0.68	0.68	0.68
Pr141								
5keV	4.12E-01		3.85E-01	2.29E+07	0.94	1.04	1.05	1.04
30keV	1.11E-01	1.3	1.13E-01	1.64E+07	1.01	0.98	1.06	0.98
80keV	5.62E-02		5.96E-02	1.42E+07	1.06	0.99	1.11	0.99
Pr142 (SMC)								
5keV	1.67E+00		1.68E+00	9.98E+07	1.01	0.83	—	0.72
30keV	4.15E-01	42.9	4.03E-01	5.86E+07	0.97	0.87	—	0.93
80keV	1.94E-01		1.75E-01	4.14E+07	0.90	0.80	—	0.89
Pr143 (SMC)								
5keV	1.19E+00		1.23E+00	7.28E+07	1.03	0.32	0.32	0.32
30keV	3.50E-01	24.6	3.56E-01	5.17E+07	1.02	0.31	0.31	0.31
80keV	1.83E-01		1.96E-01	4.66E+07	1.07	0.30	0.30	0.30
Nd142								
5keV	9.86E-02		8.79E-02	5.22E+06	0.89	0.86	1.03	0.88
30keV	3.50E-02	2.0	3.71E-02	5.39E+06	1.06	0.96	1.02	1.01
80keV	2.29E-02		2.61E-02	6.20E+06	1.14	0.97	1.02	1.12
Nd143								
5keV	9.25E-01		8.13E-01	4.82E+07	0.88	0.90	0.87	0.87
30keV	2.45E-01	1.2	2.53E-01	3.68E+07	1.03	0.97	0.94	1.03
80keV	1.38E-01		1.50E-01	3.57E+07	1.09	1.00	0.99	1.09
Nd144								

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
5keV	2.39E-01		2.40E-01	1.42E+07	1.00	0.76	0.93	0.75	
30keV	8.13E-02	1.8	9.06E-02	1.32E+07	1.11	0.92	0.91	0.92	
80keV	5.42E-02		6.32E-02	1.50E+07	1.17	0.99	0.98	0.99	
Nd145									
5keV	1.48E+00		1.38E+00	8.16E+07	0.93	1.00	0.96	0.98	
30keV	4.25E-01	1.2	4.17E-01	6.06E+07	0.98	0.99	0.96	0.99	
80keV	2.27E-01		2.29E-01	5.43E+07	1.01	0.95	0.98	1.01	
Nd146									
5keV	2.10E-01		2.06E-01	1.22E+07	0.98	1.10	0.96	1.11	
30keV	9.12E-02	1.1	9.59E-02	1.39E+07	1.05	1.08	1.00	1.08	
80keV	6.56E-02		7.28E-02	1.73E+07	1.11	1.02	1.01	1.02	
Nd147 (SMC)									
5keV	2.19E+00		2.00E+00	1.18E+08	0.91	1.41	1.58	1.41	
30keV	5.44E-01	16.5	5.32E-01	7.74E+07	0.98	1.53	1.83	1.54	
80keV	2.51E-01		2.58E-01	6.13E+07	1.03	1.59	2.07	1.60	
Nd148									
5keV	4.14E-01		3.17E-01	1.88E+07	0.77	0.70	0.75	0.75	
30keV	1.47E-01	1.4	1.47E-01	2.14E+07	1.00	0.95	0.92	0.92	
80keV	1.01E-01		1.06E-01	2.52E+07	1.05	0.99	0.99	0.99	
Nd150									
5keV	5.91E-01		3.66E-01	2.17E+07	0.62	0.58	0.57	0.60	
30keV	1.59E-01	6.3	1.60E-01	2.33E+07	1.01	0.98	0.98	0.92	
80keV	8.60E-02		9.63E-02	2.29E+07	1.12	1.13	1.11	1.03	
Pm147									
5keV	2.26E+00		2.82E+00	1.67E+08	1.25	1.53	1.08	1.52	
30keV	7.09E-01	14.1	7.66E-01	1.11E+08	1.08	1.48	0.99	1.48	
80keV	4.55E-01		4.35E-01	1.03E+08	0.96	1.38	0.91	1.38	
Pm148 (SMC)									
5keV	1.35E+01		9.39E+00	5.57E+08	0.70	0.42	0.23	0.42	
30keV	2.97E+00	16.8	2.49E+00	3.62E+08	0.84	0.57	0.31	0.57	
80keV	1.54E+00		1.28E+00	3.04E+08	0.83	0.64	0.32	0.64	
Pm148m (SMC)									
5keV	—		1.70E+01	1.01E+09	—	—	—	—	
30keV	2.45E+00	48.9	4.83E+00	7.02E+08	1.97	2.94	0.75	1.97	
80keV	—		2.36E+00	5.61E+08	—	—	—	—	
Pm149 (SMC)									
5keV	9.73E+00		9.12E+00	5.41E+08	0.94	0.35	0.19	0.19	
30keV	2.51E+00	29.9	2.46E+00	3.57E+08	0.98	0.41	0.23	0.23	
80keV	1.37E+00		1.32E+00	3.14E+08	0.96	0.43	0.24	0.24	
Sm144									
5keV	2.17E-01		1.94E-01	1.15E+07	0.90	0.88	0.91	0.88	
30keV	9.20E-02	6.5	9.15E-02	1.33E+07	0.99	0.95	0.96	0.95	

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
80keV	6.40E-02		6.84E-02	1.63E+07	1.07	0.99	1.00	0.99	
Sm147									
5keV	3.25E+00		3.79E+00	2.25E+08	1.17	1.05	0.99	1.15	
30keV	9.73E-01	1.0	1.06E+00	1.54E+08	1.09	0.99	0.99	1.09	
80keV	5.73E-01		6.08E-01	1.44E+08	1.06	0.94	0.98	1.06	
Sm148									
5keV	6.64E-01		5.11E-01	3.04E+07	0.77	0.99	0.86	0.99	
30keV	2.41E-01	0.8	2.31E-01	3.36E+07	0.96	1.02	0.98	1.02	
80keV	1.83E-01		1.88E-01	4.46E+07	1.03	0.98	0.98	0.98	
Sm149									
5keV	7.33E+00		6.60E+00	3.92E+08	0.90	0.87	0.86	0.87	
30keV	1.82E+00	0.9	1.88E+00	2.73E+08	1.03	0.98	1.00	0.98	
80keV	1.04E+00		1.07E+00	2.54E+08	1.03	0.99	1.01	0.99	
Sm150									
5keV	1.18E+00		1.15E+00	6.84E+07	0.98	0.95	0.86	1.00	
30keV	4.22E-01	0.9	4.24E-01	6.17E+07	1.00	1.00	1.00	1.01	
80keV	3.12E-01		3.31E-01	7.85E+07	1.06	1.01	1.01	1.06	
Sm151									
5keV	—		1.24E+01	7.34E+08	—	—	—	—	
30keV	3.03E+00	2.2	2.97E+00	4.32E+08	0.98	0.95	0.95	0.98	
80keV	1.54E+00		1.27E+00	3.01E+08	0.83	0.90	0.89	0.83	
Sm152									
5keV	1.25E+00		1.13E+00	6.74E+07	0.91	0.89	0.88	0.88	
30keV	4.73E-01	0.8	4.61E-01	6.70E+07	0.97	0.97	0.99	0.97	
80keV	2.83E-01		2.66E-01	6.32E+07	0.94	0.98	1.01	0.94	
Sm153 (SMC)									
5keV	5.24E+00		5.01E+00	2.98E+08	0.96	0.82	0.81	0.82	
30keV	1.09E+00	16.0	9.95E-01	1.45E+08	0.91	0.83	0.96	0.83	
80keV	4.77E-01		4.06E-01	9.64E+07	0.85	0.76	0.92	0.76	
Sm154									
5keV	5.61E-01		5.48E-01	3.25E+07	0.98	1.19	1.27	1.19	
30keV	2.06E-01	4.4	1.95E-01	2.83E+07	0.94	1.36	1.37	1.36	
80keV	1.09E-01		1.02E-01	2.41E+07	0.93	1.34	1.37	1.33	
Eu151									
5keV	1.16E+01		1.08E+01	6.39E+08	0.92	0.96	1.04	1.18	
30keV	3.48E+00	2.2	3.64E+00	5.29E+08	1.05	1.03	1.02	1.25	
80keV	2.04E+00		2.17E+00	5.16E+08	1.07	0.99	0.97	1.13	
Eu152 (SMC)									
5keV	2.08E+01		2.61E+01	1.55E+09	1.26	0.57	0.68	0.68	
30keV	7.60E+00	15.8	7.02E+00	1.02E+09	0.92	0.60	0.64	0.64	
80keV	3.70E+00		2.95E+00	7.01E+08	0.80	0.75	0.65	0.65	
Eu153									

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
5keV	7.11E+00		6.55E+00	3.89E+08	0.92	1.11	1.03	1.03
30keV	2.56E+00	1.8	2.45E+00	3.56E+08	0.96	1.04	0.96	0.96
80keV	1.48E+00		1.38E+00	3.28E+08	0.93	0.97	0.91	0.91
Eu154								
5keV	1.29E+01		1.85E+01	1.10E+09	1.43	0.77	0.75	0.77
30keV	4.42E+00	15.2	4.61E+00	6.70E+08	1.04	0.79	0.79	0.79
80keV	2.22E+00		1.91E+00	4.53E+08	0.86	0.83	0.78	0.82
Eu155								
5keV	4.66E+00		5.58E+00	3.31E+08	1.20	0.83	0.81	0.83
30keV	1.32E+00	6.4	1.34E+00	1.95E+08	1.02	0.86	0.96	0.86
80keV	6.46E-01		6.24E-01	1.48E+08	0.97	0.89	1.00	0.89
Gd152								
5keV	3.27E+00		2.90E+00	1.72E+08	0.88	0.80	0.83	0.80
30keV	1.05E+00	1.6	1.03E+00	1.50E+08	0.98	0.94	0.97	0.94
80keV	7.56E-01		7.82E-01	1.86E+08	1.03	0.93	1.02	0.93
Gd153 (SMC)								
5keV	1.63E+01		1.80E+01	1.07E+09	1.10	0.51	0.56	1.28
30keV	4.55E+00	15.4	4.37E+00	6.35E+08	0.96	0.58	0.72	1.13
80keV	2.24E+00		1.92E+00	4.56E+08	0.86	0.55	0.83	1.02
Gd154								
5keV	2.80E+00		2.63E+00	1.56E+08	0.94	0.94	0.88	0.95
30keV	1.03E+00	1.2	1.10E+00	1.59E+08	1.07	0.93	0.97	0.93
80keV	6.53E-01		6.72E-01	1.60E+08	1.03	0.89	0.99	0.89
Gd155								
5keV	7.26E+00		5.50E+00	3.26E+08	0.76	1.01	0.98	1.11
30keV	2.65E+00	1.1	2.54E+00	3.70E+08	0.96	0.99	1.03	1.15
80keV	1.44E+00		1.51E+00	3.58E+08	1.05	0.98	1.06	1.21
Gd156								
5keV	1.63E+00		1.64E+00	9.72E+07	1.01	1.05	0.98	0.94
30keV	6.15E-01	0.8	5.94E-01	8.64E+07	0.97	0.97	0.97	0.98
80keV	3.64E-01		3.36E-01	7.98E+07	0.92	0.95	0.98	1.00
Gd157								
5keV	4.25E+00		3.50E+00	2.08E+08	0.82	1.03	0.95	1.29
30keV	1.37E+00	1.1	1.39E+00	2.02E+08	1.01	1.02	1.00	1.19
80keV	6.83E-01		7.00E-01	1.66E+08	1.02	1.02	1.02	1.24
Gd158								
5keV	8.42E-01		7.39E-01	4.39E+07	0.88	0.88	1.00	0.93
30keV	3.24E-01	0.9	3.19E-01	4.64E+07	0.98	0.95	0.99	0.91
80keV	1.74E-01		1.77E-01	4.21E+07	1.02	0.97	0.99	1.04
Gd160								
5keV	5.46E-01		3.89E-01	2.31E+07	0.71	0.77	1.10	1.06
30keV	1.54E-01	13.0	1.60E-01	2.33E+07	1.04	1.11	1.21	1.49

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
80keV	8.00E-02		8.20E-02	1.95E+07	1.02	1.08	1.16	1.77
Tb159								
5keV	4.37E+00		3.71E+00	2.20E+08	0.85	1.31	0.92	0.92
30keV	1.58E+00	9.5	1.51E+00	2.20E+08	0.96	1.31	0.99	0.99
80keV	9.10E-01		8.50E-01	2.02E+08	0.93	1.27	0.99	0.99
Tb160 (SMC)								
5keV	9.15E+00		1.47E+01	8.72E+08	1.60	0.71	0.74	2.67
30keV	3.24E+00	15.7	3.37E+00	4.90E+08	1.04	0.74	0.80	1.81
80keV	1.71E+00		1.39E+00	3.29E+08	0.81	0.67	0.76	1.46
Dy156								
5keV	4.34E+00		5.55E+00	3.29E+08	1.28	1.03	0.96	1.23
30keV	1.61E+00	5.7	1.93E+00	2.81E+08	1.20	0.95	0.92	1.12
80keV	1.08E+00		1.25E+00	2.97E+08	1.16	0.92	0.90	1.09
Dy158 (SMC)								
5keV	3.19E+00		3.48E+00	2.06E+08	1.09	1.01	0.74	1.17
30keV	1.06E+00	37.7	1.15E+00	1.68E+08	1.09	1.05	0.85	1.22
80keV	6.84E-01		7.04E-01	1.67E+08	1.03	0.98	0.80	1.15
Dy160								
5keV	2.27E+00		2.46E+00	1.46E+08	1.09	0.95	0.95	1.04
30keV	8.90E-01	1.3	9.05E-01	1.32E+08	1.02	0.94	0.98	0.93
80keV	5.24E-01		5.37E-01	1.27E+08	1.02	0.98	0.98	0.95
Dy161								
5keV	5.71E+00		5.89E+00	3.50E+08	1.03	1.02	1.07	1.03
30keV	1.96E+00	1.0	2.02E+00	2.94E+08	1.03	0.99	1.01	0.99
80keV	9.77E-01		9.75E-01	2.32E+08	1.00	0.98	1.00	0.98
Dy162								
5keV	1.13E+00		9.53E-01	5.65E+07	0.84	1.10	1.09	1.10
30keV	4.46E-01	0.9	4.40E-01	6.39E+07	0.99	1.02	1.04	1.02
80keV	2.50E-01		2.71E-01	6.44E+07	1.09	1.01	1.01	1.01
Dy163								
5keV	3.18E+00		3.26E+00	1.93E+08	1.03	1.03	1.02	1.03
30keV	1.11E+00	1.0	1.09E+00	1.59E+08	0.98	0.98	1.00	0.98
80keV	6.06E-01		5.78E-01	1.37E+08	0.95	0.98	1.00	0.98
Dy164								
5keV	5.92E-01		5.10E-01	3.02E+07	0.86	1.09	0.99	1.09
30keV	2.12E-01	1.4	1.92E-01	2.79E+07	0.91	1.02	0.99	0.99
80keV	1.09E-01		1.10E-01	2.60E+07	1.00	1.00	0.98	1.00
Ho163								
5keV	5.81E+00		9.24E+00	5.48E+08	1.59	—	—	3.90
30keV	2.12E+00	4.5	2.25E+00	3.27E+08	1.06	—	—	2.81
80keV	1.37E+00		1.21E+00	2.86E+08	0.88	—	—	2.26
Ho165								

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
5keV	3.30E+00		4.25E+00	2.52E+08	1.29	1.14	—	1.14
30keV	1.28E+00	7.8	1.37E+00	2.00E+08	1.07	1.04	—	1.04
80keV	7.61E-01		7.68E-01	1.82E+08	1.01	1.01	—	1.01
Er162								
5keV	4.91E+00		5.22E+00	3.10E+08	1.06	0.45	0.45	0.45
30keV	1.62E+00	7.6	1.72E+00	2.50E+08	1.06	0.53	0.53	0.53
80keV	1.14E+00		1.09E+00	2.59E+08	0.95	0.50	0.50	0.50
Er164								
5keV	3.07E+00		3.23E+00	1.91E+08	1.05	1.61	1.61	1.61
30keV	1.08E+00	4.7	1.13E+00	1.64E+08	1.04	1.77	1.77	1.77
80keV	6.94E-01		7.10E-01	1.69E+08	1.02	1.77	1.77	1.77
Er166								
5keV	1.30E+00		1.23E+00	7.27E+07	0.94	1.22	1.29	0.91
30keV	5.63E-01	9.9	5.01E-01	7.29E+07	0.89	1.24	1.25	0.92
80keV	3.32E-01		3.04E-01	7.23E+07	0.92	1.13	1.13	0.95
Er167								
5keV	4.46E+00		4.11E+00	2.44E+08	0.92	0.95	1.00	0.95
30keV	1.43E+00	10.0	1.37E+00	1.99E+08	0.96	1.09	1.09	1.02
80keV	9.33E-01		7.48E-01	1.78E+08	0.80	0.95	0.95	0.84
Er168								
5keV	7.90E-01		6.20E-01	3.68E+07	0.78	0.74	1.06	1.16
30keV	3.38E-01	13.0	3.18E-01	4.62E+07	0.94	0.89	1.00	0.97
80keV	1.88E-01		1.89E-01	4.49E+07	1.01	0.92	0.95	0.97
Er169 (SMC)								
5keV	1.93E+00		2.11E+00	1.25E+08	1.10	1.03	—	1.20
30keV	6.53E-01	17.5	6.41E-01	9.32E+07	0.98	1.07	—	0.99
80keV	3.20E-01		3.11E-01	7.38E+07	0.97	1.08	—	0.98
Er170								
5keV	6.00E-01		6.53E-01	3.88E+07	1.09	0.97	1.04	0.92
30keV	1.70E-01	4.1	2.15E-01	3.13E+07	1.27	1.27	1.21	1.05
80keV	8.54E-02		9.66E-02	2.29E+07	1.13	1.24	1.19	1.01
Tm169								
5keV	3.38E+00		3.10E+00	1.84E+08	0.92	1.02	0.91	1.22
30keV	1.13E+00	5.0	1.12E+00	1.63E+08	1.00	0.96	0.93	1.03
80keV	6.68E-01		5.84E-01	1.39E+08	0.87	0.90	0.91	0.88
Tm170 (SMC)								
5keV	4.94E+00		8.57E+00	5.09E+08	1.73	1.11	—	1.77
30keV	1.87E+00	17.6	2.05E+00	2.98E+08	1.10	0.97	—	1.10
80keV	1.12E+00		1.01E+00	2.40E+08	0.90	0.90	—	0.90
Tm171 (SMC)								
5keV	1.58E+00		2.44E+00	1.45E+08	1.55	2.12	—	2.89
30keV	4.86E-01	29.6	5.27E-01	7.66E+07	1.08	1.89	—	2.04

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
80keV	2.79E-01		3.07E-01	7.29E+07	1.10	1.83	—	2.10
Yb168								
5keV	3.00E+00		3.56E+00	2.11E+08	1.19	1.03	1.03	1.20
30keV	1.21E+00	4.0	1.21E+00	1.76E+08	1.00	1.00	1.00	1.02
80keV	7.28E-01		8.08E-01	1.92E+08	1.11	1.12	1.12	1.13
Yb170								
5keV	1.86E+00		1.85E+00	1.10E+08	0.99	0.98	0.98	0.99
30keV	7.68E-01	0.9	7.73E-01	1.12E+08	1.01	1.01	1.01	1.01
80keV	4.64E-01		4.90E-01	1.16E+08	1.06	1.04	1.04	1.06
Yb171								
5keV	3.05E+00		2.97E+00	1.76E+08	0.97	1.04	1.04	0.96
30keV	1.21E+00	1.0	1.27E+00	1.85E+08	1.05	1.04	1.04	1.01
80keV	6.57E-01		6.99E-01	1.66E+08	1.06	1.05	1.05	1.03
Yb172								
5keV	8.27E-01		7.65E-01	4.54E+07	0.93	1.05	1.05	1.19
30keV	3.41E-01	0.9	3.83E-01	5.56E+07	1.12	1.04	1.04	1.16
80keV	1.90E-01		2.10E-01	4.99E+07	1.11	1.05	1.05	1.12
Yb173								
5keV	2.19E+00		2.52E+00	1.50E+08	1.15	1.00	1.00	1.15
30keV	7.54E-01	0.9	8.44E-01	1.23E+08	1.12	1.03	1.03	1.12
80keV	4.10E-01		4.25E-01	1.01E+08	1.04	1.05	1.05	1.04
Yb174								
5keV	3.74E-01		3.07E-01	1.82E+07	0.82	1.03	1.03	1.30
30keV	1.51E-01	1.1	1.44E-01	2.09E+07	0.95	1.05	1.05	1.07
80keV	7.80E-02		7.91E-02	1.88E+07	1.01	1.06	1.06	1.05
Yb175 (SMC)								
5keV	1.58E+00		2.65E+00	1.57E+08	1.68	1.72	—	1.89
30keV	5.58E-01	14.9	7.93E-01	1.15E+08	1.42	1.44	—	1.44
80keV	3.22E-01		4.63E-01	1.10E+08	1.44	1.33	—	1.44
Yb176								
5keV	2.95E-01		3.41E-01	2.03E+07	1.16	0.98	0.98	0.84
30keV	1.16E-01	1.7	1.18E-01	1.72E+07	1.02	1.04	1.04	0.83
80keV	5.80E-02		5.47E-02	1.30E+07	0.94	1.08	1.08	0.87
Lu175								
5keV	—		3.29E+00	1.95E+08	—	—	—	—
30keV	1.22E+00	0.8	1.25E+00	1.81E+08	1.02	1.08	—	1.04
80keV	7.01E-01		7.17E-01	1.70E+08	1.02	1.13	—	1.03
Lu176								
5keV	—		6.77E+00	4.02E+08	—	—	—	—
30keV	1.64E+00	0.9	1.90E+00	2.77E+08	1.16	0.94	—	1.16
80keV	9.81E-01		1.15E+00	2.74E+08	1.17	1.03	—	1.17
Hf174								

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
5keV	2.52E+00		2.71E+00	1.60E+08	1.07	0.96	1.01	0.93	
30keV	9.83E-01	4.7	1.03E+00	1.49E+08	1.04	0.95	1.00	0.93	
80keV	6.93E-01		6.94E-01	1.65E+08	1.00	0.85	0.93	0.89	
Hf176									
5keV	—		1.37E+00	8.13E+07	—	—	—	—	
30keV	6.26E-01	1.8	5.53E-01	8.04E+07	0.88	0.81	0.95	0.76	
80keV	3.80E-01		3.55E-01	8.43E+07	0.94	0.93	0.97	0.79	
Hf177									
5keV	—		4.18E+00	2.48E+08	—	—	—	—	
30keV	1.54E+00	0.8	1.53E+00	2.23E+08	0.99	0.94	0.98	0.93	
80keV	9.65E-01		9.77E-01	2.32E+08	1.01	1.01	1.00	0.92	
Hf178									
5keV	—		1.01E+00	5.97E+07	—	—	—	—	
30keV	3.19E-01	0.9	3.43E-01	4.98E+07	1.07	0.95	1.14	1.08	
80keV	1.91E-01		2.01E-01	4.76E+07	1.05	0.96	1.11	1.11	
Hf179									
5keV	—		2.92E+00	1.73E+08	—	—	—	—	
30keV	9.22E-01	0.9	9.66E-01	1.40E+08	1.05	1.04	1.07	1.07	
80keV	5.50E-01		5.75E-01	1.37E+08	1.05	1.02	1.10	1.08	
Hf180									
5keV	—		3.61E-01	2.14E+07	—	—	—	—	
30keV	1.57E-01	1.3	1.41E-01	2.05E+07	0.90	1.34	1.24	1.15	
80keV	8.80E-02		7.45E-02	1.77E+07	0.85	1.15	1.22	1.15	
Hf181 (SMC)									
5keV	5.75E-01		1.56E+00	9.23E+07	2.71	1.44	1.44	2.10	
30keV	1.94E-01	16.0	3.97E-01	5.77E+07	2.05	1.32	1.32	1.99	
80keV	9.30E-02		2.15E-01	5.11E+07	2.32	1.24	1.24	2.30	
Hf182									
5keV	3.30E-01		3.85E-01	2.29E+07	1.17	1.06	1.06	1.34	
30keV	1.41E-01	5.7	1.41E-01	2.05E+07	1.00	1.02	1.02	1.03	
80keV	7.80E-02		7.31E-02	1.74E+07	0.94	1.04	1.04	0.94	
Ta179 (SMC)									
5keV	2.85E+00		1.02E+01	6.04E+08	3.57	—	—	3.51	
30keV	1.33E+00	31.6	3.13E+00	4.55E+08	2.35	—	—	2.34	
80keV	8.90E-01		1.85E+00	4.40E+08	2.08	—	—	2.08	
Ta180m									
5keV	—		5.59E+00	3.31E+08	—	—	—	—	
30keV	1.47E+00	6.8	1.66E+00	2.41E+08	1.13	—	—	1.13	
80keV	9.42E-01		1.02E+00	2.43E+08	1.09	—	—	1.09	
Ta181									
5keV	2.77E+00		2.64E+00	1.57E+08	0.96	1.04	0.94	0.94	
30keV	7.66E-01	2.0	7.74E-01	1.12E+08	1.01	1.11	0.98	0.98	

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
80keV	4.23E-01		4.24E-01	1.01E+08	1.00	1.07	0.98	0.98
Ta182 (SMC)								
5keV	2.48E+00		4.21E+00	2.50E+08	1.70	1.37	—	1.70
30keV	1.12E+00	16.1	1.20E+00	1.74E+08	1.07	0.92	—	1.07
80keV	7.05E-01		6.30E-01	1.49E+08	0.89	0.82	—	0.89
W180								
5keV	1.79E+00		1.81E+00	1.07E+08	1.01	0.78	0.77	0.82
30keV	6.60E-01	8.0	6.66E-01	9.67E+07	1.01	0.85	0.85	0.85
80keV	4.33E-01		3.82E-01	9.07E+07	0.88	0.85	0.83	0.73
W182								
5keV	6.37E-01		7.29E-01	4.32E+07	1.14	1.12	1.19	1.35
30keV	2.74E-01	2.9	2.81E-01	4.08E+07	1.02	1.05	1.02	1.08
80keV	1.73E-01		1.76E-01	4.17E+07	1.02	1.00	0.93	1.01
W183								
5keV	1.59E+00		1.90E+00	1.13E+08	1.19	1.18	1.11	1.14
30keV	5.15E-01	2.9	5.59E-01	8.13E+07	1.09	1.12	1.11	1.02
80keV	2.77E-01		3.02E-01	7.16E+07	1.09	1.09	1.06	1.02
W184								
5keV	6.88E-01		5.66E-01	3.36E+07	0.82	0.91	0.95	0.88
30keV	2.23E-01	2.2	2.33E-01	3.39E+07	1.04	1.13	1.09	0.98
80keV	1.32E-01		1.52E-01	3.61E+07	1.15	1.16	1.10	0.99
W185								
5keV	1.65E+00		2.79E+00	1.65E+08	1.69	2.17	—	1.78
30keV	5.84E-01	9.1	8.26E-01	1.20E+08	1.41	1.94	—	1.42
80keV	2.99E-01		4.28E-01	1.02E+08	1.43	1.91	—	1.43
W186								
5keV	6.02E-01		4.47E-01	2.65E+07	0.74	0.81	0.81	0.71
30keV	2.35E-01	3.8	1.78E-01	2.58E+07	0.76	0.80	0.82	0.74
80keV	1.62E-01		1.17E-01	2.77E+07	0.72	0.70	0.71	0.72
Re185								
5keV	3.44E+00		4.57E+00	2.71E+08	1.33	1.02	—	1.31
30keV	1.53E+00	4.0	1.71E+00	2.48E+08	1.11	0.75	—	1.11
80keV	1.06E+00		1.07E+00	2.53E+08	1.00	0.68	—	1.00
Re186 (SMC)								
5keV	3.12E+00		6.00E+00	3.56E+08	1.92	—	—	1.90
30keV	1.55E+00	16.1	1.91E+00	2.78E+08	1.24	—	—	1.23
80keV	1.04E+00		1.13E+00	2.67E+08	1.08	—	—	1.08
Re187								
5keV	3.75E+00		3.33E+00	1.98E+08	0.89	0.82	—	0.89
30keV	1.16E+00	4.9	1.13E+00	1.65E+08	0.98	0.87	—	1.00
80keV	7.29E-01		6.84E-01	1.62E+08	0.94	0.86	—	0.96
Os184								

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
5keV	1.56E+00		1.57E+00	9.33E+07	1.01	1.20	1.20	0.93
30keV	5.90E-01	6.6	6.00E-01	8.71E+07	1.02	1.23	1.23	0.99
80keV	3.96E-01		3.44E-01	8.16E+07	0.87	1.19	1.19	0.86
Os186								
5keV	1.11E+00		1.30E+00	7.70E+07	1.17	1.16	1.16	0.58
30keV	4.10E-01	4.1	4.10E-01	5.96E+07	1.00	1.11	1.11	0.94
80keV	2.92E-01		2.47E-01	5.85E+07	0.84	1.00	1.00	0.83
Os187								
5keV	3.75E+00		4.17E+00	2.47E+08	1.11	1.22	1.22	1.12
30keV	9.66E-01	3.2	1.04E+00	1.51E+08	1.07	1.23	1.23	1.14
80keV	5.01E-01		5.11E-01	1.21E+08	1.02	1.19	1.19	1.08
Os188								
5keV	7.62E-01		1.04E+00	6.16E+07	1.36	1.42	1.42	1.35
30keV	2.93E-01	4.8	2.53E-01	3.68E+07	0.86	1.24	1.24	0.86
80keV	2.21E-01		1.47E-01	3.48E+07	0.66	1.06	1.06	0.66
Os189								
5keV	4.39E+00		4.16E+00	2.47E+08	0.95	0.90	0.90	0.95
30keV	1.17E+00	4.0	1.26E+00	1.83E+08	1.08	0.93	0.93	1.08
80keV	5.80E-01		6.76E-01	1.60E+08	1.17	0.88	0.88	1.17
Os190								
5keV	6.79E-01		7.73E-01	4.59E+07	1.14	1.23	1.23	1.16
30keV	2.74E-01	4.4	3.04E-01	4.41E+07	1.11	1.30	1.30	1.13
80keV	1.85E-01		2.10E-01	4.98E+07	1.13	1.35	1.35	1.12
Os191 (SMC)								
5keV	3.26E+00		3.78E+00	2.24E+08	1.16	1.18	—	1.18
30keV	1.29E+00	21.7	1.22E+00	1.77E+08	0.95	0.95	—	0.95
80keV	8.14E-01		7.75E-01	1.84E+08	0.95	0.95	—	0.95
Os192								
5keV	4.16E-01		5.03E-01	2.99E+07	1.21	1.30	1.30	0.99
30keV	1.55E-01	4.5	2.21E-01	3.22E+07	1.43	1.52	1.52	1.02
80keV	1.01E-01		1.66E-01	3.94E+07	1.64	1.65	1.65	1.12
Ir191								
5keV	4.35E+00		4.09E+00	2.43E+08	0.94	0.99	—	0.99
30keV	1.35E+00	3.2	1.34E+00	1.95E+08	0.99	0.94	—	0.94
80keV	7.85E-01		8.25E-01	1.96E+08	1.05	0.94	—	0.94
Ir192 (SMC)								
5keV	4.28E+00		6.67E+00	3.96E+08	1.56	1.56	—	1.56
30keV	2.08E+00	21.6	2.38E+00	3.46E+08	1.15	1.15	—	1.15
80keV	1.53E+00		1.36E+00	3.22E+08	0.89	0.89	—	0.89
Ir193								
5keV	3.10E+00		2.82E+00	1.67E+08	0.91	1.23	—	1.23
30keV	9.94E-01	7.0	9.13E-01	1.33E+08	0.92	1.12	—	1.13

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
80keV	5.61E-01		5.46E-01	1.30E+08	0.97	1.11	—	1.11
Pt190								
5keV	1.29E+00		1.55E+00	9.17E+07	1.19	1.95	—	1.95
30keV	5.08E-01	8.7	5.85E-01	8.51E+07	1.15	1.83	—	1.83
80keV	3.87E-01		4.76E-01	1.13E+08	1.23	1.93	—	1.93
Pt192								
5keV	1.35E+00		6.72E-01	3.99E+07	0.50	0.50	—	1.04
30keV	5.90E-01	20.3	3.85E-01	5.59E+07	0.65	0.69	—	1.02
80keV	4.50E-01		4.58E-01	1.09E+08	1.02	1.08	—	1.17
Pt193 (SMC)								
5keV	3.11E+00		2.62E+00	1.55E+08	0.84	0.89	—	0.89
30keV	1.12E+00	21.4	8.13E-01	1.18E+08	0.72	0.73	—	0.73
80keV	6.50E-01		4.75E-01	1.13E+08	0.73	0.73	—	0.73
Pt194								
5keV	8.73E-01		4.84E-01	2.87E+07	0.55	0.60	—	0.60
30keV	3.65E-01	23.3	3.18E-01	4.62E+07	0.87	0.87	—	0.87
80keV	2.68E-01		2.57E-01	6.09E+07	0.96	0.96	—	0.96
Pt195								
5keV	2.17E+00		2.31E+00	1.37E+08	1.06	0.96	—	0.96
30keV	8.60E-01	23.3	8.13E-01	1.18E+08	0.95	0.93	—	0.93
80keV	4.72E-01		5.06E-01	1.20E+08	1.07	1.07	—	1.07
Pt196								
5keV	4.85E-01		3.83E-01	2.27E+07	0.79	0.99	—	0.99
30keV	1.83E-01	8.7	1.98E-01	2.88E+07	1.08	1.10	—	1.10
80keV	1.32E-01		1.57E-01	3.72E+07	1.19	1.19	—	1.19
Pt198								
5keV	2.82E-01		2.61E-01	1.55E+07	0.93	2.05	—	2.05
30keV	9.22E-02	5.0	9.13E-02	1.33E+07	0.99	1.45	—	1.45
80keV	6.28E-02		6.59E-02	1.56E+07	1.05	1.18	—	1.18
Au197								
5keV	2.05E+00		1.98E+00	1.17E+08	0.97	1.02	1.02	1.04
30keV	5.82E-01	1.5	6.30E-01	9.15E+07	1.08	1.06	1.05	1.06
80keV	3.56E-01		3.79E-01	8.98E+07	1.06	1.05	1.03	1.04
Au198 (SMC)								
5keV	2.10E+00		2.65E+00	1.57E+08	1.26	—	—	—
30keV	8.40E-01	17.5	8.96E-01	1.30E+08	1.07	—	—	—
80keV	5.16E-01		5.52E-01	1.31E+08	1.07	—	—	—
Hg196								
5keV	5.81E-01		6.14E-01	3.64E+07	1.06	0.17	0.17	0.17
30keV	2.04E-01	3.9	2.14E-01	3.10E+07	1.05	0.17	0.17	0.17
80keV	1.28E-01		1.65E-01	3.92E+07	1.29	0.17	0.17	0.17
Hg198								

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E
5keV	5.88E-01		5.01E-01	2.97E+07	0.85	0.67	0.67	0.71
30keV	1.73E-01	8.7	1.84E-01	2.68E+07	1.06	0.93	0.93	1.41
80keV	1.39E-01		1.37E-01	3.25E+07	0.99	0.77	0.77	1.49
Hg199								
5keV	1.35E+00		1.02E+00	6.03E+07	0.75	0.79	0.79	0.72
30keV	3.74E-01	6.1	3.35E-01	4.87E+07	0.90	1.05	1.04	0.89
80keV	2.24E-01		2.10E-01	4.97E+07	0.94	1.04	1.04	0.93
Hg200								
5keV	3.24E-01		2.95E-01	1.75E+07	0.91	0.82	0.82	1.02
30keV	1.15E-01	10.4	1.22E-01	1.77E+07	1.06	1.11	1.11	0.84
80keV	8.60E-02		8.99E-02	2.13E+07	1.04	0.98	0.98	1.29
Hg201								
5keV	9.50E-01		1.08E+00	6.41E+07	1.14	1.09	1.09	1.27
30keV	2.64E-01	5.3	2.79E-01	4.05E+07	1.06	0.97	0.97	1.24
80keV	1.22E-01		1.37E-01	3.25E+07	1.12	1.00	1.00	1.35
Hg202								
5keV	1.59E-01		1.64E-01	9.73E+06	1.03	1.35	1.35	0.62
30keV	6.32E-02	3.0	5.53E-02	8.04E+06	0.88	1.35	1.35	0.49
80keV	4.49E-02		3.79E-02	9.00E+06	0.85	1.33	1.33	0.67
Hg203 (SMC)								
5keV	3.75E-01		7.84E-01	4.65E+07	2.09	5.20	—	5.20
30keV	9.80E-02	17.3	3.50E-01	5.09E+07	3.57	4.03	—	4.03
80keV	4.90E-02		2.05E-01	4.87E+07	4.19	4.33	—	4.33
Hg204								
5keV	9.84E-02		1.69E-01	1.00E+07	1.72	1.01	1.01	1.01
30keV	4.20E-02	9.5	3.98E-02	5.78E+06	0.95	1.03	1.03	1.03
80keV	3.02E-02		2.86E-02	6.79E+06	0.95	1.00	1.00	1.00
Tl203								
5keV	3.80E-01		5.54E-01	3.29E+07	1.46	1.57	—	1.46
30keV	1.24E-01	6.5	1.13E-01	1.65E+07	0.91	1.37	—	0.76
80keV	5.00E-02		8.21E-02	1.95E+07	1.64	2.23	—	1.42
Tl204 (SMC)								
5keV	8.74E-01		1.45E+00	8.58E+07	1.66	1.45	—	1.45
30keV	2.15E-01	17.7	5.08E-01	7.38E+07	2.36	2.32	—	2.32
80keV	1.22E-01		3.15E-01	7.47E+07	2.58	2.57	—	2.57
Tl205								
5keV	1.02E-01		1.92E-01	1.14E+07	1.89	1.32	—	1.64
30keV	5.40E-02	7.4	1.23E-01	1.78E+07	2.27	0.97	—	2.01
80keV	2.50E-02		6.39E-02	1.52E+07	2.56	1.34	—	2.56
Pb204								
5keV	3.12E-01		2.72E-01	1.61E+07	0.87	0.87	0.97	0.92
30keV	8.10E-02	2.8	8.26E-02	1.20E+07	1.02	0.89	1.03	0.80

	KADoNiS	$\Delta\sigma_E$	TENDL-2017			ENDF/B8.0	JENDL4.0	JEFF-3.3	
	$\sigma(b)$	%	$\sigma(b)$	R(cm ² /s)	C/E	C/E	C/E	C/E	
80keV	5.44E-02		5.78E-02	1.37E+07	1.06	0.72	1.17	0.66	
Pb205 (SMC)									
5keV	6.04E-01		4.86E-01	2.88E+07	0.80	0.98	—	1.49	
30keV	1.25E-01	17.6	1.31E-01	1.90E+07	1.05	1.69	—	2.07	
80keV	6.80E-02		7.36E-02	1.74E+07	1.08	1.82	—	1.90	
Pb206									
5keV	2.09E-02		2.02E-02	1.20E+06	0.97	0.97	1.01	1.01	
30keV	1.45E-02	2.1	1.36E-02	1.97E+06	0.94	0.94	1.01	1.01	
80keV	1.19E-02		1.09E-02	2.59E+06	0.92	0.92	0.98	0.98	
Pb207									
5keV	1.62E-02		1.62E-02	9.62E+05	1.00	1.07	1.23	1.23	
30keV	9.90E-03	5.1	1.18E-02	1.72E+06	1.19	0.83	1.04	1.04	
80keV	5.30E-03		2.70E-02	6.40E+06	5.09	1.21	1.19	1.19	
Pb208									
5keV	5.80E-05		1.46E-06	8.63E+01	0.03	0.07	1.05	1.05	
30keV	3.60E-04	8.3	2.63E-04	3.81E+04	0.73	1.82	1.04	1.04	
80keV	3.95E-04		6.52E-04	1.55E+05	1.65	2.58	1.42	1.42	
Bi209									
5keV	1.30E-02		1.51E-02	8.96E+05	1.17	1.17	1.02	1.02	
30keV	2.56E-03	11.7	2.90E-03	4.21E+05	1.13	1.31	1.15	1.15	
80keV	1.75E-03		2.30E-03	5.46E+05	1.32	2.15	1.04	1.04	
Bi210 (SMC)									
5keV	1.80E-02		3.37E-02	2.00E+06	1.87	—	—	1.17	
30keV	6.00E-03	83.3	1.15E-02	1.67E+06	1.91	—	—	1.68	
80keV	4.00E-03		6.79E-03	1.61E+06	1.70	—	—	1.62	

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