

Nuclear Data Newsletter

A newsletter of the Nuclear Data Section (NDS)
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NDS end of 1969

Standing:

Trevor Byer, Ian Battershill, Valya Konshin, Albert Koster, Alex Lorenz, Hae-Il Bak, Leif Hjärne, Hans Lemmel, Francisco Manero, Joe Schmidt

Sitting:

Jill White, Francoise Hirschbichler, Pamela Attree, Bill Good, Marty Every, Eva Kiovisky, Edith Rogauz

From the Section Head

NDS was created in 1964 following advice to the DG from the International Nuclear Data Scientific Working Group (INDSWG). Initially it was called the Nuclear Data Unit with its main objectives to collect, compile and review nuclear data particularly those relevant for the worldwide fission reactor programs. INDSWG met four times with additional recommendations that NDU should organise international meetings, encourage discussion between Nuclear Data producers in various countries and act as a Data Centre. INDSWG changed its name to INDC and has continued to review NDS' work and offer advice and recommendations.

NDU became the Nuclear Data Section in 1970 and has continued with its mission to provide accurate fundamental data to Member States and to act as a Coordination Centre for Networks and as a stimulus for data work around the world. Thus in 2014 we are able to celebrate the 50th anniversary of NDS and we will do this by a special session at the start of the 30th INDC meeting on 2nd June. We will be hearing more of the development and highlights of the section from former Section Heads and I would like to invite any former staff members and people connected to the NDS to attend, for details see page 2. To remind us of days gone past the photograph above shows staff members in 1969; many other photographs and memorabilia will be available to view at the meeting. I look forward to seeing many of you at the meeting, please come and meet old friends!

Robin Forrest

50 Years of the Nuclear Data Section

The Nuclear Data Section is 50 years old! Trying to capture the many achievements arising from its work is difficult. However, we can see both how much things have changed from data on punched cards, magnetic tapes and the huge problems of transferring data between the various Data Centres to today with web servers in the cloud, interactive tools and routine transfer of data. On the other hand our concerns; the coordination of networks, compilation of experimental data, training workshops and the production of high quality authoritative documents have remained the same from our beginnings. To mark this anniversary we are holding a meeting linked to the 30th INDC meeting. The preliminary programme is shown below. If you are able to attend you are very welcome, please contact us if you need additional information or guidance. An indication of some of the notable events over the last 50 years is shown in the timeline.



International Atomic Energy Agency

50th Anniversary of the Nuclear Data Section PRELIMINARY PROGRAMME

2 June 2014

Board Room A, M Building

13:20	Welcome by DDG-NA and DDG-NE
	Welcome by M Herman, Chairman of INDC
	Introduction by RA Forrest, Head of Nuclear Data Section (NDS)
13:40	NDS – The mission over the last 50 years, AL Nichols
14:10	NDS – The present and future, RA Forrest
14:40	Comments and discussion
15:00	End

Optional presentations, personal views of the past 50 years of NDS

15:10	NDS - The early years, HD Lemmel
15:40	NDS - The middle years, D Muir
16:10	NDS – Into a new millennium, P Obložinský
16:40	Refreshments

During the event a collection of photographs, documents and equipment is on display.

50 Years of NDS

1964	Nuclear Data Unit (NDU) created
1965	1 st Physics and Chemistry of Fission Symposium
1969	1 st NDU IAEA/ICTP structure workshop
1970	NDU becomes the Nuclear Data Section
1970	EXFOR becomes official exchange format
1974	NSDD network formed to coordinate ENSDF
1976	Four Centre Network becomes NRDC
1977	Formation of the A+M Data Unit
1978	1 st NDS IAEA/ICTP reaction workshop
1979	NDS Newsletter started
1982	First release of Neutron Standards file
1987	Handbook of Nuclear Activation Data published
1988	ALADDIN database started
1991	NDS acquires VAX computer
1991	X- and gamma-ray standards published
1996	Release of FENDL-1 for fusion
1997	CD-ROM version of EXFOR retrieval system
1997	Web service started
1998	RIPL-1 released
1998	All major databases available online
2000	Updated PREPRO codes released
2001	Monitor reactions for medical applications
2003	IBANDL database created
2004	Migration from VMS to multi-platform systems
2005	EXFOR master file created by NDS
2006	IRDF-2002 dosimetry file released
2007	Handbook of Nuclear Data for Safeguards
2008	Mirror site available at Data Centre in India
2009	RIPL-3 released
2009	LiveChart available on NDS website
2010	XSAMS widely adopted as A+M exchange format
2011	Therapeutic radionuclide data released
2013	FENDL-3 released
2013	Milestone of 20,300 experiments in EXFOR
2013	Mirror site available at Data Centre in China
2014	Portable EMPIRE for Windows created

Computer Codes and Data Libraries – News

Databases and libraries are available for download or on CD-ROM/DVD cost-free on request

Please find a complete list of all computer codes and data libraries available from NDS on:

<https://www-nds.iaea.org/cdroms/>

IRDFF – a new version 1.03 of the dosimetry cross section database for reactor and fusion applications was released in March 2014. Compared with previous version 1.02, it now includes one new dosimetry reaction, $^{238}\text{U}(n,2n)$, and updates of several existing ones. More information, comparisons and IRDFF 1.03 library presented in different formats are available on the web pages: <https://www-nds.iaea.org/IRDFF/> and <https://www-nds.iaea.org/IRDFFtest/>.

STAYSL PNNL - a software suite for reactor dosimetry. It provides a set of tools for working with neutron activation rates measured in a nuclear fission reactor, an accelerator-based neutron source, or any neutron field to determine the neutron flux spectrum through a generalized least-squares approach. Available on

<https://www-nds.iaea.org/irdf2002/codes/index.htmlx>.

SPECOMP - a code for determining displacement cross sections for compound materials. SPECOMP uses the SPECTER data files and can be run for any combination of five elements from the list of 38 elements. Both SPECOMP and SPECTER are available on <https://www-nds.iaea.org/irdf2002/codes/index.htmlx>.

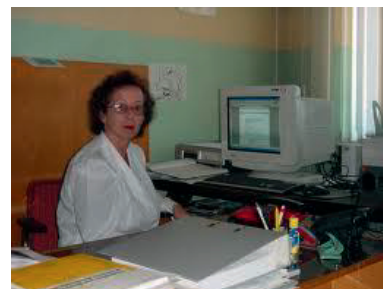
PLOTTAB - is a general purpose plotting utility code to plot continuous curves and/or discrete physical data for use in almost any application. The simple data format is designed for easy implementation in users' application codes to immediately produce plots using PLOTTAB interactively or via PostScript output. The code package is available on-line <https://www-nds.iaea.org/plottab/> and on CD-ROM from the IAEA Nuclear Data Section.

In Memoriam



Boris Kuzminov passed away on 13 November 2013 in Obninsk at the age of 84. For many years, he was the Head of the Department of Nuclear Research at the Institute for Physics and Power Engineering in Obninsk. During this time he and his co-workers made essential contributions to the measurements, analysis and theoretical interpretation of nuclear data. From 1998 to 2004 he actively participated in the International Nuclear Data Committee (INDC) meetings. His guidance in the work of the IAEA Nuclear Data Section during that time was much appreciated and he will be greatly missed.

Natalia Janeva passed away on 16 December 2013. The Neutron Physics community lost a big supporter and scientist. Her scientific studies in the field were well known and of a very high standing and she achieved high international respect and gained an enviable reputation for her support of young researchers at her Institute. Her work as a member of the INDC from 2005 to 2013 was particularly appreciated.



As this Newsletter was being finalized, we were saddened to hear of the passing of Joe Schmidt on 21 April 2014. Joe was Section Head of NDS from 1969 to 1993 and many people will remember him as the face of the Section. He guided and directed the Section for almost half of its existence and he will be greatly missed.

NDS Meeting Reports

Meeting reports, when finalised, available at <http://www-nds.iaea.org/publications/>

Third Research Coordination Meeting (RCM) on Prompt Fission Neutron Spectra for Actinides Vienna, Austria, 21–24 October, 2013

Scientific Secretary: R. Capote Noy, 12 participants and IAEA staff.



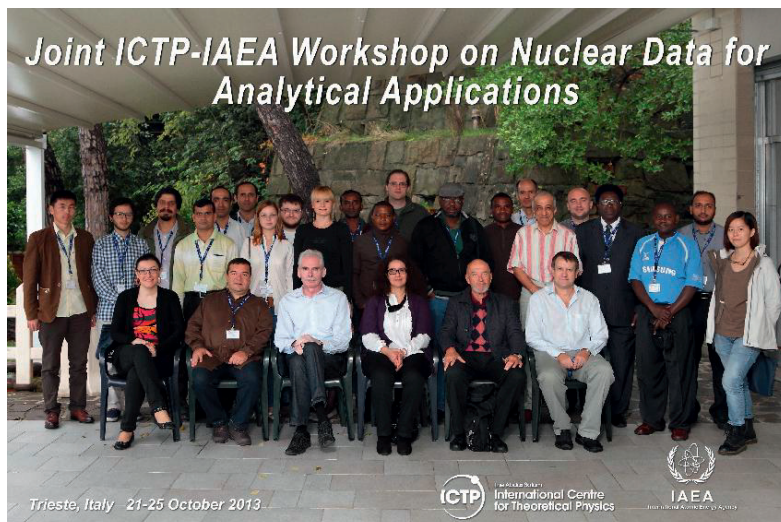
Participants of the RCM on Prompt Fission Neutron Spectra for Actinides.

The third RCM was convened to discuss technical problems in the evaluation methodology of Prompt Fission Neutron Spectra (PFNS), review new PFNS evaluations of actinide nuclei, and define a detailed schedule toward producing the CRP technical report and final database. Participants reviewed the available PFNS experimental data for major actinides, and extensively discussed evaluation methods. New evaluations have been delivered for $^{230-241}\text{U}$, $^{236-246}\text{Pu}$, ^{232}Th and ^{237}Np nuclei. Individual

presentations and additional documentation are available at the IAEA webpage of the meeting (<https://www-nds.iaea.org/index-meeting-crp/PFNS-3RCM/>). Discussions will be summarized in the report INDC(NDS)-0655 (in preparation), along with listings of the agreed CRP deliverables and the program of work to be undertaken by the participants to prepare the final technical document.

ICTP/IAEA Workshop on Nuclear Data for Analytical Applications Trieste, Italy, 21–25 October, 2013

Directors: P. Dimitriou (IAEA) and A. Gurbich (IPPE); Local organizer: C. Tuniz, 21 participants.



Participants of the ICTP Workshop on Nuclear Data for Analytical Applications.

This workshop continues the series of Nuclear Data for Science and Technology workshops initiated in 1999 and held at regular intervals since then. The main theme of

the workshop was nuclear data for Ion Beam Analysis applications. Topics included: nuclear data and on-line retrieval systems, fundamentals of energetic particle in-

interactions with matter, atoms and nuclei, overview of IBA techniques (RBS, EBS, ERDA, NRA), nuclear data for IBA (IBANDL), nuclear data for Particle-Induced Gamma-ray Emission (PIGE), applications of IBA and

PIGE in particular. The scientific programme consisted of morning lectures and afternoon practical exercises where participants were trained to use software packages widely used in Ion Beam Analysis.

Consultants Meeting (CM) on Compilation and Evaluation of Gamma-Ray Data Vienna, Austria, 4–6 November, 2013

Scientific Secretary: P. Dimitriou, 6 participants and IAEA staff.



Participants of CM on Compilation and Evaluation of Gamma-Ray Data.

Participants reviewed the state-of-affairs regarding experimental techniques, new measurements, and new evaluation methods for photonuclear and reaction γ -ray data that are used for the determination of Photon Strength Functions. They concluded that there is an urgent need for the compilation and evaluation of all relevant data in a dedicated database. A Coordinated Research Project, with the primary task of compiling the relevant data, defining the database structure and formats, outlining the

evaluation methodology, assessing experimental methods and understanding the source of discrepancies, was recommended. Consultants also suggested that the DICEBOX code for analysis of γ -ray data be disseminated by the IAEA in coordination with the group from Charles University in Prague. Participant's presentations and detailed discussions are available in the summary report of the meeting [INDC\(NDS\)-0649](#).

First Research Coordination Meeting (RCM) on Primary Radiation Damage Cross Sections Vienna, Austria, 4–8 November, 2013

Scientific Secretary: S. Simakov, 19 participants and IAEA staff.



Participants of RCM on Primary Radiation Damage Cross Sections.

The Nuclear Data Section has initiated a new Coordinated Research Project (<https://www-nds.iaea.org/CRPdpa/>) with the main goal of reviewing and recommending primary damage response functions for neutron and ion irradiations of materials. The output of this CRP will be a

database of recommended damage response functions for selected materials with corresponding documentation. It will serve the needs of the fission, fusion and accelerator neutron source communities. At this meeting, the attendees discussed the objectives of the whole CRP, pre-

sented their contributions and elaborated on consolidated recommendations and actions for implementation over the next 1.5 year period. Summary Report [INDC\(NDS\)-0648](#) documents the individual contributions and joint decisions made during this meeting. The identified research needs were refined through extensive discussion,

and a consensus was developed which defined the CRP objectives in two broad categories. The first addresses the underlying physics-related research relevant to nuclear reactions and ion stopping powers, while the second task will address the development of new materials damage response functions.

First Research Coordination Meeting (RCM) Plasma Wall Interaction of Irradiated Tungsten and Tungsten Alloys in Fusion Devices Vienna, Austria, 26–28 November, 2013

Scientific Secretary: B.J. Braams, 19 participants and IAEA staff.



Participants of RCM on Plasma Wall Interaction of Irradiated Tungsten and Tungsten Alloys in Fusion Devices.

The choice of wall material for fusion devices involves a difficult compromise between the demands of low erosion (favouring heavy elements such as Mo or W), low radiation loss as a plasma impurity (favouring light elements such as Be and C), high melting point and high thermal conductivity (favouring C and W), low nuclear activation (generally favouring lighter elements) and low propensity to absorb tritium (favouring tungsten most of all, steel and beryllium less, and all but ruling out carbon-based materials). The material properties will be affected

by the intense radiation environment in a reactor. In order to study this and to provide best expert estimates and uncertainties for plasma-material interaction properties (especially tritium retention and tritium transport) for tungsten-based materials in a fusion reactor environment the Atomic and Molecular Data Unit started a new CRP on "Plasma-Wall Interaction with Irradiated Tungsten and Tungsten Alloys in Fusion Devices." There are 19 participating projects as well as representative from ITER.

Training Meeting (TR) on Modelling and Evaluating Nuclear Reactor Data for Energy and Non-energy Applications - EMPIRE Vienna, Austria, 2–6 December, 2013

Scientific Secretary: R. Capote Noy, 15 participants, 5 external lecturers and IAEA staff.



Participants of the EMPIRE Workshop.

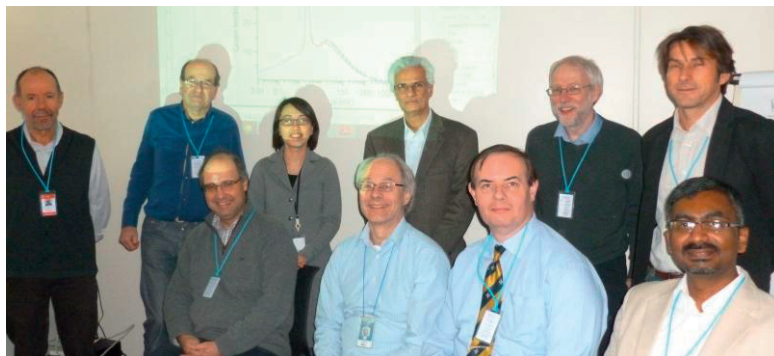
The workshop was organized to give extensive and up-to-date training on the use and understanding of the [EMPIRE code](#) for nuclear reaction modelling and nuclear data evaluations. Both neutron and charged-particle induced reactions modelling were covered addressing data needs for energy and non-energy applications (e.g. theoretical modelling of medical isotope production cross sections).

Core developers of the EMPIRE system were lecturing including M.W. Herman and S. Hoblit (Brookhaven National Laboratory, USA), M. Sin (University of Bucharest, Romania), B.V. Carlson (ITA, Brazil), A. Trkov

(Jozef Stefan Institute, Slovenia), V. Zerkin (IAEA), and R. Capote (IAEA). The workshop was attended by 15 participants from China (2), India (3), Malaysia, Pakistan (2), Nigeria, Indonesia, Slovenia, Germany, Hungary, Ukraine, and Brazil. The EMPIRE Linux setup was distributed to the participants. The participants could acquire a working knowledge of the computer simulations to be carried out for generation and evaluation of nuclear reaction data. Workshop lectures and a new distribution of the EMPIRE system for Windows are available at <https://www-nds.iaea.org/index-meeting-crp/EmpireWorkshop2013/>.

Consultants Meeting (CM) on Evaluation of Data for Collisions of Electrons with Nitrogen Molecules and Nitrogen Molecular Ions Vienna, Austria, 5–6 December, 2013

Scientific Secretary: H.-K. Chung, Chairman: N.J. Mason, 7 participants and IAEA staff.



Participants of the CM on Evaluation of Data for Collisions of Electrons with Nitrogen Molecules and Nitrogen Molecular Ions.

The meeting was organized in collaboration between the European eMOL project led by Prof N.J. Mason of the Open University, UK, and the Atomic and Molecular Data Unit of the IAEA. Nitrogen is often used as an edge plasma cooling gas in tokamak experiments for fusion energy development and the complete set of electron-nitrogen molecule scattering processes is required for the modelling of these experiments. In order to cover the data needs, seven experts from six countries participated in the

meeting to evaluate currently available electron scattering data for nitrogen and nitrogen molecular ions and to develop general guidelines for data evaluation as a structured small group activity. Electron scattering cross sections critically reviewed include elastic, momentum transfer, vibrational and rotational excitation, ionization and electron excitation, dissociation and total cross-sections.

Consultants Meeting (CM) on Recommended Input Parameters for Fission Cross Section Calculation, Vienna, Austria, 17–18 December, 2013

Scientific Secretary: R. Capote Noy, 5 participants and IAEA staff.



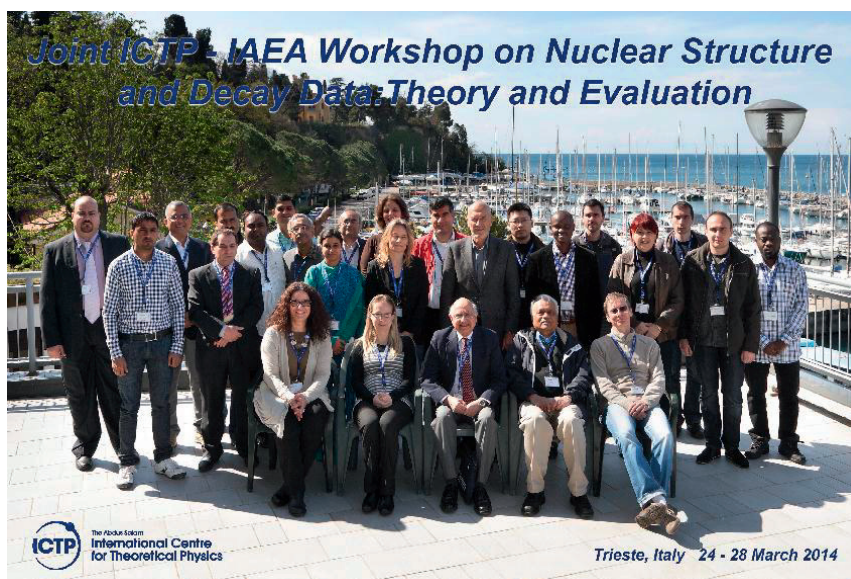
Participants of the CM on Recommended Input Parameters for Fission Cross Section Calculation.

The consultants' meeting was organised to maintain and extend the RIPL database. Consultants agreed that RIPL input parameters for fission have not been comprehensively validated against available experimental data. A large variability in calculated fission cross sections is observed due to the use of different fission formalisms, implementation in the codes, and/or combination of parameters. Due to the increasing importance of modelling in

nuclear data evaluation, the improvement of fission input parameters is considered a high priority. The participants pointed out the need for a CRP on the topic. Priorities will be given to the modelling of photon and nucleon induced reactions on actinides and a description of relevant reaction channels with emphasis on incident energies below 30 MeV.

ICTP/IAEA Workshop on Nuclear Structure and Decay Data: Theory and Evaluation Trieste, Italy, 24–28 March, 2014

Directors: P. Dimitriou (IAEA) and J. Tuli (BNL); Local organizer: C. Tuniz (ICTP), 21 participants.



Participants of the ICTP Workshop on Nuclear Structure and Decay Data.

The seventh of a series of workshops was held at ICTP for a one-week period in March 2014. 21 trainees from 10 countries attended the workshop. The scientific programme included morning lectures and afternoon practical exercises. Following the tradition set by the previous workshops, and in spite of the shorter duration of this event, the hands-on exercises focussed on the evaluation of a mass chain. The trainees were divided into four

groups each led by one of the lecturers. The evaluation of mass chain $A=227$ was undertaken collectively and was coordinated by B. Singh of McMaster University, Canada. The evaluation work will continue after the end of the workshop, and will conclude with the update of the corresponding ENSDF files and a publication in the Nuclear Data Sheets.

CIELO collaboration: IAEA NDS coordination and technical work

The OECD's Nuclear Energy Agency WPEC (Working Party on International Nuclear Data Evaluation Co-operation) during a meeting held in May 2012 accepted a new WPEC working group SG40 with the name CIELO [1]. CIELO is a pilot project of the OECD-NEA, coordinated by Los Alamos National Laboratory (United States), and it provides a new working paradigm to facilitate evaluated nuclear reaction data advances. It brings together experts from across the international nuclear reaction data community to identify and document discrepancies among existing evaluated data libraries, measured data, and model calculation interpretations, and aims to make progress in reconciling these discrepancies to create more accurate ENDF-formatted files. CIELO pilot isotopes ^1H , ^{16}O , ^{56}Fe , ^{235}U , ^{238}U and ^{239}Pu will be addressed as highest priority nuclides [2].

CIELO evaluation work is being supported through IAEA projects (e.g. the Neutron standards), the technical work of the NDS staff, and the IAEA consultancy visits and meetings. The Neutron standard group will contribute with evaluations of selected neutron induced reactions on ^1H , ^{235}U , ^{238}U and ^{239}Pu . IAEA staff have been contributing technically to

solve the discrepancies between different evaluated nuclear data libraries in the elastic/inelastic scattering, and to the evaluation of the actinide nuclei in the fast neutron region.

References:

- [1] Collaborative International Evaluated Library Organisation Pilot Project, WPEC Subgroup 40 (SG40) - CIELO Pilot Project. Online available from <https://www.oecd-neo.org/science/wpec/sg40-cielo/>.
- [2] M.B. Chadwick, E. Dupont, E. Bauge, *et al.*, "The CIELO Collaboration: Neutron Reactions on ^1H , ^{16}O , ^{56}Fe , ^{235}U , ^{238}U , ^{239}Pu ", presented at ND2013, 4-8 March 2013, New York, USA (to be published in Nuclear Data Sheets 2014).

Forthcoming Events

Technical Meeting on Improving ENSDF Analysis Codes, 10–13 June 2014, IAEA, Vienna: the purpose of the meeting is to discuss problems related to the ENSDF analysis codes and propose ways to solve them. The meeting will address the need to improve the physics models implemented in the codes as well as the requirement that they are based on modern programming tools and are easy to compile, run and maintain.

Staff Items

For all NDS staff details: <http://www-naweb.iaea.org/naweb/nd/aboutus.asp>.



Khalid Sheikh, team assistant and database assistant to the Atomic and Molecular Data Unit, retired from the IAEA at the end of 2013. Khalid joined the IAEA and the Nuclear Data Section in 1982 to support the work of the A+M Data Unit, which had been formed a few years previously. He was the stable presence in the Unit for almost 32 years.



Andrej Trkov took over the post of the Nuclear Physicist in the Nuclear Data Development Unit of the NDS as of January 2014. Andrej is involved in Nuclear Data Development activities, nuclear data evaluation, verification and validation, organization of CRPs and Consultants' Meetings related to the development of nuclear reaction for various applications.

Selected Charts, Reports and Documents

All INDC series reports are available online:

<http://www-nds.iaea.org/publications/>

Recent Releases:



Library of Recommended Actinide Decay Data, 2011

High quality decay data are an essential input across a wide range of nuclear applications, and none more so than in the case of the actinides and their related decay chain data. Well defined nuclear data are essential to ensure safe procedures within mining operations, various nuclear fuel cycles for energy generation, environmental monitoring, specific analytical techniques, and diagnostic and radiotherapeutic treatments in nuclear medicine. A major objective of the IAEA nuclear data programme is to promote improvements in the accuracy and quality of nuclear data used in science and technology. The contents of this report constitute the results of a Coordinated Research Project established to assemble an updated decay data library for actinides. Recommended half-lives and decay scheme data have been comprehensively evaluated, and are tabulated in terms of a carefully selected set of actinide radionuclides, STI/PUB/1618, ISBN: 978-92-0-143910-9, 2013.

IAEA-NDS-82, Rev. 1 Program PLOTTAB-A Code Designed to Plot Continuous and/or Discrete Physical Data (Version 2013-1), written by D.E. Cullen, November 2013.

IAEA-NDS-216, GDGraph 5.0 Manual - A Tool for Digitization of Graph Image, written by Yin Yongli and Chen Guochang, August 2013.

INDC(GER)-0052 Database for Proton Induced Residual Production Cross Sections up to 2.6 GeV, prepared by R. Michel and N. Otuka, March 2014.

INDC(KAS)-001 Proceedings of the Fourth Asian Nuclear Reaction Database Development Workshop, 23–25 October 2013, Almaty, Kazakhstan, edited by N. Takibayev, N. Otsuka and N. Kenzhebayev, February 2014.

INDC(NDS)-0605 Summary Report from the First Research Coordination Meeting on Atomic and Molecular Data for the State-Resolved Modelling of Hydrogen and Helium and Their Isotopes in Fusion Plasma, Vienna, Austria, 10–12 August 2011, prepared by B.J. Braams, December 2013.

INDC(NDS)-0608 Summary Report from the Second Research Coordination Meeting on Prompt Fission Neutron Spectra of Major Actinides, 13–16 December 2011, Vienna, Austria, prepared by R. Capote Noy, September 2013.

INDC(NDS)-0621 Summary Report from the 18th Meeting of the IFRC Subcommittee on Atomic and Molecular Data for Fusion, 26–27 April 2012, Vienna, Austria, prepared by B.J. Braams, December 2013.

INDC(NDS)-0634 Summary Report from the Consultants' Meeting on Accuracy of Experimental and Theoretical Nuclear Cross-Section Data for Ion Beam Analysis and Benchmarking, Vienna, 11–13 March 2013, Vienna, prepared by P. Dimitriou, D. Abriola and A. Gurbich, November 2013.

INDC(NDS)-0635 Summary Report from the Technical Meeting of Nuclear Structure and Decay Data (NSDD) Network, Safat, Kuwait, 27–31 January 2013, Safat, Kuwait, prepared by D. Abriola, P. Dimitriou, E. Ricard-McCutchan, J.K. Tuli, August 2013.

INDC(NDS)-0638 Summary Report from the Consultants' Meeting on Auger Electron Emission from Nuclear Decay Data Needs for Medical Applications, 9–10 May 2013, Vienna, Austria, prepared by R. Capote Noy, *et al.*, March 2014.

INDC(NDS)-0643 Summary Report from the First Research Coordination Meeting on Development of Reference Database for Beta-delayed Neutron Emission, 26–30 August 2013, Vienna, Austria, prepared by I. Dillmann, P. Dimitriou and B. Singh, March 2014.

INDC(NDS)-0644 Summary Report from the 22nd International Network of Atomic and Molecular Data Centres (DCN), 4–6 September 2013, Vienna, Austria, prepared by H.K. Chung, December 2013.

INDC(NDS)-0645 Summary Report of the Coordinated Research Project on FENDL-3 Library, prepared by R.A. Forrest, December 2013.

INDC(NDS)-0646 The absolute total delayed neutron yields, relative abundances and half-lives of delayed neutron groups, prepared by V.M. Piskunov, A.S. Egorov, K.V. Mitrofanov, October 2013.

INDC(NDS)-0647 Summary Report from the Consultants' Meeting on EXFOR Data in Resonance Region, 8–10 October 2013, Vienna, Austria, prepared by F. Gunsing, P. Schillebeeckx and V. Semkova, December 2013.

INDC(NDS)-0648 Summary Report from the First Research Coordination Meeting on Primary Radiation Damage Cross Sections, 4–8 November 2013, Vienna, Austria, prepared by R.E. Stoller, L.R. Greenwood and S.P. Simakov, December 2013.

INDC(NDS)-0649 Summary Report from the Consultants' Meeting on Compilation and Evaluation of γ -Ray Data, 4–6 November 2013, Vienna, Austria, prepared by P. Dimitriou, R.B. Firestone and S. Siem, December 2013.

INDC(NDS)-0650 Table of Nuclear Electric Quadrupole Moments, prepared by N.J. Stone, December 2013.

INDC(NDS)-0653 Summary Report from the Consultants' Meeting on Evaluation of Data for collisions of Electrons with Nitrogen Molecule and Nitrogen Molecular Ion, Vienna, Austria, 5–6 December 2013, prepared by H.k. Chung and N.J. Mason, February 2014.

INDC(NDS)-0657 Evaluation of some (n,n') , (n,γ) , (n,p) , $(n,2n)$ and $(n,3n)$ Reaction Excitation Functions for fission and Fusion Reactors Dosimetry Application, prepared by K.I. Zolotarev and P.K. Zolotarev, December 2013.

INDC(NDS)-0658 Table of Nuclear Magnetic Dipole and electric Quadrupole Moments, prepared by N.J. Stone, February 2014.

INDC(SEC)-0110 Implementation of New Evaluations into the IRDFF Library, prepared by A. Trkov, February 2014.

INDC(UK)-0094 Decay Heat Validation, FISPACT-II & FENDL-3.0 and TENDL-2013, -2012, prepared by J.-C. Sublet and M.R. Gilbert, February 2014.

Nuclear Data Sheets *Special Issue on Nuclear Reaction Data, Vol. 113, No.12 (2012)*. Editor: P. Oblozinsky, Assistant Editor: B. Pritychenko. Containing seven papers covering the nuclear reaction code TALYS and its innovative implementation.

Limited number of hard copies available on request.

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 (17. edition, revised 2009). Available cost-free on request only for **teachers and scientists from developing countries**.

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

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

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

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http://www-pub.iaea.org/books/IAEABooks/View_Newsletters/60/Nuclear-Data-Newsletter

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Email: Emmeric.Dupont@oecd.org or odata@oecd-nea.org; Worldwide Web: <http://www.oecd-nea.org/databank/> contact: E. Dupont, ext. 1084.

For services to the customers from the former USSR:

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Tel. +7 08439-9-8982; Fax +7 095-230-2326;

Email: blokhin@ippe.ru; Worldwide Web: <http://www.ippe.ru/podr/cjd>; contact: A.I. Blokhin.

Photonuclear data: Centre for Photonuclear Experiments Data, Centr Dannykh Fotoyadernykh Eksperimentov (CDFE),
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Tel. +7 495-939-3483; Fax +7 495-939-0896;

Email: varlamov@depni.sinp.msu.ru; Worldwide Web: <http://cdfe.sinp.msu.ru/>; contact: V.V. Varlamov.

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Email: cdc@ornl.gov

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