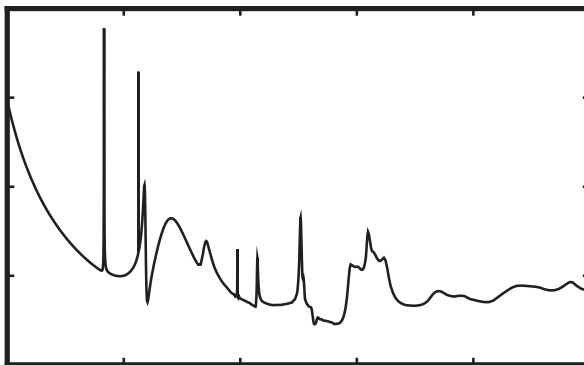# NUCLEAR DATA NEWSLETTER

Nuclear Data Section (NDS)

International Atomic Energy Agency
Vienna

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Staff Items

P-2 post of Nuclear Data Physicist with major assignments to access and compile nuclear reaction data for CINDA and EXFOR databases and to participate in data development activities will be advertised soon at the NDS. For details, see the announcement which will be placed at http://www.iaea.org/worldatom/Jobs/.

Announcements

Professor Dr. Syed M. Qaim, Head of the Research Group "Nuclear Data and Radionuclide Production" in the Institute of Nuclear Chemistry of the Research Centre Jülich, and Professor at the University of Köln, was elected an Associate Fellow of the Third World Academy of Sciences (TWAS). He received this high honour for his excellent research work and his great services to the cause of science in the Third World. Professor Qaim is chairman of the International Nuclear Data Committee (INDC) which provides guidance on the priorities for future activities of the IAEA Nuclear Data Section.

The IAEA (Vienna - Austria) in co-operation with the ICTP (Trieste - Italy) is organizing a "Workshop on Nuclear Data for Science and Technology: Materials Analysis", to be held at the ICTP in Trieste from 19 to 30 May 2003. For details, please see: http://www-nds.iaea.org/trieste03.htm.

Online News

The following INDC Reports are available at http://iaeand.iaea.org/indc_sel.html: INDC(AUS)-016, 017, INDC(CCP)-431, 433 and 434, INDC(NDS)-432, 433, 434 and 435.

JEFF-3.0 GENERAL PURPOSE LIBRARY. The Evaluated Neutron Nuclear Data Library of the NEA Data Bank. Available on http://www-nds.iaea.org or on CD-ROM.

JENDL-3.3, The Japanese Evaluated Nuclear Data Library, by the JAERI Nuclear Data Centre and the Japanese Nuclear Data Committee (2002). Available on http://www-nds.iaea.org/endf/ or on CD-ROM.

Computer Codes and Packages

IAEA-NDS-CD-04, WINENDF, Release 9 (October 2002). CD-ROM updated in October 2002 contains all latest releases of comprehensive evaluated data libraries (ENDF/B-VI, Release 8, JENDL-3.3, JEF-3.0, BROND-2, CENDL-2, Utility Codes, release 6.13, retrieval and merger system for MS Windows, Manuals and Documentation in PostScript format, Utilities and Preprocessing Codes.

ENDF UTILITY CODES, Release 6.13. Description and operating instructions are given for a package of utility codes operating on evaluated nuclear data files in the formats ENDF-6 (and ENDF-5). Included are the data checking codes CHECKER, FIZCON, PSYCHE; the code INTER for retrieving thermal cross-sections and some other data; graphical plotting subroutines PLOTEF, and the file maintenance and retrieval codes LISTEF, SETMDC, GETMAT, STANEF. This program package which is designed for VMS, Windows and UNIX operating systems and report IAEA-NDS-29 with documentation, can be obtained on CD-ROM free of charge on request, or files can be downloaded from: http://www-nds.iaea.org/ndspub/endf/utility/.

EMPIRE-II, Modular System of Codes for Nuclear Reaction Calculations, version 2.18 (October 2002), M. Herman (NDS). A system of FORTRAN codes linked through a number of bash scripts that with a few key strokes and mouse clicks performs comprehensive calculations of nuclear reaction cross sections taking into account contributions of the important reaction mechanisms. Available on CD-ROM and online at: http://www-nds.iaea.org/empire/ for latest and most updated version.

Offline News

New and updated databases and libraries available on CD-ROM:

Data for Prompt Gamma 2002, by R.S. Reedy and S.C. Frankle, LANL, USA. Evaluated Database for Prompt Gamma from Radiative Capture of Thermal Neutrons by Elements from Hydrogen through Zinc.

Selected Reports and Documents

CEA-R-5990. *Report on the Activities of the "Decay Data Evaluation Project"*, ed. by E. Browne, M.M. Bé; D. Mac Mahon and R.G. Helmer, CEA/Saclay (2001).

Chart of the Nuclides. *Wall chart of the Nuclides from KAPL and General Electric Co., 15th edition (revision to 1996).* Available cost free on request by users from developing countries.

Karlsruher Nuklidkarte. *Wall Chart of the Nuclides from Karlsruhe, 6th edition (1995).* Available cost free on request by users from developing countries.

Proceedings of the Workshop "Nuclear Reaction Data and Nuclear Reactors: Physics, Design and Safety", Vol. I and II, ICTP, Trieste, Italy, 13 March – 14 April 2000, ed. by N. Paver, M. Herman, A. Gandini (2001).
Vol. I: Theory and Practice in Nuclear Data Evaluation:
*Introduction to the Theory and Analysis of Resolved (and Unresolved) Neutron Resonances via SAMMY (*N.M. Larson*); Data Analysis and Evaluation with SAMMY (*L.C. Leal); *Optical Model Calculations with the Code ECIS95* (B.V. Carlson); *Statistical Nuclear Reactions* (S. Hilaire); *Level Densities* (S. Hilaire); *EMPIRE-II Statistical Model Code for Nuclear Reaction Calculations* (M. Herman); *Actinide Neutron-Induced Fission up to 20 MeV* (V.M. Maslov); *Nuclear Data Evaluation at Intermediate Energies: An Introduction* (A.J. Koning; *Nuclear Data at High Energy: Experiment, Theory and Applications* (S. Leray).
Processing (from Nuclear Data to Reactor Calculations):
Nuclear Data Services Provided by the IAEA (O. Schwerer and P. Oblozinsky); *From Basic Nuclear Data to Applications (*A. Trkov); *An Introduction to the ENDF Formats* (R.E. MacFarlane); *Understanding NJOY* (R.E. MacFarlane); *An Introduction to the Neutron Transport Phenomena* (T. Kulikowska); *Reactor Lattice Transport Calculations* (T. Kulikowska); *Processing of Nuclear Data for Applications - WIMS-D Library Example* (A. Trkov); *Reactor Lattice Codes (*T. Kulikowska); *Basic Data, Computer Codes and Integral Experiments: The Tools for Modelling in Nuclear Technology* (E. Sartori).
Vol. II: Advanced Nuclear Systems for Energy Generation:
*Small and Medium Reactors: Development Status and Application Aspects (*J. Kupitz); *IAEA Activities in Nuclear Reactor Simulation for Educational Purposes (*R.B. Lyon); *Determination of Research Reactor Safety Parameters by Reactor Calculations* (M. Ravnik); *Accelerator Driven Systems (ADS) and Transmutation of Nuclear Waste: Options and*

Trends (A. Stanculescu); *Nuclear Power Information at the IAEA* (R. Spiegelberg-Planer); *Comparative Assessment of Different Energy Sources and their Potential Role in Long-Term Sustainable Energy Mix* (V.S. Kragramanian).
Design and Safety of Proven and Advanced Power Reactor Plants:
Design Principles, Targets and Criterions for a Multipurpose Advanced Reactor Inherently Safe (MARS). Evaluation of the Total Production Cost of Electric Energy (M. Cumo); *Genetic Algorithms: Theory and Applications in the Safety Domain* (M. Marseguerra and E. Zio); *Medium and Long Term Scenarios for Fission Nuclear Energy and Role of Innovative Concepts* (M. Salvatores); *Aspects of Physics and Computation of Plutonium Recycling in PWRs: Full MOX Loading and Void Effect* (G.B. Bruna); *Long Term Radiotoxicity* (I. Slessarev); *Advanced ADS Concepts* (I. Slessarev); *New Reactors Concepts and Scenarios* (A. Gandini); *Problems in the Neutron Dynamics of Source-Driven Systems* (P. Ravetto).
A limited number of copies of these proceedings are available cost free for scientists from developing countries on request to the Nuclear Data Section (see address on cover page). **Please indicate which volumes are required**.

IAEA-TECDOC-1285. *Reference Neutron Activation Library.* RNAL – a library of evaluated cross sections for neutron induced reactions leading to radioactive products. The library is restricted to the 255 most important reactions.

INDC(AUS)-016. *Evaluations of the Fast Neutron Cross Sections of ^{58}Ni Including Complete Covariance Information*. S. Tagesen, H. Vonach and A. Wallner, August 2002. The report is available as hard copy or online at: http://www-nds.iaea.org/indc_sel.html.

INDC(AUS)-017. *Evaluations of the Fast Neutron Cross Sections of ^{60}Ni Including Complete Covariance Information*. S. Tagesen, H. Vonach and A. Wallner, August 2002. The report is available as hard copy or online at: http://www-nds.iaea.org/indc_sel.html.

INDC(CCP)-431. *Evaluation and Improvement of Cross Section Accuracy for Most Important Dosimetry Reactions Including Covariance Data*. K.I. Zolotarev, August 2002. The report is available as hard copy or online at: http://www-nds.iaea.org/indc_sel.html.

INDC(CCP)-433. *Study of consistency between (γ,xn), [(γ,n) + (γ,np)] and (γ,2n) reaction cross sections using data systematics*, V.V. Varlamov and B.S. Ishkhanov, August 2002. The report is available as hard copy or online at: http://www-nds.iaea.org/indc_sel.html.

INDC(CCP)-434. *Experimental and Theoretical Study of the Yields of Residual Product Nuclei Produced in Thin Targets Irradiated by 100-2600 MeV Protons,* Yu. E. Titarenko (Project Manager), September 2002. The report is available as hard copy on request or online at: http://www-nds.iaea.org/indc_sel.html.

INDC(CPR)-056. *Communication of Nuclear Data Progress, No. 26 (2001).* China Nuclear Data Center, ed. by Liu Tingjin and Zhuang Youxiang.

INDC(GER)-048. *Progress Report on Nuclear Data Research in the Federal Republic of Germany, April 1, 2001 – March 31, 2002,* ed. by S.M. Qaim, Forschungszentrum Jülich, Germany.

INDC(JPN)-189. *Progress Report (January 2001 to December 2001)*, ed. J. Katakura, Japanese Nuclear Data Committee.

INDC(NDS)-431. *Nuclear Model Parameter Testing for Nuclear Data Evaluation (Reference Input Parameter Library: phase II).* Summary Report of the Third Research Co-ordination Meeting, Vienna, Austria, 3-7 December 2001. Prepared by M. Herman, April 2002. Available on request in hardcopy format only.

INDC(NDS)-432. *Summary Report of the Consultants' Meeting on Nuclear Data for Production of Therapeutic Radioisotopes,* IAEA Headquarters, Vienna, Austria, 27 February to 1 March 2002, prepared by R.C. Haight and R. Paviotti-Corcuera, April 2002. The report is available as hard copy or online at: http://www-nds.iaea.org/indc_sel.html.

INDC(NDS)-433. *Report of the IAEA Nuclear Data Section to the International Nuclear Data Committee for the Period January 2000 – December 2001*, ed. by A.L. Nichols, May 2002. The report is available as hard copy or online at: http://www-nds.iaea.org/indc_sel.html.

INDC(NDS)-434. *Report on the IAEA Technical Meeting on Network of Nuclear Reaction Data Centres*, NEA OECD, Issy-les-Moulineaux, France, 27 - 30 May 2002, prepared by V.G. Pronyaev, O. Schwerer and A.L. Nichols, August 2002. The report is available as hard copy or online at: http://www-nds.iaea.org/indc_sel.html.

INDC(NDS)-435. *Summary Report of the Technical Meeting on "International Reactor Dosimetry File: IRDF-2002",* IAEA, Vienna, Austria, 27 – 29 August 2002, prepared by L.R. Greenwood and R. Paviotti-Corcuerra. The report is available as hard copy or online at: http://www-nds.iaea.org/indc_sel.html.

Yadernye Konstanty (Nuclear Constants), 2001(2). *Evaluation of ν_p energy dependence for Neptunium and Americium isotopes (*Kuzminov B.D. et al. in Russian). *New technique for a simultaneous estimation of the level density and radiative strength functions of dipole transitions at $E_{ex} \leq B_n$-0.5 MeV* (Khitrov V.A. et al., in English). *Neutron cross section evaluations for actinides at intermediate energies: ^{239}Pu* (Ignatyuk A.V. et al., in English). *Scission neutron emission and prompt fission neutron spectrum* (Kornilov N.V. et al., in Russian). *The transmutation of ^{204}Pb irradiated by intensive gamma flux* (Ishkhanov B.S. et al., in Russian). *Use of enriched ^{206}Pb for reducing expenditures at spent lead coolant utilization in fast reactors (*Khorasanov G.L. et al., in Russian). *Evaluation and benchmarking of nuclear data of vanadium in integral experiments with 14-MeV neutrons* (Blokhin A.I. et al., in English). *Investigation of approximations used in CONSYST cross-section processing system for water-water reactor cell calculations* (Raskach K.F. et al., in Russian). *Burnup calculations with ORIGEN code in CONKEMO pakage* (Zabrodskaya S.V. et al., in English). Copies of papers published in this report are available on request.

JAERI-Review 2002-005. *Nuclear Energy System Department Annual Report, April 1, 2000 – March 31,* 2001 (March 2002).

Jülich-3980. *Fast neutron induced reactions leading to activation products: selected cases relevant to development of low activation materials, transmutation and hazard assessment of nuclear wastes.* P. Reimer, Institut für Nuklearchemie, Forschungszentrum Jülich, 2002.

Jülich-3931. *Kernchemische Untersuchungen zur Produktion einiger Medizinisch relevanter Strontium- und Rubidium-Isotope.* S. Kastleiner,

Institut für Nuklearchemie Forschungszentrum Jülich, 2001 (in German).

Progress Report. *China Institute of Atomic Energy.* 1998-2000.

Note: Unless indicated otherwise, the quoted data files, printed materials, or computer codes are available cost-free upon request. When requesting data files or codes, kindly give us your acceptable specifications.

Co-operating nuclear data service centers

For services to customers in USA and Canada:
US National Nuclear Data Center, Bldg. 197D, Brookhaven National Laboratory, P.O. Box 5000, Upton, NY 11973-5000, USA. Tel. +1 631-344-2902; Fax +1 631-344-2806; E-mail: nndc@bnl.gov; Worldwide Web: http//www.nndc.bnl.gov/. For information on online services and requests contact: Ms. V. McLane.

For services to customers in OECD countries in Western Europe and Japan:
NEA Data Bank: OECD Nuclear Energy Agency, Le Seine Saint-Germain, 12 blvd des Iles, F-92130 Issy-les-Moulineaux, France. Tel. +33 1 4524 (plus extension); Fax +33 1 45241110; E-mail: (name)@nea.fr or nea@nea.fr; Worldwide Web: http://www.nea.fr, username: NEADB. Contact: C. Nordborg, ext. 1090.

For services to the countries of the former USSR:
Neutron data: Russia Nuclear Data Center, Centr Jadernykh Dannykh (CJD), Fiziko-Energeticheskij Institut, Ploschad Bondarenko, 249020 Obninsk, Kaluga Region, Russia. Tel. +7 08439-9-8982; Fax +7 095-230-2326; E-mail: manokhin@ippe.obninsk.ru. Worldwide Web http://rndc.ippe.obninsk.ru/. Contact: V.N. Manokhin.
Charged-particle data: Russia Nuclear Structure and Reaction Data Center (CAJAD), Kurchatov Institute, 1 Kurchatov Square, 123 182 Moscow, Russia. Tel. +7 095-196-9968; Fax +7 095-882-5804; E-mail: feliks@polyn.kiae.su. Contact: F.E. Chukreev.
Photonuclear data: Centre for Photonuclear Experiments Data, Centr Dannykh Fotoyadernykh Eksperimentov (CDFE), Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Leninskie Gory, 119 922 Moscow, Russia. Tel. +7 095-939-3483; Fax +7 095-939-0896; E-mail: varlamov@depni.sinp.msu.ru or varlamov@depni.npi.msu.su. Worldwide Web http://depni.npi.msu.su/cdfe/. 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 10-6935-7830; Fax +86 10-6935-7008; E-mail: yxzhuang@iris.ciae.ac.cn. Contact: Zhuang Youxiang.

Computer codes of US origin to all countries:
Radiation Safety Information Computational Center (RSICC), Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6362, USA. Tel. +1 865-574-6176; Fax +1 865-574-6182; E-mail: pdc@ornl.gov. Worldwide Web http://epicws.epm.ornl.gov/rsic.html. (There may be charges and release restrictions).

Computer codes of non-US origin to all countries:
NEA Data Bank, see above, contact: E. Sartori, ext. 1072; E-mail: sartori@nea.fr. (There may be release restrictions).

The IAEA Nuclear Data Section offers data center services primarily to non-OECD countries (except Russia and China, see above). However, most products advertised in this Newsletter, specifically INDC reports, IAEA-NDS-documents, etc., are provided, upon request to customers in all countries. For online services see the first page of this Newsletter. Users of countries in Latin America and Caribbean may use IAEA-NDS mirror at Worldwide Web http://www-nds.ipen.br.