



Proceedings of the  
13<sup>th</sup> International Symposium  
on Reactor Dosimetry

State of the Art 2008

# Reactor Dosimetry

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 World Scientific

# Foreword

This book is a compilation of the papers presented and the workshops held at the 13<sup>th</sup> International Symposium on Reactor Dosimetry (ISR D) which was held May 25<sup>th</sup> – May 29<sup>th</sup>, 2008 in Akersloot in The Netherlands. Only papers that passed the process of peer reviewing by two experts were accepted for publication. The editors thank all reviewers.

The ISR D symposia have a long history and are held approximately every three years in turn in Europe and the United States. The symposia provide a forum for the interchange of state-of-the-art techniques, data and standardization of radiation metrology. The symposia and also the content of this book are of value for everyone involved in reactor dosimetry, including researchers, manufacturers, and those employed in industry, utilities and regulatory agencies.

The ISR D symposia are jointly organised by the European Working Group on Reactor Dosimetry (EWGRD) and the ASTM Committee E10 on Nuclear Technology and Applications. The 13<sup>th</sup> ISR D was hosted by the Joint Research Centre, Institute for Energy in Petten in The Netherlands.

The subject of the symposium was dosimetry for the assessment of irradiated reactor materials and reactor experiments, featuring radiation metrology techniques, nuclear data and standardization. Papers were presented in the following areas:

- Reactor surveillance and plant life management
- Data evaluation, uncertainty analysis and adjustment methods
- Retrospective dosimetry and decommissioning
- Dosimetry for the assessment of reactor structural materials
- Neutron and gamma-ray transport calculations
- Dosimetry for core characterisation and reactor physics
- Characterisation of neutron and gamma ray environments
- Damage correlation and exposure parameters
- Monitoring of irradiation experiments

- Nuclear data for dosimetry
- Benchmarking, calibrations and standards
- Fusion and high-energy neutrons
- Advanced reactors and accelerator neutron sources
- Irradiation processing and testing of electronics
- Experimental techniques, new developments

Six oral sessions and 2 poster sessions were organised. The papers are presented in this book in order of presentation at the symposium.

Furthermore, six workshops were organised on the following topics:

- Reactor surveillance, internals and plant-life management
- Nuclear data for dosimetry with cross sections
- Retrospective dosimetry and decommissioning data
- Next generation reactors, fusion and high-energy neutrons
- Neutron and gamma-ray transport calculations; needs for benchmarks
- Cross sections, nuclear data, damage correlations

The workshop summaries are also presented in this book.

The editors of these proceedings are Pierre D'hondt, chairman of the EWGRD, Luigi Debarberis, chairman of the local Organising Committee, Jan Wagemans, scientific secretary of the EWGRD, and Wim Voorbraak, scientific secretary of the symposium.

*Wim Voorbraak*  
*Luigi Debarberis*  
*Pierre D'hondt*  
*Jan Wagemans*

## Sponsors

The 13<sup>th</sup> International Symposium on Reactor Dosimetry was sponsored by:



**Institute for Energy**

The Joint Research Centre Petten, Institute for Energy, hosted this conference and supplied the local organisation team. Besides financial support, JRC offered a grant to a number of young scientists.



Chairman and secretary of the European Working Group on Reactor Dosimetry are from SCK•CEN Mol, Belgium. Both were strongly involved in the organisation of the conference.



The International Atomic Energy Agency (IAEA) facilitated the travel and stay of a number of participants.



The Organization for Economic Co-operation and Development (OECD) and The European Nuclear Society (ENS) supported the organisation committee with the announcement of the conference.



The U.S. Department of Energy encouraged and supported U.S. involvement in the Symposium.

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