

---

# Radiation Safety Information Computational Center

---



Oak Ridge National Laboratory  
POST OFFICE BOX 2008  
OAK RIDGE, TENNESSEE 37831-6171

Managed by  
UT-Battelle, LLC  
for the U.S. Department of Energy  
under contract DE-AC05-00OR22725

phone 865-574-6176 fax 865-241-4046  
email [PDC@ORNL.GOV](mailto:PDC@ORNL.GOV)  
www <http://rsicc.ornl.gov/>

---

No. 556

July 2011

---

*Nurture your mind with great thoughts, for you will never go any higher than you think.—Benjamin Disraeli*

---

Betty Cluster .....	1
VARSKIN4 Workshop .....	2
CHANGES TO THE RSICC CODE AND DATA COLLECTION .....	2
ANS News .....	5
New Monograph Available from ANS on Radioactive Aerosols.....	5
Join the ANS Group on LinkedIn .....	5
CONFERENCES, COURSES, SYMPOSIA .....	5
TRAINING .....	5
CONFERENCES .....	8
CALENDAR.....	10

## Betty Cluster

ORNL's Research Reactors Division (RRD) has taken a step to keep the memory of Betty Maskewitz alive. While ORNL has become nationally known for supercomputing resources, RRD has needs more similar to commercial reactors than a national laboratory. Government regulations require software quality assurance and records maintenance that are generally not imposed on “research oriented” computing. Consequently, RRD staff purchased a cluster of LINUX workstations to meet these requirements while providing adequate computing resources to support the High Flux Isotope Reactor. But what to call the system? Naming a system is discussed in an on-line article <http://www.faqs.org/rfcs/rfc1178.html>. The author advises:

- Don't use your own name.
- Don't use long names.
- Avoid alternate spellings.
- Avoid domain names.



The [betty.ornl.gov](http://betty.ornl.gov) cluster.

- Avoid domain-like names.
- Don't use antagonistic or otherwise embarrassing names.
- Don't use digits at the beginning of the name.
- Don't use non-alphanumeric characters in a name.
- Don't expect case to be preserved.
- Use words/names that are rarely used.
- Use theme names.
- Use real words.
- Don't worry about reusing someone else's hostname.
- There is always room for an exception.

So many suggestions, but “theme” seemed particularly appropriate. Executing nuclear analysis software, quality assurance, ease-of-use while maintaining consistency among the various reactor analysts—these were the functions of the new system. RRD staff discussed that these are also the functions of RSICC, but that name was taken. It was then that staff decided to honor the founder of RSICC, Betty Maskewitz, by naming the system `betty.ornl.gov`. The cluster has been in use for over two years and has served the needs of the reactor well. Naming is a small act, but in the future, when new users ask “Why the name Betty?”, the memory of a nuclear pioneer will be preserved in some small but hopefully appropriate way.

*Contributed by Trent Primm*

## **VARSKIN4 Workshop**

RSICC is making plans to host a VARSKIN4 workshop October 10–11, 2011. The workshop, to be led by David Hamby, will be held on the Oak Ridge National Laboratory campus. A maximum of 20 participants will be accepted. Watch the RSICC website and the newsletter for information and registration as the workshop develops.

## **CHANGES TO THE RSICC CODE AND DATA COLLECTION**

### **[CCC-740/MCNP5/MCNPX](#)**

The recent MCNP/MCNPX distribution (C740MNYCP06 & 07) did not contain updated data files used by MCNPX2.7 in the default data installer, although these files are present in the MCNPX2.7 source directory. The missing data files named `mollnix.tbl`, `gdr.dat`, `cinder.dat` and `delay_library.dat` are used for photonuclear physics, delayed particle production and an update to the CEM physics model. People who do not use these capabilities may not need the new files, but it is recommended everyone update to this latest release. Note: the updated data installer also contains a new photon library (`mcplib05t`) which improves scattering form factors in MCNPX2.7, but is not recommended as the default pending further testing. The cost recovery fee is still waived for this distribution. (C00740MNYCP08, source & executables; C00740MNYCP09, executables only).

### **[CCC-781/VARSKIN4](#)**

Center Department of Nuclear Engineering and Radiation Health Physics, Oregon State University, Corvallis, OR, and the U.S. Nuclear Regulatory Commission contributed VARSKIN 4. The original VARSKIN computer code, an algorithm to calculate skin dose from radioactive skin contamination, has been modified on several occasions. The VARSKIN 4 code is designed to operate in both Windows® and MacIntosh® environments and is expected to be significantly easier to learn and use than its predecessors. PC and MAC users will unzip different executable files, but the functionality is identical.

Five different predefined source configurations are available in VARSKIN 4 to allow simulations of point, disk, cylinder, sphere, and slab sources. Improvements to VARSKIN 4 include an enhanced photon dosimetry model, as well as models to account for air gap and cover materials for photon dosimetry. Although the user can choose any dose-averaging area, the default area for skin dose calculations in VARSKIN 4 is 10 square centimeters, to conform to regulatory requirements pursuant to Title 10 of the Code of Federal Regulations, Section 20.1201(c). Data entry is condensed to a single screen, and the user does not need to enter the data in any particular order. A variety of unit options are provided, including both British and International System (SI) units, and the source strength can be entered in units of total activity or distributed in units of activity per unit area or activity per unit volume. The output page and the user's ability to add radionuclides to the library are greatly simplified. A library file contains data on photons, internal conversion electrons, and Auger electrons. VARSKIN 4 allows the user to eliminate radionuclides that are not of interest and thus build a customized library. Finally, an extensive, context-sensitive help file is made available to provide guidance and to offer new users a tutorial in the use of VARSKIN. The package is transmitted on a CD which includes the referenced document, Windows and MAC executables, built-in data libraries and on-line help. Reference: NUREG/CR-6918/Rev. 1 (2011). C++; x86 processors (C00781PCX8600).

### [CCC-785/Scale 6.1](#)

Oak Ridge National Laboratory, Oak Ridge, Tennessee, contributed a newly frozen version of the Scale system, which was developed for the Nuclear Regulatory Commission to satisfy a need for a standardized method of analysis for the evaluation of nuclear fuel facility and package designs. The Scale code system provides a comprehensive, verified and validated, user-friendly tool set for criticality safety, reactor physics, spent fuel characterization, radiation shielding, and sensitivity and uncertainty analysis. Since 1976, regulators, licensees, and research institutions around the world have used Scale for safety analysis and design. Scale provides a "plug-and-play" framework with 89 computational modules, including three deterministic and three Monte Carlo radiation transport solvers that are selected based on the desired solution. Scale's graphical user interfaces assist with accurate system modeling and convenient access to desired results. Scale 6.1 provides improved reliability and introduces a number of enhanced features in a robust yet user-friendly package that are intended to improve safety and efficiency throughout the nuclear community. Enhanced areas include:

- Criticality safety - The KENO Monte Carlo neutron transport codes for eigenvalue problems have realized a number of enhancements for Scale 6.1.
- Shielding Analysis - The MAVRIC shielding analysis capabilities with automated variance reduction capabilities, first introduced with Scale 6.0, have realized a number of enhancements for their second release in Scale 6.1.
- Depletion and Decay - The ORIGEN and COUPLE codes used for isotopic activation, depletion and decay have been substantially improved for Scale 6.1.
- Reactor Physics - The TRITON reactor physics capabilities have realized a number of enhancements for Scale 6.1.
- Sensitivity and Uncertainty Analysis - For Scale 6.1 the TSUNAMI-3D adjoint-based sensitivity and uncertainty analysis capabilities were enhanced through many of the previously described improvements in the KENO mesh capabilities, and a new TSUNAMI-2D capability was introduced using NEWT as the transport solver.
- Graphical User Interfaces - Many of the Scale graphical user interfaces have been enhanced for Scale 6.1.

- Nuclear Data - For uranium and plutonium isotopes in ENDF/B-VI.8 and ENDF/B-VII.0 continuous-energy cross sections, the unresolved resonance region probability tables have been improved, providing more accurate results, especially for intermediate energy systems.

Please visit the Scale website for more information at <http://scale.ornl.gov>.

This package is distributed on 3 DVDs for Windows, LINUX and MacOS systems. Package C00785MNYCP01 includes executables for PC Windows, PC Linux and MacOS, as well as documentation and sample problems for verification. (See abstract for details). Package C00785MNYCP00 includes the items listed above plus source files, makefiles, build scripts, and some additional documentation. Export control regulations restrict the distribution of source code. If restrictions apply, RSICC will send the executable-only version. Please order the package you prefer, and we will honor your preference if possible. Executables require JAVA RTE for installation. For compilation Intel Fortran 11.1 or GNU/GCC 4.2, CMAKE, [TRILINOS](#) and [LAPACK](#) are required. Reference: Scale Newsletter (43) Summer 2011. Fortran 90 and C/C++; Windows PCs, Linux PC, and Mac [Package ID: C00785MNYCP00 (full package) and C00785MNYCP01 (executable-only package)].

### [DLC-247/POINT2011](#)

Lawrence Livermore National Laboratory, Livermore, California, contributed this new temperature-dependent, linearly interpolable, tabulated cross section library based on the recently released ENDF/B-VII.1 data library. The latest ENDF/B-VII.1 beta2 data library was recently and is now freely available through the National Nuclear Data Center (NNDC), Brookhaven National Laboratory. This release completely supersedes all preceding releases of ENDF/B. The ENDF/B-VII.1 data library was processed into the form of temperature dependent cross sections and is being distributed as POINT2011. For use in our applications the ENDF/B-VII.1 library has been processed into cross sections at eight neutron reactor like temperatures—between 0 and 2100 Kelvin—in steps of 300 Kelvin (the exception being 293.6 Kelvin, for exact room temperature at 20 Celsius). The data has also been processed to five astrophysical like temperatures—1, 10, and 100 eV; and 1 and 10 keV. For reference purposes, 300 Kelvin is approximately 1/40 eV, so that 1 eV is approximately 12,000 Kelvin. At each temperature the cross sections are tabulated and linearly interpolable in energy.

A table in the documentation summarizes the contents of the ENDF/B-VII.1 general purpose library. This library contains evaluations for 418 materials (isotopes or naturally occurring elemental mixtures of isotopes). Each evaluation is stored as a separate file. The entire library is in the computer-independent ENDF-6 character format, which allows the data to be easily transported between computers. The entire library requires approximately 15.5 gigabyte of storage. Reference: LLNL-TR-479947 (April 1, 2011). (D00247/MNYCP/00).

### [MIS-014/REACTORSHIELDING-NMS](#)

REACTORSHIELDING-NMS, Reactor Shielding for Nuclear Engineers is the release by N. M. Schaeffer (Editor) through the OECD NEA Data Bank, Issy-les-Moulineaux, France, of the legacy book on reactor shielding for free distribution. The book became a reference for several generations after it was first published in 1973 by the then U.S. Atomic Energy Commission. During the Eleventh International Conference on Radiation Shielding, held from 13-18 April 2008, he expressed the wish that the book, now difficult to find on book-shelves in libraries and absent from bookshops for some time, be made available to the younger generation, to students and researchers.

The package is transmitted on a CD which contains the referenced document in electronic pdf format (M00014MNYCP00).

## ANS News

### New Monograph Available from ANS on Radioactive Aerosols

Authored by the late Rudy Sher and Richard Hobbins, the authors present the current state of knowledge of the chemical and thermodynamic phenomena taking place in reactor cores during the progression of accidents; the formation and physical and chemical properties of the aerosols, the timing and duration of the aerosol release from the core to the coolant and containment; and the physical, chemical, and thermal-hydraulic phenomena that govern the removal of aerosols from the containment atmosphere. Read more at <http://www.ans.org/goto/nad.cgi?id=1310878800-2> .

### Join the ANS Group on LinkedIn

Join hundreds of other ANS Members that already belong to the ANS group on the business networking Web site LinkedIn, allowing them to display the ANS logo on their LinkedIn profiles and connect with ANS colleagues. The ANS group on LinkedIn also provides areas for sharing news and participating in online discussions. Visit <http://www.ans.org/goto/nad.cgi?id=1310878800-9> to join.

## CONFERENCES, COURSES, SYMPOSIA

RSICC attempts to keep its users and contributors advised of conferences, courses, and symposia in the field of radiation protection, transport, and shielding through this section of the newsletter. Should you be involved in the planning/organization of such events, feel free to send your announcements and calls for papers via email to [riceaf@ornl.gov](mailto:riceaf@ornl.gov) with “conferences” in the subject line by the 20th of each month. Please include the announcement in its native format as an attachment to the message. If the meeting is on a website, please include the url.

Every attempt is made to ensure that the links provided in the Conference and Calendar sections of this newsletter are correct and live. However, the very nature of the web creates the possibility that the links may become unavailable. In that case, please call or mail the contact provided.

## TRAINING

### MCNPX and Visual Editor Training

Classes are taught using the most recent (beta) version of the Visual Editor Code. All class attendees must have a valid MCNP/MCNPX RSICC license. Bring proof of receipt (letter or email) to the class.

<u>2011 Classes for Visual Editor</u>		
September 12–16	Introduction to MCNP using the MCNPX Visual Editor	Myrtle Beach, SC
September 19–23	Intermediate MCNP Visual Editor with a special emphasis on tallies and variance reduction	Myrtle Beach, SC
October 17–21	Introduction to MCNP using the MCNPX Visual Editor	Las Vegas, NV
October 24–28	Intermediate MCNP Visual Editor with a special emphasis on tallies and variance reduction	Las Vegas, NV

<u>2011 Classes for Visual Editor</u>		
November 14–18	Intermediate MCNP Visual Editor with a special emphasis on tallies and variance reduction	London, U.K.

The introductory workshops combine teaching on MCNP basics and how to create MCNP input files using the Visual Editor. The intermediate Visual Editor workshops focus on more advanced topics such as tallies and variance reduction using the Visual Editor.

Exercises will focus on creating input files and visualizing output data with the Visual Editor. Attendees are encouraged to bring their own input files for viewing and modifying in the Visual Editor; this is particularly important for the intermediate workshop.

The course description and registration information can be found at <http://www.mcnpvised.com/index.html>.

<u>2011 Classes for MCNPX</u>		
September 26–30	MCNPX Intermediate Workshop	Washington, DC
November 7–11	MCNPX Intermediate Workshop	London, U.K.
<u>2012 Classes</u>		
January 9–13	MCNPX Intermediate Workshop	Las Vegas, NV

The MCNPX team at Los Alamos National Laboratory offers interactive workshops for training users in the capabilities of MCNPX at the intermediate level.

The list of workshops is tentative, as workshops may be added, removed, or modified throughout the year, depending on user interests. Workshops with fewer than 12 registrants on the early registration date are subject to cancellation or rescheduling.

In order to process non-U.S. citizens by the class date, non-U.S. citizens must register at least 6 weeks prior to the start of the training class. All non-U.S. citizens who reside in countries listed in the U.S. Code of Federal Regulations, Title 10, Part 810.8, are required to register at least 8 weeks prior to the start of the training class. These participants must be processed by the DOE and should not make travel arrangements until approval from DOE has been obtained.

Additional information about the courses can be found at the website, <http://mcnpx.lanl.gov/>. To register send an email to Randy Schwarz at [randyschwarz@mcnpvised.com](mailto:randyschwarz@mcnpvised.com), indicating the workshop of interest to you.

### Scale Training Courses

Date	Title	Location	Registration Fee
Sept. 7–9	Scale/ORIGEN Activation and Decay Calculations; Includes ORIGEN-ARP <i>Isotopic depletion/decay and source term characterization using ORIGEN/ORIGEN-ARP</i>	ORNL Oak Ridge, TN, USA	\$1200
Sept. 12–16	Scale/TRITON Lattice Physics and Depletion Course <i>2D lattice physics calculations; 1D, 2D, and 3D depletion calculations; Resonance self-shielding techniques including Monte Carlo Dancoff factors for non-uniform lattices; Generation of libraries for ORIGEN-ARP</i>	ORNL Oak Ridge, TN, USA	\$2000
Sept. 26–30	Scale/TSUNAMI Sensitivity and Uncertainty Analysis Course	ORNL Oak Ridge,	\$2000

	<i>1D, 2D, and 3D eigenvalue sensitivity and uncertainty analysis; 1D and 2D generalized perturbation theory for reactor analysis; Reactivity sensitivity analysis</i>	TN, USA	
Oct. 3–5	<b>TSUNAMI Validation Techniques</b> <i>Advanced validation and bias assessment techniques using sensitivity and uncertainty analysis; Burnup credit validation</i>	ORNL Oak Ridge, TN, USA	\$1200
Oct. 10–14	<b>Scale Criticality and Shielding Course</b> <i>Basic criticality calculations with KENO-VI; Shielding analysis with automated variance reduction using MAVRIC; Criticality accident alarm system analysis</i>	ORNL Oak Ridge, TN, USA	\$2000
Oct. 17–21	<b>Scale Criticality Safety Calculations Course</b> <i>Introductory through advanced criticality calculations using KENO V.a and KENO-VI; Resonance self-shielding techniques</i>	ORNL Oak Ridge, TN, USA	\$2000
Oct. 17–21	<b>Scale/TSUNAMI Sensitivity and Uncertainty Analysis Course</b> <i>1D, 2D, and 3D eigenvalue sensitivity and uncertainty analysis; 1D and 2D generalized perturbation theory for reactor analysis; Reactivity sensitivity analysis</i>	NEA Data Bank, Paris, France	€2000

A discount of \$200 will be applied for registration of multiple courses, and additional discounts are available for students. Class size is limited and courses may be canceled if minimum enrollment is not obtained one month prior to the course. Course fees are refundable up to one month before each class. Note that all attendees must be registered Scale 6.1 users. All foreign national visitors must register a minimum of 40 days prior to the start date of the training course they plan to attend. Course descriptions may be found at [http://scale.ornl.gov/training\\_course\\_descriptions.shtml](http://scale.ornl.gov/training_course_descriptions.shtml).

### **ENEN Course**

The European Nuclear Education Network (ENEN) has provided the following information on upcoming course.

#### **Principles and Operation of Nuclear Reactors—September 12–23, 2011**

Contact: Nadia Nowacki at

The European Nuclear Education Network Association (ENEN)

PO Box 35

Commissariat à l'Energie Atomique / Saclay

INSTN/UEIN - Bld 395

91191 GIF-SUR-YVETTE Cedex

FRANCE

phone + 33 1 69083092

fax + 33 1 69087782

[nadia.nowacki@cea.fr](mailto:nadia.nowacki@cea.fr)

[sec.enen@cea.fr](mailto:sec.enen@cea.fr)

[www.enen-assoc.org](http://www.enen-assoc.org)

<http://www-instn.cea.fr/>

### **IAEA Workshop Monte Carlo Radiation Transport and Associated Data Needs for Medical Applications**

The International Atomic Energy Agency (IAEA) is offering a 2-week workshop on “Monte Carlo Radiation Transport and Associated Data Needs for Medical Applications,” October 17–28, 2011, in Trieste, Italy, at the Abdus Salam International Centre for Theoretical Physics. This workshop will revolve around the EGSnrc and BEAMnrc codes. There is no registration fee associated with attendance at the workshop. Priority will be given to participants from developing countries. The workshop Director

is Roberto Capote of the IAEA and the lecturers include Iwan Kawrakow, Ernesto Mainegra-Hing, Frederic Tessier, Blake Walters and David W. O. Rogers. Visit the workshop website at <http://www-nds.iaea.org/MC2011/MC2011.htmlx> for more information, and to download the application form.

## CONFERENCES

### Symposium on Sustainable Nuclear Fuel Management

The Symposium on Sustainable Nuclear Fuel Management (SSNFM) will be held on August 23, 2011, from 8:00 a.m. to 6:00 p.m. The symposium is sponsored by the Georgia Public Service Commission and the Nuclear and Radiological Engineering Program at Georgia Institute of Technology. This symposium, featuring eleven speakers and a panel discussion, will focus on challenges to developing a sustainable nuclear fuel management solution in the United States. A preliminary agenda for the symposium is available at <http://ssnfm.gatech.edu>.

SSNFM 2011 will take place on the Georgia Tech Campus in Atlanta, Georgia, in the Auditorium of the Callaway Manufacturing Research Center (MARC) building located at 813 Ferst Drive, N.W. Atlanta, Georgia. Space for SSNFM 2011 is limited and interested participants are encouraged to register early. Registration will be open through Monday, August 15, 2011. Details and registration can be completed online at <http://ssnfm.gatech.edu/register/>.

Attendees are encouraged to stay at the Georgia Tech Hotel and Conference Center, 800 Spring Street N.W. Atlanta, Georgia 30308. A special room rate of \$122 per night has been reserved for SSNFM 2011. The Georgia Tech Trolley provides convenient transportation from the Hotel to the symposium auditorium. Reservations may be completed online at <http://ssnfm.gatech.edu/hotel/> or by contacting the hotel directly at 866-395-1376. If the Georgia Tech Hotel and Conference Center does not have rooms available, please contact Mrs. Shauna Bennett-Boyd ([shauna.boyd@nre.gatech.edu](mailto:shauna.boyd@nre.gatech.edu)) for additional hotel options.

### International Conference on Transport Theory (ICTT-22)

The International Conference on Transport Theory (ICTT-22) will be held September 11–15, 2011, in Portland, Oregon. The conference will bring together researchers in the several fields of engineering and science who use similar - or even identical - mathematical methods in their studies, meaning those which evolved from the Boltzmann transport theory. Possible topics include:

- Kinetic Theory
- Transport Problems in Plasma Physics
- Neutron Transport and Applications to Reactor Physics
- Stochastic Transport Problems - Non Conventional Applications
- Quantum Transport Problem
- Inverse Transport Problems
- Computational Methods
- Radiative Transfer - Fluid-dynamics

The registration page for the meeting is available at <http://ne.oregonstate.edu/ICTT/Registration.htm>. Additional information regarding the program, accommodations, and special events is available at the conference website: <http://ne.oregonstate.edu/ICTT/>.





The International Conference on Nuclear Criticality (ICNC2011) which will be held at Heriot-Watt University, Edinburgh, United Kingdom, September 19–22, 2011, allows specialists from around the world to meet to discuss, analyze and study the latest developments in the area of nuclear criticality safety. Complete details on the conference are available at the website, <http://www.informaglobalevents.com/event/icnc2011>. For information about registering, delegate information or any other customer service enquiries, please contact Energy Customer Services, Informa UK Ltd., PO Box 406, West Byfleet KT14 6NN UK (phone +44 (0) 20 7017 5518, fax +44 (0) 20 7017 4745, email [energycustserv@informa.com](mailto:energycustserv@informa.com)).

### INAC 2011

The International Nuclear Atlantic Conference (INAC) will convene its 2011 conference October 24–28, 2011, in Belo Horizonte, the capital of the state of Minas Gerais, in the Brazilian Southeast. The theme of the event will be *Nuclear Energy: New Jobs for a Better Life*, which intends to discuss how to prepare young professionals for the opportunities that are surfacing with the renewed investment in the nuclear sector.



The conference will be organized around three independent but complementary technical meetings: The XVII Meeting on Nuclear Reactor Physics and Thermal Hydraulics (Enfir), the X Meeting on Nuclear Applications (Enan) and the II Meeting on Nuclear Industry (Enin).

Topics to be discussed at the event include nuclear power plant and research reactor operation, maintenance, troubleshooting, security and safety; research; irradiation activities; education; communications and public information; training programs; reactor siting, decontamination and decommissioning activities; current regulatory issues; radiopharmaceuticals; nuclear instrumentation; reactor physics; radioprotection; radioactive waste management; sustainability of energy sources; the uranium market; and social responsibility.

INAC 2011 will also promote the fourth edition of the Junior Poster Technical Sessions, where, under the supervision of nuclear researchers from Brazilian institutions, undergraduate students from a number of colleges and universities present relevant results achieved in their research work.

Completing the one-week program, ExpoInac, the event's traditional technical and commercial exhibition, showcases the contribution made by nuclear technology, products and services to the quality of life in our society.

The conference will also include a historical exhibition, open to the general public, to celebrate the 50<sup>th</sup> anniversary of the Triga IPR-R1, the first reactor of its type installed in the southern hemisphere, and the 59<sup>th</sup> anniversary of the Nuclear Technology Development Center (CDTN), the first nuclear energy research institute founded in Brazil, both located in Belo Horizonte.

Details about registration and paper submission can be found at the conference website: <http://www.inac2011.com.br/inac.php>.

### ICRS-12 and RPSD-2012



The 12th International Conference on Radiation Shielding (ICRS-12) and the 17th Topical Meeting of the Radiation Protection and Shielding Division of the American Nuclear Society (RPSD-2012) will be held in Nara, Japan,

September 2–7, 2012. The first ICRS conference was held in 1958 at Cambridge, United Kingdom. Since then, ICRS has been held in Europe, Japan, and the United States. The ICRS series occurs every four or five years.

This conference, organized by the Atomic Energy Society of Japan, will explore the scientific, technological and engineering issues associated with particle and ionizing radiation shielding in its broadest context, including nuclear energy systems, accelerator facilities, space and other radiation environments. It is one of the premier international radiation shielding events, regularly drawing hundreds of the world's top scientists and engineers.

The conference will open with a special session summarizing the facts and circumstances surrounding the Fukushima accident and consequent environmental assessment and recovery. The special session will complement the conference topics. Abstracts may be submitted electronically beginning December 1, 2011, on the following topics:

Fission Reactor Facilities	Monte Carlo Methods & Applications
Fusion Reactor Facilities	Deterministic Methods & Applications
Fuel Cycle Facilities	Empirical Methods & Applications
Transportation & Storage Issues	Visualization & User Interface
Waste Management Facilities	Nuclear Data
Accelerator Facilities	Advanced Phantoms
Medical Facilities	Shielding Materials
Aircraft Dosimetry & Space Technology	Radiation Detections & Measurements
Medical Applications	Radiation Protections
Industrial Applications	Radiation Dosimetry
Shielding Experiments & Benchmarks	Decommissioning
Source Term Measurement & Evaluation	Clearance
Activation Measurement & Analysis	Environmental Assessment
Standardization of Radiation Field & Measurement	International Collaboration

The deadline for submitting abstracts is February 29, 2012. Check the website <http://www.icrs12.org> or contact ICRS-12 & RPSD-2012 Local Organizing Committee secretariat ([office@icrs12.org](mailto:office@icrs12.org)) for further information.

## CALENDAR

### September 2011

5<sup>th</sup> Annual RadWaste Summit, Sept. 6–9, 2011, Las Vegas, NV. Contact: Exchange Monitor (phone 877-303-7367, email [forums@exchangemonitor.com](mailto:forums@exchangemonitor.com)) url [www.radwastesummit.com](http://www.radwastesummit.com).

SET 2011, 10<sup>th</sup> International Conference on Sustainable Energy Technologies, Sept. 4–7, 2011, Istanbul, Turkey. Contact: Prof. Dr. Sümer Sahin, Atılım University, Faculty Engineering, Incek, Ankara, TÜRKİYE (email [ssahin@atilim.edu.tr](mailto:ssahin@atilim.edu.tr)) url <http://www.set2011.org>.

NUTECH-2011, International Conference on Development and Applications of Nuclear Technologies, Sept. 11–14, 2011, Kraków, Poland. Contact: AGH University of Science & Technology (phone 48-12-617-2975, fax 48-12-634-0010, email [nutech2011@ftj.agh.edu.pl](mailto:nutech2011@ftj.agh.edu.pl)) url [www.ftj.agh.edu.pl/~nutech2011](http://www.ftj.agh.edu.pl/~nutech2011).

Waste Management, Decommissioning, and Environmental Restoration for Canada's Nuclear Activities, Sept. 11–14, 2011, Toronto, Ontario, Canada. Contact: Denise Rouben, CNS (phone 416-977-7620, fax 416-663-3504, email [cns-snc@on.aib.com](mailto:cns-snc@on.aib.com)) url [www.cns-snc.ca/events/waste-management-decommissioning-and-environmental](http://www.cns-snc.ca/events/waste-management-decommissioning-and-environmental).

ICTT-22, International Conference on Transport Theory, Sept. 11–15, 2011, Portland, Oregon. Contact: Todd Palmer, Technical Program Chair, Oregon State University ([palmerts@ne.orst.edu](mailto:palmerts@ne.orst.edu)) url <http://ne.oregonstate.edu/ICTT/>.

ISFNT-10, 10<sup>th</sup> International Symposium on Fusion Nuclear Technology, Sept. 11–16, 2011, Portland, OR. Contact: Shannon Eddins, Idaho National Laboratory (email [isfnt10@inl.gov](mailto:isfnt10@inl.gov)) url [www.isfnt-10.org](http://www.isfnt-10.org).

20<sup>th</sup> International Conference on Nuclear Energy for New Europe, Sept. 12–15, 2011, Bovec, Slovenia. Contact: Nuclear Society of Slovenia (phone 386-1-588-5298, fax 386-1-588-5376, email [nene2011@ijs.si](mailto:nene2011@ijs.si)) url [www.nss.si/nene2011/](http://www.nss.si/nene2011/).

ICNC2011, International Conference on Nuclear Criticality, Sept. 19–22, 2011, Heriot-Watt University, Edinburgh, United Kingdom. Contact: Energy Customer Services, Informa UK Ltd, PO Box 406 West Byfleet KT14 6NN UK (phone +44 0 20 7017 5518, fax +44 0 20 7017 4745, email [energycustserv@informa.com](mailto:energycustserv@informa.com)) url <http://www.informaglobalevents.com/event/icnc2011>.

RADECS 2011, 11<sup>th</sup> European Conference on Radiation Effects on Components and Systems, Sept. 19–23, 2011, Seville, Spain. Contact: Héctor Guerrero, INTA (email [radecs2011@inta.es](mailto:radecs2011@inta.es)) url [www.radecs2011.org](http://www.radecs2011.org).

ICEM 2011, 14<sup>th</sup> International Conference on Environmental Remediation and Radioactive Waste Management, Sept. 25–29, 2011, Reims, France. Contact: Sylvie Delaplace, SFEN (phone 33-0-1-53-58-32-16, fax 33-0-1-53-53-32-11, email [icem11.france@sfen.fr](mailto:icem11.france@sfen.fr)) url [www.sfen.fr/icem-11](http://www.sfen.fr/icem-11).

ASME 2011 Small Modular Reactors Symposium, Sept. 28–30, 2011, Washington, DC. Contact: Mary Jakubowski, ASME (phone 212-591-7637, email [jakubowskim@asme.org](mailto:jakubowskim@asme.org)) url [www.asmeconferences.org/smr2011](http://www.asmeconferences.org/smr2011).

### October 2011

2011 ANS Winter Meeting and Nuclear Technology Expo, Oct. 30–Nov. 3, 2011, Washington, DC. The website is [http://www.new.ans.org/meetings/c\\_1](http://www.new.ans.org/meetings/c_1).

#### *Embedded Topical Meetings*

- First Annual ANS Small Modular Reactors, General Chair: Thomas Sanders
- Young Professionals Congress, General Chair: Peter F. Caracappa

### September 2012

ICRS-12 (12<sup>th</sup> International Conference on Radiation Shielding) and RPSD-2012 (17<sup>th</sup> Topical Meeting of the Radiation Protection and Shielding Division of the American Nuclear Society), Sept. 2–7, 2012, Nara, Japan. Contact: ICRS-12 & RPSD-2012 Local Organizing Committee secretariat ([office@icrs12.org](mailto:office@icrs12.org)) url <http://www.icrs12.org/>.