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NEUTRON CROSS SECTIONS FOR NUCLEOSYNTHESIS STUDIES

Z. Y. BAO,[1] H. BEER, F. KÄPPELER, F. VOSS, and K. WISSHAK

Forschungszentrum Karlsruhe, Institut für Kernphysik
PO Box 3640, D-76021 Karlsruhe, Germany

and

T. RAUSCHER

Institut für Physik, Universität Basel, Klingelbergstrasse 82
CH-4056 Basel, Switzerland

Previous compilations of (n, γ) cross sections of relevance for neutron capture nucleosynthesis in the big bang and in the slow neutron capture process (s process) have been updated to encompass information available up to December 1998; data references include work in process then and published subsequently. The experimental results for nuclei between H and Bi were critically surveyed, renormalized to selected standard cross sections, and condensed into a set of recommended Maxwellian averaged cross sections for a thermal energy of $kT = 30$ keV. Recent statistical model calculations of the capture cross sections made with the code NON-SMOKER are listed for comparison; these calculated cross sections are adopted in those cases where experimental information is still missing, e.g., for the majority of radioactive nuclei defining the s-process branchings. Maxwellian averages, normalized to our recommended 30 keV averages, were determined for a range of thermal energies between $kT = 5$ and 100 keV. We have also included the calculated stellar enhancement factors due to thermally populated nuclear states as a function of temperature. © 2000 Academic Press

[1] On leave from Chinese Institute of Atomic Energy, Beijing, China.

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CONTENTS

INTRODUCTION

The primary goal of this work is to provide an updated nuclear physics data base for studies of neutron capture nucleosynthesis in the slow neutron capture process (*s* process). The time scale for (n, γ)-reactions being much slower than for β-decays implies that the reaction path follows the stability valley. Accordingly, it involves mostly the stable isotopes in the mass region between H and Bi. The nucleosynthesis is assumed to take place over a range of thermal energies from $kT = 5$ to 100 keV corresponding to the conditions of the related He burning scenarios. However, these data are equally well suited for investigations of primordial element formation in the big bang.

While focused on the experimental cross sections of isotopes in or close to the valley of β-stability, the data base produced in this work is also of interest for explosive nucleosynthesis scenarios related to the regions of unstable nuclei on either side of the stability line. In these scenarios, neutron captures contribute predominantly during the rapid decline of temperature and density at the end of the explosive episodes, i.e., during freeze-out of the respective abundance distributions. Since the freeze-out occurs before the β-decay chains have reached the stable nuclei, the reaction rates for explosive nucleosynthesis have to be calculated by statistical model approaches, which in turn can be tested and improved by comparison with the available experimental data.

The present tabulation of astrophysically relevant (n, γ) rates attempts to update previous compilations [1, 2]. This work also contains a set of improved statistical model calculations using the Hauser–Feshbach code NON-SMOKER [3] including the effect of thermally populated nuclear states.

Experimental Cross Section Data

Status and Progress

The current status of this data base is illustrated in Figs. 1 and 2, which show the stellar (n, γ) rates between Fe and Pb for a characteristic thermal energy of $kT = 30$ keV. Significant progress in experimental techniques in the past decade has led to increasingly accurate data. This is evident from the fact that many of the data points exhibit uncertainties

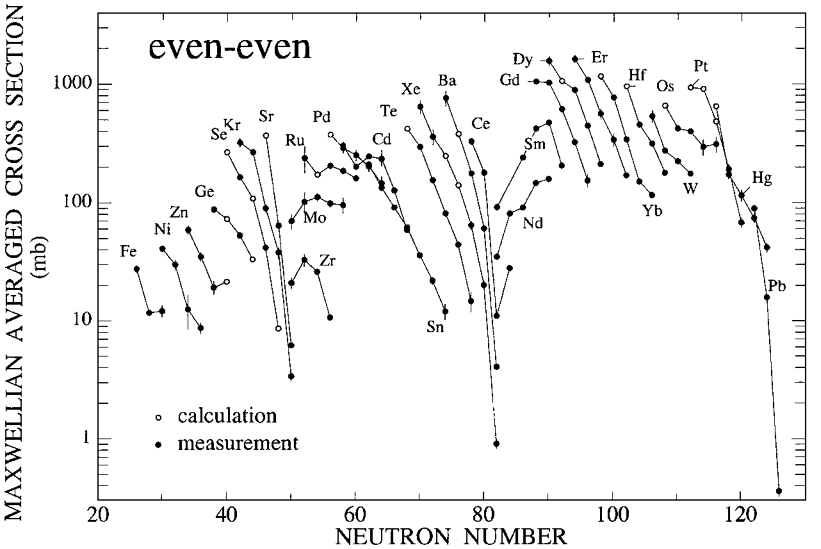

FIG. 1. The 30 keV Maxwellian-averaged (n, γ) cross sections for the even–even nuclei along the s-process reaction path. Experimental data are indicated by black circles; open symbols refer to theoretical values. The solid lines connect isotopes of the same element. Note the deep minima at magic neutron numbers.

smaller than the ±4% indicated by the size of the symbols in Figs. 1 and 2, even in the deep minima at magic neutron numbers. Many of the more recently reported measurements were used to resolve discrepancies among previous results. Nevertheless, additional and more precisely measured cross sections are still needed, particularly in the region from Mo to Pd where large uncertainties persist. In some cases, experimental data are still missing, namely, those for isotopes of Ge and Se as well as for the important s-only nuclei ^{128}Xe and ^{130}Xe. For a third s-only isotope, ^{192}Pt, the only existing experimental information is more uncertain than the corresponding statistical model calculations. Therefore, ^{192}Pt is the only example for which the calculated cross section was preferred over an experimental result in obtaining our recommended value. Nature's rarest stable isotope, ^{180m}Ta, represents another case for which an experimental cross section is urgently needed. Since the origin of ^{180m}Ta is still unknown, the Maxwellian-averaged cross section might decisively define the possible s-process contribution to its production.

Experimental techniques have been improved in several respects, namely in accuracy, sensitivity, and spectroscopic quality. An impressive example for the accuracy that presently can be achieved are the difficult measurements of the small stellar (n, γ) cross sections of the barium isotopes, where a consistent data set results from three independent experiments [4] with final uncertainties of about 3%. This case illustrates that different techniques [5–7] can agree within the quoted uncertainties and that the overall quality of the data can be improved by combining complementary methods. Even smaller uncertainties of typically 1% were achieved in experiments with the Karlsruhe 4π BaF_2 detector (see, e.g., [8, 9]).

Experiments of high sensitivity permit the study of small cross sections and for cases where only small samples could be used. This list includes the time-of-flight (TOF) measurements on light isotopes, e.g., the very small (n, γ) cross sections of ^{12}C [10] and ^{16}O [11], which show the importance of

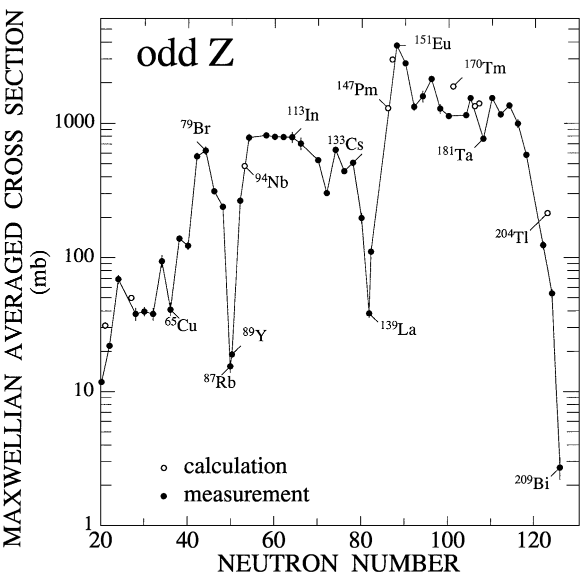

FIG. 2. The 30 keV Maxwellian-averaged (n, γ) cross sections for the odd Z nuclei along the s-process reaction path. Experimental data are indicated by black circles; open symbols refer to theoretical values. The solid line drawn to guide the eye emphasizes the strong effect of neutron shell closures.

the direct capture (DC) mechanism in this mass region. Also, determination of the small cross sections of neutron magic nuclei could be improved by high-resolution TOF measurements, e.g., on ^{138}Ba and ^{208}Pb [12], as well as by series of activation measurements [13, 14].

The standard activation method has been extended by the fast cycling technique [15]. With this new method it has been possible to investigate short-lived residual activities with half-lives down to 1 s. This method was applied especially to determine the small cross sections of light neutron-rich isotopes from ^{14}C to ^{50}Ti [16]. The excellent sensitivity of the activation technique also allowed the first successful measurement on a radioactive sample with a half-life of less than 5 yr [17]. The main difficulties of such measurements, namely the high γ-background due to the sample activity, the radiation hazards related to sample handling, and the fact that suitable samples are not easily available, can be considerably reduced in activation measurements where samples of about 100 ng or some 10^{14} atoms are sufficient. Therefore, such studies could benefit from future radioactive ion beam facilities where intensities of 10^9 s^{-1} allow the production of appropriate samples within a few hours, presumably with considerably better purity than can be achieved by radiochemical methods.

Neutron capture events leading to isomeric states could be identified for the first time in a TOF experiment covering the keV region on a series of Yb isotopes [18]. Thanks to the good energy resolution of the Karlsruhe 4π BaF_2 detector, capture γ-ray cascades to the ground and isomeric states could be distinguished by their different sum energies, a novel possibility that was not available to traditional techniques for (n, γ) measurements using Moxon–Rae detectors or the pulse height weighting method. The spectroscopic quality of these new experiments will allow the study of important effects of long-lived isomers on some s-process abundance patterns, since these are determined by the respective partial cross sections [18]. Moreover, these data are also useful as tests of the γ-decay spectra predicted by statistical model calculations.

Standardization

Cross section measurements are often carried out relative to reference or "standard" cross sections in order to avoid the difficult neutron flux determination in the keV region. These standard cross sections have been improved by more recent measurements. These better determined standard cross sections usually imply an adjustment of older capture cross section results. Moreover, the use of updated standard cross sections implies a certain reduction of the systematic uncertainties quoted in the original publications.

By far the most common standard is the (n, γ) cross section of ^{197}Au. We have adopted the energy-dependent cross section of Macklin [19], which is given with an uncertainty of 3%, but have normalized these data by a factor of 0.990 to the result of an activation measurement near 25 keV [20], which is quoted with an uncertainty of 1.5%. The almost perfect agreement of the two measurements supports the reliabilty of this standard cross section. Note that the values listed in the ENDF/B-V evaluation are significantly different, since they refer to a superseded version of Macklin's data [19]. All measurements based on the gold standard have been renormalized as specified in the "References and Comments" column of Table I. Occasionally, for some measurements the ^{127}I(n, γ) cross section has also been used as a secondary standard. These measurements are renormalized to the iodine cross section recommended in this work.

Other standards, i.e., the ^{6}Li(n, α), ^{10}B(n, α), ^{10}B$(n, \alpha\gamma)$, and ^{235}U(n, f) cross sections, were mostly used to determine the cross section shape in TOF measurements at white neutron sources, where the normalization can be performed via the saturated resonance technique. Basic references to these standards are given in the explanations to Table I, and the corresponding updates that were used in the various experiments can be found in the original literature. Possible, minor differences in the adopted standards have little impact for the stellar rates since all these cross sections exhibit essentially a smooth $1/v$ dependence in the energy range below 200 keV which is most relevant for astrophysical applications.

Through the procedure discussed below, the experimental data were converted into Maxwellian averages for a thermal energy of $kT = 30$ keV, which is commonly used for s-process comparisons.

Model Calculations

Despite the progress in experimental techniques for neutron capture measurements, cross section calculations remain indispensable for s-process studies in two respects: for determining the (n, γ) rates of short-lived branch point nuclei with hard γ-decay components such as ^{134}Cs or ^{148}Pm, and for obtaining the (possible) differences between the laboratory values and the actual stellar cross sections. Naturally, theoretical calculations are much more important for explosive scenarios with reaction paths off the stability valley, regions where experimental data are still completely missing.

Short-Lived Nuclei

Neutron capture rates between Fe and the actinides are usually calculated by means of the statistical Hauser–

Feshbach model. The application of this approach is appropriate provided the nuclear level density in the contributing energy window around the peak of the projectile energy distribution is sufficiently high to justify a statistical treatment. The critical level density is usually estimated between 5 and 10 MeV^{-1} [21]. Furthermore, the compound nucleus picture will only dominate when the energy of the incident particle is low enough ($\leq$20 MeV). While the latter point is practically always satisfied in astrophysical environments, the level density may fall below the critical value in certain nuclei lighter than Fe, at shell closures, and for very neutron rich isotopes near the drip line with correspondingly low separation energies. In these cases, single resonances or direct capture contributions will become significant and have to be treated individually.

The quality of the Hauser–Feshbach approach depends critically on the model parameters used. For applications in or near the stability valley, *local* parameter sets were constructed from experimentally known quantities in rather limited mass regions [22–24]. In this way, consistent parameters can be obtained by interpolation among similar nuclei. Sensitivity studies in several mass regions showed that uncertainties of typically 25% are obtained with this phenomenological procedure, as illustrated by the example of the Ce isotopes [13]. Accordingly, such data are quoted with error bars in Table I.

For nuclei far from stability which are involved in explosive scenarios, a different strategy has to be used for establishing a *global* parameter systematics. In this case, the corresponding prescriptions are formulated on theoretical grounds, including as many basic nuclear physics concepts as possible. The major difficulty in constructing these global parameter sets is the prediction of nuclear level densities. The parameterization adopted for the statistical model code NON-SMOKER [3] is based on a modified back-shifted Fermi-gas model [21] with an energy-dependent level density parameter and with vanishing shell effects at high excitation energies [25, 26]. Using global input parameter predictions without considering specific experimental information, the NON-SMOKER calculations agree with the available measurements with an average deviation of about 40% as shown in Fig. 3 for the Maxwellian averages. These theoretical results [27] are given for all isotopes listed in Table I, except for those cases where the level density was not sufficient to justify the applicability of the statistical approach [21]. For comparison, the corresponding values from previous calculations [28, 29] are included as well.

For several isotopes, where only theoretical data are available, the recommended values in Table I are marked by an asterisk. These values were derived by comparing the theoretical NON-SMOKER values to available experimental data

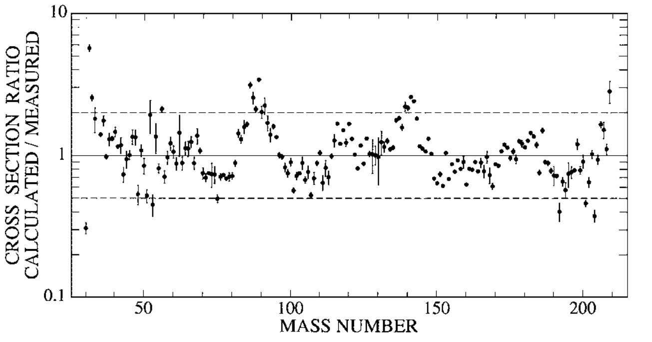

FIG. 3. Comparison of Maxwellian-averaged (n,γ) cross sections for 30 keV thermal energy calculated with the statistical model code NON-SMOKER [3] with experimental data. The dashed lines are drawn to illustrate that the calculations tend to overestimate the cross sections near magic neutron numbers by up to a factor two, but are much more reliable elsewhere.

for nearby nuclei. The resulting deviation pattern is clearly seen to depend on the neutron number of the nucleus involved [21]. The deviations are most pronounced at magic numbers and indicate a deficiency in the estimates for the underlying nuclear structure (microscopic corrections). Because of the dependence on neutron number, correction factors for the purely theoretical cases can be derived from an average over known deviations of nearby nuclei with similar neutron numbers. For each isotope with neutron number N, a weighted average $\tilde{\Delta}$ of the ratios $\Delta_i = \sigma^i_{\text{theo}}/\sigma^i_{\text{exp}}$ of n experimentally known isotopes i in the interval $N-1 \leq N_i \leq N+1$ was computed,

$$\tilde{\Delta} = \frac{\sum_i g_i \Delta_i}{\sum_i g_i}, \tag{1}$$

with the weighting function

$$g_i = 2^{-(N_i-N)^2}.$$

(If there were fewer than three known nuclei in the averaging interval, its width was systematically increased until it contained at least three experimentally known nuclei.) As usual, the error was taken to be the standard deviation δ from the mean. For a weighted distribution it is approximately given by

$$\delta = \left(\frac{\sum_i g_i(\tilde{\Delta} - \Delta_i)^2}{(n-1)}\right)^{1/2}. \tag{2}$$

The averaged deviations $\tilde{\Delta} \pm \delta$ were assumed to apply to the NON-SMOKER cross sections for which no experimental data were available, and were adopted for calculating the respective recommended values and the corresponding errors.

Other cross section tables have been assembled by the LBNL Isotopes project and are disseminated on the Nuclear Astrophysics homepage at http://ie.lbl.gov/astro.html [30]. A recent set of nuclear reaction rates calculated with the statistical model code MOST [31] can be found at http://astro.ulb.ac.be/iaa.htm.

Stellar Cross Sections

The second aspect where statistical model calculations are indispensable refers to the effect of temperature on the reaction rates. In the intense photon bath at the *s*-process site, low-lying nuclear levels can be significantly populated. Neutron captures on these states and the competition with new channels for downward inelastic scattering—the so-called *superelastic* scattering, where neutrons gain energy—may cause non-negligible differences between the laboratory cross section and the actual value in the stellar environment. These differences can be accounted for by comparing Maxwellian averages of the ground state cross section and the effective cross section for a thermally equilibrated nucleus. The corresponding ratio is denoted as the temperature-dependent stellar enhancement factor (SEF) for the relevant stellar cross sections. For all isotopes, the SEFs are given in Table II in a separate line below the respective cross section values.

For ^{180}Ta, the isomeric $J^{\pi} = 9^{-}$ state lives much longer than the ground state of the nucleus. Therefore, the isomeric state can be studied in the laboratory and it is more useful to relate the SEF to this state instead of the ground state in this case. The SEF values given in Table II for ^{180}Ta are derived from the ratio of the Maxwellian-averaged cross sections (MACS) of a thermally populated target to the MACS of a pure isomeric state.

The SEF corrections are illustrated in Fig. 4 for the standard thermal energy of $kT = 30$ keV commonly used in *s*-process comparisons. About 25% of all isotopes involved in the *s* process show SEF corrections of more than 2%, comparable to the uncertainty of a careful laboratory measurement (upper panel of Fig. 4). Significant corrections are to be expected for odd and/or deformed nuclei with excited states well below 100 keV. The corresponding ensemble of *s*-only isotopes is little affected, except for the mass region $160 < A < 190$ (lower panel of Fig. 4).

The only cases for which this correction has been experimentally investigated are the ^{187}Os and ^{191}Os cross sections [32–36], which are important for the Re/Os chronometer. In view of the importance of the SEF effect, at least the crucial

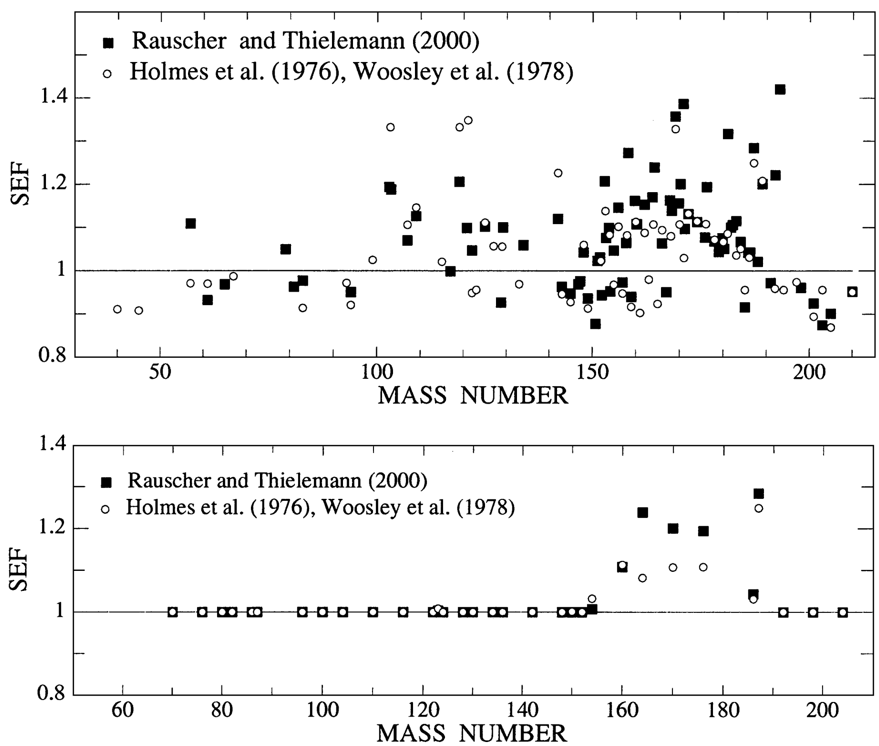

FIG. 4. Stellar enhancement factors (SEF) for (n, γ) cross sections at 30 keV thermal energy. Top: All nuclei in each calculation with SEF corrections of more than 2%. Bottom: Enhancement factors for the important *s*-only nuclei. Data are from Refs. [28, 29] (open symbols) and [27] (black squares).

s-only isotopes should also be studied in detail, including complementary measurements of the elastic and inelastic cross sections. This broader data basis would then allow for a better understanding of whether the cross section enhancements calculated with the statistical model are sufficiently reliable.

Comparison with a previous calculation [28] shows significantly different SEF values only in about 15 cases including the s-only isotopes ^{164}Er, ^{170}Yb, and ^{176}Hf as well as the branching point nuclei ^{151}Sm and ^{192}Ir. To some extent, the differences can be explained by the considerably improved information on excited states, since more accurate and complete data on excited states and the revision of previously misassigned spin values have an impact on the calculated SEFs. This is especially true for ^{151}Sm, where no information had been available for the ground state spin and the excited states [37]. In the present calculation, a revised ground state spin and the first 20 excited states were included. For the other cases, the reason for the differences is not as clear because the level data revisions were not that drastic. The different optical potential used (equivalent square well in Ref. [28] and semi-microscopic optical potential [38] in NON-SMOKER) has some influence. Likewise, numerical differences in the treatment of the energy grid and the integration may be another minor source of disagreement but will be hard to trace. In general, the present calculations appear more reliable since they are based on updated information on ground and excited states.

In a few cases, where the existing level schemes are insufficient to discuss the problem of thermal equilibration in a quantitative way, cross sections are given for ground and isomeric states separately. Examples of this type are ^{115}Cd and ^{148}Pm.

Direct Capture

As previously mentioned, the DC mechanism becomes important at the low level density of light nuclei, at or near magic neutron numbers, and for very neutron rich isotopes. Another prerequisite for a significant DC component is the absence of strong resonances close to the relevant energy window which would contribute to the cross section directly or by their tails. Widely spaced resonances are mainly found in light isotopes and at the low separation energies of nuclei close to the drip line. Significant DC components are also favored by low projectile energies, as, e.g., in the reaction ^{16}O(n,γ). However, even for heavy nuclei there are examples where the stellar cross section can only be explained by the sum of single resonances and a DC component, e.g., in ^{208}Pb [12]. In some cases of widely spaced resonances both DC in between the resonances and resonance capture by individual resonances could be determined, e.g., for ^{26}Mg [39] and ^{46}Ca [40].

Depending on the final states, the shape of the neutron capture cross section can differ from the expected $1/v$ behavior resulting from pure s-wave capture. Capture of p-wave neutrons leads to a cross section which increases with projectile energy. Superposition of s- and p-wave components can, therefore, result in an upturn in the excitation function above the energy at which captures to both states contribute equally. For instance, this was shown for ^{22}Ne [16] and ^{26}Mg [39].

Maxwellian-Averaged Cross Sections

The methods for converting the experimental cross section data into proper stellar values were adopted from Beer et al. [2], where they are described in great detail. Therefore, a brief summary of the main features may suffice here.

The stellar neutron capture rate

$$\langle \sigma v \rangle = \int_0^\infty \sigma v \Phi(v)\, dv \tag{3}$$

is determined by integration over the velocity distribution $\Phi(v)\, dv$. Most neutron capture scenarios are associated with dense, He rich environments where neutrons are quickly thermalized, regardless of their production reactions. The resulting Maxwell–Boltzmann distributions

$$\Phi(v)\, dv = \frac{4}{\sqrt{\pi}} \left(\frac{v}{v_T}\right)^2 \exp\left(-\frac{v}{v_T}\right)^2 d\left(\frac{v}{v_T}\right) \tag{4}$$

refer to thermal energies ranging between $kT = 8$ and 80 keV for the various s-process scenarios [4].

Maxwellian-averaged stellar (n,γ) cross sections $\langle\sigma\rangle$ are defined as

$$\langle\sigma\rangle_{kT} = \frac{\langle \sigma v\rangle}{v_T} = \frac{2}{\sqrt{\pi}} \frac{\int_0^\infty \sigma(E_n) E_n \exp(-E_n/kT)\, dE_n}{\int_0^\infty E_n \exp(-E_n/kT)\, dE_n}, \tag{5}$$

where $E_n = E_{n,\mathrm{lab}}\,(A/(A+1))$ is the total kinetic energy in the center-of-mass system, $E_{n,\mathrm{lab}}$ is the laboratory neutron energy, $v_T = \sqrt{2kT/m}$ is the mean thermal velocity, and m is the reduced mass for the neutron-target system.

As noted before, the Maxwellian-averaged cross sections of a number of isotopes have to be corrected by a temperature-dependent stellar enhancement factor

$$SEF(T) = \frac{\langle\sigma\rangle^{\mathrm{star}}}{\langle\sigma\rangle_{kT}}, \tag{6}$$

which takes into account neutron capture on excited states in a thermally equilibrated nucleus, before being used in astrophysical models.

The more common form of Eq. (5)

$$\langle\sigma\rangle_{kT} = \frac{\langle\sigma v\rangle}{v_T} = \frac{2}{\sqrt{\pi}}\frac{1}{(kT)^2}\int_0^\infty \sigma(E_n)E_n \exp(-E_n/kT)\, dE_n \quad (7)$$

shows that the (n, γ) cross section as a function of energy, $\sigma(E_n)$, has to be determined over a sufficiently wide energy interval. In order to avoid uncertainties due to truncated cross section measurements, data between $E_n \approx 0.1$ and 500 keV have to be considered in the integral to cover the full range of thermal energies from $kT = 5$ to 100 keV. This wide energy range implies that most Maxwellian-averaged cross sections had to be evaluated stepwise by considering the contributions from different energy regions and different reaction mechanisms separately. This was performed using a procedure developed by Winters and Macklin [41] which has been applied in Ref. [2] as well:

$$\langle\sigma\rangle_{kT} = \frac{\langle\sigma v\rangle}{v_T} = \frac{2}{\sqrt{\pi}}\frac{1}{(kT)^2}[J_1 + J_2 + J_3 + J_4 + J_5]; \quad (8)$$

here J_1 and J_2 represent the contributions from distant resonances situated outside the astrophysically relevant energy range, including the tails of subthreshold resonances if necessary, and contributions from resonances inside this interval, respectively. These components were evaluated by numerical integration of the Breit–Wigner formula. As noted in Ref. [2] the Breit–Wigner form is particularly important for broad resonances. If not explicitly specified, complementary data for the resonance region were taken from Ref. [42].

In a number of cases, it was important to treat the resonance part and the DC components J_3 for different partial waves separately in order to obtain the correct energy dependence (for examples see Ref. [2]). For the majority of nuclei between Fe and Bi, the Maxwellian-averaged cross section is dominated by the smooth cross section beyond the resonance region. These contributions, J_4, were evaluated from measured average cross sections by numerical integration of Eq. (7). Due to the rapid decline of the (n, γ) cross sections, experimental data are often restricted to neutron energies below about 300 keV. Since the contributions J_5 from still higher energies to the Maxwellian average are small, it is often sufficient to extrapolate the experimental cross sections by means of statistical model calculations.

Where the above criteria had been considered, the respective Maxwellian averages have been adopted directly from the original publications.

With the above procedures, the available experimental information was converted case by case into the Maxwellian averages listed in column 2 of Table I. The respective uncertainties were essentially evaluated from the systematic errors quoted for the experimental data. Since most publications were not detailed enough with respect to error estimates, no critical judgment on these was attempted. Nevertheless, these error estimates appeared fairly realistic in general. The subsequent columns provide additional information on renormalized data, references, year of publication, and some indications on the experimental techniques.

The individual results for each isotope were condensed into the recommended values listed in the last column of Table I. In most cases this choice is straightforward due to obvious preferences resulting from the quality of the respective data. If cross sections of comparable accuracy are available, the recommended values represent a weighted average with uncertainty assignments that consider the individual uncertainties as well as the respective deviations from the mean. In relatively few cases, where there are large discrepancies among various data sets, the recommended values are based on a judgment of the experimental techniques as well as of the general cross section trends defined by neighboring isotopes.

In view of the fact that it is hardly possible to deduce the recommended values by strictly objective criteria, different choices may be obtained by means of the individual data listed in column 2.

In general, astrophysical applications require (n, γ) rates for a range of thermal energies. Accordingly, Maxwellian averages for thermal energies from $kT = 5$–100 keV are given in Table II. These were determined from the experimental information on $\sigma(E)$ taken from the references quoted in the last column of Table II. Where necessary, these data were complemented by statistical model calculations. For all isotopes the final Maxwellian averages were normalized to fit the recommended $kT = 30$ keV values listed in Table I. The respective stellar enhancement factors are given in the line below the corresponding cross section values.

Recommendations

The persisting data needs in this field of astrophysics are summarized in a list of recommended (n, γ) measurements, which concentrate on the following areas:

- All s-only nuclei, since these are the key isotopes for any s-process investigation including the analysis of the s-process branchings. The s-process branchings are important because they provide direct clues with respect to stellar neutron density, temperature, and pressure and allow one to characterize the He-burning zones, where the s process actually takes place. A complete set of accurate data with experimental uncertainties of 1% is, therefore, needed for this ensemble.

• Elements for which isotopic anomalies have been found in meteoritic inclusions. These signatures are characteristic of specific nucleosynthetic processes and should be investigated with particular emphasis. For this purpose, the cross sections have to be determined with uncertainties of 1% for decoding the full information contained in the respective abundance patterns. However, the present status is far from adequate, particularly for the lighter elements oxygen, neon, magnesium, silicon, calcium, titanium, and zirconium.

• Nuclei at or near magic neutron numbers $N = 50, 82$, and 126, which act as bottlenecks for the reaction flow in the main s-process region between Fe and Bi. These data should be known with uncertainties of better than 3%.

• Abundant light isotopes below Fe, which may constitute crucial neutron poisons for the s-process. Of particular importance are ^{16}O, ^{18}O, and ^{22}Ne.

• Nuclides for which the DC process accounts for a significant fraction of the astrophysical reaction rate. For example, two thirds of the ^{208}Pb s-process (n, γ) rate is due to direct capture, which is very difficult to detect in TOF measurements. Similar cases with significant DC contributions are ^{14}C, ^{16}O, ^{88}Sr, and ^{138}Ba.

• Nuclei with as yet unmeasured cross sections, including the s-only isotopes ^{128}Xe, ^{130}Xe, and ^{192}Pt. These gaps in the experimental data, as well as the uncertain cross sections of numerous nuclei, especially in the mass region below Fe, around $A = 100$, and near the end of the s-process region from Pt to Bi, should be determined to the 5% level.

• Last, but not least, enhanced efforts should be directed to measurements of unstable nuclei of relevance for the reliable interpretation of the branchings in the reaction path of the s process. In addition to the activation technique, the very high neutron fluxes available at spallation neutron sources appear to be promising options for such measurements [43, 44]. From a list of possible measurements, priority should be given to the important branch points ^{79}Se, ^{147}Pm, ^{151}Sm, ^{163}Ho, ^{170}Tm, ^{171}Tm, ^{179}Ta, ^{204}Tl, and ^{205}Pb. These cases are of immediate relevance to s-process analyses and should not present unexpected experimental problems.

In addition to the total (n, γ) cross sections listed above, partial cross sections leading to long-lived isomers may also be of immediate consequence for several branchings. A well-known example is the population of the 10.8 yr isomer in ^{85}Kr, which determines the probability for neutron captures to the neutron magic isotope ^{86}Kr. So far, this partial cross section has been determined by activation for a particular thermal energy only. Therefore, complementary TOF measurements with a $4\pi\ \gamma$ detector such as the Karlsruhe BaF_2 array are important for determining the energy dependence of partial cross sections. This information is crucial for describing the branching pattern in the complex He burning scenarios suggested by stellar models.

Finally, elastic and inelastic scattering data for a variety of isotopes are definitely needed for establishing a quantitative set of stellar enhancement factors, in analogy to the treatment of the Os isotopes mentioned above.

Parallel to the efforts for completing the experimental data base, necessary improvements on the theoretical side would include the following:

• *Local systematics* of nuclear properties relevant to the calculation of astrophysical reaction rates should be extended. This includes level density systematics (and the energy dependence of parity distributions), parametrization of giant dipole resonance widths and energies, and neutron potentials. Experimental data should be obtained and then described in simple, phenomenological models, taking into account a possible extrapolation toward very neutron-rich nuclei.

• The consistent treatment of *SEFs and superelastic scattering* should be emphasized by using elastic and inelastic scattering data (which, hopefully, will be measured in the future). So far, only the population of the states is considered in most SEF calculations but not the additional superelastic channels.

• Efforts toward *improved microscopic calculations* of the relevant properties, such as masses, shell and microscopic corrections for level density calculations, level schemes, and optical potentials, should continue.

• *Comprehensive DC cross sections* should be calculated based on systematics of neutron optical potentials for DC and of scattering phase shifts. Also spectroscopic factors and information on nuclear levels, either from microscopic models or from experiment, are important in this context.

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EXPLANATION OF TABLES

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

The collected data cover the period from 1971 through 1998; included are some works which were still in progress in 1998 but which have subsequently been published and thus publication dates are up to 2000.

Isotope	Mass number and element symbol of the target isotope.
$\langle\sigma v\rangle/v_T$	Maxwellian-averaged cross section in millibarn (10^{-27} cm^2) for $kT = 30$ keV ($T = 0.348 \times 10^9$ K). $v_T = (2kT/m)^{1/2}$, where m is the reduced mass. "Original" are 30 keV data based on the published cross sections except where indicated otherwise; "renorm" are data for which the reference or standard cross section was meanwhile improved. A list of the adopted standard cross sections and the corresponding normalization factors used here is given below.

"References and Comments" pertain to the tabulated cross sections; see References for Tables for complete citations, and *note that these references are tagged with a separate set of numbers different from those used in the text section.*

The letters and numbers preceding the reference(s) give information on how the corresponding cross section has been obtained:

a	Calculated from resonance parameters with the formula from Ref. [45]
b	Calculated from smooth cross sections with model fit: $\ln(\sigma) = a + a_1[\ln(E_n)] + a_2[\ln^2(E_n)]$
c	Directly quoted from the reference itself
r	Recalculated for $kT = 30$ keV with the code described in Ref. [2] after renormalizing the original data to updated standard cross sections (see below).
1	Including k from Ref. [46], where k is a correction factor which has been applied to the originally reported cross section.
2	Including k from Ref. [47], where k is a correction factor which has been applied to the originally reported cross section.
e	Evaluated value taken directly from the reference.
s	Semiempirical estimates given in the reference.
t	Theoretical value.

For experimental papers, the comments following the year of publication refer to:

Method for neutron production:

VdG, Pelletron	Neutrons produced by ^{7}Li(p , n)^{7}Be or ^{3}H(p , n)^{3}He at a Van de Graaff or Pelletron electrostatic accelerator
Linac	Neutrons produced by (γ, n) reaction at an electron linear accelerator
Reactor	Thermal or subthermal reactor neutrons
Critical Pile	Integral measurements in fast neutron fields
F.N.B.	Filtered neutron beam from a reactor
Sb–Be	Antimony–beryllium photoneutron source
N.S.D.	Neutron slowing down spectrometer

Technique for neutron energy and cross section determination:

TOF	Time of flight method
Sat.	Saturated resonance method
Act.	Activation technique

EXPLANATION OF TABLES continued

1/v(kT) — Activation in a quasi-stellar spectrum for $kT = 25A/(A+1)$ keV; extrapolation to $kT = 30$ keV by differential (n,γ) cross section; if this is unknown a $1/v$ dependence is assumed.

1/v(E) — Activation in filtered neutron beam, extrapolation to $kT = 30$ keV as above.

Reference standard and cross section adopted in the original work:

^{197}Au(n, γ) cross section (mb): The more frequently used standards and their renormalization factors relative to the ^{197}Au standard cross section at $kT = 30$ keV [20] of 582 ± 9 mb (referred to as Au: [6] in Table I) used in the present work are as given below.

Notation in Table I	Source	Year	Integration(2–500 keV) $kT = 25$ keV	Integration(2–500 keV) $kT = 30$ keV	Integration(therm.-infinity) $kT = 25$ keV	Integration(therm.-infinity) $kT = 30$ keV	Normalization to Refs. [19, 20]
Au: B-IV	ENDF/B-IV	1975	672 ± 17	610 ± 15	696 ± 18	625 ± 16	0.931
Au: B-V	ENDF/B-V	1979	657 ± 16	596 ± 15	676 ± 17	610 ± 16	0.954
Au: [38]	[19]	1982	618 ± 17	562 ± 15	655 ± 16	588 ± 15	0.990
Au: [6,38]	[19, 20]	1988			648 ± 10	582 ± 9	1.000

^{127}I(n,γ) cross section: the recommended value of the present work with $1/v(E)$ extrapolation is adopted.
^{10}B(n,α) and ^{10}B$(n,\alpha+\gamma)$ cross sections: from Refs. [48–50] and updates as cited in the identified publications.
^{6}Li(n,α) cross section: from Refs. [51–53] used at ORELA, and from Ref. [54] (ENDF/B-V and JENDL-2) used at JAERI.
^{235}U(n,f) cross section: from Ref. [55] and updates as cited in the identified publications.

Note that, except for the entries below "Notation in Table I," all the reference numbers up to this point refer to those at the end of the introductory text of this article.

The final column of this Table gives

$\langle\sigma v\rangle/v_T$ recommended — Maxwellian-averaged cross section in millibarn (10^{-27} cm^2). "*" indicates that for the particular isotope, only theoretical data are available: the recommended value is derived by comparing NON-SMOKER results to nearby experimental data (for details see text). "p" indicates a partial cross section for the isotope, either to the ground state (g) or to the isomer (m). For an explanation of the quoted errors, see the Introduction.

TABLE II. Maxwellian-Averaged (n,γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

The data adjacent to each isotope in this Table are values of Maxwellian-averaged cross sections $\langle\sigma v\rangle/v_T$ [Eq. (5)] at $kT = 5$–100 keV, in millibarn (10^{-27} cm^2). Below these cross sections are the corresponding stellar enhancement factors (SEF) [Eq. (6)]. Up to ^{28}Si SEF corrections are negligible and therefore omitted.

The cross section data are normalized to the recommended Maxwellian-averaged cross sections at $kT = 30$ keV of Table I. The temperature dependence was obtained in the following ways:

—directly quoted from the given reference;
—quoted from the tabulations of Ref. [2];
—calculated with the code of Ref. [2] or with the formula from Ref. [45];

EXPLANATION OF TABLES continued

—calculated from smoothly varying cross sections using a model fit: $\ln(\sigma) = a + a_1[\ln(E_n)] + a_2[\ln^2(E_n)]$;

—calculated with the formula and constants from Refs. [28, 29] or directly quoted from Refs. [3, 27].

The stellar enhancement factor [Eq. (6)] represents the ratio of the stellar rate of a particular (n, γ) reaction over its laboratory value (target in ground state). These data are taken from Refs. [3, 27].

The “References and Comments” pertain to the cross sections; see References for Tables for complete citations, and *note that these references are tagged with a separate set of numbers different from those used in the text section.* The letter preceding the publication year gives information on how the corresponding cross section has been obtained, as follows:

e The Maxwellian-averaged cross sections (MACS) from $kT = 5$ to 100 keV are obtained from experimental data; the relative uncertainties are similar to those quoted for the 30 keV data.

t The MACS from $kT = 5$ to 100 keV are obtained from theoretical calculations with corresponding uncertainties between 25 and 50% in most cases.

e + t The MACS from $kT = 5$ to 100 keV are derived from calculated cross sections, which are then normalized to experimental data, e.g., to the values at $kT = 25$ keV obtained in activation measurements. In these cases the uncertainties should be linearly increased below 25 and above 30 keV to reach about 30% at the extreme kT values.

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
^{1}H	0.254±0.020		b [1]	1995, Pelletron, TOF, Au:ENDF/B-VI and [2]	0.254±0.020
^{3}He	0.0091±0.0008 (24.5keV)	0.0076	c [3]	1991, F.N.B., Act., 1/v(E) Au: 623±9mb(24.5keV)	0.0076±0.0006
	0.012±0.006 (25keV)		c [4]	1979	
^{7}Li	0.0366±0.0026 (54 keV)	0.042	r [5]	1998, VdG, Act., Au:[6] Recalcul. including contrib. of reson.(254keV) 101.9±7(5meV), Reactor, Act., ^{6}Li(n,α)	0.042±0.003
	0.037±0.004		r [7]	1996, Linac, TOF, ^{6}Li(n,α); Au:Sat	
	45.4±3.0 (Thermal)	0.042	c [8]	1991, Reactor, 1/v(E), ^{1}H(n,γ):332±1mb(therm.)	
	0.039±0.006		c [9]	1991, Pelletron, TOF, Au:Sat.	
	0.021±0.002 (24.5keV)	0.053	c [10]	1989, VdG, Act., 1/v(kT), Au:[6]	
	40.0±8.0 (Thermal)	0.037	c [11]	1959, VdG, Act., 1/v(E), ^{6}Li(n,α)	
^{12}C	0.0154±0.001		c [12]	1994, Pelletron, TOF, Au:B-V [2]	0.0154±0.001
	0.0168±0.0021		c [13]	1991, VdG, TOF, Au:B-V	
	0.0032–0.014		c [14]	1990, Linac, TOF, ^{6}Li, Au:Sat.	
	0.2±0.4		e [15]	1971	
^{13}C	0.0198±0.0037 (25.7keV)	0.021	b [16]	1997, Pelletron, TOF, Au:B- VI Recalcul. including contrib. of p-wave [17] and of resonance at 153 keV [18]	0.021±0.004
	0.020±0.009 (40keV)	0.015	r [18]	1990, Pelletron, TOF, Au:B-VI Recalcul. including contrib. of reson.(153keV)	
	0.23±0.1		c [19]	1981, Calcul. from data of [20]	
	0.12±0.04		a [21]	1971, Linac, TOF, ^{127}I:BNL-325,2nd(1966)	
^{14}C	0.00172±0.00043 (23.3keV)	0.00152	r [22]	1992, VdG, Act., Au:[6]	0.0015±0.0004
	0.100 (25keV)	0.092	t [23]	1990	
^{14}N	0.041±0.06		r [19]	1981, Calcul. from data of [20]	0.041±0.06
^{15}N	0.00532±0.00046 (25keV)	0.0058	r [24]	1996, VdG, Act., Au:[6]	0.0058±0.0006
^{16}O	0.038±0.004		c [25]	1995, Pelletron, TOF, Au:B-V [2]	0.038±0.004
	0.00086±0.0001		r [19]	1981, Calcul. from data of [20]	
	0.0002±0.0001		c [21]	1971, Linac, TOF, ^{127}I:BNL-325,2nd(1966)	
	0.002±0.0003		t [26]	1992	
^{18}O	0.00793±0.0007 (25keV)	0.00886	r [27]	1996, VdG, Act., Au:[6]	0.00886±0.0008
^{19}F	5.8±1.2		r [28, 29]	1980, Linac, TOF, ^{6}Li, Au:Sat., Recalcul. including data of [20]	5.8±1.2

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	6.2±1.2		c [30]	1973, Linac, TOF, ^{6}Li, Au:Sat.	
	5.6±0.4		e [15]		
^{20}Ne	0.119±0.011		c [31]	1988, Linac, TOF, ^{6}Li, Au:Sat.	0.119±0.011
	1.5±0.7	1.4	c [32]	1983, VdG, TOF, Au:B-V	
^{21}Ne	1.6±0.9	1.5	c [32]	1983, VdG, TOF, Au:B-V	1.5±0.9
^{22}Ne	0.059±0.0057		c [33]	1991, VdG, Act., $1/v$(kT), Au:[6]	0.059±0.006
	0.045 – 0.24		c [31]	1988, Linac, TOF, ^{6}Li, Au:Sat.	
	0.9±0.7		c [32]	1983, VdG, TOF, Au:B-V	
^{23}Na	2.1±0.2		r [34]	1978, Linac, TOF, ^{6}Li, Au:Sat. Recalcul. including data of [20]	2.1±0.2
	1.6±0.2		a,2 [35]	1976, VdG, TOF, ^{10}B+^{6}Li data at 20≤E≤60 keV from [34], k=1.0360	
	2.7±0.4		e [15]	1971	
^{24}Mg	3.3±0.4		r [36]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=0.9535 Recalcul. including data of [20]	3.3±0.4
	4.2±0.3		c,1 [36]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=0.9535	
	4.0±1.0		e [15]	1971	
^{25}Mg	6.4±0.4		r [36]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=0.9535 Recalcul. including data of [20]	6.4±0.4
	6.5±0.4		c,1 [36]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=0.9535	
^{26}Mg	0.1137±0.008 (52keV)	0.116	c [37]	1999, VdG, Act., Au:431mb(52keV) [38]	0.126±0.009
	0.124±0.008 (25keV)	0.131	c [39]	1998, VdG, Act., Au:[6, 40]	
	0.084±0.005		r [36]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=0.9535 Recalcul. including data of [20]	
	0.086±0.005		c,1 [36]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=0.9535	
	12		e [15]	1971	
^{26}Al	7.3		t [44]	2000	3.7*
	2.9		t [45]	1978	
^{27}Al	3.89±0.27	3.74	r [41]	1984, VdG, TOF, Au:B-V	3.74±0.3
	3.55±0.3		r [34, 29]	1978, Linac, TOF, ^{6}Li, Au:Sat. Recalcul. including data of [20]	
	3.96±0.3		r [34]	1978, Linac, TOF, ^{6}Li, Au:Sat.	
	4.6±0.8		e [15]	1971	
^{28}Si	2.9±0.3		r [42, 43]	1976, Linac, TOF, ^{6}Li, Au:Sat. Recalcul. including data of [20]	2.9±0.3
	3.8±1.0		e [15]	1971	
	5.5		t [44]	2000	
	2.4		t [45]	1978	
^{29}Si	7.9±0.8		r [42, 43]	1976, Linac, TOF, ^{6}Li, Au:Sat. Recalcul. including data of [20]	7.9±0.9
	10.4		s [15]	1971	
	8.8		t [44]	2000	
	5.4		t [45]	1978	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
^{30}Si	6.5±0.6		r [43]	1975, Linac, TOF, ^{6}Li, Au:Sat. Recalcul. including data of [20]	6.5±0.6
	1.9		e [15]	1971	
	2.0		t [44]	2000	
	1.5		t [45]	1978	
^{31}P	1.74±0.09		c [46]	1985, Linac, TOF, ^{6}Li+^{235}U:B-V; Au:Sat.	1.74±0.09
	7±1.0		e [15]	1971	
	11.1		t [44]	2000	
	7.9		t [45]	1978	
^{32}S	4.1±0.6		r [47]	1980, Linac, TOF, ^{6}Li, Au:Sat. Recalcul. including data of [20]	4.1±0.2
	4.2±0.2		c [47]	1980, Linac, TOF, ^{6}Li ;Au:Sat.	
	3.0±0.6		e [15]	1971	
	11.2		t [44]	2000	
	4.9		t [45]	1978	
^{33}S	7.4±1.5		c,1 [48]	1975, Linac, TOF,^{6}Li; Au:Sat., k=0.985	7.4±1.5
	15.1		t [44]	2000	
			t [45]	1978	
^{34}S	0.226±0.010		c [49]	2000, VdG & Reactor, Act., σ_{th}(^{197}Au,^{34}S,^{45}Sc,^{59}Co):BNL325(1997) VdG, Act., Au:[6, 38], Reson.param. from [50]	0.226±0.010
	3.5		t [44]	2000	
	2.9		t [45]	1978	
^{36}S	0.187±0.014 (25keV)	0.171	r [51]	1995, VdG, Act., Au:[6, 38]	0.171±0.014
	0.3		t [44]	2000	
	0.192		t [51]	1995	
	0.3		t [45]	1978	
^{35}Cl	10.0±0.3		c [52]	1984, Linac, TOF, ^{6}Li, Au:Sat.	10.0±0.3
	13.5±5		e [15]	1971	
	15.9		t [44]	2000	
	11		t [45]	1978	
^{36}Cl	18.2		t [44]	2000	12±1*
	12		t [45]	1978	
^{37}Cl	2.15±0.08		c [52]	1984, Linac, TOF, ^{6}Li, Au:Sat.	2.15±0.08
	3.1±1.		e [15]	1971	
	2.2		t [44]	2000	
	2.8		t [45]	1978	
^{36}Ar	8		e [53]	1983	9.0±1.5*
	14.6		t [44]	2000	
	6.7		t [45]	1978	
^{38}Ar	3.8		t [44]	2000	3±0.3*
	2.6		t [45]	1978	
^{39}Ar	8.9		t [44]	2000	8±2*
	8		t [45]	1978	
^{40}Ar	2.79±0.15		c [54]	1989, Linac, TOF, ^{6}Li, Au:Sat.	2.6±0.2

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	2.33±0.15	2.3	c [55]	1985, VdG, Act., $1/v$(kT), Au:657mb(25keV)	
	0.05		e [53]	1983	
	4.5		e [15]	1971	
	3.7		t [44]	2000	
	3.6		t [45]	1978	
^{39}K	11.8±0.4		c [56]	1984, Linac, TOF, ^{6}Li, Au:Sat.	11.8±0.4
	16±2		e [15]	1971	
	13.8		t [44]	2000	
	12		t [45]	1978	
^{40}K	30.4		t [44]	2000	31±7*
	19		t [45]	1978	
^{41}K	22.0±0.7		c [56]	1984, Linac, TOF, ^{6}Li, Au:Sat.	22.0±0.7
	22±3		e [15]	1971	
	22.7		t [44]	2000	
	17		t [45]	1978	
^{40}Ca	6.7±0.7		r [57]	1976, Linac, TOF, ^{6}Li, Au:Sat.	6.7±0.7
	10±3		c [58]	1976, VdG, TOF, E_n=40keV	
	12.3		t [44]	2000	
	5.8		t [45]	1978	
^{41}Ca	30.8		t [44]	2000	30±7*
	15		t [45]	1978	
^{42}Ca	15.6±2		c,2 [59]	1977, Linac, TOF, ^{6}Li, Au:Sat.	15.6±2
	16.7		t [44]	2000	
	12		t [45]	1978	
^{43}Ca	51±6		c,2 [59]	1977, Linac, TOF, ^{6}Li, Au:Sat.	51±6
	33.2		t [44]	2000	
	32		t [45]	1978	
^{44}Ca	9.4±1.3		r [59]	1977, Linac, TOF, ^{6}Li, Au:Sat. Recalcul. including data of [20]	9.4±1.3
	8.8±1.3		c,2 [59]	1977, Linac, TOF, ^{6}Li, Au:Sat.	
	7.9		t [44]	2000	
	7.5		t [45]	1978	
^{45}Ca	16.7		t [44]	2000	17.5±3.5*
	14		t [45]	1978	
^{46}Ca	4.9±0.6		c [60]	1999, VdG, Act., Au:[6, 38]	5.3±0.5
	2.3±0.3		c [61]	1993, F.N.B., Act., ^{10}B	
	5.7±0.5	5.6	c [62]	1985, VdG, Act., $1/v$(kT), Au:657mb(25keV)	
	3.1		t [44]	2000	
	3.7		t [45]	1978	
^{48}Ca	0.623±0.047 (52keV)	0.820	c [63]	1997, VdG, Act., $1/v$(kT), Au:[64, 40]	0.87±0.09
	0.751±0.068 (25keV)	0.686	r [65]	1996, VdG, Act., Au:[6, 38]	
	0.95±0.09	0.94	c [62]	1985, VdG, Act., $1/v$(kT), Au:657mb(25keV)	
	1.05±0.13		c [66]	1987, Linac, TOF, ^{6}Li, Au:Sat.	
	1.03±0.13		c [67]	1984, Linac, TOF, ^{6}Li, Au:Sat.	
	0.655 (52keV)	0.862	t [63]	1997	
	0.7		t [44]	2000	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	1.039		t [68]	1996	
	1.1		t [45]	1978	
^{45}Sc	69±5		r [69]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=1.0737 Recalcul. including data of [20]	69±5
	89.9±6.3		c,2 [69]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=1.0737	
			e [15]	1971	
	60.1		t [44]	2000	
	52		t [45]	1978	
^{46}Ti	26.8±3.2		r [70]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833 Recalcul. including data of [20]	26.8±3.2
	26.5±3.2		c,2 [70]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	34		s [15]	1971	
	35.0		t [44]	2000	
	20		t [45]	1978	
^{47}Ti	64.4±7.7		c,2 [70]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	64.4±7.7
	92		s [15]	1971	
	80.5		t [44]	2000	
	46		t [45]	1978	
^{48}Ti	31.8±5.1		r [70]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=1.0360 Recalcul. including data of [20]	31.8±5.1
	30.8±5.1		c,2 [70]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=1.0360	
	12		s [15]	1971	
	15.2		t [44]	2000	
	14		t [45]	1978	
^{49}Ti	22.1±2.1		c,2 [70]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	22.1±2.1
	20		s [15]	1971	
	22.9		t [44]	2000	
	23		t [45]	1978	
^{50}Ti	3.58±0.40		c [71]	1999, VdG, Act., Au:[6, 38]	3.6±0.4
	3.9±0.5		r [70]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=1.000 Recalcul. including data of [20]	3.9±0.5
	4.0±0.5		c,2 [70]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=1.000	
	2		e [15]	1971	
	3.3		t [44]	2000	
	2.7		t [45]	1978	
^{50}V	51.2		t [44]	2000	50±9*
	49		t [45]	1978	
^{51}V	38±4		r [72]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0360 Recalcul. including data of [20]	38±4
	42±3		c,1 [72]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0360	
	16.4±4	13.7	c [73]	1979, F.N.B., Act., $1/v$(E), ^{127}I:832mb(25keV)	
	25		e [15]	1971	
	19.3		t [44]	2000	
	22		t [45]	1978	
^{50}Cr	48.5±13		r [74]	1977, Linac, TOF, ^{6}Li, Au+Ti:Sat., k=1.0737 Recalcul. including data of [20]	49±13
	52±13		c,2 [74]	1977, Linac, TOF, ^{6}Li, Au+Ti:Sat., k=1.0737	
	50±15		c [75, 76]	1975, VdG, TOF, Au:596mb [77]	
	31±4		e [15]	1971	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n,γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	44.8		t [44]	2000	
	34		t [45]	1978	
^{51}Cr	86.0		t [44]	2000	87±16*
	63		t [45]	1978	
^{52}Cr	8.79±2.3		r [78]	1989, Linac, TOF, ^{10}B,^{6}Li; Ag:Sat.	8.8±2.3
	9.8±2.3		c,2 [74]	1977, Linac,TOF,^{6}Li, Au+Ti:Sat., k=1.0737	
	8.3±3		c [75, 76]	1975, VdG, TOF, Au:596mb [77]	
	3.8±1		e [15]	1971	
	16.7		t [44]	2000	
	12		t [45]	1978	
^{53}Cr	58±10		c,2 [74]	1977, Linac, TOF, ^{6}Li, Au+Ti:Sat., k=1.0737	58±10
	61±24		c [75, 76]	1975, VdG, TOF, Au:596mb [77]	
	40±5		e [15]	1971	
	26.0		t [44]	2000	
	24		t [45]	1978	
^{54}Cr	6.7±1.6		c,2 [74]	1977, Linac, TOF, ^{6}Li, Au+Ti:Sat., k=1.0737	6.7±1.6
	4.5		s [15]	1971	
	9.4		t [44]	2000	
	7.2		t [45]	1978	
^{55}Mn	39.6±3		r [79]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9587 Recalcul. including data of [20]	39.6±3
	31.6±3		b,1[79]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9587	
	32.1±3		b [35]	1976, VdG, TOF, ^{10}B+^{6}Li	
	37±3		c [80]	1970, Sb-Be, Act., 1/v(E), Au:640mb(24keV)	
	50±2		e [15]	1971	
	35.5		t [44]	2000	
	28		t [45]	1978	
^{54}Fe	27.6±1.8		r [81]	1983, Linac, TOF, ^{10}B, ^{56}Fe:Sat.	27.6±1.8
	33.6±2.7		c [82, 83]	1977, Linac, TOF, ^{6}Li, Au:Sat.	
	28±9		c [75, 76]	1975, VdG, TOF, Au:596mb [77]	
	34±10		e [15]	1971	
	28		t [45]	1978	
^{55}Fe	83.9		t [44]	2000	75±12*
	46		t [45]	1978	
^{56}Fe	11.7±0.5		a [84, 85]	1992, Linac, TOF, ^{6}Li+^{10}B+^{235}U, Au:Sat.	11.7±0.5
	13.9±0.7	10.9	r [86, 87]	1983, VdG, TOF, Au:(B-IV)+(B-V)	
	14.4±2		b [88, 89]	1977, Linac, TOF, ^{6}Li, Au:Sat.	
	13.2±2		b,2 [89]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=1.0000	
	15.1±1.3		c,2 [89]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=1.0000	
	13.5±2		e [15]	1971	
	26.2		t [44]	2000	
	15		t [90]	1981	
	19		t [45]	1978	
^{57}Fe	39.9±4		r [91]	1983, Linac, TOF, ^{10}B, Ag:Sat.	40±4
	36.0±2.3		c,2 [92]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=1.0360	
	28±6		c [75, 76]	1975, VdG, TOF, Au:596mb [77]	
	30±5		e [15]	1971	
	30.3		t [44]	2000	
	27		t [90]	1981	
	21		t [45]	1978	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n,γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
^{58}Fe	14.3±1.3	12.1	r [86, 93]	1983, VdG, TOF, Au:(B-IV)+(B-V)	12.1±1.3
	15.4±1.5		c,2 [93]	1980, Linac, TOF, ^{6}Li, Au:Sat., k=0.9655	
	4.5		s [15]	1971	
	12.9		t [44]	2000	
	6.6		t [90]	1981	
	9.5		t [45]	1978	
^{59}Co	38±3.8		c [94]	1976, VdG, TOF, Au:596mb [77]	38±4
	38±3.8		c [95]	1976, Linac, TOF, ^{6}Li, Au:Sat.	
	72±25		c [75, 76]	1975, VdG, TOF, Au:596mb, [77]	
	59±14	50	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV)	
	35±10		e [15]	1971	
	51.3		t [44]	2000	
	31		t [90]	1981	
	36		t [45]	1978	
^{58}Ni	40.2±2.0		c [97]	1993, Linac, TOF, ^{6}Li, Au:Sat.	41±2
	42.2±2.0		r [98, 99]	1988, Linac, TOF, ^{6}Li, Au:Sat.	
	40±7		c [75, 76]	1975, VdG, TOF, Au:596mb [77]	
	17±3		e [15]	1971	
	50.5		t [44]	2000	
	27		t [90]	1981	
	29		t [45]	1978	
^{59}Ni	92.4		t [44]	2000	87±14*
	135		t [90]	1981	
	72		t [45]	1978	
^{60}Ni	26.0±1.4		c [100, 85]	1992, Linac, TOF,^{10}B+^{6}Li, Au:Sat.	30±3
	35.1±1.5		r [99]	1984, VdG, TOF, Au:B-V	
				Recalcul. including data of [101]	
	30.6±1.5		a [101]	1983, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	
	31±2.5		c [75, 76]	1975, VdG, TOF, Au:596mb [77]	
	29.5±3		a [102]	1971, Linac, TOF, ^{10}B, Au+Ag:Sat.	
	7.5±2		e [15]	1971	
	33.2		t [44]	2000	
	15		t [90]	1981	
	20		t [45]	1978	
^{61}Ni	82.3±8		c [103, 104]	1983, VdG, TOF, Au:596mb	82±8
	143±29		a [20]	1981	
	135±27		c [75, 76]	1975, VdG, TOF, Au:596mb [77]	
	30		e [15]	1971	
	77.8		t [44]	2000	
	63		t [90]	1981	
	37		t [45]	1978	
^{62}Ni	12.5±4		r [103]	1983, VdG, TOF, Au:596mb	12.5±4
				Recalcul. including data of [20]	
	35.5±4		c [103, 104]	1983, VdG, TOF, Au:596mb	
	26.8±5		a [76]	1975, VdG, TOF, Au:596mb [77]	
				Recalcul. including data of [105] at 4.6keV	
	26±5		c [75, 76]	1975, VdG, TOF, Au:596mb [77]	
	6		s [15]	1971	
	19.2		t [44]	2000	
	9.7		t [90]	1981	
	12		t [45]	1978	
^{63}Ni	36.5		t [44]	2000	31±6*
	28		t [90]	1981	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	$\langle\sigma v\rangle/v_T$ (mb) renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	24		t [45]	1978	
^{64}Ni	8.7±0.9		r [106]	1984, VdG, TOF, Au:B-V, Recalcul. including data of [107]	8.7±0.9
	23.2±5		a [76]	1975, VdG, TOF, Au:596mb [77] Recalcul. including data of [105] at 9.52keV and data of [107] at 80.4≤E≤163keV	
	10		e [15]	1971	
	10.1		t [44]	2000	
	5		t [90]	1981	
	6.1		t [45]	1978	
^{63}Cu	94±10		r [108]	1977, Linac, TOF, ^{6}Li, Au:Sat., Recalcul. including data of [109] at 50≤E≤300keV	94±10
	51±10	43	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	21		c [80]	1970, Sb-Be, Act., 1/v(E), Au:640mb(24keV)	
	49±14		e [15]	1971	
	102		t [44]	2000	
	75		t [90]	1981	
	70		t [45]	1978	
^{65}Cu	41±5		r [108, 110]	1977, Linac, TOF, ^{6}Li, Au:Sat., Recalcul. including data of [108] at 0≤E≤50keV(k=0.9507) and data of [110] at 50≤E≤400keV	41±5
	42±7		e [15]	1971	
	56.0		t [44]	2000	
	46		t [90]	1981	
	32		t [45]	1978	
^{64}Zn	58.8±5		a,1 [111]	1981, Linac, TOF, ^{6}Li, Au:Sat., k=0.9850	59±5
	50		s [15]	1971	
	76.2		t [44]	2000	
	37		t [90]	1981	
	57		t [45]	1978	
^{65}Zn	210		t [44]	2000	162±27*
	130		t [45]	1978	
^{66}Zn	35±3		a,1 [112]	1981, Linac, TOF, ^{6}Li, Au:Sat., k=0.9507	35±3
	40		s [15]	1971	
	47.5		t [44]	2000	
	19		t [90]	1981	
	26		t [45]	1978	
^{67}Zn	153±15		c [113, 114]	1992, Linac, TOF, ^{6}Li, Au:Sat.	153±15
	160		s [15]	1971	
	148		t [44]	2000	
	79		t [90]	1981	
	80		t [45]	1978	
^{68}Zn	19.2±2.4		c [115]	1982, Linac, TOF, ^{6}Li, Au:Sat.	19.2±2.4
	23±3		e [15]	1971	
	28.5		t [44]	2000	
	9.3		t [90]	1981	
	11		t [45]	1978	
	4.0±1.0	3.4	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV) Partial cross section to ^{69m}Zn	3.4±1(p)
^{70}Zn	16		s [15]	1971	21.5±2.0*

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	16.7		t [44]	2000	
	3.2		t [90]	1981	
	11		t [45]	1978	
^{69}Ga	146±6	139	c [104]	1984, VdG, TOF, Au:B-V	139±6
	130±30		e [15]	1971	
	180		t [44]	2000	
	240		t [90]	1981	
	180		t [45]	1978	
^{71}Ga	125±8	123	c [116]	1986, VdG, Act., 1/v(kT), Au:657mb(25keV)	123±8
	95±28	79	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	120±30		e [15]	1971	
	93.1		t [44]	2000	
	93		t [90]	1981	
	50		t [45]	1978	
^{70}Ge	92±5	88	c [117]	1985, VdG, TOF, Au:B-V	88±5
	84		s [15]	1971	
	107		t [44]	2000	
	82		t [90]	1981	
	67		t [45]	1978	
^{72}Ge	65		s [15]	1971	73±7*
	57.5		t [44]	2000	
	66		t [90]	1981	
	39		t [45]	1978	
^{73}Ge	270		s [15]	1971	243±47*
	198		t [44]	2000	
	341		t [90]	1981	
	240		t [45]	1978	
^{74}Ge	54±7	53	c [116]	1986, VdG, Act., 1/v(kT), Au:657mb(25keV)	53±7
	17±12	14	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	35±20		e [15]	1971	
	41.8		t [44]	2000	
	25		t [90]	1981	
	24		t [45]	1978	
^{76}Ge	53±10		e [15]	1971	33±15*
	22.9		t [44]	2000	
	33		t [90]	1981	
	21		t [45]	1978	
^{75}As	455±18		c [118]	1988, Linac, TOF, ^{6}Li, Au:Sat.	568±35
	576±35	568	c [116]	1986, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	371±36	310	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	143		c [80]	1970, Sb-Be, Act., 1/v(E), Au:640mb(24keV)	
	490±100		e [15]	1971	
	296		t [44]	2000	
	408		t [90]	1981	
	330		t [45]	1978	
^{74}Se	160		s [15]	1971	267±25*
	207		t [44]	2000	
	96±31		t [119]	1988	
	193		t [90]	1981	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	360		t [45]	1978	
^{76}Se	164±8		c [120]	1992, VdG, TOF, Au:[6, 38]	164±8
	100		s [15]	1971	
	119		t [44]	2000	
	146		t [121]	1982	
	126		t [90]	1981	
	83		t [45]	1978	
^{77}Se	340		s [15]	1971	418±71*
	307		t [44]	2000	
	553		t [90]	1981	
	430		t [45]	1978	
^{78}Se	60		s [15]	1971	109±41*
	74.0		t [44]	2000	
	90		t [90]	1981	
	49		t [45]	1978	
^{79}Se	223		t [44]	2000	263±46*
	218±50		t [121]	1982	
	514		t [90]	1981	
	260		t [45]	1978	
^{80}Se	44±3	42	c [116]	1986, VdG, TOF, Au:B-V	42±3
	38.3		t [44]	2000	
	20±12		e [15]	1971	
	34		t [90]	1981	
	41		t [45]	1978	
^{82}Se	36±15		e [15]	1971	9±8*
	18.6		t [44]	2000	
	19±6		t [119]	1988	
	6.1		t [90]	1981	
	16		t [45]	1978	
^{79}Br	741±30		c [118]	1988, Linac, TOF, ^{6}Li, Au:Sat.	627±42
	636±42	627	c [116]	1986, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	600±150		e [15]	1971	
	437		t [44]	2000	
	749		t [90]	1981	
	520		t [45]	1978	
	79±8	78	c [104]	1984, VdG, Act., 1/v(kT), Au:657mb(25keV) Partial cross section to ^{80m}Br	78±8(p)
^{81}Br	244±10		c [118]	1988, Linac, TOF, ^{6}Li, Au:Sat.	313±16
	317±16	313	c [116]	1986, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	460±80		e [15]	1971	
	266		t [44]	2000	
	596		t [90]	1981	
	460		t [45]	1978	
^{78}Kr	318±26		c [122]	1991, VdG, Act., 1/v(kT), Au:[6]	321±26
	359±44	332	r [123]	1986, VdG, TOF, Au:B-V	
	250		s [15]	1971	
	351		t [44]	2000	
	368		t [123]	1986	
	253		t [90]	1981	
	200		t [45]	1978	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n,γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	92.3±6.2		c [122]	1991, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{79m}Kr	92.3±6.2(p)
^{79}Kr	803		t [44]	2000	959±162*
	857		t [116]	1986	
^{80}Kr	257±15	267	r [123]	1986, VdG, TOF, Au:B-V	267±14
	310		e [124]	1988	
	140		s [15]	1971	
	203		t [44]	2000	
	242		t [123]	1986	
	156		t [90]	1981	
	150		t [45]	1978	
	88.2±3.5		c [122]	1991, VdG, Act., 1/v(kT),Au:[6] Partial cross section to ^{81m}Kr	88.2±3.5(p)
^{81}Kr	553		t [44]	2000	607±105*
	682		t [123]	1986	
	994		t [90]	1981	
	1100		t [45]	1978	
^{82}Kr	84±6	90	r [123]	1986, VdG, TOF, Au:B-V	90±6
	80		s [15]	1971	
	118		t [44]	2000	
	76±25		t [119]	1988	
	100		t [123]	1986	
	79		t [90]	1981	
	120		t [45]	1978	
^{83}Kr	251±16	243	r [123]	1986, VdG, TOF, Au:B-V	243±15
	225		s [15]	1971	
	314		t [44]	2000	
	237		t [123]	1986	
	259		t [90]	1981	
	540		t [45]	1978	
^{84}Kr	36.5±4.5	37.7	r [123]	1986, VdG, TOF, Au:B-V	38±4
	57±10 (25keV)	45	c [125]	1972, Sb-Be, Act., 1/v(E), ^{127}I:832mb(25keV)	
	28		s [15]	1971	
	62.2		t [44]	2000	
	40		t [123]	1986	
	13		t [90]	1981	
	29		t [45]	1978	
	18.3±0.8		c [122]	1991, VdG, Act., 1/v(kT), Au:[6]	17.8±0.8(p)
	16.7±1.2	17.3	c [64]	1987, VdG, Act.,1/v(kT), Au:562mb Partial cross section to ^{85m}Kr	
^{85}Kr	123		t [44]	2000	55±45*
	67±17		t [123]	1986	
	25		t [90]	1981	
	150		t [45]	1978	
^{86}Kr	3.34±0.24		c [122]	1991, VdG, Act., 1/v(kT), Au:[6]	3.4±0.3
	3.5±0.3	3.6	c [64]	1987, VdG, Act., 1/v(kT), Au:562mb	
	5.6±0.7	5.3	c [123]	1986, VdG, TOF, Au:B-V	
	3.8±0.7	3.7	c [126]	1986, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	4.8±1.2		c [127]	1983, Linac, TOF, ^{6}Li, Au:Sat.	
	9		s [15]	1971	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	8.1		t [44]	2000	
	8.0±2.8		t [126]	1986	
	3.7		t [90]	1981	
	4.2		t [45]	1978	
^{85}Rb	240±9		c [128]	1989, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	240±9
	360±20	355	c [104, 126]	1986, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	215±20		e [15]	1971	
	453		t [44]	2000	
	278		t [90]	1981	
	387		t [129]	1976	
^{86}Rb	475		t [44]	2000	202±163*
	476		t [129]	1976	
^{87}Rb	15.5±1.5		c [130]	1996, VdG, TOF., Au:[6, 38]	15.5±1.5
	18±0.5		c [131]	1993, VdG, Act., 1/v(kT), Au:[6]	
	15.7±1.6		c [132]	1990, VdG, TOF, Au:[6, 38]	
	21.5±2		c [128]	1989, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	
	11±2		c [104, 126]	1986, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	52±16	44	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV)	
	24±4		e [15]	1971	
	51.0		t [44]	2000	
	20		t [90]	1981	
	31		t [129]	1976	
^{84}Sr	330		s [15]	1971	368±126*
	393		t [44]	2000	
	144±47		t [119]	1988	
	317		t [90]	1981	
	285		t [129]	1976	
^{86}Sr	70±4		c [133]	1991, Linac, TOF,^{6}Li, Au:[134]	64±3
	63.9±2.6		c [135]	1989, Linac, TOF, ^{6}Li, Au:Sat.	
	74±5	71	c [117]	1985, VdG, TOF, Au:B-V	
	70±8		c [136]	1982, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	
	109±30	93	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV)	
	75±15		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	74±7		e [15]	1971	
	209		t [44]	2000	
	57		t [90]	1981	
	87		t [129]	1976	
^{87}Sr	97±5		c [133]	1991, Linac, TOF,^{6}Li,Au:[134]	92±4
	92.1±3.7		c [135]	1989, Linac, TOF, ^{6}Li, Au:Sat.	
	100±7	95	c [117]	1985, VdG, TOF, Au:B-V	
	74±10		c [136]	1982, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	
	108±20		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	109±9		e [15]	1971	
	330		t [44]	2000	
	90		t [90]	1981	
	222		t [129]	1976	
^{88}Sr	6.13±0.18		c [137]	1990, VdG, Act., 1/v(kT), Au:[6]	6.2±0.3
	6.5±0.3		c [135]	1989, Linac, TOF, ^{6}Li, Au:Sat.	
	6.2±0.5		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0737	
	5.6±0.5		c [139]	1976, Linac, TOF, ^{6}Li, Au:Sat.	
	6.9±1.7		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	6.9±2.5		e [15]	1971	
	15.3		t [44]	2000	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	12.5		t [90]	1981	
	9.5		t [129]	1976	
^{89}Sr	46.3		t [44]	2000	19±14*
	40		t [129]	1976	
^{89}Y	19.0±0.6		c [137]	1990, VdG, Act., 1/v(kT), Au:[6]	19.0±0.6
	21±3		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0360	
	13.5±1.3		c,2 [140]	1977, Linac, TOF, ^{6}Li, Au:Sat., k=1.0360	
	21±4		e [15]	1971	
	88.4		t [44]	2000	
	32		t [90]	1981	
	41		t [129]	1976	
^{90}Zr	16.4±1		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9670	21±2
	21±2		c [141]	1975, Linac, TOF, ^{6}Li, Au:Sat.	
	11±3		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	12±2		e [15]	1971	
	49.7		t [44]	2000	
	26		t [90]	1981	
	28		t [129]	1976	
^{91}Zr	60±8		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat.	60±8
	53±10		c [142]	1977, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	
	59±10		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	68±8		e [15]	1971	
	154		t [44]	2000	
	66		t [90]	1981	
	128		t [129]	1976	
^{92}Zr	50±6		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	33±4
	33±4		c,2 [143]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	34±6		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	34±6		e [15]	1971	
	69.0		t [44]	2000	
	51		t [90]	1981	
	47		t [129]	1976	
^{93}Zr	95±10		c [144]	1985, Linac, TOF, ^{6}Li, Au:Sat.	95±10
	177		e [145]	1981	
	188		t [44]	2000	
	266		t [90]	1981	
	81		t [129]	1976	
^{94}Zr	26.4±1.0	26.1	c [146]	1990, VdG, Act., 1/v(kT), Au:[6]	26±1
	25±4	25	c [147]	1983, VdG, Act., Au:576mb	
	33±5		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	26.6±3		c,2 [143]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	21±4		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	20±2		e [15]	1971	
	66.1		t [44]	2000	
	57		t [90]	1981	
	34		t [129]	1976	
^{95}Zr	50		s [146]	1990	
	126		t [44]	2000	79±12*
	72		t [129]	1976	
^{96}Zr	10.7±0.5		c [146]	1990, VdG, Act.,1/v(kT), Au:[6]	10.7±0.5
	12±1		c [147]	1983, VdG, Act., Au:576mb	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	$\langle\sigma v\rangle/v_T$ (mb) renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	41±12		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	30±12		e [15]	1971	
	14.2		t [44]	2000	
	58		t [90]	1981	
	28		t [129]	1976	
^{93}Nb	265.7±5.1		c [148]	1990, VdG, TOF, Au:[6, 38]	266±5
	267±13	255	c [149]	1982, VdG, TOF, Au:B-V	
	260±17		b [150]	1980, Linac, TOF, ^{10}B:B-IV	
	304±17		c [151]	1978, F.N.B., Act.,1/v(E), ^{10}B, Ag:Sat.	
	310±16		c,1 [152]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=1.0737	
	255		e [153]	1997	
	285±30		e [15]	1971	
	437		t [44]	2000	
	180-220		t [154]	1990	
	512		t [90]	1981	
	415		t [129]	1976	
^{94}Nb	855		t [44]	2000	482±92*
	1253		t [90]	1981	
	534		t [129]	1976	
^{95}Nb	582		t [44]	2000	310±65*
^{92}Mo	70±10		b,2 [138, 155]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	70±10
	50		s [15]	1971	
	128		t [44]	2000	
	117		t [90]	1981	
	64		t [129]	1976	
^{94}Mo	108±21		b,2 [138, 155]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	102±20
	100±20	98	c [156]	1972, VdG, Indium:763mb	
	80		s [15]	1971	
	151		t [44]	2000	
	114		t [90]	1981	
	96		t [129]	1976	
^{95}Mo	292±12		c [157]	1987, Linac, TOF, ^{6}Li, Au:Sat.	292±12
	374±50		b,2 [138, 155]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	384		e [145]	1981	
	430±50		e [15]	1971	
	479		t [44]	2000	
	831		t [90]	1981	
	298		t [129]	1976	
^{96}Mo	112±8		c [157]	1987, Linac, TOF, ^{6}Li, Au:Sat.	112±8
	102±16		b,2 [138, 158]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833 and k=0.9200 for [158]	
	104±20	102	c [156]	1972, VdG, Indium:763mb	
	90±10		e [15]	1971	
	157		t [44]	2000	
	96		t [90]	1981	
	92		t [129]	1976	
^{97}Mo	339±14		c [157]	1987, Linac, TOF, ^{6}Li, Au:Sat.	339±14
	384±50		b,2 [138, 155]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	359		e [145]	1981	
	350±50		e [15]	1971	
	409		t [44]	2000	
	515		t [90]	1981	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	222		t [129]	1976	
^{98}Mo	73±7	72	c [159]	1992, VdG, Act., Au:B-V	99±7
	99±7		c [157]	1987, Linac, TOF, ^{6}Li, Au:Sat.	
	83±5	84	c [147]	1983, VdG, Act., Au:576mb	
	102±15		c,2 [138, 155]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833 and 1.0452 [158]	
	72±12	60	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	113±30		c [160]	1977, F.N.B., Act., 1/v(E), ^{10}B:3487.5mb(24keV)	
	225±72	192	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV)	
	109		c [80]	1970, Sb-Be, 1/v(E), Au:640mb(24keV)	
	150±40		e [15]	1971	
	94.0		t [44]	2000	
	132		t [90]	1981	
	50		t [129]	1976	
^{99}Mo	210		t [44]	2000	240±40*
	201		t [129]	1976	
^{100}Mo	114±14		c [147]	1983, VdG, Act., Au:576mb	108±14
	96±20		b,2 [138, 155]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	57.5±16	48	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	117±40	100	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV)	
	100±40		e [15]	1971	
	61.1		t [44]	2000	
	98		t [90]	1981	
	39		t [129]	1976	
^{99}Tc	782±50		c [157]	1987, Linac, TOF, ^{6}Li, Au:Sat.	781±50
	779±40		b [161]	1982, Linac, TOF, ^{6}Li, Au:Sat.	
	761		e [145]	1981	
	800		s [15]	1971	
	684		t [44]	2000	
	799		t [90]	1981	
	649		t [129]	1976	
^{96}Ru	279±72	238	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV)	238±60
	270±60		e [15]	1971	
	281		t [44]	2000	
	210		t [90]	1981	
	271		t [129]	1976	
^{98}Ru	300		s [15]	1971	173±36*
	262		t [44]	2000	
	223		t [90]	1981	
	142		t [129]	1976	
^{99}Ru	1240		s [15]	1971	631±99*
	762		t [44]	2000	
	914		t [90]	1981	
	640		t [129]	1976	
^{100}Ru	206±13		c,1 [162]	1980, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat., k=0.985	206±13
	290		s [15]	1971	
	213		t [44]	2000	
	162		t [90]	1981	
	110		t [129]	1976	
^{101}Ru	996±40		c,1 [162]	1980, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat., k=0.985	996±40
	1097		e [145]	1981	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	1120		s [15]	1971	
	658		t [44]	2000	
	719		t [90]	1981	
	815		t [129]	1976	
^{102}Ru	186±11		c,1 [162]	1980, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat., k=0.985	186±11
	313±84	267	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV)	
	314		e [145]	1981	
	330±50		e [15]	1971	
	147		t [44]	2000	
	133		t [90]	1981	
	91		t [129]	1976	
^{103}Ru	307		t [44]	2000	343±52*
	569		t [129]	1976	
^{104}Ru	161±10		c,1 [162]	1980, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat., k=0.985	161±10
	171±44	143	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	182±50	155	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV)	
	177		e [145]	1981	
	120±60		e [15]	1971	
	99.8		t [44]	2000	
	190		t [90]	1981	
	105		t [129]	1976	
^{103}Rh	741±37		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc: Sat.	811±14
	810.5±14.4		c [148]	1990, VdG, TOF, Au:[6, 38]	
	830±80		c [164]	1990, Critical piles, ^{10}B	
	819±41	781	c [149]	1982, VdG, TOF, Au:B-V	
	1019±41		c,1 [162]	1980, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat., k=0.985	
	854±34		b [35]	1976, VdG, TOF, ^{10}B+^{6}Li,	
	896±90		b [165]	1975, Linac, TOF, ^{10}B, Au+Ag:Sat.	
	900±180		c [166]	1970, Linac, TOF, ^{10}B, Au+^{235}U:Sat.	
	984		e [145]	1981	
	900±100		e [15]	1971	
	689		t [44]	2000	
	1101		t [90]	1981	
	718		t [129]	1976	
^{102}Pd	320		s [15]	1971	375±118*
	137±45		t [119]	1988	
	374		t [44]	2000	
	363		t [90]	1981	
	247		t [129]	1976	
^{104}Pd	283±28		b [167]	1983, Linac, TOF, ^{6}Li+^{10}B,Au:Sat.	289±29
	291±29		b [168]	1981, Linac, TOF, ^{6}Li, Au:Sat.	
	358±36		c,1 [169]	1979, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat., k=0.7999	
	270		s [15]	1971	
	302		t [44]	2000	
	315		t [90]	1981	
	197		t [129]	1976	
^{105}Pd	1200±120		c [164]	1990, Critical piles, ^{10}B	1200±60
	1200±60		b [167]	1983, Linac, TOF, ^{6}Li+^{10}B, Au:Sat.	
	1196±120		b [168]	1981, Linac, TOF, ^{6}Li, Au:Sat.	
	1324±132		c,1 [169]	1979, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat., k=1.1133	
	1100±220		c [165]	1975, Linac, TOF, ^{10}B, Au+Ag:Sat.	
	1178		e [145]	1981	
	1130		s [15]	1971	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	$\langle\sigma v\rangle/v_T$ (mb) renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	952		t [44]	2000	
	950-1300		t [154]	1990	
	1301		t [90]	1981	
	976		t [129]	1976	
^{106}Pd	240±24		b [167]	1983, Linac, TOF, ^{6}Li+^{10}B, Au:B-V+Sat.	252±25
	267±27		b [168]	1981, Linac, TOF, ^{6}Li, Au:Sat.	
	295±30		c,1 [169]	1979, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat., k=0.7734	
	230		s [15]	1971	
	221		t [44]	2000	
	171		t [90]	1981	
	146		t [129]	1976	
^{107}Pd	1340±60		c [170]	1985, Linac, TOF, ^{6}Li, Au:Sat.	1340±60
	1200		e [124]	1988	
	1165		e [145]	1981	
	828		t [44]	2000	
	991		t [90]	1981	
	950		t [129]	1976	
^{108}Pd	185±19		b [167]	1983, Linac, TOF, ^{6}Li+^{10}B, Au:B-V+Sat.	203±20
	230±23		b [168]	1981, Linac, TOF, ^{6}Li, Au:Sat.	
	258±26		c,1 [169]	1979, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat., k=0.7480	
	200±60		e [15]	1971	
	156		t [44]	2000	
	131		t [90]	1981	
	381		t [129]	1976	
^{110}Pd	132±13		b [167]	1983, Linac, TOF, ^{6}Li+^{10}B, Au:B-V+Sat.	146±20
	171±17		b [168]	1981, Linac, TOF, ^{6}Li, Au:Sat.	
	198±20		c,1 [169]	1979, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat., k=0.7480	
	170±70		e [15]	1971	
	104		t [44]	2000	
	78		t [90]	1981	
	56		t [129]	1976	
^{107}Ag	718±60		c [171]	1994, VdG, Act., 1/v(kT), Au:[6]	792±30
	794±48		b [172]	1988, VdG, TOF, ^{10}B:B-V, Au+^{109}Ag+etc:Sat.	
	801±24		c [173]	1982, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat.	
	790±47		b [174]	1983, Linac, TOF, ^{6}Li:[175],^{10}B:B-V, Ag:Sat. Calcul. from data of [176]	
	1150±150		e [15]	1971	
	868		t [44]	2000	
	1537		t [90]	1981	
	785		t [129]	1976	
^{109}Ag	810±75		c [171]	1994, VdG, Act., 1/v(kT), Au:[6]	788±30
	782±40		b [172]	1988, VdG, TOF, ^{10}B:B-V, Au+^{109}Ag+etc:Sat.	
	890±90		c [164]	1990, Critical piles, ^{10}B	
	778±23		c [173]	1982, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat.	
	786±47		b [174]	1983, Linac, TOF, ^{6}Li:[175],^{10}B:B-V, Ag:Sat. Calcul. from data of [176]	
	1215		e [145]	1981	
	620±50		e [15]	1971	
	789		t [44]	2000	
	1382		t [90]	1981	
	790		t [129]	1976	
^{110}Ag	1354		t [44]	2000	1172±188*
	1630		t [129]	1976	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
^{106}Cd	302±24		c [177]	1998, VdG, Act., 1/v(kT), Au:[6]	302±24
	555±55		b,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.785	
	473±50		c,2 [178]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.985	
	210		s [15]	1971	
	451		t [44]	2000	
	884		t [90]	1981	
	592		t [129]	1976	
^{108}Cd	202±9		c [177]	1998, VdG, Act., 1/v(kT), Au:[6]	202±9
	407±75		b,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.985	
	443±70		c,2 [178]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.985	
	210		s [15]	1971	
	373		t [44]	2000	
	557		t [90]	1981	
	304		t [129]	1976	
^{110}Cd	236±30		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	246±30
	246±30		c,2 [178]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	270±30	259	c [156]	1972, VdG, Indium:763mb	
	210		s [15]	1971	
	300		t [44]	2000	
	447		t [90]	1981	
	220		t [129]	1976	
	13.3±1.0		c [177]	1998, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{111m}Cd	13.3±1(p)
	17±3 (25keV)	13	c [125]	1972, Sb-Be, Act., 1/v(E), ^{127}I:832mb(25keV)	
^{111}Cd	1063±125		c,2 [138, 178]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.208	1063±125
	840		s [15]	1971	
	794		t [44]	2000	
	717		t [90]	1981	
	623		t [129]	1976	
^{112}Cd	222±30		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0069	235±30
	235±30		c,2 [178]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0069	
	210		s [15]	1971	
	222		t [44]	2000	
	428		t [90]	1981	
	165		t [129]	1976	
^{113}Cd	728±80		c,2 [138, 178]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0187	728±80
	840		s [15]	1971	
	587		t [44]	2000	
	665±45		t [179]	1993	
	689		t [90]	1981	
	569		t [129]	1976	
^{114}Cd	127±5		c [177]	1998, VdG, Act., 1/v(kT), Au:[6]	127±5
	150±25		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0187	
	161±25		c,2 [178]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0187	
	266		c [80]	1970, Sb-Be, Act., 1/v(E), Au:640mb(24keV)	
	200±40		e [15]	1971	
	141		t [44]	2000	
	152		t [90]	1981	
	152		t [129]	1976	
	118±4		c [177]	1998, VdG, Act., 1/v(kT), Au:[6]	118±4(p)
	124±8	115	c [180]	1981, VdG, Act., 1/v(kT), Au:B-IV Partial cross section to ^{115g}Cd	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	9±3		c [177]	1998, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{115m}Cd	9±3(p)
^{115g}Cd	418		t [44]	2000	290±62*
	194±64		t [119]	1988	
	450		t [129]	1976	
^{115m}Cd	601		s [180]	1981	601±200
^{116}Cd	59±2		c [177]	1998, VdG, Act., 1/v(kT), Au:[6]	59±2
	94±12		b,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0187	
	94±12		c,2 [178]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0187	
	220±40		e [15]	1971	
	89.3		t [44]	2000	
	78		t [90]	1981	
	53		t [129]	1976	
	47±2		c [177]	1998, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{117g}Cd	47±2(p)
	11.8±0.5		c [177]	1998, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{117m}Cd	11.8±0.5(p)
^{113}In	787±70		c [181]	1966, VdG, quoted from [180]	787±70
	220±70		e [15]	1971	
	1202		t [44]	2000	
	897		t [90]	1981	
	1280		t [129]	1976	
	563±160	480	c [96]	1973, Sb-Be, Act., 1/v(E),^{127}I:832mb(24keV) Partial cross section to ^{114m}In	480±160(p)
^{114m}In	2595		s [180]	1981	2595±1300
^{115}In	648±130	542	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	706±70
	689±100		c [151]	1978, F.N.B., Act., 1/v(E), ^{10}B, Ag:Sat.	
	784±78	727	b [182]	1977, VdG, TOF, ^{10}B, Au:596mb(E=30kev)	
	918±100 (25keV)	722	c [125]	1972, Sb-Be, Act., 1/v(E), ^{127}I:832mb(25keV)	
	800±100		e [15]	1971	
	1003		t [44]	2000	
	599		t [90]	1981	
	990		t [129]	1976	
	808±216	689	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV) Partial cross section to ^{116m}In at 290keV and 127keV	689±170(p)
^{112}Sn	231±12	205	r [183]	1989, VdG, TOF, ^{6}Li, Au:B-V+[184]	210±12
	202±24	215	c [185]	1979, F.N.B., Act., 1/v(E), Au:621mb(24keV)	
	180		s [15]	1971	
	381		t [44]	2000	
	588		t [90]	1981	
	603		t [129]	1976	
^{114}Sn	134.4±1.8		c [186]	1996, VdG, TOF, Au:[6, 38]	134.4±1.8
	149±8	133	r [183]	1989, VdG, TOF, ^{6}Li, Au:B-V+[184]	
	217±70		t [119]	1988	
	130		s [15]	1971	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	270		t [44]	2000	
	396		t [90]	1981	
	184		t [129]	1976	
^{115}Sn	342.4±8.7		c [186]	1996, VdG, TOF, Au:[6, 38]	342.4±8.7
	412±20	382	r [183]	1989, VdG, TOF, ^{6}Li, Au:B-V+[184]	
	550		s [15]	1971	
	528		t [44]	2000	
	263±86		t [119]	1988	
	454		t [90]	1981	
	285		t [129]	1976	
^{116}Sn	90.9±0.9		c [187]	1996, VdG, TOF, Au:[6, 38]	91.4±0.9
	91.9±0.9		c [186]	1996, VdG, TOF, Au:[6, 38]	
	104±5	90	r [183]	1989, VdG, TOF, ^{6}Li, Au:B-V+[184]	
	92±21		c [188]	1989, VdG, TOF, Au:[6, 38]	
	104±21		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	100±15		e [15]	1971	
	169		t [44]	2000	
	303		t [90]	1981	
	176		t [129]	1976	
^{117}Sn	318.8±4.8		c [186]	1996, VdG, TOF, Au:[6, 38]	318.8±4.8
	308±15	285	r [183]	1989, VdG, TOF, ^{6}Li, Au:B-V+[184]	
	418±99		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	420		s [15]	1971	
	428		t [44]	2000	
	469		t [90]	1981	
	442		t [129]	1976	
^{118}Sn	61.6±0.6		c [187]	1996, VdG, TOF, Au:[6, 38]	62.1±0.6
	62.6±0.6		c [186]	1996, VdG, TOF, Au:[6, 38]	
	76±4	68	r [183]	1989, VdG, TOF, ^{6}Li, Au:B-V+[184]	
	62.5±12		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	63±5		e [15]	1971	
	102		t [44]	2000	
	65		t [90]	1981	
	85		t [129]	1976	
^{119}Sn	194±10	180	r [183]	1989, VdG, TOF, ^{6}Li, Au:B-V+[184]	180±10
	247±54		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	260±40		e [15]	1971	
	247		t [44]	2000	
	263		t [90]	1981	
	279		t [129]	1976	
^{120}Sn	35.7±0.5		c [187]	1996, VdG, TOF, Au:[6, 38]	36.0±0.5
	36.4±0.5		c [186]	1996, VdG, TOF, Au:[6, 38]	
	31.3±1.2		c [190]	1991, VdG, Act., 1/v(kT), Au:[6]	
	41±3.3	39	r [183]	1989, VdG, TOF, ^{6}Li, Au:B-V+[184]	
	41±8		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	50±15		e [15]	1971	
	61.8		t [44]	2000	
	76		t [90]	1981	
	49		t [129]	1976	
	0.52±0.18		c [191]	1993, VdG, Act.,1/v(kT), Au:[6] Partial cross section to ^{121m}Sn	0.52±0.18(p)
^{121}Sn	212		t [44]	2000	167±30*
	210±40		t [191]	1993	
	142±50		t [119]	1988	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

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Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References	and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	299		t [90]	1981	
	179		t [129]	1976	
^{122}Sn	21.9±1.5		c [192, 193]	1998, VdG, Act., 1/v(kT), Au:648mb(25keV)	21.9±1.5
	40±4	36	r [183]	1989, VdG, TOF, ^{6}Li, Au:B-V+[184]	
	23±6	20	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV)	
	23±5		e [15]	1971	
	38.7		t [44]	2000	
	44		t [90]	1981	
	34		t [129]	1976	
	21±10	18	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV) Partial cross section to ^{123m}Sn	18±10(p)
^{124}Sn	12.0±1.8		c [192, 193]	1998, VdG, Act.,1/v(kT), Au:648mb(25keV)	12.0±1.8
	16.0±2.4	17	r [183]	1989, VdG, TOF, ^{6}Li, Au:B-V+[184]	
	23±4		e [15]	1971	
	21.2		t [44]	2000	
	38		t [90]	1981	
	22		t [129]	1976	
^{125}Sn	55.9		t [44]	2000	59±9*
	73		t [129]	1976	
^{126}Sn	9.4		t [44]	2000	10±4*
	8.8		t [90]	1981	
^{121}Sb	532±16		c [191]	1993, VdG, Act., 1/v(kT), Au:[6]	532±16
	740±100		e [15]	1971	
	723		t [44]	2000	
	603		t [90]	1981	
	837		t [129]	1976	
^{122}Sb	1268		t [44]	2000	894±162*
	788±80		t [191]	1993	
	1420		t [129]	1976	
^{123}Sb	303±9		c [191]	1993, VdG, Act., 1/v(kT), Au:[6]	303±9
	440±50		e [15]	1971	
	547		t [44]	2000	
	407		t [90]	1981	
	457		t [129]	1976	
^{125}Sb	273		t [44]	2000	260±70*
	245		t [90]	1981	
^{120}Te	400		s [15]	1971	420±103*
	551		t [44]	2000	
	293±96		t [119]	1988	
	776		t [90]	1981	
	275		t [129]	1976	
^{122}Te	295.4±2.7		c [194]	1992, VdG, TOF, Au:[6, 38]	295±3
	280±10		c [195]	1989, Linac, TOF, ^{6}Li, Au:Sat.	
	351±70		c [196, 197]	1974, N.S.D., TOF, Au+Ag+Te:Sat., Normalized on the basis of resonance integral and thermal cross section	
	248±40		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	270±30		e [15]	1971	
	336		t [44]	2000	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle \sigma v \rangle / v_T$ (mb) original	renorm.	References and Comments		$\langle \sigma v \rangle / v_T$ (mb) recommended
	382		t [90]	1981	
	283		t [129]	1976	
^{123}Te	831.5±7.7		c [194]	1992, VdG, TOF, Au:[6, 38]	832±8
	819±30		c [195]	1989, Linac, TOF, ^{6}Li, Au:Sat.	
	946±180		c [196, 197]	1974, N.S.D., TOF, Au+Ag+Te:Sat., Normalized on the basis of resonance integral and thermal cross section	
	842±80		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	820±30		e [15]	1971	
	747		t [44]	2000	
	784		t [90]	1981	
	686		t [129]	1976	
^{124}Te	154.6±1.6		c [194]	1992, VdG, TOF, Au:[6, 38]	155±2
	154±6		c [195]	1989, Linac, TOF, ^{6}Li, Au:Sat.	
	163±33		c [196, 197]	1974, N.S.D., TOF, Au+Ag+Te:Sat., Normalized on the basis of resonance integral and thermal cross section	
	167±25		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	150±20		e [15]	1971	
	199		t [44]	2000	
	174		t [90]	1981	
	193		t [129]	1976	
^{125}Te	431.2±4.0		c [194]	1992, VdG, TOF, Au:[6, 38]	431±4
	423±15		c [195]	1989, Linac, TOF, ^{6}Li, Au:Sat.	
	449±67		b [196]	1974, N.S.D., TOF, Au+Ag+Te:Sat., Normalized on the basis of resonance integral and thermal cross section	
	458±60		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	430±20		e [15]	1971	
	408		t [44]	2000	
	386		t [90]	1981	
	483		t [129]	1976	
^{126}Te	81.3±1.4		c [194]	1992, VdG, TOF, Au:[6, 38]	81.3±1.4
	88.3±3.2		c [195]	1989, Linac, TOF, ^{6}Li, Au:Sat.	
	75±11		b [196]	1974, N.S.D., TOF, Au+Ag+Te:Sat., Normalized on the basis of resonance integral and thermal cross section	
	89±15		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	82±8		e [15]	1971	
	112		t [44]	2000	
	72		t [90]	1981	
	149		t [129]	1976	
^{128}Te	44.4±1.3		c [191]	1993, VdG, Act., 1/v(kT), Au:[6]	44.4±1.3
	39.5±1.1		c [198]	1990, VdG, Act., 1/v(kT), Au:[6]	
	47±12	39	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	42±6		b [196]	1974, N.S.D., TOF, Au+Ag+Te:Sat., Normalized on the basis of resonance integral and thermal cross section	
	33±10		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	32.5±5		e [15]	1971	
	53.1		t [44]	2000	
	58		t [90]	1981	
	92		t [129]	1976	
	4.94±0.21		c [191]	1993, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{129m}Te	4.94±0.21(p)
^{130}Te	7.3±6	6.1	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	14.7±2.8
	15.9±2.4		b [196]	1974, N.S.D., TOF, Au+Ag+Te:Sat., Normalized on the basis of resonance integral and thermal cross section	
	15±4	12	c [125]	1972, Sb-Be, Act., 1/v(E), ^{127}I:832mb(25keV)	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	(25keV)				
	14±5		c [2]	1967, VdG, TOF, ^{181}Ta:762mb	
	13.5±2		e [15]	1971	
	24.0		t [44]	2000	
	12		t [90]	1981	
	27		t [129]	1976	
^{127}I	625±30		c [199]	1983, Linac, TOF, ^{6}Li, Au:Sat.	635±30
	645±50		b [150]	1980, Linac, TOF, ^{10}B:B-IV+[151]	
	698±80		c [151]	1978, F.N.B., Act., 1/v(E), ^{10}B:B-IV, Ag:Sat.	
	571		c [80]	1970, Sb-Be, Act., 1/v(E), Au:640mb(24keV)	
	655		e [153]	1997	
	760±50		e [15]	1971	
	742		t [44]	2000	
	715		t [90]	1981	
	899		t [129]	1976	
^{129}I	441±22		c [199]	1983, Linac, TOF, ^{6}Li, Au:Sat.	441±22
	490		e [145]	1981	
	424		t [44]	2000	
	582		t [90]	1981	
	529		t [129]	1976	
^{124}Xe	644±83		c [122]	1991, VdG, Act., 1/v(kT), Au:[6]	644±83
	1053±110	1038	c [200]	1983, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	1200		s [15]	1971	
	799		t [44]	2000	
	2156		t [90]	1981	
	534		t [129]	1976	
	131±17		c [122]	1991, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{125m}Xe	131±17(p)
^{126}Xe	359±51		c [122]	1991, VdG, Act., 1/v(kT), Au:[6]	359±51
	800		s [15]	1971	
	534		t [44]	2000	
	1050		t [90]	1981	
	324		t [129]	1976	
	40±6.0		c [122]	1991, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{127m}Xe	40±6(p)
^{128}Xe	300		s [15]	1971	248±66*
	307		t [44]	2000	
	347±111		t [122]	1991	
	249		t [200]	1983	
	510		t [90]	1981	
	232		t [129]	1976	
	25.8±2.1		c [122]	1991, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{129m}Xe	25.8±2.1(p)
^{129}Xe	760		s [15]	1971	472±71*
	581		t [44]	2000	
	757±65		t [122]	1991	
	470		t [200]	1983	
	1454		t [90]	1981	
	666		t [129]	1976	
^{130}Xe	100		s [15]	1971	141±51*

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n,γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	159		t [44]	2000	
	175±49		t [122]	1991	
	153		t [200]	1983	
	207		t [90]	1981	
	143		t [129]	1976	
	12.3±1.0		c [122]	1991, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{131m}Xe	12.3±1.0(p)
^{131}Xe	424		e [145]	1981	340±65*
	250		s [15]	1971	
	452		t [44]	2000	
	453±81		t [122]	1991	
	348		t [200]	1983	
	570		t [90]	1981	
	587		t [129]	1976	
^{132}Xe	64.6±5.3		c [122]	1991, VdG, Act., 1/v(kT), Au:[6]	64.6±5.3
	61±4	60	c [200]	1983, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	36		s [15]	1971	
	72.3		t [44]	2000	
	65		t [200]	1983	
	75		t [90]	1981	
	91		t [129]	1976	
	4.7±0.4		c [122]	1991, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{133m}Xe	4.7±0.4(p)
^{133}Xe	157		t [44]	2000	127±34*
	134		t [129]	1976	
^{134}Xe	20.2±1.7		c [122]	1991, VdG, Act., 1/v(kT), Au:[6]	20.2±1.7
	29±2	29	c [200]	1983, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	13		s [15]	1971	
	34.7		t [44]	2000	
	33		t [200]	1983	
	38		t [90]	1981	
	48		t [129]	1976	
	0.59±0.05		c [122]	1991, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{135m}Xe	0.59±0.05(p)
^{136}Xe	0.91±0.08		c [122]	1991, VdG, Act., 1/v(kT), Au:[6]	0.91±0.08
	0.72±0.11		a [201]	1988, Linac, TOF, ^{6}Li, Au:Sat.	
	5		s [15]	1971	
	1.5		t [44]	2000	
	0.96		t [90]	1981	
	2.6		t [129]	1976	
^{133}Cs	507±28		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	509±21
	497±30		b [202]	1983, Linac, TOF, ^{10}B:B-V+[151]	
	520±21		b [203]	1982, Linac, TOF, ^{6}Li, Au:Sat.	
	685		c [204]	1970, quoted from [205]	
	518		e [145]	1981	
	700±40		e [15]	1971	
	694		t [44]	2000	
	653		t [90]	1981	
	779		t [129]	1976	
	50±14	43	c [96]	1973, Sb-Be, Act., 1/v(E), ^{127}I:832mb(24keV) Partial cross section to ^{134m}Cs	43±14(p)

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
^{134}Cs	894		t [44]	2000	664±174*
	597		t [90]	1981	
	1320		t [129]	1976	
^{135}Cs	198±17		c [206]	1997, VdG, Act., 1/v(kT), Au:[6]	198±17
	286		t [44]	2000	
	234		t [90]	1981	
	167		t [129]	1976	
^{130}Ba	715±58	761	c [185]	1979, F.N.B., Act., 1/v(E), Au:621mb(24keV)	760±110
	2000		s [15]	1971	
	730		t [44]	2000	
	1012		t [90]	1981	
	397		t [129]	1976	
^{132}Ba	650		s [15]	1971	379±137*
	467		t [44]	2000	
	280±92		t [119]	1988	
	442		t [90]	1981	
	250		t [129]	1976	
^{134}Ba	173.6±5.6		c [207]	1999, [208] and [209] below 5 keV	176.0±5.6
	179.0±5.7		c [209]	1996, Linac, TOF, ^{6}Li, Au:Sat.	
	176.3±5.6		c [208]	1994, VdG, TOF, Au:[6, 38]	
	221±35		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	225±35		c [210]	1976, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	
	155		s [15]	1971	
	227		t [44]	2000	
	123		t [90]	1981	
	180		t [129]	1976	
^{135}Ba	455.0±15.0		c [208]	1994, VdG, TOF, Au:[6, 38]	455±15
	457±80		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	300±60		c [211]	1976, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	
	315		s [15]	1971	
	500		t [44]	2000	
	687		t [90]	1981	
	472		t [129]	1976	
^{136}Ba	61.2±2.0		c [207]	1999, [208] and [209] below 5 keV	61.2±2.0
	60.4±2.9		c [212]	1997, Linac, TOF, ^{10}B, Ag:Sat.	
	62.0±2.0		c [209]	1996, Linac, TOF, ^{6}Li, Au:Sat.	
	60.6±2.1		c [213]	1995, VdG, TOF, Au:[6, 38]	
	62.0±2.1		c [208]	1994, VdG, TOF, Au:[6, 38]	
	69±10		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	61±10		c [210]	1976, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	
	90±20	86	c [156]	1972, VdG, Indium:763mb	
	37		s [15]	1971	
	101		t [44]	2000	
	42		t [90]	1981	
	88		t [129]	1976	
^{137}Ba	75.7±2.4		c [214]	1998, Linac, TOF, ^{6}Li, Au:Sat.	76.3±2.4
	76.9±2.9		c [208]	1994, VdG, TOF, Au:[6, 38]	
	57±10		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	53±10		c [211]	1976, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	
	76		s [15]	1971	
	118		t [44]	2000	
	107		t [90]	1981	
	73		t [129]	1976	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
^{138}Ba	4.07±0.20		c [215]	1997, Linac, TOF, ^{6}Li, Au+Ag:Sat.	4.00±0.20
	4.22±0.25	3.93	c [216]	1980, VdG, Act., 1/v(kT), Au:B-IV	
	3.8±0.8		c,2 [217]	1979, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	5±2		c [218, 219]	1977, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	
	12.6±1.6 (23keV)	9.5	c [220]	1973, Sb-Be, Act., 1/v(E), ^{127}I:836mb(23keV)	
	8±2		e [15]	1971	
	5.7		t [44]	2000	
	4.8		t [90]	1981	
	6.7		t [129]	1976	
^{139}La	28.8±3.1		c [221]	1990, VdG, Act., 1/v(kT), Au:655±23mb(24keV)	38.4±2.7
	38.4±2.7		c [222]	1986, VdG, Act. ,1/v(kT), Au:B-V+[38]	
	26.5±8	22.2	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	39±5		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0000	
	50±5		c [219]	1977, Linac, TOF, ^{6}Li+^{235}U, Au:Sat.	
	11.6		c [80]	1970, Sb-Be, Act.,1/v(E), Au:640mb(24keV)	
	44±4		e [15]	1971	
	74.2		t [44]	2000	
	72		t [90]	1981	
	40		t [129]	1976	
^{132}Ce	1719		t [44]	2000	1570±420*
	674		t [223]	1996	
^{133}Ce	3130		t [44]	2000	2600±400*
	1759		t [223]	1996	
^{134}Ce	1229		t [44]	2000	967±351*
	433		t [223]	1996	
^{135}Ce	2057		t [44]	2000	1320±260*
	938		t [223]	1996	
^{136}Ce	328±21		c [223]	1996, VdG, Act., 1/v(kT), Au:[6]	328±21
	100		s [15]	1971	
	595		t [44]	2000	
	262		t [223]	1996	
	398		t [90]	1981	
	629		t [129]	1976	
	28.2±1.6		c [223]	1996, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{137m}Ce	28.2±1.6(p)
^{137}Ce	1440		t [44]	2000	973±256*
	1051		t [223]	1996	
^{138}Ce	179±5		c [223]	1996, VdG, Act., 1/v(kT), Au:[6]	179±5
	30		s [15]	1971	
	287		t [44]	2000	
	166		t [223]	1996	
	256		t [90]	1981	
	137		t [129]	1976	
^{139}Ce	349		t [44]	2000	214±120*
	672		t [223]	1996	
^{140}Ce	11.0±0.4		c [223]	1996, VdG, Act., 1/v(kT), Au:[6]	11.0±0.4
	13.9±1.0	13.6	c [221]	1990, VdG, Act., 1/v(kT), Au:655±23mb(24keV)	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	11.5±0.57	10.7	c [216]	1980, VdG, Act., 1/v(kT), Au:B-IV	
	7.3±4	6.1	c [73]	1979, F.N.B., Act.,1/v(E), ^{127}I:832mb(25keV)	
	7.7±0.9		c,2 [217]	1979, Linac, TOF, ^{6}Li, Au:Sat., k=1.0000	
	26±4 (23keV)	20	c [220]	1973, Sb-Be, Act., 1/v(E), ^{127}I:836mb(23keV)	
	3±3		e [15]	1971	
	22.2		t [44]	2000	
	15		t [223]	1996	
	11		t [90]	1981	
	19		t [129]	1976	
^{141}Ce	127		t [44]	2000	76±33*
	91		t [223]	1996	
	167		t [129]	1976	
^{142}Ce	28.3±1.0		c [223]	1996, VdG, Act., 1/v(kT), Au:[6]	28±1
	31.1±2.0	30.8	c [221]	1990, VdG, Act., 1/v(kT), Au:655±23mb(24keV)	
	19.6±1.1	18.2	c [216]	1980, VdG, Act., 1/v(kT), Au:B-IV	
	17.3±8	14.4	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	63±10 (23keV)	47	c [220]	1973, Sb-Be, Act., 1/v(E), ^{127}I:836mb(23keV)	
	360±60		e [15]	1971	
	37.2		t [44]	2000	
	30.7		t [223]	1996	
	41		t [90]	1981	
	33		t [129]	1976	
^{141}Pr	111.4±1.4		c [224]	1999, VdG, TOF, Au:[6, 38]	111.4±1.4
	119±15		c,2 [225]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=1.0737	
	73		c [80]	1970, Sb-Be, Act., 1/v(E), Au:640mb(24keV)	
	110		e [153]	1997	
	110±20		e [15]	1971	
	262		t [44]	2000	
	97		t [223]	1996	
	74		t [90]	1981	
	162		t [129]	1976	
^{142}Pr	703		t [44]	2000	415±178*
	297		t [223]	1996	
	936		t [90]	1981	
^{143}Pr	450		t [44]	2000	350±86*
	205		t [223]	1996	
^{142}Nd	35.0±0.7		c [226]	1998, VdG, TOF, Au:[6, 38]	35.0±0.7
	34.0±0.6		c [227]	1998, VdG, TOF, Au:[6, 38]	
	36.6±3.0		c [228]	1997, Linac, TOF, ^{6}Li, Au:Sat.,	
	49±4	46.8	c [229]	1984, VdG, TOF, Au:B-V	
	55±7		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.967	
	77±15		c [219]	1977, Linac, TOF, ^{6}Li, Au:Sat.	
	46±8	43	c [230]	1978, VdG, TOF, ^{10}B:B-IV, Au:628mb(kT=30keV)	
	70		s [15]	1971	
	81.0		t [44]	2000	
	57		t [90]	1981	
	76		t [129]	1976	
^{143}Nd	244.6±3.1		c [227]	1998, VdG, TOF, Au:[6, 38]	245±3
	259±11	247	c [229]	1984, VdG, TOF, Au:B-V	
	319±26		c [231]	1978, Linac, TOF, ^{6}Li+^{10}B, Sat.	
	252±50		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9507	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	175±75		c [219]	1977, Linac, TOF, ^{6}Li, Au:Sat.	
	243		e [145]	1981	
	425		s [15]	1971	
	465		t [44]	2000	
	190-260		t [154]	1990	
	217		t [90]	1981	
	332		t [129]	1976	
^{144}Nd	81.3±1.5		c [226]	1998, VdG, TOF, Au:[6, 38]	81.3±1.5
	82.1±1.5		c [227]	1998, VdG, TOF, Au:[6, 38]	
	73.2±6.1		c [228]	1997, Linac, TOF, ^{6}Li, Au:Sat.	
	119±6	114	c [229]	1984, VdG, TOF, Au:B-V	
	88±18	82	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	84±25		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.967	
	77±15		c [219]	1977, Linac, TOF, ^{6}Li, Au:Sat.	
	76.8		e [145]	1981	
	100		s [15]	1971	
	113		t [44]	2000	
	88		t [90]	1981	
	67		t [129]	1976	
^{145}Nd	424.8±4.5		c [227]	1998, VdG, TOF, Au:[6, 38]	425±5
	623±54		c [231]	1978, Linac, TOF, ^{6}Li+^{10}B, Sat.	
	380±90		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9507	
	451±45		b [233]	1975, Linac, TOF, ^{10}B, Au+Ag+etc:Sat.	
	300		e [145]	1981	
	600		s [15]	1971	
	558		t [44]	2000	
	529		t [90]	1981	
	485		t [129]	1976	
^{146}Nd	91.2±1.0		c [227]	1998, VdG, TOF, Au:[6, 38]	91.2±1.0
	87.1±4.0		c [234]	1995, VdG, Act., 1/v(kT), Au:[6]	
	75±7	80	c [185]	1979, F.N.B., Act., 1/v(E), Au:621mb(24keV)	
	205±21	190	b [230]	1978, VdG, TOF, ^{10}B; Au:628mb(kT=30keV)	
	152±54		c [231]	1978, Linac, TOF, ^{6}Li+^{10}B, Sat.	
	113±25		c,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	123±30		c [219]	1977, Linac, TOF, ^{6}Li, Au:Sat.	
	120±16 (23keV)	90	c [220]	1973, Sb-Be, Act., 1/v(E), ^{127}I:836mb(23keV)	
	150		s [15]	1971	
	101		t [44]	2000	
	104		t [90]	1981	
	102		t [129]	1976	
^{147}Nd	382		t [44]	2000	544±90*
	550±150		t [234]	1995	
	625		t [235]	1986	
	339		t [129]	1976	
^{148}Nd	146.6±1.9		c [227]	1998, VdG, TOF, Au:[6, 38]	147±2
	152±9		c [234]	1995, VdG, Act., 1/v(kT), Au:[6]	
	99.4±14	106	c [185]	1979, F.N.B., Act., 1/v(E), Au:621mb(24keV)	
	208±26		c [231]	1978, Linac, TOF, ^{6}Li+^{10}B, Sat.	
	186±19	172	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	123±20		b,2 [138]	1978, Linac, TOF, ^{6}Li, Au:Sat., k=0.9833	
	113±20		c [219]	1977, Linac, TOF, ^{6}Li, Au:Sat.,	
	253±40 (23keV)	190	c [220]	1973, Sb-Be, Act., 1/v(E), ^{127}I:836mb(23keV)	
	388±144 (25keV)	305	c [125]	1972, Sb-Be, Act., 1/v(E), ^{127}I:832mb(25keV)	
	135±15		e [236]	1979	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	$\langle\sigma v\rangle/v_T$ (mb) renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	210±80		e [15]	1971	
	89.0		t [44]	2000	
	216		t [90]	1981	
	82		t [129]	1976	
^{150}Nd	159±10		c [234]	1995, VdG, Act., 1/v(kT), Au:[6]	159±10
	187±19	173	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	85±19 (25keV)	67	c [125]	1972, Sb-Be, Act., 1/v(E), ^{127}I:832mb(25keV)	
	240±150		e [15]	1971	
	104		t [44]	2000	
	262		t [90]	1981	
	147		t [129]	1976	
^{147}Pm	938		e [145]	1981	1290±470*
	2000		s [15]	1971	
	1279		t [44]	2000	
	985±250		t [234]	1995	
	1163		t [235]	1986	
	1135		t [90]	1981	
	1400		t [129]	1976	
^{148g}Pm	1896		t [44]	2000	2970±500*
	1410±350		t [234]	1995	
	1542		t [235]	1986	
	1380		t [129]	1976	
^{148m}Pm	2453		t [235]	1986	2453±1200
^{149}Pm	1146		t [44]	2000	2510±750*
	1345±320		t [234]	1995	
^{144}Sm	92±6		c [237]	1993, Linac, TOF, ^{6}Li, Au:Sat.	92±6
	92±9	85	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	150±70		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	120±55		e [15]	1971	
	212		t [44]	2000	
	165		t [90]	1981	
	176		t [129]	1976	
^{147}Sm	973.1±10.0		c [238]	1993, VdG, TOF, Au:[6, 38]	973±10
	953±47		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.: Sat.	
	1241±150		b [239]	1981, Linac, TOF, ^{6}Li+^{10}B, Sat.	
	1080±86		c [236]	1979, Linac, TOF, ^{6}Li+^{10}B, Sat.	
	2156±216	1998	b [182]	1977, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	1170±190		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	1005		e [145]	1981	
	1150±190		e [15]	1971	
	1504		t [44]	2000	
	860		t [234]	1995	
	968		t [235]	1986	
	1469		t [90]	1981	
	1070		t [129]	1976	
^{148}Sm	240.7±2.2		c [238]	1993, VdG, TOF, Au:[6, 38]	241±2
	277±13	264	c [235]	1986, VdG, TOF, Au:B-V	
	281±23	260	c [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	257±50		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	235		e [236]	1979	
	260±50		e [15]	1971	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	258		t [44]	2000	
	225		t [234]	1995	
	262		t [235]	1986	
	282		t [90]	1981	
	288		t [129]	1976	
^{149}Sm	1819.9±17.2		c [238]	1993, VdG, TOF, Au:[6, 38]	1820±17
	1511±70	1442	c [235]	1986, VdG, TOF, Au:B-V	
	2706±240		b [239]	1981, Linac, TOF, ^{6}Li+^{10}B, Sat.	
	2729±273	2529	b [182]	1977, VdG,TOF,^{10}B:[232], Au:628mb(kT=30keV)	
	2660±266		b [233]	1975, Linac, TOF, ^{10}B, Au+Ag+etc:Sat.	
	1620±280		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	1645		e [145]	1981	
	1620±280		e [15]	1971	
	1209		t [44]	2000	
	1270		t [234]	1995	
	1472		t [235]	1986	
	2083		t [90]	1981	
	1630		t [129]	1976	
^{150}Sm	421.9±3.8		c [238]	1993, VdG, TOF, Au:[6, 38]	422±4
	465±28	444	c [235]	1986, VdG, TOF, Au:B-V	
	690±51	639	c [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	370±72		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	451		e [153]	1997	
	430		e [236]	1979	
	370±70		e [15]	1971	
	238		t [44]	2000	
	385		t [234]	1995	
	488		t [235]	1986	
	462		t [90]	1981	
	235		t [129]	1976	
^{151}Sm	1825		e [145]	1981	2710±420*
	2130		e [240]	1977, quoted from[241]	
	1542		t [44]	2000	
	1820±450		t [234]	1995	
	1932		t [235]	1986	
	2809		t [90]	1981	
	1990		t [129]	1976	
^{152}Sm	431±18		c [242]	1995, VdG, Act., 1/v(kT), Au:[6]	473±4
	473.2±4.4		c [238]	1993, VdG, TOF, Au:[6, 38]	
	445±25		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	401±24	395	c [241]	1984, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	606±61	562	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	410±70		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	400		e [153]	1997	
	420		e [236]	1979	
	450±50		e [15]	1971	
	279		t [44]	2000	
	687		t [90]	1981	
	346		t [129]	1976	
^{153}Sm	761		t [44]	2000	1095±175*
	629		t [129]	1976	
^{154}Sm	206±12		c [242]	1995, VdG, Act., 1/v(kT), Au:[6]	206±12
	291±19	270	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	325±60		c [189]	1967, VdG, TOF, ^{181}Ta:762mb	
	297		e [153]	1997	
	215		e [236]	1979	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	380±60		e [15]	1971	
	197		t [44]	2000	
	521		t [90]	1981	
	219		t [129]	1976	
^{151}Eu	3821±152		c [242]	1993, VdG, Act., 1/v(kT), Au:[6]	3775±150
	3458±102		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	3400±140		c [243]	1987, Linac, TOF, ^{6}Li, Au:Sat.	
	4745±330		b [244]	1979, Linac, TOF, $^{6}Li+^{10}B$, Sat.	
	4822±740		c [245]	1976, quoted from [241]	
	4292±172		c [233]	1975, quoted from [241]	
	3600±500		e [15]	1971	
	2281		t [44]	2000	
	3161		t [90]	1981	
	2860		t [129]	1976	
	1639±184	1616	c [241]	1984, VdG, Act., 1/v(kT), Au:657mb(25keV) Partial cross section to ^{152m}Eu	1616±170(p)
^{152}Eu	5235		e [246]	1979, quoted from [241]	7600±1200*
	6309		t [44]	2000	
	4032		t [90]	1981	
	5180		t [129]	1976	
^{153}Eu	2733±110		c [242]	1995, VdG, Act., 1/v(kT), Au:[6]	2780±100
	2447±73		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	2630±200		c [164]	1990, Critical piles, ^{10}B	
	2480±100		c [243]	1987, Linac, TOF, ^{6}Li, Au:Sat.	
	3000±300		b [244]	1979, Linac, TOF, $^{6}Li+^{10}B$	
	3459±346	3206	b [182]	1977, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	3119±312		b [245]	1976, Linac, TOF, ^{10}B:[232], Au+Ag+Sm:Sat.	
	2566		e [145]	1981	
	2700±300		e [15]	1971	
	2444		t [44]	2000	
	2814		t [90]	1981	
	2840		t [129]	1976	
^{154}Eu	4420		r [247]	1981, Mass spectrometric measurement, quoted from [19]	4420±670
	4300		e [124]	1988	
	4169		t [44]	2000	
	2989		t [90]	1981	
	4450		t [129]	1976	
^{155}Eu	1320±84		c [248]	1995, VdG, Act., 1/v(kT), Au:[6]	1320±84
	1320		t [44]	2000	
	2088		t [90]	1981	
	1730		t [129]	1976	
^{152}Gd	1049±17		c [249]	1995, VdG, TOF, Au:[6, 38]	1049±17
	1003±30		c [250]	1988, Linac, TOF, ^{6}Li, Au:Sat.	
	1045±65	1030	c [241]	1984, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	548±180		t [119]	1988	
	500		s [15]	1971	
	574		t [44]	2000	
	1088		t [90]	1981	
	983		t [129]	1976	
^{153}Gd	2820		t [44]	2000	4550±700*
	2760		t [129]	1976	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n,γ) Cross Sections
at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	$\langle\sigma v\rangle/v_T$ (mb) renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
^{154}Gd	1028±12		c [249]	1995, VdG, TOF, Au:[6, 38]	1028±12
	878±27		c [250]	1988, Linac, TOF, ^{6}Li, Au:Sat.	
	1278±102	1184	c [251]	1974, VdG, TOF, ^{10}B:[252]	
	520		s [15]	1971	
	616		t [44]	2000	
	632±207		t [119]	1988	
	920		t [90]	1981	
	1090)		t [129]	1976	
^{155}Gd	2648±30		c [249]	1995, VdG, TOF, Au:[6, 38]	2648±30
	2990.4±150		b [253]	1989, Linac, TOF, ^{6}Li+^{10}B, Sat.	
	2721±90		c [250]	1988, Linac, TOF, ^{6}Li, Au:Sat.	
	2800±280	2595	b [251]	1974, VdG, TOF, ^{10}B:[254], Au:628mb(kT=30keV)	
	2280		s [15]	1971	
	2116		t [44]	2000	
	2300		t [90]	1981	
	2520		t [129]	1976	
^{156}Gd	615.2±5.1		c [249]	1995, VdG, TOF, Au:[6, 38]	615±5
	639±64	592	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	470		s [15]	1971	
	454		t [44]	2000	
	534		t [90]	1981	
	520		t [129]	1976	
^{157}Gd	1369±15		c [249]	1995, VdG, TOF, Au:[6, 38]	1369±15
	1365.5±70		b [253]	1989, Linac, TOF, ^{6}Li+^{10}B, Sat.	
	1355±39		c [250]	1988, Linac, TOF, ^{6}Li, Au:Sat.	
	1538±154	1425	b [251]	1974, VdG, TOF, ^{10}B:[254], Au:628mb(kT=30keV)	
	2070		s [15]	1971	
	1239		t [44]	2000	
	1381		t [90]	1981	
	1360		t [129]	1976	
^{158}Gd	323.6±2.8		c [249]	1995, VdG, TOF, Au:[6, 38]	324±3
	319±21		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	221±20	218	c [241]	1984, VdG, Act., 1/v(kT), Au:657mb(25keV)	
	423±42	392	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	626±350 (25keV)	492	c [125]	1972, Sb-Be, Act., 1/v(E), ^{127}I:832mb(25keV)	
	523±60		b [255]	1968, VdG, Act., ^{235}U:[256]	
	540±70		e [15]	1971	
	264		t [44]	2000	
	363		t [90]	1981	
	302		t [129]	1976	
^{160}Gd	200±13		c [163]	1992, VdG, TOF,^{6}Li, ^{10}B+Au:B-V	154±20
	144±14	142	c [241]	1984, VdG, Act., 1/v(kT), Au:657mb(25keV) ^{160}Gd$(n,\gamma)^{161}$Gd β decay of ^{161}Tb	
	192±19	178	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	290±41 (23keV)	218	c [220]	1973, Sb-Be, Act., 1/v(E), ^{127}I:836mb(23keV)	
	15±7 (25keV)	12	c [125]	1972, Sb-Be, Act., 1/v(E), ^{127}I:832mb(25keV)	
	100±30		e [15]	1971	
	175		t [44]	2000	
	265		t [90]	1981	
	171		t [129]	1976	
^{159}Tb	1471±66		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	1580±150
	1800±100		c [257]	1978, Linac, TOF, ^{6}Li+^{10}B:[175]	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	1850±250	1765	c [258]	1972, VdG, TOF, In:740±70mb	
	2200±200		e [15]	1971	
	1506		t [44]	2000	
	1975		t [90]	1981	
	1610		t [129]	1976	
^{160}Tb	2808		t [44]	2000	3240±510*
	3230		t [129]	1976	
^{156}Dy	1589±145	1567	c [259]	1985, VdG, Act., 1/v(kT), Au:657mb(25keV)	1567±145
	870		s [15]	1971	
	1091		t [44]	2000	
	850±280		t [119]	1988	
	1637		t [90]	1981	
	1840		t [129]	1976	
^{158}Dy	770		s [15]	1971	1060±400*
	932		t [44]	2000	
	883±290		t [119]	1988	
	993		t [90]	1981	
	861		t [129]	1976	
^{160}Dy	889.7±12.0		c [224]	1999, VdG, TOF, Au:[6, 38]	890±12
	806±40		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	699±35		c [260]	1984, Linac, TOF, ^{6}Li, Au:Sat.	
	777±39	769	c [260]	1984, VdG, TOF, Au:[38]	
	1162±116	1077	b [230]	1978, VdG, TOF,^{10}B:[232], Au:628mb(kT=30keV)	
	650		s [15]	1971	
	572		t [44]	2000	
	591±190		t [119]	1988	
	637		t [90]	1981	
	1010		t [129]	1976	
^{161}Dy	1964.0±19.0		c [224]	1999, VdG, TOF, Au:[6, 38]	1964±19
	1836±92		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	1936±88		c [260]	1984, Linac, TOF, ^{6}Li, Au:Sat.	
	2077±75	2056	c [260]	1984,VdG, TOF, Au:[38]	
	1912±19	1772	b [230]	1978,VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	2800±300		e [15]	1971	
	1636		t [44]	2000	
	1764		t [90]	1981	
	2150		t [129]	1976	
^{162}Dy	446.0±3.7		c [224]	1999, VdG, TOF, Au:[6, 38]	446±4
	427±21		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	476±48	441	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	470±50		e [15]	1971	
	389		t [44]	2000	
	420		t [90]	1981	
	398		t [129]	1976	
^{163}Dy	1112.0±11.0		c [224]	1999, VdG, TOF, Au:[6, 38]	1112±11
	1026±51		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	1153±44		c [261]	1985, Linac, TOF, ^{6}Li, Au:Sat.	
	1130±45	1052	c [261]	1985, VdG, TOF, Au:B-IV	
	1008±101	934	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	1600±300		e [15]	1971	
	1058		t [44]	2000	
	1270		t [90]	1981	
	913		t [129]	1976	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
^{164}Dy	211.9±2.9		c [224]	1999, VdG, TOF, Au:[6, 38]	212±3
	209±15		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	268±27	248	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	180±40		e [15]	1971	
	175		t [44]	2000	
	262		t [90]	1981	
	177		t [129]	1976	
^{163}Ho	2125±95		c [262]	1996, VdG, Act., 1/v(kT), Au:[6]	2125±95
	2077		t [44]	2000	
	2264		t [90]	1981	
	2880		t [129]	1976	
^{165}Ho	1134±60		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	1280±100
	1419±71		b [168]	1981, Linac, TOF, ^{6}Li, Au:Sat.	
	1209±61		b [150]	1980, Linac, TOF, ^{10}B:B-IV	
	1333±300	1114	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	1145±120		c [151]	1978, F.N.B., Act., 1/v(E), ^{10}B, Ag:Sat.	
	1380±100		b [263]	1973, Linac, TOF, ^{10}B:[254], Ag:Sat.	
	1480±225	1412	c [258]	1972, VdG, TOF, In:740±70mb	
	1250±150		e [15]	1971	
	1246		t [44]	2000	
	1853		t [90]	1981	
	1430		t [129]	1976	
	1064±120 (23keV)	798	c [220]	1973, Sb-Be, Act., 1/v(E), ^{127}I:836mb(23keV) Partial cross section to ^{166g}Ho	798±120(p)
^{162}Er	1624±124		c [262]	1996, VdG, Act., 1/v(kT), Au:[6]	1624±124
	900		s [15]	1971	
	1022		t [44]	2000	
	1534		t [90]	1981	
	1670		t [129]	1976	
^{164}Er	1084±51		c [264]	1996, VdG, Act., 1/v(kT), Au:[6]	1084±51
	714±61	709	c [261]	1985, VdG, Act., 1/v(kT), Au:[38]	
	750		s [15]	1971	
	809		t [44]	2000	
	1122)		t [90]	1981	
	1000		t [129]	1976	
^{166}Er	608±61	563	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	563±56
	519±156	481	c [251]	1974,VdG, TOF, ^{10}B:[254], Au:628mb(kT=30keV)	
	560		s [15]	1971	
	449		t [44]	2000	
	739		t [90]	1981	
	657		t [129]	1976	
^{167}Er	1538±154	1425	b [251]	1974, VdG, TOF, ^{10}B:[254], Au:628mb(kT=30keV)	1425±143
	2000		s [15]	1971	
	1384		t [44]	2000	
	1765		t [90]	1981	
	1830		t [129]	1976	
^{168}Er	365±44	338	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	338±44
	263±73	244	c [251]	1974, VdG, TOF, ^{10}B:[254], Au:628mb(kT=30keV)	
	400		s [15]	1971	
	243		t [44]	2000	
	415		t [90]	1981	
	317		t [129]	1976	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
^{169}Er	446		t [44]	2000	653±114*
	609		t [129]	1976	
^{170}Er	170±7		c [264]	1996, VdG, Act., 1/v(kT), Au:[6]	170±7
	223±33	207	b [230]	1978, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	144±43	133	c [251]	1974, VdG, TOF, ^{10}B:[254], Au:628mb(kT=30keV)	
	275±50		b [255]	1968, VdG, Act., ^{235}U:[256]	
	250±30		e [15]	1971	
	151		t [44]	2000	
	293		t [90]	1981	
	188		t [129]	1976	
^{169}Tm	1129±56		b,1 [265, 266]	1982, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat., k=1.0737	1129±56
	1500±200		e [15]	1971	
	692		t [44]	2000	
	1716		t [90]	1981	
	1030		t [129]	1976	
^{170}Tm	1344		t [44]	2000	1870±330*
	2260		t [129]	1976	
^{171}Tm	408		t [44]	2000	486±144*
	1332		t [90]	1981	
	637		t [129]	1976	
^{168}Yb	700		s [15]	1971	1160±440*
	841		t [44]	2000	
	971±320		t [119]	1988	
	1008		t [90]	1981	
	1110		t [129]	1976	
^{170}Yb	768.3±7.2		c [267]	1998, VdG, TOF, Au:[6, 38]	768±7
	989±50		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	738±29	731	c [260]	1984, VdG, TOF, Au:[38]	
	766±30	713	c [268]	1981, VdG, TOF, Au:B-IV	
	790±60	739	c [269]	1979, VdG, TOF, Au:624mb(kT=30keV)	
	510		s [15]	1971	
	628		t [44]	2000	
	757		t [90]	1981	
	990		t [129]	1976	
^{171}Yb	1210±12		c [267]	1998, VdG, TOF, Au:[6, 38]	1210±12
	1371±69		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	1411±51	1397	c [260]	1984, VdG, TOF, Au:[38]	
	1453±120	1347	c [270]	1974, VdG, TOF, ^{10}B:[254], Au:628mb(kT=30keV)	
	1320		s [15]	1971	
	947		t [44]	2000	
	1505		t [90]	1981	
	1510		t [129]	1976	
^{172}Yb	341.3±3.0		c [267]	1998, VdG, TOF, Au:[6, 38]	341±3
	420±25		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	410±34	380	c [270]	1974, VdG, TOF, ^{10}B:[254], Au:628mb(kT=30keV)	
	380		s [15]	1971	
	354		t [44]	2000	
	401		t [90]	1981	
	534		t [129]	1976	
^{173}Yb	753.8±7.4		c [267]	1998, VdG, TOF, Au:[6, 38]	754±7

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n,γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	$\langle\sigma v\rangle/v_T$ (mb) renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	868±43		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	865±72	802	c [270]	1974, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	990		s [15]	1971	
	849		t [44]	2000	
	1116		t [90]	1981	
	1130		t [129]	1976	
^{174}Yb	150.5±1.8		c [267]	1998, VdG, TOF, Au:[6, 38]	151±2
	173±14		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	176±16	163	c [270]	1974, VdG, TOF, ^{10}B:[232, 254], Au:628mb(kT=30keV)	
	275		s [15]	1971	
	162		t [44]	2000	
	167		t [90]	1981	
	190		t [129]	1976	
^{175}Yb	500		t [44]	2000	558±83*
	231±76		t [119]	1988	
	986		t [129]	1976	
^{176}Yb	115.9±2.0		c [267]	1998, VdG, TOF, Au:[6, 38]	116±2
	136±11		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	
	111±11	103	b [270]	1974, VdG, TOF, ^{10}B:[232, 254], Au:628mb(kT=30keV)	
	208±40		b [255]	1968, VdG, Act., ^{235}U:[256]	
	200±50		e [15]	1971	
	111		t [44]	2000	
	152		t [90]	1981	
	183		t [129]	1976	
^{175}Lu	992±50		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	1146±44
	1179±44	1167	c [260]	1984, VdG, TOF, Au:[38]	
	1266±43	1179	c [268]	1981, VdG, TOF, Au:B-IV	
	1206±54		c [265]	1978, Linac, TOF, ^{6}Li+^{235}U:B-V, Au:Sat.	
	1265±190	1207	c [258]	1972, VdG, TOF, In:740±70mb	
	1460±110		e [15]	1971	
	1054		t [44]	2000	
	1916		t [90]	1981	
	1960		t [129]	1976	
				Partial cross section to ^{176m}Lu	
	1036±30		c [271]	1991, VdG, Act., 1/v(kT), Au:[6]	1036±30(p)
	1053±40 (24keV)	1031	c [272]	1988, F.N.B., 1/v(kT), Au:623mb(24keV)	
	1198±70	1117	c [273]	1981, Linac, Act., Au:624±25mb(kT=30keV)	
	810±44	754	c [216]	1980, VdG, Act., 1/v(kT), Au:B-IV	
^{176}Lu	1526±69		c [260]	1984, Linac, TOF, ^{6}Li, Au:Sat.	1532±69
	1514±56	1499	c [260]	1984, VdG, TOF, Au:[38]	
	1718±85	1599	c [216]	1980, VdG, Act., 1/v(kT), Au:B-IV	
	2236±335	2072	c [274]	1973, VdG, TOF, ^{10}B:[232, 254], Au:628mb(kT=30keV)	
	2250±200		e [15]	1971	
	1470		t [44]	2000	
	2087		t [90]	1981	
	2680		t [129]	1976	
^{174}Hf	800		s [15]	1971	956±283*
	713		t [44]	2000	
	1182		t [90]	1981	
	1170		t [129]	1976	
^{176}Hf	449±27		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	455±20

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	458±20		c [260]	1984, Linac, TOF, ^{6}Li, Au:Sat.	
	730±110	676	c [274]	1973, VdG, TOF, ^{10}B:[232, 254], Au:628mb(kT=30keV)	
	640±160		e [15]	1971	
	477		t [44]	2000	
	732		t [90]	1981	
	755		t [129]	1976	
^{177}Hf	1663±83		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	1500±100
	1366±61		c [260]	1984, Linac, TOF, ^{6}Li, Au:Sat.	
	1500		e [275]	1976, quoted from [276]	
	110		s [15]	1971	
	1159		t [44]	2000	
	2115		t [90]	1981	
	1950		t [129]	1976	
^{178}Hf	327±20		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	314±10
	310±10		c [277]	1982, Linac, TOF, ^{6}Li, Au:Sat.	
	330		e [275]	1976, quoted from [276]	
	370		s [15]	1971	
	325		t [44]	2000	
	583		t [90]	1981	
	510		t [129]	1976	
^{179}Hf	858±43		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	956±50
	991±30		c [277]	1982, Linac, TOF, ^{6}Li, Au:Sat.	
	1346		e [275]	1976, quoted from [276]	
	960		s [15]	1971	
	964		t [44]	2000	
	1368		t [90]	1981	
	977		t [129]	1976	
	12.2±0.6	11.4	c [278]	1980, VdG, Act., 1/v(kT), Au:B-IV Partial cross section to ^{180m}Hf	11.4±0.6(p)
^{180}Hf	169±14		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	179±5
	179±5		c [277]	1982, Linac, TOF, ^{6}Li, Au:Sat.	
	180±9	168	c [276]	1982, VdG, Act., 1/v(kT), Au:B-IV	
	316±41 (23keV)	237	c [220]	1973, Sb-Be, Act., 1/v(E), ^{127}I:836mb(23keV)	
	290±80		e [15]	1971	
	174		t [44]	2000	
	245		t [90]	1981	
	384		t [129]	1976	
^{181}Hf	179		t [44]	2000	194±31*
	385		t [129]	1976	
^{182}Hf	101		t [44]	2000	117±41*
	241		t [90]	1981	
^{179}Ta	1419		t [44]	2000	1334±422*
	1128±225		t [279]	1992	
^{180m}Ta	1493		t [44]	2000	1640±260*
	2662±530		t [279]	1992	
	1800±200		t [277]	1982	
	2273		t [90]	1981	
	3270		t [129]	1976	
^{181}Ta	761±38		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	766±15
	788±33		c [280]	1991, VdG, Act., Au:[6, 38]	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	$\langle\sigma v\rangle/v_T$ (mb) renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	766.2±15.1		c [148]	1990, VdG, TOF, Au:[6, 38]	
	828±51		c [221]	1990, VdG, Act., 1/v(kT), Au:655±23mb(24keV)	
	703±35		c [281]	1984, Linac, TOF, ^{6}Li, Au:Sat.	
	770±38		c [149]	1982, VdG, TOF, Au:B-V	
	834±74	777	c [273]	1981, Linac, Act., Au:624±23mb(kT=30keV)	
	771±48		b [150]	1980, Linac, TOF, ^{10}B:B-IV	
	960±50	894	c [216]	1980, VdG, Act., 1/v(kT), Au:B-IV	
	787±100		c [151]	1978, F.N.B., Act., 1/v(E), ^{10}B, Ag:Sat.	
	855±86	792	b [182]	1977, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	
	1393±153 (23keV)	1045	c [220]	1973, Sb-Be, Act., 1/v(E), ^{127}I:836mb(23keV)	
	925±140	882	c [258]	1972, VdG, TOF, In:740±70mb	
	850±190		c [166]	1970, Linac, TOF, ^{10}B:BNL-325	
	719		e [153]	1997	
	800±80		e [15]	1971	
	871		t [44]	2000	
	1098		t [90]	1981	
	1160		t [129]	1976	
^{182}Ta	1182		t [44]	2000	1120±180*
	2610		t [129]	1976	
^{180}W	578±60	536	b [282]	1987, VdG, TOF, ^{10}B:[232], Au:628mb(kT=30keV)	536±60
	270		s [15]	1971	
	636		t [44]	2000	
	522±105		t [283]	1991	
	646		t [90]	1981	
	1090		t [129]	1976	
^{182}W	274±8		b [284]	1983, Linac, TOF, ^{6}Li, Au:Sat.	274±8
	322		c [285]	1969, Linac, TOF, ^{6}Li, Au:Sat., quoted from [276]	
	260±30		e [15]	1971	
	362		t [44]	2000	
	358±46		t [283]	1991	
	365		t [90]	1981	
	448		t [129]	1976	
^{183}W	515±15		b [284]	1983, Linac, TOF, ^{6}Li, Au:Sat.	515±15
	550		c [285]	1969, Linac, TOF, ^{6}Li, Au:Sat., quoted from [276]	
	550±50		e [15]	1971	
	614		t [44]	2000	
	618±75		t [283]	1991	
	1038		t [90]	1981	
	1010		t [129]	1976	
^{184}W	217±6		b [284]	1983, Linac, TOF, ^{6}Li, Au:Sat.	224±10
	256±10	238	c [276]	1982, VdG, TOF, Au:B-IV	
	286±38		t [283]	1991	
	180±20		e [15]	1971	
	234		t [44]	2000	
	234		t [90]	1981	
	314		t [129]	1976	
^{185}W	560		t [44]	2000	703±113*
	532±75		t [283]	1991	
	794		t [129]	1976	
^{186}W	176±5		b [284]	1983, Linac, TOF, ^{6}Li, Au:Sat.	176±5
	221±12	235	c [185]	1979, F.N.B., Act., 1/v(E), Au:621mb(24keV)	
	220±20		e [15]	1971	
	141		t [44]	2000	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.		References and Comments	$\langle\sigma v\rangle/v_T$ (mb) recommended
	136±28		t [283]	1991	
	194		t [90]	1981	
	251		t [129]	1976	
^{185}Re	1535±62		c [283]	1991, VdG, Act., 1/v(kT), Au:[6]	1535±62
	2063±500	1725	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	1530±200		e [15]	1971	
	1073		t [44]	2000	
	1473±219		t [283]	1991	
	1572		t [90]	1981	
	1810		t [129]	1976	
^{186}Re	1365		t [44]	2000	1550±250*
	1613±248		t [283]	1991	
	2127)		t [90]	1981	
	2350		t [129]	1976	
^{187}Re	1160±57		c [283]	1991, VdG, Act., 1/v(kT), Au:[6]	1160±57
	844±250	706	c [73]	1979, F.N.B., Act., 1/v(E), ^{127}I:832mb(25keV)	
	1570±100		e [15]	1971	
	799		t [44]	2000	
	1209±204		t [283]	1991	
	1205		t [90]	1981	
	1490		t [129]	1976	
^{184}Os	400		s [15]	1971	657±202*
	705		t [44]	2000	
	480		t [90]	1981	
	869		t [129]	1976	
^{186}Os	418±16		c [286, 287]	1982, Linac, TOF, ^{6}Li, Au:Sat.	422±16
	438±30		c [288]	1981, Linac, TOF, ^{6}Li:B-IV, ^{165}Ho:Sat.	
	330		s [15]	1971	
	578		t [44]	2000	
	421		t [90]	1981	
	734		t [129]	1976	
^{187}Os	922±46		c [163]	1992, VdG, TOF, Au+Ag+Nd+etc.:Sat.	896±30
	874±28		c [286, 287]	1982, Linac, TOF, ^{6}Li, Au:Sat.	
	919±43		c [288]	1981, Linac, TOF, ^{6}Li:B-IV, ^{165}Ho:Sat.	
	900		s [15]	1971	
	791		t [44]	2000	
	909		t [90]	1981	
	1230		t [129]	1976	
^{188}Os	401±15		c [286, 287]	1982, Linac, TOF, ^{6}Li, Au:Sat.	399±15
	395±24		c [288]	1981, Linac, TOF, ^{6}Li:B-IV, ^{165}Ho:Sat.	
	275		s [15]	1971	
	338		t [44]	2000	
	262		t [90]	1981	
	474		t [129]	1976	
^{189}Os	1168±47		c [289]	1987, Linac, TOF, ^{6}Li, Au:Sat.	1168±47
	1536±46		c [288]	1981, Linac, TOF, ^{6}Li:B-IV, ^{165}Ho:Sat.	
	765		s [15]	1971	
	938		t [44]	2000	
	1238		t [90]	1981	
	858		t [129]	1976	
^{190}Os	295±45		c [288]	1981, Linac, TOF, ^{6}Li:B-IV, ^{165}Ho:Sat.	295±45

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	320±36	341	c [185]	1979, F.N.B., Act., 1/v(E), Au:621mb(24keV)	
	477±71 (23keV)	358	c [220]	1973, Sb-Be, Act., 1/v(E), ^{127}I:836mb(23keV)	
	230		s [15]	1971	
	212		t [44]	2000	
	213		t [90]	1981	
	577		t [129]	1976	
^{191}Os	789		t [44]	2000	1290±280*
	1090		t [129]	1976	
^{192}Os	311±45		c [288]	1981, Linac, TOF, ^{6}Li:B-IV, ^{165}Ho:Sat.	311±45
	144±15	153	c [185]	1979, F.N.B., Act., 1/v(E), Au:621mb(24keV)	
	200		e [15]	1971	
	120		t [44]	2000	
	127		t [90]	1981	
	109		t [129]	1976	
^{191}Ir	1350±43		c [290]	1997, VdG, Act., 1/v(kT), Au:[6]	1350±43
	1345±67		b [265]	1978, Linac, TOF, ^{6}Li+^{235}U:B-V	
	1900±300		e [15]	1971	
	994		t [44]	2000	
	1789		t [90]	1981	
	1770		t [129]	1976	
^{192}Ir	1338		t [44]	2000	2080±450*
	3260		t [90]	1981	
	3460		t [129]	1976	
^{193}Ir	994±70		c [290]	1997, VdG, Act., 1/v(kT), Au:[6]	994±70
	864±43		b [265]	1978, Linac, TOF, ^{6}Li+^{235}U:B-V	
	600±80		e [15]	1971	
	688		t [44]	2000	
	1132		t [90]	1981	
	1120		t [129]	1976	
^{190}Pt	677±183		c [291, 292]	1999, VdG, Act., 1/v(kT), Au:[6]	677±183
	770		s [15]	1971	
	888		t [44]	2000	
	464		t [90]	1981	
	1080		t [129]	1976	
^{192}Pt	590±120		s [291, 292]	1999, VdG, Act., 1/v(kT), Au:[6]	590±120
	196±56		c [280]	1991, VdG, Act., 1/v(kT), Au:[6]	
	490		s [15]	1971	
	612		t [44]	2000	
	322		t [90]	1981	
	352		t [129]	1976	
^{193}Pt	845		t [44]	2000	1123±240*
	1522		t [90]	1981	
	802		t [129]	1976	
^{194}Pt	365±85		s [291, 292]	1999, VdG, Act., 1/v(kT), Au:[6]	365±85
	310		s [15]	1971	
	322		t [44]	2000	
	243		t [90]	1981	
	386		t [129]	1976	
	27±2		c [291, 292]	1999, VdG, Act., 1/v(kT), Au:[6]	27±2(p)

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	$\langle\sigma v\rangle/v_T$ (mb) renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
				Partial cross section to ^{195m}Pt	
^{195}Pt	860±200		s [291, 292]	1999	860±200
	780		s [15]	1971	
	583		t [44]	2000	
	1364		t [90]	1981	
	1040		t [129]	1976	
^{196}Pt	197±23		c [291, 292]	1999, VdG, Act., 1/v(kT), Au:[6]	197±23
	160±40		e [15]	1971	
	165		t [44]	2000	
	143		t [90]	1981	
	185		t [129]	1976	
	13.0±1.4		c [291, 292]	1999, VdG, Act., 1/v(kT), Au:[6]	13.0±1.4(p)
				Partial cross section to ^{197m}Pt	
^{198}Pt	82±12		c [291, 292]	1999, VdG, Act., 1/v(kT), Au:[6]	82±12
	185±20		e [15]	1971	
	66.5		t [44]	2000	
	76		t [90]	1981	
	74		t [129]	1976	
	2.69±0.16		c [291, 292]	1999, VdG, Act., 1/v(kT), Au:[6]	2.69±0.16(p)
				Partial cross section to ^{199m}Pt	
^{197}Au	617.8±11 (23 keV)	541	c [293]	1991, Sb-Be, Act., 1/v(E), 4π manganese bath meth.	582±9
	582±9		c [6]	1988, VdG, Act., 1/v(kT), Activity of ^{7}Be from ^{7}Li(p,n)	
	611±18		r [184]	1985, VdG, TOF., ^{6}Li; Au:Sat.	
	592±18		c [294]	1984, VdG, Act., Activity of ^{7}Be from ^{7}Li(p,n)	
	599±33		b [202]	1983, Linac, TOF, ^{10}B, B-V;	
	588±20		c [38]	1982, Linac, TOF, ^{6}Li, Au:Sat.	
	628±30		b [182]	1977, VdG, TOF, ^{10}B:[232]	
	600±40		c [295]	1976, Linac, TOF, ^{10}B:[254], ^{235}U:ENDF/B-III	
	640±40		c [295]	1976, Linac, TOF, ^{10}B:[254], ^{235}U:ENDF/B-III	
	579±8		c [38]	1982, Linac, TOF, ^{6}Li, Au:Sat.	
	585±17		c [263]	1973 Linac, TOF, ^{10}B:[254], ^{235}U:[296]	
	788±79 (23keV)	591	c [220]	1973, Sb-Be, Act., 1 /v(E), ^{127}I:836mb(23keV)	
	600±50		c [166]	1970, quoted from [295]	
	596±18		c [77]	1969, VdG, TOF, ^{10}B+^{6}Li:B-IV	
	600±9		c [297]	1966, VdG, Act., Activity of ^{7}Be from ^{7}Li(p,n) +manganese bath method	
	600±30		c [298]	1963, Linac, TOF, ^{10}B, quoted from [295]	
	610±20		e [246]	1979	
	600±50		e [15]	1971	
	528		t [44]	2000	
	1181		t [90]	1981	
	842		t [129]	1976	
^{198}Au	795		t [44]	2000	840±147*
	1650		t [129]	1976	
^{196}Hg	360		s [15]	1971	650±82*
	416		t [44]	2000	
	610		t [90]	1981	
	992		t [129]	1976	

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n, γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle \sigma v \rangle / v_T$ (mb) original	$\langle \sigma v \rangle / v_T$ (mb) renorm.	References and Comments		$\langle \sigma v \rangle / v_T$ (mb) recommended
^{198}Hg	173±15		c [299]	1985, Linac, TOF, ^{6}Li, Au:Sat.	173±15
	250		s [15]	1971	
	234		t [44]	2000	
	518		t [90]	1981	
	411		t [129]	1976	
^{199}Hg	374±23		c [299]	1985, Linac, TOF, ^{6}Li, Au:Sat.	374±23
	630		s [15]	1971	
	307		t [44]	2000	
	791		t [90]	1981	
	362		t [129]	1976	
^{200}Hg	115±12		c [299]	1985, Linac, TOF, ^{6}Li, Au:Sat.	115±12
	175		s [15]	1971	
	109		t [44]	2000	
	141		t [90]	1981	
	70		t [129]	1976	
^{201}Hg	264±14		c [299]	1985, Linac, TOF, ^{6}Li, Au:Sat.	264±14
	450		s [15]	1971	
	120		t [44]	2000	
	366		t [90]	1981	
	130		t [129]	1976	
^{202}Hg	74±6		c [299]	1985, Linac, TOF, ^{6}Li, Au:Sat.	74±6
	45±5 (23keV)	34	c [220]	1973, Sb-Be, Act., 1/v(E), ^{127}I:836mb(23keV)	
	50±15		e [15]	1971	
	47.4		t [44]	2000	
	42		t [90]	1981	
	46		t [129]	1976	
^{203}Hg	76.4		t [44]	2000	98±17*
	63		t [129]	1976	
^{204}Hg	42±4		c [299]	1985, Linac, TOF, ^{6}Li, Au:Sat.	42±4
	150±50		e [15]	1971	
	14.7		t [44]	2000	
	10		t [90]	1981	
	15		t [129]	1976	
^{203}Tl	124±8		c,1 [300]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=0.9507	124±8
	170±30		e [15]	1971	
	127		t [44]	2000	
	221		t [90]	1981	
	94		t [129]	1976	
^{204}Tl	134±40		s [300]	1976	215±38*
	168		t [44]	2000	
	97		t [90]	1981	
	267		t [129]	1976	
^{205}Tl	54±4		c [300]	1976, Linac, TOF, ^{6}Li, Au:Sat.	54±4
	48±10		e [15]	1971	
	51.5		t [44]	2000	
	35		t [90]	1981	
	49		t [129]	1976	
^{204}Pb	89.5±5.5		c [301]	1984, Linac, TOF, ^{6}Li, Au:Sat.	89.5±5.5

TABLE I. Compiled and Recommended Values of Maxwellian-Averaged (n,γ) Cross Sections at Thermal Energy $kT = 30$ keV for ^{1}H to ^{210}Bi

See page 81 for Explanation of Tables

Isotope	$\langle\sigma v\rangle/v_T$ (mb) original	renorm.	References and Comments		$\langle\sigma v\rangle/v_T$ (mb) recommended
	79.5±5		c,2 [302]	1973, Linac, TOF, ^{6}Li, Au:Sat., k=1.0737	
	42.6±5.4		c [2]	1967, VdG, TOF, ^{181}Ta:8100$E_n^{-0.697}$	
	66.7		t [44]	2000	
	78		t [90]	1981	
	50		t [129]	1976	
^{205}Pb	54±12		s [300]	1976	125±22*
	91.6		t [44]	2000	
	83		t [90]	1981	
	58		t [129]	1976	
^{206}Pb	15.8±0.8		c,2 [303]	1979, Linac, TOF, ^{6}Li, Au:Sat., k=1.0737	15.8±0.8
	16.4±1.0		c,1 [304]	1979, Linac, TOF, ^{6}Li, Au:Sat., k=1.036	
	14±1		c,2 [302]	1973, Linac, TOF, ^{6}Li, Au:Sat., k=1.0000	
	9.6±3		e [15]	1971	
	26.8		t [44]	2000	
	24		t [90]	1981	
	16		t [129]	1976	
^{207}Pb	9.7±1.3		c [305]	1997, Linac, TOF, ^{10}B, Ag:Sat.	9.7±1.3
	8.42±0.9		r [306]	1987, Linac, TOF, ^{10}B, ^{56}Fe:Sat.	
	11.3±0.7		c,2 [302]	1973, Linac, TOF, ^{6}Li, Au:Sat., k=1.0000	
	8.7±3		e [15]	1971	
	15.1		t [44]	2000	
	8.3		t [90]	1981	
	5.8		t [129]	1976	
^{208}Pb	0.356±0.038		c [215]	1997, Linac, TOF, ^{6}Li, Au+Ag:Sat.	0.36±0.03
	0.36±0.03		c [307]	1989, VdG, Act., 1/v(kT), Au:[6]	
	0.60±0.06		c [308]	1977, Linac, TOF, ^{6}Li, Au:Sat.	
	0.75±0.09		c,2 [302]	1973, Linac, TOF, ^{6}Li, Au:Sat., k=1.0000	
	0.33±0.07	0.32	c [309]	1969, VdG, Act., Au:600mb(BNL-325, 2nd)	
	0.4		t [44]	2000	
	0.3		t [90]	1981	
	0.3		t [129]	1976	
^{209}Bi	2.70±0.48		c [305]	1997, Linac, TOF, ^{6}Li, Au+Ag:Sat.	2.70±0.48
	1.70±0.17		c [310]	1990, VdG, TOF, Au:[6, 38]	
	3.12±0.6		r [20]	1981, quoted from [19]	
	11.1±1.1		c,1 [311]	1976, Linac, TOF, ^{6}Li, Au:Sat., k=1.0360	
	8.0		t [44]	2000	
	9.2		t [90]	1981	
	7.8		t [129]	1976	
	2.54±0.14 (25keV)	2.32	c [307]	1989, VdG, Act., 1/v(kT), Au:[6] Partial cross section to ^{210g}Bi	2.32±0.14(p)
^{210}Bi	13.4		t [44]	2000	6±5*
	24		t [129]	1976	
^{210}Po	6.0		t [44]	2000	3.3±3*
	2.0		t [90]	1981	

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{1}H	0.87	0.53	0.40	0.33	0.285	0.254±0.020	0.215	0.193	0.178	0.162	0.153	e,1995	[1]
^{3}He						0.0076±0.0006						e,1991	[3]
^{7}Li	0.102	0.072	0.059	0.051	0.046	0.042±0.004	0.038	0.035	0.033	0.031	0.030	e,1998	[5]
^{12}C	0.0126	0.0125	0.013	0.0139	0.0147	0.0154±0.001	0.0169	0.0183	0.0196	0.022	0.024	e,1994	[12]
^{13}C	0.0073	0.0081	0.0093	0.012	0.016	0.021±0.004	0.032	0.041	0.046	0.050	0.050	e,1997	[16, 17]
^{14}C	0.0037	0.0026	0.0021	0.0019	0.0017	0.0015±0.0004	0.0013	0.0012	0.0011	0.00093	0.00083	e+t,1992	[22, 129]
^{14}N	0.183	0.101	0.071	0.057	0.046	0.041±0.06	0.033	0.027	0.022	0.019	0.016	e+t,1981	[44, 20]
^{15}N	0.0025	0.0035	0.0042	0.0048	0.0053	0.0058±0.0005	0.0065	0.0072	0.0078	0.0087	0.0097	e,1996	[24]
^{16}O	0.016	0.022	0.027	0.031	0.035	0.038±0.004	0.044	.049	0.054	0.062	0.069	e,1995	[25]
^{18}O	0.0037	0.0051	0.0061	0.0070	0.00793	0.0089±0.0008	0.0108	0.0130	0.0157	0.0223	0.0293	e,1996	[27]
^{19}F	2.0	6.7	7.8	7.4	6.6	5.8±1.2	4.6	3.8	3.2	2.5	2.2	e,1973	[29, 30]
^{20}Ne	0.088	0.062	0.053	0.060	0.084	0.119±0.011	0.191	0.242	0.259	0.272	0.253	e,1988	[31]
^{21}Ne				1.7	1.6	1.5±0.9	1.3	1.2				e,1983	[32]
^{22}Ne	0.221	0.133	0.103	0.088	0.074	0.059±0.006	0.059	0.044	0.044	0.044	0.04	e+t,1991	[44, 33]
^{23}Na	1.4	5.2	3.4	2.7	2.2	2.1±0.2	1.7	1.5	1.4	1.3	1.2	e,1978	[20, 34]
^{24}Mg	0.11	0.48	1.3	2.3	2.9	3.3±0.4	3.6	3.4	3.1	2.7	2.1	e,1976	[36]
^{25}Mg	4.8	5.0	5.5	6.0	6.2	6.4±0.4	6.2	5.7	5.3	4.4	3.6	e,1976	[36]
^{26}Mg	0.103	0.091	0.098	0.110	0.119	0.126±0.009	0.143	0.161	0.165	0.226	0.265	e,1998	[39]
^{26}Al	10	7	5.6	4.7	4.1	3.7	3.1	2.6	2.3	1.9	1.6	t,2000	
^{27}Al	11.2	6.8	5.4	4.6	4.1	3.74±0.3	3.3	3.0	2.8	2.5	2.3	e,1984	[34, 41]
^{28}Si	0.29 1.000	0.86 1.000	1.9 1.000	2.5 1.000	2.8 1.000	2.9±0.3 1.000	2.8 1.000	2.7 1.000	2.5 1.000	2.2 1.000	1.9 1.000	e,1976	[42, 43]
^{29}Si	10.3 1.000	14.4 1.000	13.3 1.000	11.3 1.000	9.5 1.000	7.9±0.9 1.000	5.8 1.000	4.4 1.000	3.4 1.000	2.3 1.000	1.7 1.000	e,1976	[42, 43]

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{30}Si	124	43	22	13	8.8	6.5±0.6	3.8	2.6	1.9	1.3	0.96	e,1976	[43]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{31}P	0.8	1.8	2.0	1.9	1.8	1.74±0.09	1.7	1.7	1.9	1.9	1.9	e,1985	[46]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{32}S	1.3	3.0	3.7	4.0	4.1	4.1±0.2	4.0	3.8	3.6	3.3	2.9	e,1980	[47]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{33}S	6.3	11	10	9.3	8.2	7.4±1.5	6.2	5.3	4.7	3.9	3.4	e,1975	[48]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{34}S	0.367	0.256	0.213	0.204	0.212	0.226±0.010	0.250	0.262	0.267	0.269	0.265	e,2000	[49]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{36}S	0.42	0.30	0.24	0.21	0.19	0.171±0.014	0.15	0.13	0.12	0.11	0.094	e,1995	[51]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{35}Cl	26.0	22.3	17.6	14.1	11.7	10.0±0.3	7.9	6.6	5.8	4.8	4.1	e,1984	[52]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{36}Cl	39	25	19	16	14	12±1	9.8	8.4	7.4	6.0	5.2	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{37}Cl	6.95	4.94	3.72	2.99	2.50	2.15±0.08	1.66	1.34	1.12	0.8	0.6	e,1984	[52]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{36}Ar	23.7	17.2	13.8	11.6	10.1	9.0±1.5	7.5	6.5	5.8	4.9	4.3	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{38}Ar	10.6	6.5	4.8	3.9	3.4	3.0±0.3	2.5	2.2	2.0	1.8	1.6	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{39}Ar	35	20	14	11	9.3	8.0±2.0	6.4	5.3	4.6	3.8	3.2	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{40}Ar	2.9	2.7	2.5	2.5	2.6	2.6±0.2	2.6	2.6	2.5			e,1989	[54]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{39}K	24.2	20.2	17.1	14.8	13.1	11.8±0.4	9.8	8.5	7.5	6.1	5.1	e,1984	[56]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{40}K	130	74	54	43	36	31±7	24	20	17	13	11	t,2000	
	0.999	0.987	0.977	0.972	0.972	0.975	0.983	0.992	1.001	1.016	1.028		
^{41}K	88.0	49.3	35.7	28.8	24.7	22.0±0.7	18.7	16.7	15.3	13.5	12.1	e,1984	[56]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{40}Ca	11.3	12.1	10.3	8.6	7.5	6.7±0.7	5.8	5.4	5.2	4.9	4.9	e,1976	[57]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{41}Ca	111	65	49	40	34	30±7	24	21	18	15	13	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{42}Ca	30.3	25.9	21.6	18.9	17.0	15.6±2	13.7	12.3	11.3	9.4	8.0	e,1977	[59]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{43}Ca	230	129	92.4	72.4	59.7	51±6	39.8	33.2	28.8	23.7	20.9	e,1977	[59]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.998	0.994		
^{44}Ca	9.9	13.4	12.5	11.2	10.2	9.4±1.3	8.1	7.1	6.2	5.0	4.2	e,1977	[59]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{45}Ca	71	41	30	24	20	17.5±3.5	14.0	11.8	10.1	8.1	6.7	t,2000	
	1.000	1.000	1.000	1.000	1.000	0.999	0.997	0.993	0.987	0.973	0.961		
^{46}Ca	7.2	8.6	8.0	7.0	6.1	5.3±0.5	4.2	3.5	3.0	2.4	2.0	e,1999	[60, 62]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{48}Ca	2.13	1.50	1.23	1.06	0.95	0.87±0.09	0.75	0.67	0.61	0.53	0.47	e,1997	[62, 63]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{45}Sc	226	154	116	95	80	69±5	54	44	38	31	27	e,1977	[69]
	1.004	1.000	0.993	0.987	0.983	0.979	0.973	0.968	0.964	0.955	0.945		
^{46}Ti	29.9	33.8	31.3	29.0	27.8	26.8±3.2	24.7	22.3	20.4	17.3	15.2	e,1977	[70]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999		
^{47}Ti	213	146	111	89.6	74.9	64.4±7.7	50.5	42.3	37.0	30.8	27.4	e,1977	[70]
	1.000	1.000	1.000	1.000	0.999	0.996	0.987	0.973	0.957	0.925	0.902		
^{48}Ti	42.6	62.6	54.8	45.3	37.7	31.8±5.5	24.1	19.5	16.4	12.9	11.0	e,1977	[70]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{49}Ti	52.1	38.2	32.4	28.1	24.8	22.1±2.1	18.2	15.7	14.0	11.9	10.8	e,1977	[70]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{50}Ti	2.0	2.3	2.7	3.2	3.5	3.6±0.4	3.5	3.2	2.9	2.4	2.0	e,1999	[71]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{50}V	233	113	81	66	56	50±9	41	36	32	26	22	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.995	0.990		
^{51}V	226	123	80	58	46	38±4	29	24	21	18	17	e,1978	[20, 72]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.998	0.993	0.986		
^{50}Cr	229	125	87	68	57	49±13	39	33	29	23	19	e,1977	[74]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{51}Cr	438	206	146	117	99	87±16	72	62	55	46	40	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{52}Cr	10.3	8.9	9.1	9.1	8.9	8.8±2.3	8.5	8.1	7.8	7.1	6.6	e,1989	[78]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{53}Cr	350	187	121	88	70	58±10	45	36	31	27	19	e,1977	[74]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999		
^{54}Cr	16.0	13.7	10.8	8.0	7.2	6.7±1.6	6.2	5.4	5.1	4.5	4.2	e,1977	[74]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{55}Mn	251	113	74	57	47	39.6±3	31	26	24	19	17	e,1978	[79]
	1.000	1.000	1.000	0.998	0.994	0.987	0.968	0.945	0.924	0.892	0.873		

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{54}Fe	111	75.7	52.5	39.9	32.4	27.6±1.8	22.3	19.5	17.9	16.2	15.3	e,1983	[81]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.998	0.994		
^{55}Fe	367	175	124	100	85	75±12	62	54	48	40	35	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.998	0.994		
^{56}Fe	11.8	9.73	10.8	11.5	11.7	11.7±0.5	11.3	10.6	9.97	8.63	7.42	e,1992	[84, 85]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{57}Fe	124	86	67	54	46	40±4	32	26	23	19	16	e,1983	[91]
	0.982	0.979	1.009	1.045	1.079	1.109	1.154	1.188	1.214	1.254	1.285		
^{58}Fe	27	21	17	15	13	12.1±1.3	11	9.8	9.3	8.6	8.2	e,1983	[86]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999		
^{59}Co	110	82	63	52	44	38±4	32	27	22	12	8	e,1976	[94]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{58}Ni	39.8	52.0	49.9	46.2	42.9	41±2	36.3	33.5	31.3	28	25.3	e,1993	[97]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{59}Ni	405	199	143	115	99	87±14	72	62	56	46	40	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.998	0.991	0.979		
^{60}Ni	79	70	57	46	41	30±3	28	27	24	21	20	e,1992	[85, 99]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{61}Ni	265	177	135	111	94	82±8	66	56	50	42	37	e,1983	[103]
	1.000	0.998	0.988	0.969	0.949	0.932	0.909	0.899	0.898	0.907	0.922		
^{62}Ni	69	33	22	17	14	12.5±4	10	9.2	8.5	7.7	7.1	e,1983	[20, 103]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{63}Ni	112	66	50	41	35	31±6	25	20	17	13	10	t,2000	
	1.000	1.000	1.000	0.997	0.991	0.983	0.964	0.950	0.944	0.950	0.970		
^{64}Ni	12.8	14.8	13.1	11.2	9.8	8.7±0.9	7.4	6.6	6.1	5.5	5.2	e,1984	[106]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{63}Cu	331	182	136	114	102	94±10	83	79	76	66	58	e,1977	[108, 109]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{65}Cu	152	79	58	49	44	41±4	37	33	31	27	25	e,1977	[108, 110]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{64}Zn	139	108	88	75	66	59±5	52	47	44	40	38	e,1981	[111]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{65}Zn	512	314	246	207	181	162±27	135	118	104	87	75	t,2000	
	1.000	1.000	0.997	0.990	0.981	0.969	0.941	0.912	0.884	0.836	0.798		
^{66}Zn	84	69	55	45	39	35±3	30	28	26	25	24	e,1981	[112]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{67}Zn	503	318	243	200	172	153±15	126	109	97	82	71	e,1992	[113, 114]
	1.000	1.000	1.000	0.999	0.998	0.995	0.985	0.970	0.954	0.918	0.885		

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{68}Zn	93	48	33	26	22	19.2±2.4	16	14	13	12	11	e,1982	[115]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
						3.4±1(p) to ^{69m}Zn						e,1973	[96]
^{70}Zn	57	38	30	26.3	23.5	21.5±2.0	18.7	16.9	15.5	13.7	12.5	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{69}Ga	331	238	197	174	153	139±6	121	113	102	87	79	e,1984	[104]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.998	0.994	0.986		
^{71}Ga	398	249	191	159	138	123±8	103	90	81	69	60	e+t,1986	[44, 116]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.995	0.986		
^{70}Ge	201	145	121	106	97	88±5	75	69	63	55	49	e,1985	[117]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{72}Ge	199	133	106	91	80	73±7	63	57	52	47	43	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{73}Ge	772	497	385	319	275	243±47	198	169	148	119	101	t,2000	
	1.020	1.032	1.028	1.017	1.002	0.987	0.960	0.939	0.922	0.894	0.869		
^{74}Ge	149	99	78	66	58	53±7	46	41	37	33	31	e+t,1986	[44, 116]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.995		
^{76}Ge	89	61	48	41	36	33±15	28	25	23	20	19	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999		
^{75}As	1790	1137	878	732	635	568±35	478	418	389	331	273	e,1988	[116, 118]
	1.000	1.000	1.000	1.000	1.000	0.999	0.997	0.990	0.978	0.941	0.894		
^{74}Se	677	466	378	327	292	267±25	232	209	192	170	156	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999		
^{76}Se	363	285	235	202	178	164±8	144	131	123	114	109	e,1992	[120]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.002	1.007		
^{77}Se	999	695	582	510	458	418±71	360	319	287	240	205	t,2000	
	1.000	1.000	1.000	1.000	1.000	0.999	0.991	0.968	0.937	0.874	0.828		
^{78}Se	290	197	158	135	120	109±41	94	84	77	68	63	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.002		
^{79}Se	741	496	394	334	293	263±46	220	191	169	138	117	t,2000	
	1.000	1.000	1.000	0.999	0.996	0.991	0.974	0.952	0.930	0.893	0.864		
^{80}Se	116	79	62	54	47	42±3	36	32	29	25	22	e,1986	[116]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.003		
^{82}Se	25	18	14	12	10	9±8	8	7	6	5	5	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999		
^{79}Br	1767	1177	932	791	696	627±42	532	468	435	370	305	e,1988	[116, 118]
	1.000	1.000	1.000	1.000	1.000	1.000	0.998	0.993	0.984	0.957	0.929		

TABLE II. Maxwellian-Averaged (n,γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
						78±8(p) to ^{80m}Br						e,1984	[104]
^{81}Br	960 1.000	614 1.000	478 1.000	402 1.000	350 1.000	313±16 1.000	264 0.999	232 0.997	217 0.993	187 0.981	157 0.964	e,1988	[116, 118]
^{78}Kr	332 1.000	361 1.000	374 1.000	358 1.000	338 1.000	321±26 1.000	295 1.000	275 1.000	261 1.001	243 1.004	232 1.013	e,1991	[104, 122]
						92.3±6.2(p) to ^{79m}Kr						e,1991	[122]
^{79}Kr	1713 1.000	1387 1.000	1231 1.000	1118 1.003	1030 1.007	959±162 1.009	846 1.003	759 0.983	687 0.961	576 0.926	492 0.904	t,2000	
^{80}Kr	935 1.000	601 1.000	404 1.000	338 1.000	296 1.000	267±14 1.000	237 1.000	218 1.000	202 1.000	180 1.000	164 1.003	e,1986	[104, 123]
						88.2±3.5(p) to ^{81m}Kr						e,1991	[122]
^{81}Kr	1389 1.000	994 1.000	844 0.994	743 0.984	667 0.973	607±105 0.963	518 0.949	455 0.940	408 0.936	342 0.934	298 0.935	t,2000	
^{82}Kr	120 1.000	122 1.000	118 1.000	107 1.000	98 1.000	90±6 1.000	80 1.000	71 1.000	69 1.000	62 1.000	58 1.001	e,1986	[104, 123]
^{83}Kr	902 0.994	600 0.985	406 0.978	329 0.976	279 0.976	243±15 0.977	197 0.981	159 0.984	147 0.986	120 0.988	104 0.987	e,1986	[123]
^{84}Kr	260 1.000	94 1.000	74 1.000	55 1.000	45 1.000	38±4 1.000	30 1.000	26 1.000	23 1.000	19 1.000	17 1.000	e,1986	[123]
						17.8±0.8(p) to ^{85m}Kr						e,1991	[64, 122]
^{85}Kr	174 1.000	113 1.000	87 1.000	72 1.000	62 1.000	55±45 1.000	45 1.000	39 1.000	35 1.000	29 1.000	25 1.000	t,2000	
^{86}Kr	2.1 1.000	3.2 1.000	3.6 1.000	3.7 1.000	3.5 1.000	3.4±0.3 1.000	2.9 1.000	2.5 1.000	2.2 1.000	1.8 1.000	1.5 1.000	e,1991	[104, 122]
^{85}Rb	724 1.000	482 1.000	375 1.000	313 1.000	271 0.999	240±9 0.997	199 0.991	172 0.981	153 0.969	129 0.942	110 0.918	e,1989	[128]
^{86}Rb	450 1.000	320 1.000	274 1.000	243 1.000	220 1.000	202±163 1.000	175 1.000	156 1.000	142 1.000	122 0.999	108 0.997	t,2000	
^{87}Rb	35.3 1.000	24.4 1.000	20.6 1.000	18.4 1.000	16.4 1.000	15.5±0.5 1.000	13.8 1.000	12.5 1.000	11.7 1.000	10.6 0.998	9.8 0.996	e,1996	[128, 130]
^{84}Sr	885 1.000	622 1.000	517 1.000	446 1.000	400 1.000	368±126 1.000	322 1.000	286 1.000	257 1.000	213 1.000	185 1.001	t,2000	
^{86}Sr	211 1.000	134 1.000	100 1.000	86 1.000	71 1.000	64±3 1.000	53 1.000	46 1.000	41 1.000	34 1.000	29 1.000	e,1991	[133, 135]
^{87}Sr	345	207	155	127	110	92±4	76	65	56	45	38	e,1991	[133, 135]

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{88}Sr	11	12	10	8.3	7.1	6.2±0.3	5.1	4.4	4.0	3.6	3.4	e,1990	[135, 137]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{89}Sr	69	43	32	26	22	19±14	15	13	12	10	8	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{89}Y	68	40	30	25	21	19.0±0.6	16	14	13	11	10	e,1990	[137, 138]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001		
^{90}Zr	43	34	29	25	23	21±2	18	17	16	15	14	e,1978	[138]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{91}Zr	254	147	105	83	69	60±8	49	43	39	34	32	e,1978	[138]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{92}Zr	131	77	55	44	37	33±4	28	26	25	23	23	e,1978	[138]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{93}Zr	340	213	161	131	110	95±10	75	62	54	44	37	e,1985	[144]
	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.998	0.995	0.985	0.973		
^{94}Zr	74	52	40	33	29	26±1	23	22	22	21	21	e,1990	[138, 146]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{95}Zr	296	185	136	109	91	79±12	63	54	47	39	34	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{96}Zr	56	28	19	14	12	10.7±0.5	8.3	6.8	5.8	4.4	3.5	e,1967	[2, 146]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{93}Nb	887	565	430	354	303	266±5	216	184	161	130	110	e,1990	[148]
	1.000	0.997	0.993	0.990	0.987	0.985	0.982	0.979	0.978	0.976	0.974		
^{94}Nb	925	773	677	598	534	482±92	403	346	303	245	207	t,2000	
	1.000	1.005	1.006	0.995	0.975	0.951	0.904	0.864	0.833	0.787	0.753		
^{95}Nb	892	620	487	406	351	310±65	255	218	193	159	138	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.999	0.972		
^{92}Mo	277	158	115	93	79	70±10	59	53	49	45	43	e,1978	[138, 155]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{94}Mo	321	200	154	128	113	102±20	89	81	77	71	68	e,1978	[138, 155]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001		
^{95}Mo	785	559	445	375	327	292±12	244	212	197	164	140	e,1987	[157]
	1.000	1.000	1.000	1.000	1.000	0.999	0.996	0.989	0.980	0.957	0.936		
^{96}Mo	409	248	184	149	127	112±8	93	82	78	70	63	e,1987	[157]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001		
^{97}Mo	952	671	528	441	382	339±14	281	244	220	185	164	e,1987	[157]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.995		
^{98}Mo	298	186	146	124	109	99±7	85	76	70	60	54	e,1987	[157]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001		

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{99}Mo	703	490	383	318	273	240±40	193	161	138	107	87	t,2000	
	1.000	1.000	1.000	1.000	1.002	1.008	1.027	1.050	1.072	1.109	1.137		
^{100}Mo	281	189	151	131	117	108±14	96	89	84	79	76	e,1983	[138, 147]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.003		
^{99}Tc	1849	1370	1131	976	865	781±50	662	580	530	445	377	e,1987	[157]
	1.000	1.000	1.000	1.000	0.999	0.998	0.989	0.975	0.957	0.923	0.891		
^{96}Ru	475	393	339	296	263	238±60	201	177	159	137	124	e+t,1973	[44, 96]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001		
^{98}Ru	461	331	265	223	194	173±36	144	126	113	97	87	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.004		
^{99}Ru	1226	1004	877	776	696	631±99	533	463	410	337	287	t,2000	
	1.000	1.000	0.999	0.996	0.991	0.983	0.965	0.947	0.929	0.899	0.871		
^{100}Ru	525	383	307	261	229	206±13	175	156	143	126	117	e,1980	[162]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.002	1.008		
^{101}Ru	2405	1710	1401	1216	1090	996±40	865	775	709	615	551	e,1980	[162]
	1.000	1.000	1.000	0.999	0.997	0.994	0.983	0.967	0.950	0.909	0.866		
^{102}Ru	561	366	285	239	208	186±11	156	136	121	102	89	e,1980	[162]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.004	1.012		
^{103}Ru	1106	731	560	459	392	343±52	276	232	201	158	130	t,2000	
	1.132	1.138	1.155	1.171	1.184	1.194	1.202	1.199	1.189	1.164	1.142		
^{104}Ru	469	310	244	206	180	161±10	136	119	106	90	79	e,1980	[162]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.002	1.010	1.023		
^{103}Rh	1890	1392	1150	998	892	811±14	695	616	556	472	413	e,1992	[148, 163]
	1.001	1.049	1.126	1.171	1.188	1.188	1.172	1.150	1.132	1.106	1.090		
^{102}Pd	894	657	540	466	414	375±118	320	283	257	222	199	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.002	1.010		
^{104}Pd	685	523	426	364	321	289±29	246	219	199	176	163	e,1983	[168, 167]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.004	1.013		
^{105}Pd	2538	1899	1603	1421	1294	1200±60	1063	968	900	795	725	e,1990	[168, 164]
	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.997	0.990	0.963	0.923		
^{106}Pd	700	472	374	318	280	252±25	214	188	169	144	127	e,1983	[168, 167]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.004	1.012		
^{107}Pd	2734	2142	1823	1612	1459	1340±60	1165	1040	945	800	700	e,1985	[170]
	1.000	1.000	1.000	1.000	0.999	0.997	0.992	0.985	0.975	0.947	0.912		
^{108}Pd	555	376	299	255	225	203±20	173	152	138	118	103	e,1983	[168, 167]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.007	1.020		
^{110}Pd	449	291	225	188	163	146±20	122	106	94	79	68	e,1983	[168, 167]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.002	1.011	1.028		

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{107}Ag	1602 1.000	1246 1.000	1064 1.004	946 1.019	860 1.044	792±30 1.070	696 1.111	626 1.131	576 1.139	486 1.142	445 1.142	e,1988	[172, 173]
^{109}Ag	1669 1.000	1270 1.001	1071 1.015	942 1.050	851 1.091	788±30 1.126	681 1.168	611 1.182	557 1.182	481 1.164	427 1.139	e,1988	[172, 173]
^{110}Ag	2026 0.762	1606 1.016	1461 1.072	1345 1.097	1251 1.114	1172±188 1.127	1047 1.146	949 1.155	867 1.156	738 1.141	639 1.114	t,2000	
^{106}Cd	685 1.000	522 1.000	434 1.000	375 1.000	331 1.000	302±24 1.000	260 1.000	235 1.000	218 1.000	198 1.001	186 1.005	e,1998	[177, 178]
^{108}Cd	496 1.000	371 1.000	302 1.000	257 1.000	223 1.000	202±9 1.000	171 1.000	152 1.000	139 1.000	125 1.000	116 1.000	e,1998	[177, 178]
^{110}Cd	641 1.000	457 1.000	366 1.000	310 1.000	272 1.000	246±30 1.000	212 1.000	193 1.000	181 1.000	166 1.001	159 1.006	e,1978	[138, 178]
					14.6	13.3±1(p) to ^{111m}Cd						e,1998	[177]
^{111}Cd	1941 1.000	1538 1.000	1341 1.000	1218 1.000	1130 1.000	1063±125 1.002	965 1.011	895 1.028	842 1.043	765 1.056	710 1.052	e,1978	[138, 178]
^{112}Cd	685 1.000	451 1.000	353 1.000	297 1.000	260 1.000	235±30 1.000	196 1.000	171 1.000	153 1.000	128 1.002	113 1.008	e,1978	[138, 178]
^{113}Cd	1547 1.000	1156 1.000	975 1.000	863 1.000	786 1.000	728±80 1.001	645 1.006	588 1.020	544 1.043	482 1.091	439 1.117	e,1978	[138, 178]
^{114}Cd	342 1.000	233 1.000	186 1.000	159 1.000	139 1.000	127±5 1.000	108 1.000	95 1.000	86 1.000	73 1.003	65 1.012	e,1998	[177, 178]
					129	118±4(p) to ^{115g}Cd						e,1998	[177]
					10	9±3(p) to ^{115m}Cd						e,1998	[177]
^{115g}Cd	708 1.000	499 1.000	408 1.000	354 1.001	317 1.003	290±62 1.010	252 1.041	226 1.084	206 1.124	176 1.161	155 1.147	t,2000	
^{115m}Cd						601±200						t,1981	[180]
^{116}Cd	157 1.000	108 1.000	86 1.000	74 1.000	64 1.000	59±2 1.000	50 1.000	45 1.000	40 1.000	35 1.003	31 1.011	e,1998	[177, 178]
					51	47±2(p) to ^{117g}Cd						e,1998	[177]
					12.9	11.8±0.5(p) to ^{117m}Cd						e,1998	[177]
^{113}In	2306 1.000	1521 1.000	1193 1.000	1004 1.000	878 1.000	787±70 1.000	662 1.000	580 1.000	519 1.000	437 1.000	386 1.000	t,1976	[129]
						480±160(p) to ^{114m}In						e,1973	[96]

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{114m}In						2595±1300						t,1981	[180]
^{115}In	1619 1.000	1189 1.000	984 1.000	857 1.000	771 1.000	706±70 1.000	614 1.000	551 1.000	505 1.000	445 1.000	409 1.000	e,1978	[151, 182]
						689±170(p) to ^{116m}In						e,1973	[96]
^{112}Sn	479 1.000	370 1.000	306 1.000	264 1.000	227 1.000	210±12 1.000	204 1.000	159 1.000	145 1.000	128 1.000	119 1.000	e,1989	[183]
^{114}Sn	405 1.000	249 1.000	197 1.000	170 1.000	149 1.000	134.4±1.8 1.000	115 1.000	102 1.000	94 1.000	84 1.000	79 1.000	e,1996	[186]
^{115}Sn	748 1.000	551 1.000	464 1.000	413 1.000	373 1.000	342.4±8.7 1.000	299 1.000	269 1.000	247 1.000	219 1.003	199 1.013	e,1996	[186]
^{116}Sn	281 1.000	171 1.000	134 1.000	116 1.000	102 1.000	91.4±0.9 1.000	78 1.000	70 1.000	65 1.000	58 1.000	54 1.000	e,1996	[186, 187]
^{117}Sn	746 1.000	549 1.000	455 1.000	396 1.000	352 0.999	319±5 0.999	271 0.998	239 0.998	215 1.002	182 1.036	159 1.096	e,1996	[186]
^{118}Sn	226 1.000	126 1.000	95 1.000	80 1.000	69 1.000	62.1±0.6 1.000	53 1.000	47 1.000	44 1.000	40 1.000	37 1.000	e,1996	[186, 187]
^{119}Sn	558 1.007	390 1.026	302 1.048	245 1.087	207 1.143	180±10 1.206	144 1.336	121 1.450	106 1.544	88 1.684	78 1.776	e,1989	[183]
^{120}Sn	130 1.000	72 1.000	55 1.000	46 1.000	40 1.000	36.0±0.5 1.000	31 1.000	28 1.000	26 1.000	23 1.000	22 1.000	e,1996	[186, 187]
						0.52±0.18(p) to ^{121m}Sn						e,1993	[191]
^{121}Sn	479 1.039	327 1.084	259 1.094	217 1.096	188 1.098	167±30 1.099	137 1.103	118 1.108	104 1.115	86 1.128	74 1.142	t,2000	
^{122}Sn	73.0 1.000	46.3 1.000	34.6 1.000	28.3 1.000	24.5 1.000	21.9±1.5 1.000	18.8 1.000	16.7 1.000	15.3 1.000	13.1 1.000	11.5 1.000	e,1998	[192, 193]
						18±10(p) to ^{123m}Sn						e,1979	[73]
^{124}Sn	72.5 1.000	35.2 1.000	23.1 1.000	17.3 1.000	14.1 1.000	12.0±1.8 1.000	9.5 1.000	8.0 1.000	7.1 1.000	5.8 1.000	5.0 1.000	e,1998	[192, 193]
^{125}Sn	211 0.999	131 0.990	98 0.985	80 0.983	68 0.983	59±9 0.983	48 0.984	41 0.984	36 0.983	30 0.977	26 0.969	t,2000	
^{126}Sn	26 1.000	19 1.000	15 1.000	12 1.000	11 1.000	10±4 1.000	8.0 1.000	7.0 1.000	6.4 1.000	5.5 1.000	5.0 1.000	t,2000	
^{121}Sb	1301 0.999	860 0.991	735 0.982	649 0.978	584 0.978	532±16 0.980	455 0.988	401 0.997	361 1.007	306 1.026	270 1.042	e+t,1993	[44, 191]
^{122}Sb	1927 1.119	1379 1.359	1203 1.527	1076 1.642	976 1.708	894±162 1.736	768 1.723	674 1.665	601 1.594	496 1.456	422 1.336	t,2000	
^{123}Sb	805 1.000	549 1.000	441 1.000	377 1.000	334 0.999	303±9 0.998	259 0.993	229 0.986	207 0.978	176 0.961	156 0.946	e+t,1993	[44, 191]

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{125}Sb	770	509	400	337	295	260±70	222	195	175	150	132	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.995	0.988		
^{120}Te	1037	708	578	504	455	420±103	372	341	318	286	263	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.003	1.010		
^{122}Te	874	541	427	368	326	295±3	255	230	214	193	180	e,1992	[194]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.007		
^{123}Te	1995	1436	1176	1017	911	832±8	719	641	583	502	444	e,1992	[194]
	1.000	1.000	1.000	1.000	1.001	1.003	1.014	1.038	1.074	1.157	1.227		
^{124}Te	477	289	226	195	171	155±2	133	120	112	101	95	e,1992	[194]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.006		
^{125}Te	1190	815	655	560	487	431±4	353	302	267	221	191	e,1992	[194]
	0.999	0.997	1.010	1.033	1.064	1.102	1.194	1.292	1.381	1.517	1.598		
^{126}Te	250	152	120	103	90	81.3±1.4	70	62	57	51	48	e,1992	[194]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.003		
^{128}Te	91	70	59	52	48	44.4±1.3	39	37	35	32	31	e,1993	[191, 196]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.002		
						4.94±0.21(p) to ^{129m}Te						e,1993	[191]
^{130}Te	35	26	21	18	16	14.7±2.8	13	12	11	9.6	9.1	e,1974	[196]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{127}I	1659	1145	929	797	705	635±30	535	467	417	345	302	e,1983	[199]
	1.000	0.999	0.996	0.991	0.988	0.986	0.985	0.988	0.993	1.001	1.007		
^{129}I	1134	803	651	556	490	441±22	373	328	295	250	202	e,1983	[199]
	0.998	0.983	0.963	0.947	0.936	0.927	0.916	0.909	0.903	0.891	0.878		
^{124}Xe	1777	1039	857	758	692	644±83	578	536	505	465	437	e+t,1991	[44, 122]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.003	1.008	1.030	1.065		
						131±17(p) to ^{125m}Xe						e,1991	[122]
^{126}Xe	900	604	491	429	388	359±51	320	295	278	255	238	e+t,1991	[44, 122]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.004	1.019	1.045		
						40±6(p) to ^{127m}Xe						e,1991	[122]
^{128}Xe	622	417	339	296	268	248±66	221	204	192	176	165	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.003	1.014	1.035		
						25.8±2.1(p) to ^{129m}Xe						e,1991	[122]
^{129}Xe	1499	872	700	598	526	472±71	396	346	309	269	227	t,2000	
	1.000	1.008	1.032	1.056	1.079	1.100	1.144	1.194	1.247	1.343	1.407		
^{130}Xe	341	234	192	168	152	141±51	125	115	108	99	93	t,2000	

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.004	1.012		
						12.3±1.0(p) to ^{131m}Xe						e,1991	[122]
^{131}Xe	1040	661	515	433	379	340±65	287	252	227	191	165	t,2000	
	1.000	1.000	0.999	0.996	0.991	0.989	1.000	1.025	1.049	1.070	1.070		
^{132}Xe	167	119	95.4	82.5	71.6	64.6±5.3	54.7	49.7	45.7	40.8	37.8	e,1991	[122]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.004		
						4.7±0.4(p) to ^{133m}Xe						e,1991	[122]
^{133}Xe	372	243	191	161	141	127±34	108	95	86	74	65	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.001	1.006	1.019	1.038	1.082	1.121		
^{134}Xe	47.5	35.1	28.9	24.9	22.2	20.2±1.7	17.4	15.9	14.4	12.8	11.9	e+t,1991	[44, 122]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
						0.59±0.05(p) to ^{135m}Xe						e,1991	[122]
^{136}Xe	5.6	2.4	1.6	1.3	1.1	0.91±0.08	0.72	0.60	0.52	0.41	0.35	e,1991	[122, 201]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{133}Cs	1365	931	745	636	563	509±21	434	384	347	296	262	e,1992	[163, 203]
	1.000	1.000	0.999	0.995	0.989	0.981	0.961	0.938	0.917	0.880	0.850		
						43±14(p) to ^{134m}Cs						e,1973	[96]
^{134}Cs	2106	1207	971	833	737	664±174	559	486	430	352	298	t,2000	
	1.053	1.125	1.105	1.085	1.070	1.059	1.041	1.019	0.993	0.939	0.891		
^{135}Cs	595	384	300	252	221	198±17	167	147	133	113	100	e+t,1997	[44, 206]
	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.996	0.992	0.981	0.966		
^{130}Ba	2379	1284	1031	901	818	760±110	683	634	601	556	526	e+t,1979	[44, 185]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.002	1.006	1.023	1.054		
^{132}Ba	1029	659	526	455	410	379±137	339	315	298	276	261	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.004	1.018	1.040		
^{134}Ba	360	283	235	208	190	176.0±5.6	155	141	131	117	108	e,1996	[209, 208]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.004		
^{135}Ba	1274	846	672	573	505	455±15	387	342	310	266	237	e,1994	[208]
	1.000	1.000	1.000	1.000	1.000	1.000	1.002	1.006	1.016	1.045	1.079		
^{136}Ba	180	115	90.4	76.9	67.8	61.2±2.0	52.5	46.2	43.8	39.3	36.7	e,1997	[208, 212] [209]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001		
^{137}Ba	206.2	140.0	110.6	95.4	84.4	76.3±2.4	65.8	58.9	53.9	47.1	42.5	e,1998	[208, 214]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.998	0.996	0.990	0.987		
^{138}Ba	13.4	7.85	5.93	4.95	4.38	4.00±0.20	3.49	3.14	2.89	2.52	2.23	e,1997	[215, 216]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{139}La	113	71	56	48	42	38.4±2.7	33	30	28	26	24	e,1986	[138, 222]
	1.000	1.000	1.000	1.000	1.000	0.999	0.994	0.987	0.977	0.956	0.937		
^{132}Ce	5050	2799	2222	1913	1712	1570±420	1382	1266	1187	1087	1027	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.006	1.016	1.050	1.093		
^{133}Ce	7292	4543	3702	3202	2856	2600±400	2240	2000	1817	1568	1400	t,2000	
	1.001	1.084	1.223	1.312	1.361	1.388	1.413	1.422	1.424	1.421	1.416		
^{134}Ce	3298	1724	1354	1167	1049	967±351	861	797	754	702	671	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.005	1.021	1.049		
^{135}Ce	4083	2383	1913	1643	1458	1320±260	1126	997	903	776	694	t,2000	
	1.000	1.001	1.005	1.016	1.029	1.042	1.067	1.087	1.104	1.138	1.178		
^{136}Ce	1016	519	409	356	323	300±21	271	253	241	227	214	e+t,1996	[44, 223]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.003	1.011		
						28.2±1.6(p) to ^{137m}Ce						e,1996	[223]
^{137}Ce	3168	1776	1408	1206	1071	973±256	839	751	688	603	549	t,2000	
	1.000	1.000	1.000	1.000	1.000	0.999	0.998	1.000	1.007	1.031	1.061		
^{138}Ce	462	303	245	214	193	179±5	160	148	140	129	121	e+t,1996	[44, 223]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001		
^{139}Ce	769	399	311	265	235	214±120	185	166	152	134	127	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	0.999	0.998	0.996	0.988	0.980		
^{140}Ce	23	19.5	16	13.5	12	11.0±0.4	9.5	8.7	8.1	7.2	6.6	e,1996	[223]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{141}Ce	260	157	119	99	85	76±33	64	56	50	43	39	t,2000	
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{142}Ce	71.9	48.5	39.1	33.8	30.4	28.0±1	24.9	22.9	21.7	20.0	19.0	e+t,1996	[44, 223]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.004		
^{141}Pr	412	247	182	148	126	111.4±1.4	91.5	78.3	69.0	56.2	47.6	e,1999	[224]
	1.000	1.000	1.000	1.000	0.999	0.998	0.994	0.990	0.988	0.988	0.995		
^{142}Pr	1668	886	670	551	472	415±178	336	284	246	194	167	t,2000	
	0.749	1.013	1.101	1.129	1.132	1.120	1.086	1.053	1.027	0.994	0.977		
^{143}Pr	1187	729	555	458	395	350±86	289	249	221	183	159	t,2000	
	1.000	1.000	0.997	0.988	0.976	0.963	0.942	0.928	0.920	0.915	0.916		
^{142}Nd	98.6	65.1	51.3	43.4	38.4	35.0±0.7	30.7	27.7	25.5	22.9	21.0	e,1998	[226, 227]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{143}Nd	925	528	392	321	276	245±3	204	178.4	160.6	137.5	122.9	e,1998	[227]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{144}Nd	239	147.0	115	98.9	88.5	81.3±1.5	71.2	64.7	60.3	54.2	50.4	e,1998	[226, 227]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.004		
^{145}Nd	1481	895	676	557	480	425±5	351	304	270	227	199	e,1998	[227]

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
	1.000	1.000	0.995	0.984	0.967	0.948	0.913	0.883	0.860	0.827	0.806		
^{146}Nd	210	147.1	121.7	107.4	98.0	91.2±1.0	82.1	76	71.7	65.6	61.3	e,1998	[227]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.003	1.011		
^{147}Nd	2191	1236	909	735	623	544±90	437	368	318	251	208	t,2000	
	1.000	0.997	0.990	0.981	0.975	0.969	0.962	0.957	0.956	0.961	0.974		
^{148}Nd	414	266	209	177	159	147±2	130	120	113	101	93	e,1998	[227]
	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.003	1.008	1.022	1.046		
^{150}Nd	591	353	261	212	181	159±10	143	113	101	86	77	e,1995	[234, 230]
	1.000	1.000	1.000	1.003	1.008	1.016	1.037	1.063	1.096	1.174	1.263		
^{147}Pm	5166	2880	2099	1703	1459	1290±470	1071	934	836	696	599	t,2000	
	1.000	1.000	0.998	0.993	0.985	0.976	0.960	0.948	0.936	0.915	0.896		
^{148g}Pm	13479	6439	4756	3902	3357	2970±500	2447	2107	1865	1536	1317	t,2000	
	1.000	1.000	1.000	1.006	1.020	1.043	1.106	1.158	1.185	1.176	1.125		
^{148m}Pm						2453±1200						t,1986	[235]
^{149}Pm	9728	5544	4067	3302	2830	2510±750	2093	1829	1639	1373	1187	t,2000	
	1.000	1.000	1.000	0.999	0.997	0.993	0.977	0.953	0.922	0.854	0.789		
^{144}Sm	217	155	126	110	100	92±6	82	75	70	64	60	e,1993	[237]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
^{147}Sm	3250	1963	1496	1246	1085	973±10	824	729	662	573	514	e,1993	[238]
	1.000	1.000	1.000	1.000	0.999	0.996	0.988	0.976	0.962	0.933	0.909		
^{148}Sm	664	415	330	287	259	241±2	217	203	194	183	175	e,1993	[238]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.004	1.013		
^{149}Sm	7326	4017	2948	2409	2059	1820±17	1515	1329	1203	1040	935	e,1993	[238]
	0.997	0.982	0.964	0.951	0.942	0.936	0.927	0.920	0.914	0.899	0.880		
^{150}Sm	1176	742	587	505	455	422±4	380	355	337	312	293	e,1993	[238]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.003	1.014	1.034		
^{151}Sm	11535	6535	4729	3762	3144	2710±420	2132	1762	1503	1159	941	t,2000	
	0.977	0.930	0.907	0.891	0.881	0.877	0.881	0.892	0.903	0.918	0.923		
^{152}Sm	1249	863	687	581	519	473±4	410	365	331	283	250	e,1993	[238]
	1.000	1.000	1.001	1.005	1.015	1.031	1.071	1.116	1.163	1.260	1.356		
^{153}Sm	5243	2836	1990	1552	1280	1095±175	855	707	606	477	399	t,2000	
	1.038	1.102	1.138	1.163	1.186	1.207	1.251	1.292	1.330	1.388	1.423		
^{154}Sm	561	395	315	265	232	206±12	171	148	131	109	96	e,1995	[230, 242]
	1.000	1.001	1.010	1.033	1.065	1.099	1.170	1.240	1.307	1.433	1.546		
^{151}Eu	12638	7853	5942	4894	4233	3775±150	3184	2814	2555	2209	1962	e,1995	[242, 243]
	0.989	0.976	0.988	1.002	1.014	1.023	1.038	1.045	1.045	1.026	0.993		
						1616±170(p) to ^{152m}Eu						e,1984	[241]
^{152}Eu	20770	13560	11190	9647	8498	7600±1200	6273	5341	4651	3697	3070	t,2000	

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
	1.000	1.001	1.001	0.995	0.975	0.944	0.881	0.833	0.801	0.762	0.734		
^{153}Eu	7737	5041	4007	3434	3057	2780±100	2390	2117	1909	1614	1400	e,1995	[242, 243]
	1.000	1.000	1.004	1.023	1.052	1.076	1.071	1.012	0.943	0.844	0.808		
^{154}Eu	12940	7829	6427	5552	4914	4420±670	3687	3166	2774	2222	1852	e+t,1981	[44, 247]
	1.000	1.000	1.001	0.995	0.979	0.953	0.897	0.852	0.822	0.791	0.778		
^{155}Eu	4661	2806	2112	1736	1493	1320±84	1082	923	807	646	540	e+t,1995	[44, 248]
	1.000	1.000	1.001	1.001	0.999	0.994	0.979	0.960	0.942	0.913	0.895		
^{152}Gd	3275	1951	1507	1280	1142	1049±17	933	864	818	756	712	e,1995	[249]
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.003	1.015	1.038		
^{153}Gd	16290	9075	7078	5922	5131	4550±700	3736	3188	2789	2241	1879	t,2000	
	1.000	1.006	1.021	1.037	1.050	1.060	1.073	1.077	1.076	1.070	1.066		
^{154}Gd	2801	1863	1477	1258	1124	1028±12	898	810	745	653	591	e,1995	[249]
	1.000	1.000	0.999	0.999	1.000	1.007	1.037	1.080	1.128	1.225	1.314		
^{155}Gd	7264	5030	3980	3347	2943	2648±30	2233	1948	1738	1441	1238	e,1995	[249]
	1.000	1.000	1.006	1.019	1.034	1.047	1.062	1.068	1.067	1.061	1.054		
^{156}Gd	1629	1117	892	760	677	615±5	528	468	424	364	325	e,1995	[249]
	1.000	1.001	1.014	1.049	1.097	1.146	1.230	1.297	1.354	1.450	1.536		
^{157}Gd	4251	2803	2163	1791	1547	1369±15	1123	959	841	683	580	e,1995	[249]
	1.000	0.995	0.980	0.971	0.970	0.973	0.988	1.004	1.019	1.042	1.057		
^{158}Gd	842	595	479	408	360	324±3	272	236	209	174	152	e,1995	[249]
	1.000	1.000	1.002	1.014	1.036	1.065	1.131	1.200	1.267	1.391	1.504		
^{160}Gd	546	310	243	203	175	154±20	126	107	93	80	66	e,1992	[163, 230]
	1.000	1.004	1.029	1.072	1.119	1.162	1.244	1.319	1.390	1.521	1.638		
^{159}Tb	4365	2930	2330	2010	1750	1580±150	1340	1185	1070	910	800	e,1992	[163, 257]
	1.000	0.996	0.977	0.957	0.945	0.940	0.945	0.961	0.977	0.986	0.977		
^{160}Tb	9155	5523	4583	4001	3574	3240±510	2740	2380	2106	1712	1441	t,2000	
	1.000	1.000	1.001	0.997	0.987	0.971	0.931	0.892	0.860	0.817	0.795		
^{156}Dy	5442	2712	2126	1850	1682	1567±145	1412	1307	1229	1117	1039	e+t,1985	[44, 259]
	1.000	1.000	1.001	1.007	1.022	1.046	1.107	1.164	1.211	1.282	1.337		
^{158}Dy	3190	1955	1524	1298	1158	1060±400	928	842	778	684	617	t,2000	
	1.000	1.001	1.027	1.102	1.195	1.273	1.368	1.404	1.409	1.390	1.388		
^{160}Dy	2267	1578	1271	1096	978	890±12	764	677	613	524	465	e,1999	[224]
	1.000	1.000	1.005	1.028	1.065	1.108	1.193	1.266	1.329	1.433	1.518		
^{161}Dy	5710	3891	3051	2554	2214	1964±19	1615	1380	1210	977	825	e,1999	[224]
	0.999	1.013	1.022	1.017	1.007	0.995	0.975	0.961	0.952	0.945	0.945		
^{162}Dy	1129	796	641	553	492	446±4	379	332	297	250	219	e,1999	[224]
	1.000	1.001	1.017	1.055	1.104	1.153	1.238	1.309	1.371	1.480	1.577		
^{163}Dy	3178	2132	1671	1412	1238	1112±11	936	817	729	606	522	e,1999	[224]
	1.000	1.000	1.000	0.999	0.996	0.992	0.985	0.976	0.966	0.936	0.903		

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{164}Dy	592 1.000	405 1.004	320 1.031	271 1.076	237 1.125	212±3 1.170	175 1.252	151 1.325	133 1.394	109 1.522	93.6 1.635	e,1999	[224]
^{163}Ho	5806 1.000	3385 1.000	2872 0.999	2579 0.998	2303 0.996	2125±95 0.993	1868 0.988	1690 0.983	1558 0.978	1370 0.963	1237 0.942	e+t,1996	[44, 262]
^{165}Ho	3301 1.000	2316 1.000	1867 0.999	1598 0.996	1416 0.993	1280±100 0.989	1092 0.980	967 0.972	877 0.965	761 0.951	692 0.940	e,1992	[168, 163]
						798±120(p) to ^{166g}Ho						e,1973	[220]
^{162}Er	4906 1.000	2646 1.000	2152 1.003	1902 1.015	1741 1.041	1624±124 1.074	1459 1.144	1346 1.201	1262 1.247	1144 1.319	1065 1.378	e+t,1996	[44, 262]
^{164}Er	3067 1.000	1940 1.001	1537 1.018	1319 1.080	1182 1.164	1084±51 1.239	951 1.331	861 1.369	797 1.375	694 1.357	633 1.350	e+t,1985	[44, 261]
^{166}Er	1304 1.000	970 0.999	802 0.998	695 1.006	620 1.031	563±56 1.064	481 1.142	426 1.219	385 1.290	332 1.415	299 1.522	e,1978	[230]
^{167}Er	4457 1.000	2817 1.000	2192 0.994	1824 0.982	1588 0.966	1425±143 0.951	1217 0.929	1097 0.916	1021 0.908	933 0.888	885 0.862	e,1974	[251]
^{168}Er	790 1.000	594 1.002	490 1.022	422 1.065	374 1.116	338±44 1.163	285 1.245	250 1.313	223 1.375	188 1.490	168 1.596	e,1978	[230]
^{169}Er	1926 1.000	1244 0.999	984 0.994	835 0.988	731 0.983	653±114 0.980	539 0.987	459 0.999	401 1.013	320 1.042	269 1.070	t,2000	
^{170}Er	600 1.000	374 1.003	280 1.024	228 1.065	194 1.112	170±7 1.156	138 1.237	117 1.310	103 1.379	85.4 1.510	75.6 1.632	e,1978	[230]
^{169}Tm	3381 0.986	2200 1.274	1711 1.338	1436 1.350	1257 1.353	1129±56 1.357	956 1.370	845 1.387	769 1.401	668 1.412	610 1.402	e,1982	[265, 266]
^{170}Tm	4944 0.999	3028 0.994	2550 0.998	2252 1.011	2036 1.027	1870±330 1.042	1627 1.064	1454 1.070	1320 1.065	1124 1.040	982 1.017	t,2000	
^{171}Tm	1576 1.385	952 1.383	732 1.380	614 1.381	539 1.383	486±144 1.386	413 1.399	364 1.418	328 1.444	279 1.501	246 1.554	t,2000	
^{168}Yb	3231 1.000	1815 1.001	1510 1.013	1349 1.046	1241 1.093	1160±440 1.139	1043 1.214	961 1.265	900 1.304	814 1.367	757 1.422	t,2000	
^{170}Yb	1863 1.000	1322 1.000	1077 1.011	936 1.060	840 1.133	768±7 1.201	665 1.288	592 1.324	539 1.333	464 1.318	414 1.314	e,1998	[267]
^{171}Yb	3052 1.000	2183 1.002	1757 1.016	1509 1.044	1339 1.074	1210±12 1.097	1024 1.124	893 1.134	795 1.139	657 1.147	565 1.156	e,1998	[267]
^{172}Yb	827 1.000	599 1.000	488 1.011	423 1.042	377 1.086	341±3 1.131	290 1.211	254 1.275	227 1.332	190 1.437	166 1.537	e,1998	[267]
^{173}Yb	2192 1.000	1456 1.001	1139 1.004	960 1.007	841 1.009	754±7 1.009	633 1.008	552 1.007	492 1.006	410 1.002	355 0.993	e,1998	[267]
^{174}Yb	374	271	220	190	168	151±2	125	108	95	78	67	e,1998	[267]

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
	1.000	1.001	1.010	1.036	1.073	1.113	1.197	1.278	1.357	1.505	1.641		
^{175}Yb	1578	1032	816	696	616	558±83	477	422	381	322	282	t,2000	
	1.000	1.000	1.000	1.000	0.999	0.997	0.989	0.979	0.966	0.940	0.918		
^{176}Yb	295	213	172	147	129	116±2	96	82	72	58	50	e,1998	[267]
	1.000	1.000	1.005	1.020	1.046	1.077	1.147	1.222	1.297	1.445	1.586		
^{175}Lu	2871	2036	1645	1412	1257	1146±44	1001	917	862	798	762	e,1992	[163, 260]
	1.000	1.000	1.000	1.000	1.000	1.000	0.998	0.993	0.987	0.965	0.933		
						1036±30(p) to ^{176m}Lu						e,1991	[271]
^{176}Lu	4115	2745	2187	1874	1673	1532±69	1345	1223	1135	1008	929	e,1984	[260]
	1.000	1.000	1.000	1.000	1.000	0.999	0.996	0.989	0.977	0.939	0.886		
^{174}Hf	2453	1436	1219	1100	1019	956±283	863	797	746	674	625	t,2000	
	1.000	1.001	1.012	1.044	1.087	1.131	1.204	1.256	1.297	1.365	1.426		
^{176}Hf	1015	736	615	543	493	455±20	397	356	325	279	250	e,1992	[163, 260]
	1.000	1.002	1.027	1.080	1.141	1.194	1.265	1.305	1.331	1.374	1.420		
^{177}Hf	4141	2740	2167	1854	1646	1500±100	1302	1172	1078	944	852	e,1992	[163, 260]
	1.000	1.000	1.000	1.001	1.002	1.002	1.001	0.998	0.993	0.978	0.958		
^{178}Hf	853	545	436	380	338	314±10	273	244	222	190	172	e,1992	[163, 277]
	1.000	1.000	1.002	1.013	1.037	1.068	1.136	1.200	1.260	1.370	1.470		
^{179}Hf	2884	1808	1406	1189	1052	956±50	828	742	679	590	524	e,1992	[163, 277]
	1.000	1.000	1.000	0.998	0.995	0.991	0.981	0.970	0.960	0.937	0.912		
						11.4±0.6(p) to ^{180m}Hf						e,1981	[278]
^{180}Hf	478	313	253	219	196	179±5	153	134	121	101	89	e,1992	[163, 277]
	1.000	1.000	1.004	1.019	1.044	1.075	1.140	1.203	1.264	1.383	1.499		
^{181}Hf	575	381	301	253	219	194±31	158	134	116	93	78	t,2000	
	1.000	1.012	1.074	1.164	1.248	1.317	1.427	1.516	1.594	1.732	1.845		
^{182}Hf	274	190	158	140	127	117±41	101	88	79	65	56	t,2000	
	1.000	1.000	1.001	1.009	1.025	1.047	1.104	1.166	1.232	1.367	1.502		
^{179}Ta	2854	1938	1709	1551	1430	1334±422	1190	1087	1007	890	805	t,2000	
	1.002	1.036	1.054	1.055	1.050	1.044	1.030	1.017	1.005	0.983	0.964		
^{180m}Ta	2773	2182	2008	1861	1740	1640±260	1485	1370	1281	1148	1052	t,2000	
	0.939	0.890	0.896	0.920	0.942	0.957	0.969	0.970	0.965	0.950	0.927		
^{181}Ta	2765	1633	1221	1002	863	766±15	639	557	500	423	374	e,1992	[148, 163]
	0.951	0.970	0.989	1.002	1.012	1.019	1.027	1.026	1.020	0.999	0.974		
^{182}Ta	2476	1630	1432	1302	1201	1120±180	994	898	822	705	619	t,2000	
	1.113	1.230	1.192	1.154	1.125	1.100	1.055	1.011	0.969	0.896	0.838		
^{180}W	1182	887	738	647	583	536±60	471	428	399	363	343	e,1987	[282]
	1.000	1.000	1.001	1.009	1.026	1.051	1.108	1.162	1.210	1.294	1.370		

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{182}W	637	459	379	331	298	274±8	239	215	197	173	155	e,1983	[284]
	1.000	1.000	1.008	1.031	1.067	1.106	1.179	1.237	1.288	1.381	1.473		
^{183}W	1594	1030	797	665	578	515±15	430	374	333	277	242	e,1983	[284]
	1.000	1.005	1.027	1.057	1.088	1.115	1.160	1.197	1.229	1.277	1.301		
^{184}W	469	361	305	269	243	224±10	196	178	163	144	131	e,1983	[284]
	1.000	1.000	1.003	1.016	1.039	1.067	1.129	1.186	1.238	1.341	1.443		
^{185}W	1983	1335	1060	897	786	703±113	585	504	444	360	304	t,2000	
	0.997	0.978	0.957	0.939	0.926	0.916	0.910	0.917	0.933	0.977	1.023		
^{186}W	395	290	241	212	191	176±5	155	140	129	114	103	e,1983	[284]
	1.000	1.000	1.000	1.001	1.005	1.014	1.045	1.088	1.136	1.245	1.358		
^{185}Re	3445	2194	1925	1758	1634	1535±62	1385	1276	1191	1065	975	e+t,1991	[44, 283]
	1.000	1.000	1.000	1.001	1.001	1.002	1.003	1.003	1.003	1.001	0.998		
^{186}Re	3120	2144	1925	1772	1650	1550±250	1394	1276	1183	1040	933	t,2000	
	1.000	0.999	0.999	1.006	1.022	1.042	1.084	1.114	1.133	1.144	1.140		
^{187}Re	3755	1997	1620	1406	1263	1160±57	1015	915	839	729	650	e+t,1991	[44, 283]
	1.000	1.000	1.000	1.001	1.003	1.004	1.006	1.004	1.000	0.987	0.973		
^{184}Os	1508	930	810	742	694	657±202	600	558	525	476	442	t,2000	
	1.000	1.000	1.002	1.011	1.030	1.056	1.112	1.162	1.204	1.275	1.339		
^{186}Os	1040	825	655	525	463	422±16	366	329	311	275	239	e,1982	[287]
	1.000	1.000	1.000	1.004	1.017	1.043	1.113	1.175	1.221	1.273	1.301		
^{187}Os	2750	2038	1550	1200	1020	896±30	733	629	583	492	401	e,1992	[163, 287]
	1.084	1.312	1.315	1.298	1.287	1.284	1.303	1.342	1.391	1.495	1.591		
^{188}Os	875	744	600	486	440	399±15	350	320	303	268	234	e,1982	[287]
	1.000	1.000	1.000	1.003	1.009	1.021	1.056	1.097	1.137	1.211	1.281		
^{189}Os	4390	2599	1928	1564	1332	1168±47	951	811	712	580	494	e,1987	[289]
	1.005	1.086	1.150	1.180	1.193	1.201	1.216	1.229	1.241	1.254	1.254		
^{190}Os	808	547	435	370	327	295±45	251	221	199	170	150	e,1981	[288]
	1.000	1.000	1.000	1.000	1.000	1.000	1.006	1.020	1.041	1.100	1.169		
^{191}Os	3264	2237	1812	1568	1407	1290±280	1128	1017	934	814	729	t,2000	
	1.000	1.000	0.998	0.994	0.985	0.972	0.937	0.898	0.860	0.798	0.756		
^{192}Os	647	487	413	367	335	311±45	276	252	234	208	190	e,1981	[288]
	1.000	1.000	1.000	1.000	1.000	1.000	1.001	1.006	1.016	1.047	1.085		
^{191}Ir	4352	2732	2088	1733	1505	1350±43	1132	996	903	785	717	e,1997	[265, 290]
	1.000	1.000	1.000	0.998	0.996	0.995	0.999	1.011	1.030	1.071	1.108		
^{192}Ir	4276	2811	2519	2333	2192	2080±450	1909	1784	1685	1534	1418	t,2000	
	1.000	1.008	1.048	1.111	1.173	1.221	1.283	1.309	1.315	1.290	1.241		
^{193}Ir	3100	2000	1540	1280	1110	994±70	832	727	653	561	507	e,1997	[265, 290]
	1.000	0.999	0.990	0.981	0.982	0.993	1.030	1.068	1.102	1.150	1.173		

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{190}Pt	1527 1.000	941 1.000	823 1.000	757 1.000	711 1.000	677±183 1.000	630 1.001	598 1.005	575 1.013	543 1.043	519 1.083	e+t,1999	[291, 292]
^{192}Pt	1354 1.000	941 1.000	779 1.000	689 1.000	630 1.000	590±120 1.000	537 0.999	504 0.997	481 0.996	450 1.002	427 1.022	e+t,1999	[291, 292]
^{193}Pt	3106 0.743	1814 1.271	1523 1.373	1350 1.397	1223 1.409	1123±240 1.421	971 1.455	860 1.499	774 1.551	650 1.656	564 1.748	t,2000	
^{194}Pt	873 1.000	597 1.000	489 1.000	432 1.000	392 1.000	365±85 1.000	330 1.000	307 1.002	291 1.008	268 1.029	250 1.060	t,1999	[291, 292]
						27±2(p) to ^{195m}Pt						e,1999	[291, 292]
^{195}Pt	2167 1.000	1486 1.000	1210 1.000	1051 1.000	942 0.997	860±200 0.988	737 0.963	648 0.942	577 0.938	472 0.968	397 1.013	t,1999	[291, 292]
^{196}Pt	501 1.000	335 1.000	271 1.000	236 1.000	214 1.000	197±23 1.000	177 1.000	164 1.000	155 1.001	142 1.009	133 1.025	e+t,1999	[291, 292]
						13.0±1.4(p) to ^{197m}Pt						e,1999	[291, 292]
^{198}Pt	236 1.000	150 1.000	117 1.000	100 1.000	89 1.000	82±12 1.000	72 1.000	66 1.000	63 1.001	57 1.005	53 1.011	e+t,1999	[291, 292]
						2.69±0.16(p) to ^{199m}Pt						e,1999	[291, 292]
^{197}Au	2050 1.000	1208 1.000	904 0.999	746 0.995	648 0.988	582±9 0.980	496 0.962	442 0.945	406 0.931	356 0.915	321 0.920	e,1988	[6, 38]
^{198}Au	2101 1.000	1268 1.000	1096 0.996	988 0.988	906 0.975	840±147 0.961	740 0.931	665 0.899	606 0.865	516 0.801	447 0.755	t,2000	
^{196}Hg	1622 1.000	933 1.000	803 1.000	734 1.000	686 1.000	650±82 1.000	600 1.000	566 1.000	543 1.002	511 1.010	489 1.029	t,2000	
^{198}Hg	588 1.000	318 1.000	240 1.000	205 1.000	186 1.000	173±15 1.000	159 1.000	150 0.999	145 0.997	139 0.991	135 0.987	e,1985	[299]
^{199}Hg	1348 1.000	755 1.000	550 1.000	467 1.000	411 1.001	374±23 1.002	325 1.007	291 1.015	264 1.023	224 1.045	198 1.081	e,1985	[299]
^{200}Hg	324 1.000	198 1.000	155 1.000	135 1.000	123 1.000	115±12 1.000	106 1.000	99 1.002	94 1.005	86 1.016	80 1.032	e,1985	[299]
^{201}Hg	950 0.885	593 0.891	446 0.890	361 0.896	305 0.908	264±14 0.925	211 0.962	177 0.997	155 1.028	122 1.077	106 1.113	e,1985	[299]
^{202}Hg	179 1.000	106 1.000	87 1.000	80 1.000	77 1.000	74±6 1.000	70 1.000	66 1.000	63 1.000	59 1.001	55 1.004	e,1985	[299]
^{203}Hg	375 0.976	223 0.959	165 0.939	133 0.916	112 0.894	98±17 0.874	79 0.840	67 0.815	59 0.794	49 0.762	42 0.739	t,2000	
^{204}Hg	93 1.000	63 1.000	51 1.000	46 1.000	44 1.000	42±4 1.000	39 1.000	37 1.000	35 1.000	31 0.997	29 0.992	e,1985	[299]

TABLE II. Maxwellian-Averaged (n, γ) Cross Sections and Stellar Enhancement Factors at Thermal Energies $kT = 5$–100 keV for ^{1}H to ^{210}Bi

See page 82 for Explanation of Tables

	Thermal energy (keV)											Refs. and Comments	
	5	10	15	20	25	30	40	50	60	80	100		
^{203}Tl	380 1.000	307 1.000	214 1.000	167 1.000	140 1.000	124±8 1.000	93 1.000	76 0.999	63 0.997	50 0.990	40 0.982	e,1976	[300]
^{204}Tl	874 1.000	412 1.000	317 1.000	269 0.999	238 0.998	215±38 0.995	183 0.983	161 0.966	145 0.946	122 0.898	106 0.849	t,2000	
^{205}Tl	102 1.000	89 1.000	74 1.000	65 1.000	58 1.000	54±4 1.000	46 1.000	40 0.997	35 0.990	25 0.974	15 0.960	e,1976	[300]
^{204}Pb	168 1.000	139 1.000	118 1.000	105 1.000	96 1.000	89.5±5.5 1.000	80 1.000	73 1.000	67 1.000	57 1.000	50 1.000	e,1984	[301]
^{205}Pb	604 0.846	268 0.876	197 0.894	162 0.900	140 0.902	125±22 0.901	104 0.898	91 0.893	81 0.887	68 0.873	60 0.857	t,2000	
^{206}Pb	25.5 1.000	23.4 1.000	21.0 1.000	17.3 1.000	16.2 1.000	15.8±0.8 1.000	15.1 1.000	14.3 1.000	13.6 1.000	12.1 1.000	11.0 0.999	e,1979	[303]
^{207}Pb	13.9 1.000	12.3 1.000	12.3 1.000	11.6 1.000	10.7 1.000	9.7±1.3 1.000	8.1 1.000	6.9 1.000	6.0 1.000	5.2 1.000	4.7 1.000	e,1997	[305, 306]
^{208}Pb	0.058 1.000	0.118 1.000	0.198 1.000	0.268 1.000	0.320 1.000	0.36±0.04 1.000	0.394 1.000	0.410 1.000	0.411 1.000	0.395 1.000	0.366 1.000	e,1997	[215]
^{209}Bi	11.25 1.000	6.13 1.000	4.27 1.000	3.40 1.000	2.95 1.000	2.70±0.48 1.000	2.46 1.000	2.33 1.000	2.2 1.000	2.1 1.000	2 1.000	e,1997	[305]
						2.32±0.14(p) to ^{210g}Bi						e,1989	[307]
^{210}Bi	18 1.000	10 0.997	8 0.989	7 0.976	7 0.963	6±5 0.952	5 0.939	5 0.939	4 0.951	4 0.985	3 1.001	t,2000	
^{210}Po	8 1.000	6 1.000	5 1.000	4 1.000	4 1.000	3.3±3 1.000	3 1.000	2.5 1.000	2.4 1.000	2.3 1.000	2.2 1.000	t,2000	

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