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From the Section Head

It is a great pleasure to write my first welcome address for the Nuclear Data Newsletter. My name is Arjan Koning, I come from the Netherlands, and since 27 July 2015 am in charge of the Nuclear Data Section, succeeding Robin Forrest who has returned to the UK leaving behind a very experienced team. Until recently, I was working as Programme Manager Nuclear Science and Nuclear Data specialist at NRG in Petten, at the same time performing duties of a Professor in nuclear reaction modeling at the University of Uppsala, Sweden.

As the main author of the TALYS code, and a chairman of the JEFF and WPEC projects, my interests and accomplishments also include development of nuclear reaction models, the TENDL nuclear data library, uncertainty propagation and development of nuclear data for nuclear energy, fusion and medical isotope production, as well as involvement in various other international nuclear data efforts.

After a rather calm summer at the IAEA, a series of Consultancy Meetings have just taken or are taking place: on Simulations of Plasma–Material Interaction experiments; on analysis codes for nuclear structure and decay data; on compensating effects in integral benchmarking, on nuclear data processing capabilities, and a meeting on the Generalized Nuclear Data format.
A recent CRP on Prompt Fission Neutron Spectra has resulted in an impressive IAEA-led publication which will appear in Nuclear Data Sheets in January 2016.

In the coming years interesting challenges are awaiting us - first and foremost, the usual challenge of replacing very experienced staff members, who are about to retire or are at the end of their seven years of service, by newcomers who can follow in their footsteps.

In terms of technical work, we foresee increased participation in the Collaborative International Evaluated Library (CIELO) project on evaluated data for H, O, Fe, U and Pu, and the enhancement of our capabilities on Atomic and Molecular Data and nuclear structure and decay data. EXFOR is still expanding, and the Section is carefully selecting consultancy projects to augment the nuclear reaction database with the most crucial reactions.

One of our most visited webpages - the Isotope Browser App, (available as android and apple version) continues to support your work with nuclear data information (details at the next page).

And finally, much more nuclear data development can be expected now that the IAEA has both EMPIRE and TALYS in the house.

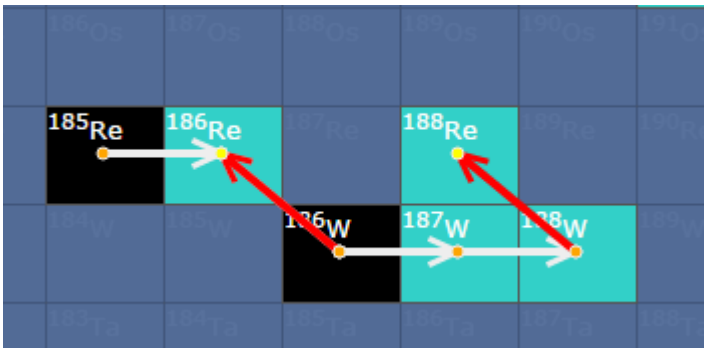
Arjan Koning



Computer Codes and Data Libraries – News

Medical Portal

The Medical Portal provides a unified view to all nuclear data relevant for medical applications, databases, documents, libraries and ongoing CRP projects. Besides all the relevant documents from CRPs and technical meetings, data from evaluated reactions and the relevant decay data are accessible and constantly updated as new evaluations are submitted.



The graphical interface visualises all the reaction paths linking target and product (red lines correspond to charged particle, white - to neutron induced reactions), and evaluated data are visualised by clicking on a link or a nuclide. The portal can be accessed at https://www-nds.iaea.org/medportal/.

STANDARDS

The neutron cross section standards are used in measurement and evaluation of all other neutron reaction cross sections. The neutron fission cross sections were evaluated for ^{209}Bi and ^{nat}Pb and extended for ^{235}U, ^{238}U and ^{239}Pu up to 1 GeV. They were added to existing Standards as reference cross sections in June 2015: https://www-nds.iaea.org/standards/ .

SAFEGUARDS DATA

A set of recommended nuclear data for safeguards applications was assembled in January 2007. Responding to the requests from the IAEA Safeguards Department, the neutron yields from reactor fuels (U and Pu oxides) and from spontaneous fission of actinides (Th, U, Np, Pu, Am, Cm Bk and Cf) were assessed between March and October 2015 employing the latest evaluated decay and (α,xn) cross section data. New quantities are available from Safeguards Data portal https://www-nds.iaea.org/sgnucdat/.

DXS

This database provides atom displacement (NRT- and a thermal recombination-corrected-dpa) and gas production cross sections by neutrons and protons in the ENDF-6 format: https://www-nds.iaea.org/public/download-endf/DXS/. The database was updated in August 2015 with new data for Eurofer and SS-316 steels and Titanium.

STAYSL PNNL

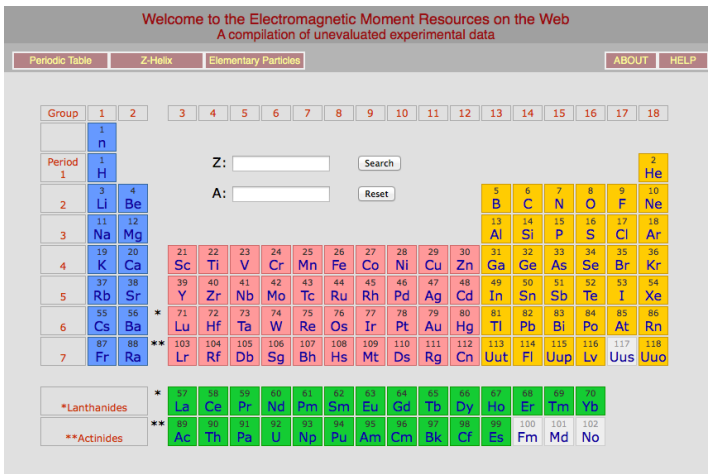
The software determines the neutron spectrum from measured activation rates: https://www-nds.iaea.org/irdf2002/codes/index.htmlx . The new version from August 2015 is based on the neutron cross sections in IRDFF V1.05 and extends to 60 MeV. It has passed the software verification and validation procedures.

Atomic Mass Data Center

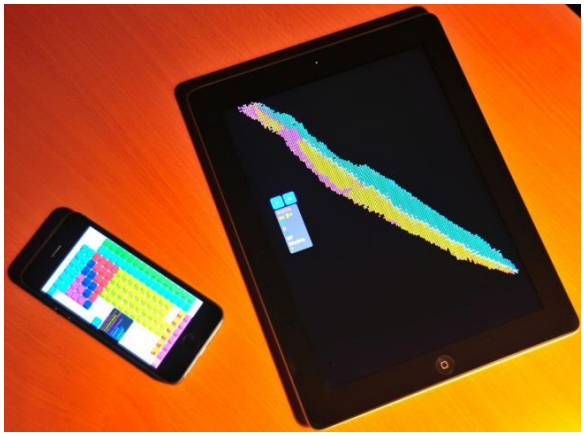
The web page https://www-nds.iaea.org/amdc/ contains evaluated and experimental masses of atoms including covariances, and their ground and decay properties. The update from May 2015 included the latest available numerical data and reference publications. NDS acknowledges the Atomic Mass Data Center from Institute of Modern Physics of the Chinese Academy of Sciences for provision of data.

Nuclear Moments Database

An online database of magnetic dipole and electric quadrupole nuclear moments is available from the NDS server. The database comprises data found in print compilations (INDC(NDS)-0650,-0658), peer-reviewed journals and conference proceedings. The user can click on a built-in periodic table to choose an element and then the isotope of interest. Alternatively, the user can type in the atomic (Z) or mass (A) number in input form. The data are displayed in a concise tabulated form. Bibliographical information has been linked to the sources, i.e. the Nuclear Science References (NSR) key numbers are linked to the NSR database, and, in addition, Digital Object identifiers (DOI) have been added to all the publications featuring one. Further developments will include enhancement of retrieval capabilities and plotting tools. The database is available on Nuclear Moments and through LiveChart.



The Isotope Browser on Apple Devices



In December 2014 the Nuclear Data Section published the Isotope Browser on iTunes App Store. Like the Android version, the app gives properties of more than 4 000 nuclides and isomers. A Chart of Nuclides, with zooming and tapping enabled, and a Periodic Table of Elements are included to allow easy selection and navigation. Filter criteria on half-life, decay mode, radiation type and energy can be selected. Summary data are presented in a scrolling list, with a details page for each nuclide containing web links to the data sources and further information such as level and decay schema. The filtered nuclides can be visualised on the Chart of Nuclides.

Data are taken from the most recent and reliable sources, and optimal search-and-retrieve performance is achieved with an embedded database, meaning that no network connection is required.

The **Isotope Browser** for Apple can be found at: https://itunes.apple.com
If you want the Android version: https://play.google.com/store/apps

NDS Meeting Reports

(TM = Technical Meeting, RCM = Research Coordination Meeting, CM = Consultants' Meeting, WS = Workshop, CRP = Coordinated Research Project)

Consultants' Meeting on EXFOR Compilation of Thermal Neutron Scattering Data

2-4 November 2015, Vienna, Austria
Scientific Secretary: Valentina Semkova
6 participants and IAEA staff



Participants of the CM on EXFOR Compilation of Thermal Neutron Scattering Data

Recently there has been a renewed interest in revisiting the existing thermal neutron scattering libraries and production of new evaluations driven by novel applications. These activities imply new requirements on experimental data and their compilation. In thermal neutron scattering not only the isotopes that compose the sample, but also the compounds, the structure and other physical properties have to be considered. Several measurement techniques and evaluation methods were discussed during the meeting in order to define the rules for EXFOR compilation of thermal neutron scattering data that will provide comprehensive information for the experimental conditions and derived quantities. It was pointed out that, in addition to the differential and total cross sections compiled in EXFOR, a collection of derived or complementary data, such as phonon spectra; structural parameters; thermal neutron scattering kernels etc., in a dedicated section of EXFOR or in a separate repository will provide information that will facilitate further developments in thermal neutron scattering studies and applications. The presentations given at the meeting are available on CM-THSC-2015. Report INDC(NDS)-0697 is in preparation.

Technical Meeting of the International Atomic and Molecular Data Centre Network

2-4 November 2015, Vienna, Austria
Scientific Secretary: Hyun-Kyung Chung
10 participants and IAEA staff



Participants of the TM of the International A+M Data Centre Network

The 23rd Data Centres Network (DCN) meeting brought together 7 representatives from Network sites and 3 additional representatives of other atomic and molecular database projects, and A+M data Unit staff. Data centres in the network provide numerical and bibliographical data on spectroscopy and on collision processes of interest to fusion and other plasma applications in astrophysics and plasma processing. Common concerns among the network are permanent traceability of data, citation policies for original sources, and policies for uncertainty assessment, data evaluation, and the provision of recommended data. Data formats and interoperability among databases is another topic of joint interest that was discussed at the meeting. There have been a number of data evaluation activities recently in the area of electron-molecule collisions; the experience was reviewed and priorities for future evaluations were discussed. Participants also discussed current atomic and molecular data needs for fusion with an emphasis on data needed to simulate processes of neutral beams used for heating and diagnostics in fusion plasma. A meeting report is in preparation.

Joint ICTP-IAEA School on Nuclear Data Measurements for Science and Applications

19-30 October 2015, Vienna, Austria
Directors: S. Simakov, D. Ridikas (IAEA)
and J. Niemela (ICTP)
Local organizer: L.Iannitti (ICTP)
60 participants and IAEA staff

This School was organized by the Abdus Salam International Centre for Theoretical Physics (ICTP) in cooperation with the Nuclear Data and Physics Sections of IAEA, n_TOF collaboration of CERN and University of Sevilla. The main goal of the School was to introduce and deliver concise and the most recent information on nuclear reaction physics and nuclear data measurements required for both, fundamental research and various applications.
25 lectures have covered the advanced neutron beam facilities, experimental techniques, relevant instrumentation, data taking and analysis approaches. Eight practical exercises (hands-on virtual experiments) gave an opportunity for participants to experience the various case studies relevant to the measurement techniques, nuclear data processing and analysis.
The poster sessions gave an additional chance to students and lecturers for knowledge exchange and establishing contacts, as well as for selection of four best posters to be awarded with prizes and certificates.
More information, including materials presented at the School, are available from the event website: http://indico.ictp.it/event/a14288/overview .



Participants of the ICTP-IAEA School on Nuclear Data Measurements for Science and Applications

Consultants' Meeting on the New Evaluated Nuclear Data file Processing Capabilities Dates

5-9 October 2015, Vienna, Austria
Scientific Secretary: Andrej Trkov
21 participants and IAEA staff



Participants of the CM on the New Evaluated Nuclear Data file Processing Capabilities Dates

The ENDF-6 format is the currently adopted format for storing evaluated nuclear data. However, such data representation is seldom directly usable in application codes. Processing of the data is less trivial than it seems, as demonstrated through the "Code Verification Project" conducted by D.E. Cullen through the IAEA many years ago. As a result, many codes were simply abandoned. Apart from some local codes, the main survivors for basic data processing and for generating application libraries were PREPRO, NJOY and AMPX. Unfortunately, the PREPRO package is limited to the basic operations on nuclear data, while NJOY and AMPX are subject to some restrictions in the distributions. There is a request from the users in Member States to have open source data processing codes and to enhance the development of data processing capabilities for the emerging alternative data representation format such as the GND format.
Very recently there seems to be some revival of activities on nuclear data processing codes, partly stimulated by the idea of a new format for storing such data and partly to avoid "common mode failure" due to data processing being done with the same code for different application codes. As a result of presentations by the participants a comprehensive list of codes and their status was compiled. The presentations are available from the webpage Data Processing 2015. Several utilities and data files mentioned at the Meeting are also available from the same web page. The summary report is in preparation.

Second Technical Meeting on Improvement of Analysis Codes for Nuclear Structure and Decay Data Evaluations

5-8 October 2015, Vienna, Austria
Scientific Secretary: Paraskevi Dimitriou
9 participants and IAEA staff



Participants of the TM on Improvement of Analysis Codes for Nuclear Structure and Decay Data (NSDD) Network

This was the second meeting of the project aimed at improving the ENSDF Analysis and Utility codes, the first being held at the IAEA in June 2014 (INDC(NDS)-0665). Participants met to monitor the progress since the previous meeting, discuss the new codes and provide feedback to the developers, and recommend appropriate validation procedures. The current status of analysis codes as well as data evaluation needs was assessed and the list of priority codes and assignments was revised accordingly. The summary report INDC(NDS)-0696 is in preparation. Presentations are available on the meeting web page: CodesTM2.

Consultants' Meeting on Compensating Effects due to Nuclear Reaction and Material Cross Correlations in the Simulations of Integral Benchmarks

28 September -1 October 2015, Vienna, Austria
Scientific Secretary: Andrej Trkov
7 participants and IAEA staff

The Meeting was held in support of the CIELO project, which is an international collaboration aimed at improving the evaluated nuclear data files for the primary materials in nuclear reactor technology, namely U-235, U-238, Pu-239, O-16, H-1 and Fe-isotopes. It is well known that due to several compensating effects there is more than one way of adjusting the data to fit a limited set of benchmarks, but the ultimate aim is to identify the root cause of the discrepancies and eliminate them by better physics used in the evaluation process. Various ideas for addressing the impact of compensating effects on the data evaluation process were exchanged, focusing on the data validation

through modelling of integral benchmarks. The usefulness of the DICE and NDaST tools developed at the OECD/NEA Data Bank was acknowledged, as well as the ENDVER tool of the IAEA for data comparison with the measured data in EXFOR. The issue of input models for the benchmarks was also discussed. At present, they are exchanged on a personal basis. The Meeting was attended by seven participants from 5 countries. More details about the meeting can be found on the meeting webpage Compensating Effects 2015. The summary report is in preparation and will be available shortly.



Participants of the CM on Compensating Effects due to Nuclear Reaction and Material Cross Correlations in the Simulations of Integral Benchmarks

Consultants' Meeting on Recommended Data for Atomic Processes of Tungsten Ions

14-16 September 2015, Seoul, Korea
Scientific Secretary: Hyun-Kyung Chung
7 participants and IAEA staff



Participants of the CM on Recommended Data for Atomic Processes of Tungsten Ions

This meeting was hosted by Nuclear Data Center of Korea Atomic Energy Research Institute (KAERI) in Daejeon, Republic of Korea. Eight participants from five countries and two IAEA staff members participated in the meeting in order to evaluate and recommend the available data of tungsten dielectronic recombination rate coefficients as a function of electron temperature. Participants provided their own data for compilation and identified missing data sets of several charge states out of 74 charge states of tungsten atoms. Future work was identified and participants will provide new results.

Second Research Coordination Meeting on Plasma-Wall Interaction with Irradiated Tungsten and Tungsten Alloys in Fusion Devices

8-11 September 2015, Seoul, Korea
Scientific Secretary: Hyun-Kyung Chung
19 participants and IAEA staff



Participants of the RCM on Plasma-Wall Interaction with Irradiated Tungsten and Tungsten Alloys in Fusion Devices

The most important topic in this CRP is to understand how tritium retention, tritium migration and ways to extract trapped tritium are affected by radiation damage. The relevant level of neutron damage in a fusion reactor is so high that it cannot be simulated in present experiments, and for experimental work one relies instead on surrogate irradiation by charged particle beams. The difference between neutron irradiation and surrogate irradiation in their effect on plasma-material interaction properties needs to be much better understood. This leads to the need to characterize the effects upon microstructure due to different kinds of irradiation and to characterize how changes in microstructure influence the tritium retention and tritium transport properties. The meeting addressed the status of the fundamental and applied modelling, and of experiments involving surrogate irradiation.

Technical Meeting of the International Atomic and Molecular Code Centre Network on Simulation of Plasma-Material Interaction Experiments

29-31 July 2015, Vienna, Austria
Scientific Secretary: Hyun-Kyung Chung
9 participants and IAEA staff



Participants of the TM of the International Atomic and Molecular Code Centre Network on Simulation of Plasma-Material Interaction Experiments

This meeting was convened to discuss the current status and future directions of the Uncertainty Quantification (UQ) activities for theoretical Plasma-Material Interaction (PMI) data. Related to fusion activities, discussion topics were focused on PMI related to hydrogen retention. Invited experts discussed uncertainties in interatomic potentials, density-functional theory (DFT) simulations, molecular dynamics (MD) simulations, kinetic Monte Carlo (KMC) simulations and rate simulations for hydrogen retention and migration in fusion material.

Consultants' Meeting on Evaluation and Uncertainty Assessment for Be, C, Ne Atomic Data

13-15 July 2015, Vienna, Austria
Scientific Secretary: Hyun-Kyung Chung
4 participants and IAEA staff

Four experts from three countries participated in the three-day meeting to evaluate currently available electron collisional data for beryllium, carbon and neon atoms and ions and recommend the best possible data for electron-beryllium collision processes. A new recommended data set for electron-beryllium excitation and ionization cross-sections will be produced as a result of this meeting.



Participants of the CM on Evaluation and Uncertainty Assessment for Be, C, Ne Atomic Data

Second Research Coordination Meeting on Primary Radiation Damage Cross Section

29 June – 2 July 2015, Vienna, Austria
Scientific Secretary: Stanislav Simakov
25 participants and IAEA staff



Participants of the 2nd RCM on Primary Radiation Damage Cross Section.

The attendees presented their individual research contributions to the CRP, and discussed actual results and existing problems. They have elaborated consolidated recommendations and actions for implementation during the period until 3rd RCM, which will probably take place in the first half of 2017. Beside a certain progress, the discussions have shown that there are still large discrepancies between main evaluated libraries or simulation methods for the recoils spectra, damage and gas production cross sections. There is still no solution on how to evaluate and propagate the uncertainties. Moreover, the processing of such kind of evaluated data caused a long discussion. To overcome this, the participants

recommended organization of a dedicated Technical Meeting next year in order to address these issues. The presentations are available from 2.RCM, and the Meeting Summary Report INDC(NDS)-0691 with individual contributions and consolidated decisions is in preparation.

Consultants' Meeting on Uncertainty Assessment for Molecular Data

22-23 June 2015, Vienna, Austria
Scientific Secretary: Bastiaan Braams
3 participants and IAEA staff

The main concern of this CM was the provision of uncertainties for calculated scattering data for electron-atom, electron-molecule and heavy particle collisions. In present practice calculated cross sections are often presented as the best that could be done with the available codes and resources, and information about uncertainties is not supplied. The A+M Data Unit is trying to remedy this situation. This meeting was a follow-up of a larger TM that the Unit organized in July 2014 in cooperation with the Institute of Theoretical Atomic, Molecular and Optical Physics (ITAMP) at Harvard-Smithsonian Center for Astrophysics: the Joint IAEA-ITAMP Technical Meeting on Uncertainty Assessment for Theoretical Atomic and Molecular Scattering Data. Three outside experts and A+M Data Unit staff discussed a technical document outlining procedures for uncertainty quantification of theoretical atomic and molecular data, addressed to the atomic and molecular theory community and discussing both how uncertainties are introduced into specific calculations and how they are propagated. A journal publication in the course of 2016 is foreseen.

Consultants' Meeting on Inelastic Scattering Data for Major Actinides

22-23 June 2015, Vienna, Austria
Scientific Secretary: Roberto Capote Noy
8 participants and IAEA staff

The CM was convened as a follow-up to a previous IAEA CM on inelastic scattering and capture reactions on major actinides held in September 2011 (cf. INDC(NDS)-0597, 2012). The goal was to review the advance on inelastic neutron scattering calculations on major actinides with focus on the status of deformed optical model calculations on actinides, and recommend improvements to solve existing discrepancies in evaluated libraries within the NEA CIELO project. Recent developments in theoretical modelling of neutron scattering on actinides were critically reviewed during the meeting and recommendations made toward improving modelling of relevant reactions. A summary report of the meeting will be published later this year as INDC(NDS)-0692.



Participants of the CM on Inelastic Scattering Data for Major Actinides

Technical Meeting on Benchmarking Experiments for Ion Beam Analysis

26-29 May 2015, Vienna, Austria
Scientific Secretary: Paraskevi Dimitriou
12 participants and IAEA staff



Participants of the TM on Benchmarking Experiments for Ion Beam Analysis

The meeting was held to discuss the need for validation/benchmarking of nuclear reaction cross section data for the different Ion Beam Analysis techniques (EBS, NRA, PIGE). Participants assessed the current status of experimental and evaluated data, outlined the methodology for performing benchmarking experiments and proposed guidelines for validation of nuclear cross sections using benchmarking measurements. Data compilation and

dissemination was also discussed and a priority list of experiments was produced. The summary report INDC(NDS)-0690 is in preparation. Presentations are available from the meeting web page: TM-IBA-2015

Announcements

2015 John Dawson Award

The American Physical Society (APS) has selected Hyun-Kyung Chung as one of the recipients of the 2015 John Dawson Award for Excellence in Plasma Physics Research. The Award recognizes Hyun and her collaborators' achievements "For creative and novel use of the hard x-ray free electron laser to isochorically create high density plasmas and accurately measure the ionization potential depression, and for new theory that addresses discrepancies with long standing models and provides stimulus for continued developments." The award stems from research using the Linac Coherent Light Source (LCLS) X-ray laser at Stanford by a team led at Oxford University to which Hyun contributed her atomic physics modelling expertise. She will share this award with her co-workers Roger Falcone from UC Berkeley, Phillip Heimann, Richard W. Lee and Bob Nagler from SLAC National Accelerator Laboratory, and Orlando Ciricosta, Sam Vinko and Justin Wark from Oxford University. The award ceremony will take place at the American Physical Society, Division of Plasma Physics meeting in Savannah, GA, in November 2015.



Forthcoming Events



International Conference on Nuclear Science and Technology - ND2016, 11-16 September 2016, Bruges, Belgium - ND2016 is the primary conference for the advancement of nuclear data in the interest of both science and technology. It addresses all important active fields of investigation: fundamental nuclear physics, astrophysics, nuclear energy, nuclear medicine, nuclear non-proliferation, safeguards and arms control. The IAEA will award a limited number of grants to participants from Member States eligible to receive technical assistance under the IAEA's technical cooperation programme. In spring 2016, a Note Verbale will be sent to Ministries of Foreign Affairs of IAEA Member States with the request that they draw the attention of the appropriate governmental authorities to this fact.
Requests can only be considered if they are submitted by a government on behalf of one of its specialists

In Memoriam

Edward Cheng



Edward Cheng passed away 31 May 2015. Edward was part of the international fusion research community and made many friends. He attended numerous international conferences and symposia and visited most of the leading nuclear energy research centers in the world. We remember him from the early FENDL meetings and his other work in activation.

Selected Charts, Reports and Documents

INDC(IND)-0048 Proceedings of the 5th AASPP Workshop on Asian Nuclear Reaction Database Development, edited by A. Saxena, February 2015.

INDC(JPN)-0199; JAEA-CONF 2014-002 Proceedings of the 2013 Symposium on Nuclear Data, 14-15 November 2013, Fukui, Japan, edited by N. Yamano, *et al*., February 2015.

INDC(NDS)-0623 Summary Report from the Second Research Coordination Meeting on Spectroscopic and Collisional Data for Tungsten from 1eV to 20 keV, 29-31 August 2012, Heidelberg, Germany, prepared by B.J. Braams, H.K. Chung, October 2014.

INDC(NDS)-0631 Benchmarking of the FENDL-3 Neutron Cross-Section Data Library for Fusion Applications, prepared by U. Fischer, *et al*., March 2014.

INDC(NDS)-0654 Summary Report from the Consultants' Meeting on Recommended Input Parameters for Fission Cross Section Calculation, Vienna, prepared by R. Capote Noy, *et al*., December 2014.

INDC(NDS)-0655 Summary Report of the Third Research Coordination Meeting on Prompt Fission Neutron Spectra of Major Actinides, 21-24 October 2013, Vienna, prepared by P. Talou, R. Capote Noy, S. Simakov, December 2014.

INDC(NDS)-0677 Summary Report of the Technical Meeting on Current Status of Neutron Standards, 1-5 December 2014, Vienna, prepared by V.G. Pronyaev, A.D. Carlson, and R. Capote Noy, October 2015.

INDC(NDS)-0679 Summary Report of the Decennial IAEA Technical Meeting on Atomic, Molecular and Plasma-Material Interaction Data for Fusion Science and Technology, 15-19 December 2014, Daejeon, Republic of Korea, prepared by H.K. Chung, *et al*., June 2015.

INDC(NDS)-0680 Summary Report of a Joint ICTP-IAEA Conference on Models and Data for Plasma-Material Interaction in Fusion Devices, 3-7 November 2014, Trieste, Italy, prepared by B.J. Braams, May 2015.

INDC(NDS)-0682 Summary Report from the Second Research Coordination Meeting on Testing and Improving of the International Reactor Dosimetry and Fusion File (IRDFF), 16-20 March 2015, Vienna, prepared by P. Griffin, L. Greenwood, S. Simakov, June 2015.

INDC(NDS)-0683 Summary Report of the Second Research Coordination Meeting on Beta-delayed Neutron Emission Evaluation, 23-27 March 2015, Vienna, prepared by I. Dillmann, P. Dimitriou, B. Singh, July 2015.

INDC(NDS)-0685 Summary Report of the Joint ICTP-IAEA Advanced School and Workshop on Modern Methods in Plasma Spectroscopy, 16-27 March 2015, Trieste, Italy, prepared by H.K. Chung, Y. Ralchenko, B.J. Braams, June 2015.

INDC(NDS)-0686 Summary Report of the Technical Meeting of International Network of Nuclear Reaction Data Centres (NRDC), 21-23 April 2015, Vienna, prepared by N. Otsuka, S. Taova, June 2015.

INDC(NDS)-0687 Summary Report from the 21st Technical Meeting of International Network of Nuclear Structure and Decay Data (NSDD) Evaluators, 20-24 April 2015, Vienna, prepared by E. Ricard McCutchan, P. Dimitriou, A.L. Nichols, August 2015.

INDC(NDS)-0688 Summary Report of a Specialised Workshop on Nuclear Structure and Decay Data (NSDD) Evaluations, 27-29 April 2015, Vienna, prepared by A.L. Nichols, P. Dimitriou, F.G. Kondev, E. Ricard-McCutchan, September 2015.

INDC(NDS)-0689 High Resolution Measurements of Aggregate Delayed Neutron Spectra in Different Time Intervals from Thermal Neutron Induced Fission of ^{235}U, prepared by V.M. Piksaikin, *et al*., September 2015.

INDC(NDS)-0693 Supplementary Data for Neutron Activation Analysis, Results from the Coordinated Research Project on Reference Database for Neutron Activation Analysis (2005-2009), prepared by A. Trkov, *et al*., October 2015.

INDC(NED)-012 Use of Maxwellian Integral Data for Validation of 30 keV Capture Cross Section of FENDL-3/A Activation Library, prepared by J. Kopecky, June 2015.

INDC(SEC)-0111 Updating of data for the neutron yields in reactor fuels for the interest of Nuclear Safeguards,

prepared by Q. van den Berg and S. Simakov, October 2015.

INDC(USA)-0108 Verification of the ^{252}Cf Standard in the Energy Range 2-20 MeV, prepared by N.V. Kornilov, July 2015.

Also Available:

Chart of the Nuclides 2010 JAEA Nuclear Data Centre.

Chart of the Nuclides *(Wall chart) prepared by Knolls Atomic Power Laboratory (KAPL) and distributed by Lockheed Martin (17th edition, revised 2009).* Available cost-free on request only for **teachers and scientists from developing countries.**

Karlsruher Nuklidkarte *Wall chart of the nuclides, 7th edition (2006). Available cost-free on request only for* **teachers and scientists from developing countries.**

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F-92130 Issy-les-Moulineaux, France.
Tel. +33 1 4524 (plus extension); Fax +33 1 45241110;
Email: Oscar.cabellos@oecd.org; data@oecd-nea.org; Worldwide Web: http://www.oecd-nea.org/databank/ contact: O. Cabellos, ext. 1084.

For services to the customers from the former USSR:
Neutron data: Russia Nuclear Data Center, Centr Jadernykh Dannykh (CJD), Fiziko-Energeticheskij Institut, Ploschad Bondarenko,1,
249033 Obninsk, Kaluga Region, Russian Federation.
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Email: dvoytenkov@ippe.ru; Worldwide Web: http://www.ippe.ru/podr/cjd; contact: D.A.Voitenkov.
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Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Leninskie Gory, 119 922 Moscow, Russian Federation.
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Email: varlamov@depni.sinp.msu.ru; Worldwide Web: http://cdfe.sinp.msu.ru/; contact: V.V. Varlamov.

For services to customers in China:
China Nuclear Data Center, China Institute of Atomic Energy, P.O. Box 275(41), Beijing 102413, China.
Tel. +86 10-6935-7275; Fax +86 10-6935-8119; Email: gezg@ciae.ac.cn; contact: Ge Zhigang.

Computer codes of US origin to all countries (there are charges and release restrictions):
Radiation Safety Information Computational Center (RSICC), Oak Ridge National Laboratory,
P.O. Box 2008, Oak Ridge, TN 37831-6003, USA.
Tel. +1 865-574-6176; Fax +1 865-241-4046;
Email: pdc@ornl.gov

Computer codes of non-US origin to all countries (there may be release restrictions):
NEA Data Bank (see above)
Email: Juan.Galan@oecd.org; contact: J. Galan, ext. 1008.

IAEA Nuclear Data Section offers data centre services primarily to non-OECD countries
(except Russian Federation and China, see above). However, most products advertised in this Newsletter, specifically INDC reports, IAEANDS-documents, etc., are provided upon request to customers in all countries.
IAEA-NDS on-line services at Worldwide Web: http://www-nds.iaea.org/
Users in India, China and neighbouring countries may use
IAEA-NDS mirror at Worldwide Web: http://www-nds.indcentre.org.in (India); http://www-nds.ciae.ac.cn/ (China).

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