

# International Reactor Dosimetry File 2002 Irdf 2002

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All papers were peer reviewed. This conference focused on the broad field of nuclear data, their production, dissemination, and testing, with the goal of providing reliable data for applications such as nuclear fission and fusion energy, accelerators, spallation neutron sources, nuclear medicine, environment, space, non-proliferation, nuclear safety, astrophysics and cosmology, and basic research.

This book provides a systematic and comprehensive introduction to the neutronics of advanced nuclear systems, covering all key aspects, from the fundamental theories and methodologies to a wide range of advanced nuclear system designs and experiments. It is the first-ever book focusing on the neutronics of advanced nuclear systems in the world. Compared with traditional nuclear systems, advanced nuclear systems are characterized by more complex geometry and nuclear physics, and pose new challenges in terms of neutronics. Based on the achievements and experiences of the author and his team over the past few decades, the book focuses on the neutronics characteristics of advanced nuclear systems and introduces novel neutron transport methodologies for complex systems, high-fidelity calculation software for nuclear design and safety evaluation, and high-intensity neutron source and technologies for neutronics experiments. At the same time, it describes the development of various neutronics designs for advanced nuclear systems, including neutronics design for ITER, CLEAR and FDS series reactors. The book not only summarizes the progress and achievements of the author's research work, but also highlights the latest advances and investigates the forefront of the field and the road ahead.

A data development project (International Reactor Dosimetry File or IRDF 2002) was initiated in 2001 to create a current, tested and

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standardised reactor dosimetry cross-section database with associated uncertainty data for use in the service lifetime assessment of nuclear power reactors. This publication describes the selection procedure and contents of the database and includes a CD-ROM containing the full contents of the IRDF-2002 data library. This set of recommended high-quality data is also appropriate for use in other neutron metrology applications, such as boron neutron capture therapy, therapeutic use of radioisotopes, nuclear physics measurements and reactor safety studies.

[IRDF-2002 : IAEA Headquarters, Vienna, Austria, 1-3 October 2003](#)

[Fast Reactor Database 2006 Update](#)

[Thorium Energy for the World](#)

[????? ????????????](#)

[Handbook on Nuclear Activation Data](#)

[The Agency's Programme and Budget for  
Safety Guide](#)

[Summary Report of the Final Technical Meeting on International  
Reactor Dosimetry File](#)

[Review the Requirements to Improve and Extend the IRDF Library  
\(International Reactor Dosimetry File \(IRDF-2002\)\)](#)

[The Fukushima Daiichi Accident](#)

[Decommissioning Techniques for Research Reactors](#)

*This revised and extended 6 volume handbook set is the most comprehensive and voluminous reference work of its kind in the field of nuclear chemistry. The Handbook set covers all of the chemical aspects of nuclear science starting from the physical basics and including such diverse areas as the chemistry of transactinides and exotic atoms as well as radioactive waste management and radiopharmaceutical chemistry relevant to nuclear medicine. The nuclear methods of the investigation of chemical structure also receive ample space and attention. The international team of authors consists of scores of world-renowned experts - nuclear chemists, radiopharmaceutical chemists and physicists - from Europe, USA, and*

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*Asia. The Handbook set is an invaluable reference for nuclear scientists, biologists, chemists, physicists, physicians practicing nuclear medicine, graduate students and teachers - virtually all who are involved in the chemical and radiopharmaceutical aspects of nuclear science. The Handbook set also provides further reading via the rich selection of references.*

*Liquid metal cooled fast reactors (LMFRs) have been under development for about 50 years. The fast reactor database (FRDB) summarised in this report contains detailed design and operational data on 37 fast reactor plants, their thermal power ranging from 10 to 4000 MW, covering experimental, prototype, demonstration and commercial size LMFRs. Data includes physical, hydraulic and thermomechanical characteristics, technological requirements and methods and criteria to ensure safe operation, as well as dimensions, materials information and main design features and performance parameters of reactor cores, components and various systems, along with sketches and drawings.*

*Synthetic diamond is diamond produced by using chemical or physical processes. Like naturally occurring diamond it is composed of a three-dimensional carbon crystal. Due to its extreme physical properties, synthetic diamond is used in many industrial applications, such as drill bits and scratch-proof coatings, and has the potential to be used in many new application areas. A brand new title from the respected Wiley Materials for Electronic and Optoelectronic Applications series, this title is the most up-to-date resource for diamond specialists. Beginning with an introduction to the properties of diamond, defects, impurities and the growth of CVD diamond with its imminent commercial impact, the remainder of the book comprises six sections: introduction, radiation sensors, active electronic devices, biosensors, MEMs and electrochemistry. Subsequent chapters cover the diverse areas in which diamond applications are having an impact including electronics, sensors and actuators and medicine.*

*Ion exchange is one of the most common and effective treatment methods for liquid radioactive waste. Various aspects of ion exchange*

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*technology are being actively studied in many countries to improve efficiency and economy. Spent ion exchangers are considered to be problematic waste that in many cases requires special approaches and precautions during its immobilization to meet the acceptance criteria for disposal. This books reviews and updates the current literature on the subject and reports on the existing state of the art of the application of ion exchange processes for liquid radioactive waste treatments and of the management of spent ion exchange media.*

[IAEA Emergency Response Network](#)

[The Agency's Draft Programme and Budget for ...](#)

[Summary Report of Consultants' Meeting : IAEA Headquarters,](#)

[Vienna, Austria, 25-26 January 2007](#)

[Occupational Radiation Protection](#)

[ND 2001 : October 7-12, 2001, Tsukuba International Congress](#)

[Center, Tsukuba, Ibaraki-ken, Japan](#)

[Technical Reports Series](#)

[Dosimetry Requirements for Pressure Vessel Steels Toughness Curve in the Ductile to Brittle Range](#)

[Известия Академии наук](#)

[Proceedings of the ThEC13 Conference, CERN, Globe of Science and Innovation, Geneva, Switzerland, October 27-31, 2013](#)

[Acta Physica Et Chimica Debrecina](#)

[CVD Diamond for Electronic Devices and Sensors](#)

The Fukushima Daiichi Accident consists of a Report by the IAEA Director General and five technical volumes. It is the result of an extensive international collaborative effort involving five working groups with about 180 experts from 42 Member States with and without nuclear power programmes and several international

bodies. It provides a description of the accident and its causes, evolution and consequences, based on the evaluation of data and information from a large number of sources available at the time of writing. The Fukushima Daiichi Accident will be of use to national authorities, international organizations, nuclear regulatory bodies, nuclear power plant operating organizations, designers of nuclear facilities and other experts in matters relating to nuclear power, as well as the wider public. The set contains six printed parts and five supplementary CD-ROMs.

The present Safety Guide provides general guidance on the establishment of an effective radiation protection programme for occupational exposure, appropriate for the sources of radiation likely to be encountered in a range of industries, medical institutions, educational and research establishments and nuclear fuel cycle facilities. The report further provides the necessary guidance to meet the requirements as laid down in Safety Series No. 115, International Basic

Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (1996).

This is an authoritative compilation of information regarding methods and data used in all phases of nuclear engineering. Addressing nuclear engineers and scientists at all levels, this book provides a condensed reference on nuclear engineering since 1958.

As part of PWR life-time assessment project, a large R&D program, PV-CT50, has been carried out from 1995 to 2004, to assess pressure vessel (PV) steel's toughness curve using very large compact tension (CT) specimens ( $50 \times 125 \times 120$  mm<sup>3</sup>) allowing measurements in the ductile to brittle transition range. A new high capacity irradiation rig was designed to meet the specific CT50 specimens loading requirements in the 70 MWth OSIRIS material testing reactor operated by CEA's Nuclear Energy Division at the Saclay Research Center. This paper presents the measurement and calculation developments required in these particular conditions. Spectrum

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characteristics and neutron flux levels were determined by a comprehensive dosimetry on mock-ups featuring activation foils and damage monitors. At the same time, a new calculation methodology based on the TRIPOLI-4.3 Monte Carlo code and IRDF-2002 dosimetry files was validated against calorimetric and neutron activation measurements.

[The British National Bibliography](#)

[The Stationery Office Agency Catalogue](#)

[Proceedings of International Conference](#)

[on Nuclear Data for Science and](#)

[Technology](#)

[A New Technique for Dosimetry Reaction](#)

[Cross-Section Evaluation](#)

[Radiation Protection and Shielding](#)

[Proceedings of the 11th International](#)

[Symposium on Reactor Dosimetry :](#)

[Brussels, Belgium, 18-23 August 2002](#)

[Handbook of Nuclear Chemistry](#)

[Physics](#)

[Operating Experience with Nuclear Power](#)

[Stations in Member States in 1991](#)

[Bulletin of the Russian Academy of](#)

[Sciences](#)

[Application of Ion Exchange Processes](#)

[for the Treatment of Radioactive Waste](#)

[and Management of Spent Ion Exchangers](#)

This manual enters into effect on 1 March 2003 and supersedes the previous version EPR-ERNET (2000)

This publication is aimed at students and teachers involved in teaching programmes in field of medical radiation physics, and it covers the basic medical physics knowledge required in the form of a syllabus for modern radiation oncology. The information will be useful to those preparing for professional certification exams in radiation oncology, medical physics, dosimetry or radiotherapy technology.

An objective of this paper is a unification of the procedure for dosimetry reaction cross-section evaluation. A set of requirements for the unified evaluation procedure is presented. A new code (ORTHO) was developed in order to meet these requirements. A statistical model, an algorithm, and the basic formulae employed in the code are described. The code was used for  $Ti48(n,p)$  reaction cross-section evaluation. The results of the evaluation are compared to International Reactor Dosimetry File (IRDF)-2002 data. The evaluated cross-sections and their correlations from this work are in good agreement with the IRDF-2002 evaluated data, whereas the uncertainties of the evaluated cross-sections are inconsistent.

This book presents the state of the art in reactor dosimetry as applied to nuclear power plants and to high performance research reactors, accelerator-driven systems and spallation sources. The reader will also find the latest advances in computer code development for radiation transport and shielding. In addition, the book focuses on radiation measurement techniques.

[Ninth Symposium on Neutron Dosimetry, Aula Conference](#)



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[Centre, Delft University of Technology, Delft, The Netherlands, 28 September to 3 October 2003](#)  
[Summary Report of the Technical Meeting on "International Reactor Dosimetry File: IRDF-2002"](#)  
[International Reactor Dosimetry File 2002 \(IRDF-2002\).](#)  
[ICRS-10 Tenth International Conference on Radiation Shielding, RPS 2004 - Thirteenth ANS Topical Meeting on Radiation Protection and Shielding ...](#)  
[Annual Book of ASTM Standards](#)  
[Handbook of Nuclear Engineering](#)  
[Stationery Office Agency Catalogue 2007](#)  
[International Atomic Energy Agency Publications](#)  
[Safe Management of Wastes from Health-care Activities](#)  
[Reactor Dosimetry in the 21st Century](#)  
[Vol. 1: Nuclear Engineering Fundamentals; Vol. 2: Reactor Design; Vol. 3: Reactor Analysis; Vol. 4: Reactors of Generations III and IV; Vol. 5: Fuel Cycles, Decommissioning, Waste Disposal and Safeguards](#)

*The Thorium Energy Conference (ThEC13) gathered some of the world's leading experts on thorium technologies to review the possibility of destroying nuclear waste in the short term, and replacing the uranium fuel cycle in nuclear systems with the thorium fuel cycle in the long term. The latter would provide abundant, reliable and safe energy with no CO2 production, no air pollution, and minimal waste production. The participants, representatives of 30 countries, included Carlo Rubbia, Nobel Prize Laureate in physics and inventor of the Energy Amplifier; Jack Steinberger, Nobel Prize Laureate in physics; Hans Blix, former Director General of the International Atomic Energy Agency (IAEA); Rolf Heuer, Director General of CERN; Pascal Couchepin, former President of the Swiss Confederation; and Claude Haegi, President of the FEDRE, to name just a few. The*

*ThEC13 proceedings are a source of reference on the use of thorium for energy generation. They offer detailed technical reviews of the status of thorium energy technologies, from basic R&D to industrial developments. They also describe how thorium can be used in critical reactors and in subcritical accelerator-driven systems (ADS), answering the important questions: – Why is thorium so attractive and what is the role of innovation, in particular in the nuclear energy domain? – What are the national and international R&D programs on thorium technologies and how are they progressing? ThEC13 was organized jointly by the international Thorium Energy Committee (iThEC), an association based in Geneva, and the International Thorium Energy Organisation (IThEO). It was held in the Globe of Science and Innovation at the European Organization for Nuclear Research (CERN), Geneva, Switzerland, in October 2013.*

[\*The Agency's Programme and Budget for ... and Budget for ... International Conference on Nuclear Data for Science and Technology\*](#)

[\*ERNET\*](#)

[\*A Handbook for Teachers and Students\*](#)

[\*Vol. 1: Basics of Nuclear Science; Vol. 2: Elements and Isotopes: Formation, Transformation, Distribution; Vol. 3: Chemical Applications of Nuclear Reactions and Radiation; Vol. 4: Radiochemistry and Radiopharmaceutical Chemistry in Life Sciences; Vol. 5: Instrumentation, Separation Techniques, Environmental Issues; Vol. 6: Nuclear Energy Production and Safety Issues.\*](#)

[\*Neutronics of Advanced Nuclear Systems\*](#)

[\*Reactor Dosimetry State of the Art 2008\*](#)

[\*Radiation Oncology Physics\*](#)

[\*IAEA Headquarters, Vienna, Austria, 27-29 August 2002\*](#)

[\*CINDA.\*](#)

[\*Advances in Nuclear Particle Dosimetry for Radiation Protection and Medicine\*](#)