

# NUCLEAR & PLASMA SCIENCES SOCIETY NEWS

A Publication of the Institute of Electrical & Electronics Engineers

Number 3, September 2011

## CONFERENCES

### 2011 IEEE Nuclear Science Symposium, Medical Imaging Conference and 18<sup>th</sup> International Workshop on Room-Temperature Semiconductor X-ray and Gamma-ray Detectors



We look forward to welcoming you to the 2011 IEEE Nuclear Science Symposium, Medical Imaging Conference and 18<sup>th</sup> International Workshop on Room-Temperature Semiconductor X-ray and Gamma-ray Detectors (NSS MIC RTSD) to be held from October 23<sup>rd</sup>–29<sup>th</sup>, 2011 in Valencia, Spain at the Valencia Convention Center (VCC, designed by Sir Norman Foster) and two adjacent hotels: the Melia Hotel and the Sorolla Hotel. The conference center is located in the northern part of city, with easy access to the airport, and within walking distance of a variety of other hotels in all categories. It is conveniently linked to the city center and the beaches by public transport and I would encourage you to explore the city during your stay in Valencia.

The first IEEE NSS/MIC to be held in Europe took place in Lyon, France to celebrate the millennium in 2000, and since then successful European meetings have been held with a four-year cycle, in Rome (2004) and Dresden (2008). However, so outstanding has been the success of the European meetings that it was decided to hold the fourth European meeting in 2011, only three years after Dresden.

Consequently, an international Organizing Committee has planned a meeting of high scientific level that includes oral and poster presentations, short courses, workshops and refresher courses on interesting scientific topics.

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## NUCLEAR & PLASMA SCIENCES SOCIETY NEWS

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Publicity releases for forthcoming meetings, items of interest from local chapters, committee reports, announcements, awards, or other materials requiring society publicity or relevant to NPSS should be submitted to the Newsletter Editor by September 10, 2011 for publication in the December 2011 Newsletter.

### CONTRIBUTED ARTICLES

News articles are actively solicited from contributing editors, particularly related to important R&D activities, significant industrial applications, early reports on technical breakthroughs, accomplishments at the big laboratories and similar subjects. The various Transactions, of course, deal with formal treatment in depth of technical subjects. News articles should have an element of general interest or contribute to a general understanding of technical problems or fields of technical interest or could be assessments of important ongoing technical endeavors.

Advice on possible authors or offers of such articles are invited by the editor.

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## CONFERENCES

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Attendees are encouraged to take full advantage of the wide range of scientific and social activities and, whatever your specialty, whether nuclear science, medical imaging or semiconductor technology, you should consider staying for the entire meeting. The joint sessions that will be held on Tuesday emphasize the increasing overlap between NSS, MIC and RTSD. As usual, there will be a strong program of short courses on topics of relevance to these fields and for those requiring more introductory material, refresher courses will be held on some mornings prior to the start of the main scientific sessions.

A commercial exhibition that showcases state-of-the-art products and services from a wide range of companies will be held in parallel to the scientific sessions. To avoid overcrowding, the exhibition will be located on two levels at the VCC in large, convenient, multipurpose rooms.

All conference attendees will have access to free wireless internet throughout the conference center and the adjacent hotels and a computer room at the VCC will provide internet-connected laptops and printers. The program will allow time for attendees to interact and discuss with friends and colleagues about their work, new ideas and emerging technologies.

The city of Valencia is a traditional, average-sized Mediterranean-style Spanish city located on the east coast of Spain. As an attendee you will experience the atmosphere of an historic city that is a fascinating mixture of different cultures and religions, combining history with a unique vision of the future exemplified by the modern architectural area that has become a reference model for urban expansion. Valencia offers a stimulating scientific environment together with a rich cultural heritage of music, art, gastronomy, architecture and folklore.

You can enjoy relaxing walks through the parks and streets of this unique city, as well as visiting the museums, aquarium, biopark (zoo) and beaches. Temperatures will be mild and pleasant at this time of year. A variety of interesting tours are offered so attendees and their companions can experience Valencia and the surrounding region to the full extent.

On behalf of the Organizing Committee and the IEEE Nuclear and Plasma Sciences Society, we encourage you to plan to attend the first-ever IEEE NSS/MIC/RTSD to be held in Spain. The meeting is dedicated to the memory of our dear friend and colleague, the late Professor Juan Antonio Rubio, formerly director of CIEMAT in Madrid.

We very much look forward to welcoming you to Valencia in October 2011.

### CONFERENCE PROGRAM

#### Nuclear Science Symposium (NSS) October 24<sup>th</sup>-27<sup>th</sup>, 2011

Under the experienced guidance of NSS Program cochairs Paul Lecoq and Faustino Gómez, together with their Topic Conveners, five main NSS topics were identified for oral and poster presentation at this meeting:

#### Detection Components

- Scintillators
- Photodetectors
- Solid State Hybrid and Monolithic Detectors
- Gaseous Detectors

#### Front End, DAQ, and Trigger Electronics

- Analog and digital circuits
- Low Noise Highly Integrated Front End Electronics
- Digitization and Signal Processing

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David Townsend  
General Chair



Paul Lecoq  
NSS Program Chair



Alberto Del Guerra  
MIC Program Chair

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Faustino Gómez  
NSS Deputy Program Chair

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- DAQ Architectures and Hardware Standards
- Multilevel Trigger Approaches and Trigger Farms
- Fault Tolerance and Radiation Hardness

### Software and Computing

- Core Software Tools
- Simulation and Analysis
- Distributed and Grid Computing

### Detectors/Instrumentation (small systems)

- Gamma-ray and Neutron Detection
- Nuclear Detectors
- Tools and Techniques for Biomedical Research
- Synchrotron Radiation and Accelerator Instrumentation
- Homeland Security

### Large Detection Systems

- High-Energy Physics and Nuclear-Physics Selectors
- Astrophysics and Space Instrumentation
- Nuclear Power

Each major topic was placed under the supervision of two topic conveners, who organized the sessions in such a way as to avoid as much as possible conflicts of interest and promote interactions between different subtopics. Hopefully that has been achieved and a very strong NSS scientific program will be a highlight of the meeting. Posters are organized following the same approach with five two-hour poster sessions that do not overlap with the corresponding oral sessions on the same topic. Each poster will remain up for 1.5 days to allow for individual viewing. In the same spirit, the oral and poster sessions addressing solid-state detector topics are organized



Juan J. Vaquero  
MIC Deputy Program Chair



Ralph James  
RTSD Program Cochair

in close collaboration with the RTSD program chair and cochair.

Educational Short Courses are organized focusing on topics of interest for the NSS scientific community. They will offer the opportunity for very detailed presentations and discussions by renowned experts in the corresponding fields. We have also introduced three refresher courses to allow students to be up-to-date on the following generic subjects: Geant4 simulation, gaseous detectors and neutron detection. We have further tried to restrict the number of parallel workshops, allowing only new emerging fields that are not yet addressed in the standard NSS topics and where it is anticipated that the community needs to become better organized.

Finally, this year the NSS luncheon will include a talk from Dr. Manuel Toharia, director of the Science Museum in Valencia, a recognized expert in the communication of science to the general public, something that is especially important for the public perception of nuclear science and technology.

### Medical Imaging Conference (MIC) October 26<sup>th</sup>–29<sup>th</sup>

The Medical Imaging Conference (MIC) is the foremost international scientific meeting on the physics, engineering and mathematical aspects of nuclear medical imaging. As the field develops, multimodality approaches are becoming more important. The content of the MIC reflects this, with a growing emphasis on the methodologies of X-ray, optical and MR imaging also in relation to nuclear imaging techniques. Most recent topics such as Advanced Imaging in Radiotherapy and Hadron Therapy are now well located within the Conference. In addition, specialized topics will be addressed in the Short Courses. Submissions were invited on the following topics:

- Emission Tomography Instrumentation (PET, SPECT)

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- Other Medical Imaging Technologies (CT, MR, Optical, Photoacoustic, etc.).
- Multimodality Systems
- High Resolution and Preclinical Imaging Instrumentation, Techniques and Systems
- Intraoperative Probes and Portable Imaging Systems
- New Detector Materials/Technologies for Medical Imaging
- Image Reconstruction Methods
- Data Correction and Quantitative Imaging Techniques
- Simulation and Modeling of Medical Imaging Systems
- Data Acquisition and Signal Processing
- Image Processing and Parametric Imaging
- Imaging in Radiotherapy
- Hadron Therapy

The MIC Program cochairs, Alberto Del Guerra and Juan Jose Vaquero have worked hard to establish a high level and exciting scientific program. This year, we received a total of 764 abstracts and we accepted 682 of them after a rigorous review process. Of the 682 accepted abstracts, 122 have been assigned either to 16 MIC oral sessions or to the two joint NSS-MIC and MIC-RTSD sessions; the remaining 560 accepted papers were assigned to the MIC poster sessions. The joint sessions between NSS and MIC will again be held on Tuesday afternoon. The MIC oral sessions are organized into two parallel sessions, where we have attempted to minimize the subject matter overlap in order to avoid conflict. Similar to last year, we have limited the number of poster sessions to five to accommodate a total of 560 posters in an effort to reduce the number of posters per session. Although the physical space assigned to the poster sessions will have to be split between

two locations, we have tried to limit the inconvenience to an absolute minimum.

There will be two MIC plenary sessions held on Wednesday. The first session will feature two renowned speakers, Prof. Willi Kalender from the University of Erlangen who will speak on “Is there still room for research in CT?” and secondly Dr. Cristoph Bert from GSI, Darmstadt who will speak on “New frontiers in particle therapy.” The second plenary session will feature the third keynote speaker, Prof. Anders Brahme from the Karolinska Institute and Stockholm University, who will speak on “Optimal Use of Imaging in Radiation Therapy.” This plenary lecture will be followed by presentations from the winners this year of the Hoffman and Hasegawa Awards and by the recognition of Professor Harry Barrett from Tucson, Arizona, the recipient of the 2011 IEEE Medal for Innovations in Healthcare Technology.

We have retained the concept of refresher courses to be held before the start of the main scientific sessions on Thursday, Friday and Saturday. The courses will cover the basics of radiotherapy, CT, and MR/PET imaging. On Wednesday morning prior to the opening plenary session there will be an interesting refresher course on the European patent system. There will also be the usual social events at the meeting, including the MIC dinner that will feature a fascinating after-dinner talk from the Spanish architect Luis Fernández-Galiano on “Biology and design: the city as artificial nature.”

### 18<sup>th</sup> International Workshop on Room-Temperature Semiconductor X- and Gamma-ray Detectors (RTSD) October 24<sup>th</sup>–27<sup>th</sup>

The 18<sup>th</sup> International Workshop on Room-Temperature Semiconductor Detectors (RTSD) represents the largest forum of scientists and engineers

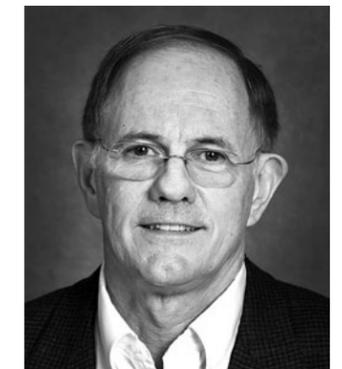
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Ernesto Dieguez  
RTSD Program Cochair



Joao Varela  
NSS Short Course Chair

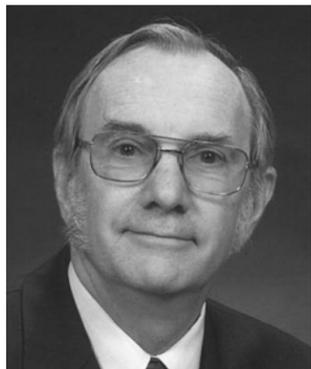


Grant Gullberg  
MIC Short Course Chair

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Ralf Engels  
Treasurer



Ronald M. Keyser  
Industrial Program Cochair



Manuel Lozano  
Industrial Program Cochair

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developing new semiconductor radiation detectors and imaging arrays. Room-temperature solid-state detectors for X-ray, gamma and neutron radiation are finding increasing applications in such diverse fields as medicine, homeland security, astrophysics and environmental remediation. The objective of this workshop is to provide a forum for discussion of the state-of-the-art of the development for semiconductor materials and organic materials for detection, materials characterization, device fabrication and technology, electronics and applications. To provide a comprehensive review, oral and poster presentations representing a broad spectrum of research activities emphasizing either device or materials understanding were sought.

- Semiconductor Materials for Radiation Detection
- Organic Materials for Radiation Detection
- Crystal Growth, Materials and Defects Characterization
- Solid-state Neutron Detectors
- Strip, Pixel and Discrete Semiconductor Detectors
- Properties of Electrical Contacts and Device Technology
- Radiation Damage, Long-term Stability and Environmental Effects
- Scintillator/Semiconductor Array Hybrids
- Detector/ASIC Hybridization, Interconnects and Electronics
- Spectrometer Systems for Homeland Security, Nuclear Inspections Safeguards and Portal Monitoring
- Imaging Systems for Medical, Astrophysics, Nondestructive Testing and Cargo Monitoring Applications

The RTSD cochairs Ralph James and Ernesto Dieguez, expertly assisted by Michael Fiederle, have once again organized a strong and interesting program. They have chosen to hold this workshop in conjunction with the IEEE NSS and MIC meetings for the purpose of encouraging information exchange between a much larger body of scientists and engineers who have an in-depth knowledge of detectors, instrumentation, nuclear science and technology, and medical imaging. Joint sessions with NSS and MIC have been scheduled on the Tuesday to help bring together people with common interests and offer the right environment for the creation of new and fruitful associations. These joint sessions are clearly identified in the program booklet, and everyone who can is invited to attend. Once again there will be an RTSD luncheon and those wishing to attend the lunch are encouraged to purchase tickets when they register as space will be limited.

### SHORT COURSE PROGRAM

An excellent set of short courses has been organized at the start of the NSS/MIC programs, covering a wide range of nuclear science and medical imaging technology. Expertly organized by Short Course Chairs Joao Varela (NSS) and Grant Gullberg (MIC), all courses are one day in length. The first lecture will begin at 09:30 and lunch, refreshments, lecture notes, and a certification of completion are also provided as part of the short course registration fee.

#### NSS Short Courses:

**SC1:** Experimental Techniques in Nuclear and Particle Physics, Saturday, October 22, 09:30-18:00

**SC2:** High-Precision Calorimetry for Particle and Nuclear Physics Experiments, Saturday, October 22, 09:30-18:00

**SC3:** Integrated Circuits for Time and Amplitude Measurement of

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Nuclear Radiation Pulses, Sunday, October 23, 09:30-18:00

#### MIC Short Courses:

**SC4:** Statistical Approaches to Tomographic Reconstruction, Sunday, October 23, 09:30-18:00

**SC5:** Kinetic Modeling, Sunday, October 23, 09:30-18:00

**SC6:** Statistical Approaches to Medical Image Analysis, Monday, October 24, 09:30-18:00

**SC7:** Physics and Design of Detectors for SPECT and PET, Monday, October 24, 09:30-18:00

#### WORKSHOPS

The workshop program consists of invited talks with extensive opportunity for questions and discussions. This year, three workshops will be offered:

**Fifth Workshop on xTCA**, Saturday, October 22 and Sunday, October 23, 2011, Organizing Committee: Javier Bermajo, ESSB, Bilbao, Spain, Ray Larsen, SLAC, USA

**Workshop on <sup>3</sup>He Alternatives for Neutron Detection**, Friday, October 28, 2011, 8:30-15:30, Organizing Committee: Ralf Engels, Forschungszentrum Jülich GmbH, Germany, Richard Kouzes, Pacific Northwest National Laboratory, USA

**Fifth International Workshop on the Molecular Radiology of Breast Cancer**, Sunday, October 30, 2011, 8:30-17:30, Organizing Committee: Martin Tornai, Duke University, Durham, NC, USA, Stan Majewski, West Virginia University, WV, USA, Mark Williams, University of Virginia, USA, Marie-Alix Duval, IMNC Laboratory, France, Michael Hofmann, University of Hannover Medical School, Germany, Craig Levin, Stanford University, USA

## SPECIAL EVENTS

### Reception for IEEE Gold Members

The IEEE Nuclear and Plasma Science Society (NPSS) promotes the activities of IEEE GOLD (Graduates of the Last Decade) program. Consequently, a special reception will be held on Thursday, October 27<sup>th</sup> from 18:30 to 20:00 in the Gran Pinedo Room of the Sorolla Hotel. Refreshments will be served and attendance is free but restricted to IEEE GOLD members.

In a comfortable and casual atmosphere, personal contact between the attendees will be easily established: After a short welcome address, the participants will be invited to take refreshment while listening to speakers who look back on their careers in both academia and industry. They will give brief summaries of what they have done to get where they are today. IEEE Fellows will be among these speakers and their comments will focus on aspects of successful career planning. Since these brief statements are meant to set the stage for peer-to-peer discussions among the participants, ample time will be reserved for this activity.

Over the past few years, the GOLD reception at NSS-MIC has proven to foster direct contact between young professionals and colleagues at the peak of their careers. Therefore, if you are an IEEE GOLD member or have joined the Nuclear and Plasma Sciences society in Valencia, you are cordially invited to participate. If you wish to become a GOLD member, please check the IEEE website ([www.ieee.org](http://www.ieee.org)) for more information.

### Women in Engineering

Once again, we are pleased to announce that the meeting will host the popular

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Kathy Gullberg  
Companion Program Cochair



Carolyn Hoffman  
Companion Program Cochair



Christina Sanders  
Registration Chair

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Women in Engineering (WIE) Session on Thursday, October 27<sup>th</sup>, 2011 from 18:00-20:00. This special session, cochaired by Jane Lehr from Sandia National Laboratory and Maria-Jesus Ledesma from the Polytechnic University of Madrid, will address the theme of the contributions made by women to nuclear science and medical imaging. The mission of WIE is to “inspire, engage, encourage and empower IEEE women worldwide. Speakers with outstanding careers in academia and industry will summarize the steps they took to reach where they are today. These women, role models for future generations, will address some key issues related to their personal experiences followed by a general panel discussion with questions from the audience, and refreshments will be provided. We encourage all members, both male and female, of the NSS, MIC and RTSD to attend this session.

### INDUSTRIAL PROGRAM

The IEEE NSS/MIC Industrial Program has been organized by cochaired Ron Keyser and Manuel Lozano and provides the conference attendees with ample opportunities to meet the different exhibitors on Tuesday, Wednesday, and Thursday, 25 to 27 October. The opening hours will follow the hours of the conference. More than 40 companies from all around the world will be present to meet conference attendees and to demonstrate their latest products. These represent state-of-the-art in detectors, pulse-processing instrumentation, imaging, software, and other associated areas. The exhibition area is located in two rooms in the Valencia Conference Center, Multipurpose 1 and 2, located near the main session rooms. The coffee breaks will be in the exhibit rooms on Tuesday, Wednesday, and Thursday. The exhibits will remain open until after the afternoon coffee on Thursday to

provide extra time for the MIC attendees to visit. The three-day exhibition is complemented by a series of seminars and technical presentations on Tuesday, Wednesday, and Thursday that will allow an in-depth exchange of information between attendees and exhibitors on existing products, future developments and needs.

### COMPANION PROGRAM

Located on the Mediterranean coast, Valencia has a unique cultural identity and is not just another Spanish city. It has always considered itself a state within a state. It has held on to its own unique traditions and they are still very much alive in the 21st century. Valencia has a totally stunning and compact old town center, packed with gorgeous buildings, historic sights, squares, gardens, museums and charming little streets. It is a total delight to get lost in it while soaking up the atmosphere. The Historic Center (Old Town) bears the marks of 2000 years in a spectacular mix of Roman, Muslim and Christian civilizations. But it doesn't end there—walking through Valencia you will see ultra-modern, breathtaking, futuristic architecture contrasting with the gothic, baroque and classical. Valencia is also a beach city. While you have many sights and culture to fill your leisure time to the limit, you can always just drop down to the beach and relax under the sun.

The Companion Program provides a daily selection of guided excursions to places of interest both within and outside of the city. All tours will depart from and return to the Companion Program Meeting Area in the Convention Center. This meeting area will be available as a lounge for all registered companions to gather during the conference. Information about the Valencia area will also be available for individuals and families to plan trips and excursions other than those offered in the Companion Program. This exciting program has been

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organized by experienced Companion Program cochaired Kathy Gullberg and Carolyn Hoffman, ably assisted by Antonio Gonzalez, and offers the following tours:

**Tour #1: The Caves of San Jose in Vall d'Uixo/Sagunto-Roman City** Sunday, October 23, 9:00-13:30 and Thursday, October 27, 14:30-18:30

**Tour #2: Valencian Port Sports City and Catamaran Boat Trip on Mediterranean.** Sunday, October 23, 14:30-18:30

**Tour #3: Valencian Port Panoramic/Lladro Tour.** Monday, October 24, 9:00-13:30

**Tour #4: The City of Arts and Sciences with admission to Oceanographic (1/2 day).** Monday, October 24, 14:30-18:30

**Tour #5: Old Town of Valencia** Tuesday, October 25, 9:00-13:30 and Thursday, October 27, 9:00-13:30

**Tour #6: Valencian Palaces** Tuesday, October 25, 14:30-18:30 and Friday, October 28, 14:30-18:30

**Tour #7: Peñíscola—A Legendary Town** Wednesday, October 26, 8:30-18:30 and Saturday, October 29, 8:30-18:30

**Tour #8: Museums: IVAM (Valencian Contemporary Art Institute and San Pio V (Museum of Fine Arts)** Wednesday, October 26, 14:30-18:30

**Tour #9: Lladro Museum and Albufera Nature Reserve with Paella Tasting** Friday, October 28, 9:00-18:00

### HOTEL INFORMATION

There are several hotels in close proximity to the VCC, including the Sercotel Sorolla Palace Hotel and the Melia Valencia Palacio de Congresos Hotel. A number of events will be held in these hotels, including the poster sessions. In addition, there are good hotels within easy walking distance of the VCC that include the Ibis Palacio

de Congresos, the NH Jardines del Turia and the Hotel NH Centre. Other hotels are situated further away, such as the Ayre Astorya, right in the center of town, or the AC Valencia, closer to the port and the beaches. An excellent public transport system will give attendees easy access to the VCC either by bus or subway, wherever they decide to stay. However, since hotel space in Valencia is limited, attendees are advised to book early. For further information on hotel accommodation, please check the website [www.nss-mic.org/2011](http://www.nss-mic.org/2011).

Registration was opened the second week in July and you are advised to register as soon as possible to ensure your place in the short courses, workshops, NSS lunch, MIC dinner, RTSD lunch and tours. The early registration discount will end on October 5<sup>th</sup> after which on-line registration rates will be the same as the on-site registration. For further information on registration, please check the website: [www.nss-mic.org/2011](http://www.nss-mic.org/2011).

### TRAVEL TO VALENCIA, SPAIN

Valencia is easily reached by direct flights from many main cities both in Spain and abroad. There are twelve UK airports that offer regular, scheduled flights to Valencia from five different airlines. Delta Airlines now also offers direct flights from the US to Valencia. Alternatively, the high speed train AVE makes its way from Madrid to Valencia in only 90 min. and is a very convenient option. The drive from Madrid is 355 km (around 4 hours) and from Barcelona 365 km (3h, 30 min.) both by motorway. Further information can be found on the conference website: [www.NSS-MIC.org/2011](http://www.NSS-MIC.org/2011).

*David W. Townsend, General Chair of the 2011 NSS MIC RTSD can be reached at: Singapore Bioimaging Consortium, 11, Biopolis Way, #02-02 Helios, Singapore 138667; Tel: +65 6516 7408; Fax: +65 6516 8433; E-mail: david\_townsend@sbic.a-star.edu.sg.*

### And leases broken

*Some politicians can be bought, but most can only be rented.*

Richard Needham

### But you have to know when

*A fool must now and then be right, by chance.*

William Cowper

### Still can't recognize who she is

*I am always doing that which I cannot do, in order that I may learn to do it.*

Pablo Picasso

## CONFERENCES



### 39<sup>th</sup> IEEE International Conference on Plasma Science



Michael Kong  
General Chair

We extend a cordial invitation to you to attend the 39<sup>th</sup> IEEE International Conference on Plasma Science (ICOPS 2012) to be held in Edinburgh, Scotland, UK, from July 8 to July 12, 2012. The conference venue is the Edinburgh International Conference Centre (EICC). Situated at the heart of Scotland's elegant and historic capital city, the EICC is one of the world's outstanding venues for conferences, conventions and exhibitions.

The conference will have an exciting program that covers:

- Basic Processes in Fully and Partially Ionized Plasmas
- Microwave Generation and Plasma Interactions
- Charged Particle Beams and Sources
- High Energy Density Plasmas and Applications
- Industrial, Commercial and Medical Plasma Applications
- Plasma Diagnostics
- Pulsed Power and Other Plasma Applications

The conference will include plenary sessions by international leaders in the plasma community, including the 2012 IEEE Plasma Science and Applications Award recipient, oral presentations and poster sessions. In addition to the conference, a minicourse on the rapidly growing field of Plasma Healthcare will be offered. As part of this course, a set of comprehensive lectures will be delivered by international experts in this new vibrant field of plasma medicine.

Selected papers will be published in a special issue of the IEEE Nuclear and Plasma Science Society (NPSS) journal *IEEE Transactions on Plasma Science*.

Abstract submission will be available via the conference web site. For more information including registration, abstract submission and social events, please go to <http://icops2012.lboro.ac.uk>.

*Michael Kong, Chair of ICOPS 2012, can be reached at the School of Electronic, Electrical and System Engineering, Loughborough University, Loughborough, Leicestershire LE11-3TU, UK. E-mail: [m.g.kong@lboro.ac.uk](mailto:m.g.kong@lboro.ac.uk)*

### 2012 IEEE NSREC is Planning for Miami, Florida

The 2012 IEEE Nuclear and Space Radiation Effects Conference will be held July 16<sup>th</sup>-20<sup>th</sup>, 2012, in Miami, at the InterContinental Miami Hotel. The conference will feature a Technical Program consisting of nine sessions of contributed papers (both oral and poster) that describe the latest observations and

research results in radiation effects, an up-to-date Short Course offered on July 16<sup>th</sup>, a Radiation Effects Data Workshop, and an Industrial Exhibit.

#### MIAMI, FLORIDA

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## CONFERENCES

InterContinental Miami (<http://www.icmiami.com>). This grand downtown Miami hotel offers richly appointed accommodations, as well as fine dining and a world-class spa. From a dramatic marble exterior to a newly restyled marble lobby with a soaring atrium and massive marble sculpture, the InterContinental Miami specializes in an international flair. Overlooking beautiful Biscayne Bay, this formidable hotel places you in the epicenter of Miami's pulsing nightlife, brilliant white-sand beaches, golf courses, and sizzling culture. Immerse yourself in the height of cosmopolitan style—walk to nearby entertainment complexes, a myriad of restaurants, and the third largest jewelry district in the U.S.; attendees will be only minutes by transportation from South Beach and the Art Deco District, the Port of Miami, Coconut Grove, Coral Gables, and Key Biscayne. The InterContinental Miami site is only 7.5 miles from Miami International Airport (MIA), 25 miles from Fort Lauderdale International Airport (FLL), and offers:

- Multilingual, experienced staff (fluent in more than 11 languages)
- Heated outdoor pool/stylish sundeck, overlooking Biscayne Bay
- New modern fitness center, with cutting-edge equipment/beauty salon
- New full-service spa/steam rooms/sauna/stylish lounges
- Three stylish restaurants and cocktail lounges/gift shop/florist

Supporters of the conference include the Defense Threat Reduction Agency, Sandia National Laboratories, Air Force Research Laboratory, NASA Electronic Parts and Packaging Program, Jet Propulsion Laboratory, Aeroflex, Atmel, Boeing, BAE Systems, Honeywell, Intersil, International Rectifier, Northrop Grumman, and Southwest Research Institute.

#### TECHNICAL PROGRAM

Chaired by Christian Poivey, ESA ESTEC, papers to be presented at this meeting will describe the effects of space, terrestrial, or nuclear radiation on electronic or photonic devices, circuits, sensors, materials and systems, as well as semiconductor processing technology and techniques for producing radiation-tolerant devices and integrated circuits. The conference will be attended by engineers, scientists, and managers who are concerned with radiation effects. International participation in the conference is strongly encouraged.

The conference committee is soliciting papers describing significant new findings in the following or related areas:

- Basic Mechanisms of Radiation Effects in Electronic Materials and Devices
- Radiation Effects on Electronic and Photonic Devices and Circuits
- Space, Atmospheric and Terrestrial Radiation Effects
- Hardness Assurance Technology and Radiation Testing
- New Developments of Interest to the Radiation Effects Community

#### RADIATION EFFECTS DATA WORKSHOP

The Radiation Effects Data Workshop is a forum for papers on radiation effects data on electronic devices and systems. Workshop papers are intended to provide radiation response data to scientists and engineers who use electronic devices in a radiation environment, and for designers of radiation-hardened or radiation-tolerant systems. Papers describing new simulation facilities are also welcomed.

#### PAPER SUBMITTAL

Information on the submission of summaries to the 2012 NSREC for

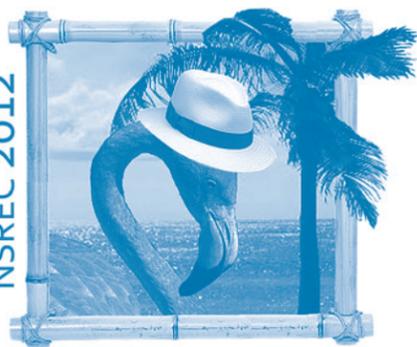
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Dan Fleetwood  
NPSS Radiation Effects Technical Committee Chair



Teresa Farris  
Radiation Effects Vice Chair, Publicity



## CONFERENCES

*(continued from page 11)*

either the Technical Sessions or the Data Workshop can be found at [www.nsrec.com](http://www.nsrec.com). The deadline for submitting summaries is February 3, 2012.

### SHORT COURSE

Attendees will have the opportunity to participate in a one-day Short Course on Monday, July 16. The theme for the 2012 short course is the application of advanced techniques (simulation and testing) to practical problems, and is being organized by Ron Schrimpf, Vanderbilt University. The course will be of interest to both radiation effects specialists and newcomers to the field alike.

### INDUSTRIAL EXHIBIT

An Industrial Exhibit will be included as an integral part of the conference and chaired by Penny Meeker, US Semi. The exhibit will be held on Tuesday and Wednesday. It will include exhibits from 40-55 exhibitors who represent companies or agencies involved in manufacturing electronic devices or systems for applications in space or nuclear environments, modeling and analysis of radiation effects at the device and system level, and radiation testing.

### CONFERENCE COMMITTEE

#### General Chairman

Ken LaBel, NASA GSFC  
[kenneth.a.label@nasa.gov](mailto:kenneth.a.label@nasa.gov)

#### Technical Program

Christian Poivey, ESA ESTEC  
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#### Awards

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#### Industrial Exhibits

Penny Meeker, US Semi  
[Pennym@us-semi.com](mailto:Pennym@us-semi.com)

*For further information contact Dan Fleetwood, Chair of the NPSS Radiation Effects Technical Committee at Vanderbilt University, Department of Electrical Engineering and Computer Science, P.O. Box 92, Station B, Nashville, TN 37235; Phone: +1 615 322-2771; Fax: +1 615 343-6702; E-mail: [Dan.Fleetwood@vanderbilt.edu](mailto:Dan.Fleetwood@vanderbilt.edu). Teresa Farris can be reached at [Teresa.Farris@aeroflex.com](mailto:Teresa.Farris@aeroflex.com)*

### Compulsion

*We must believe in free will, we  
have no choice.*

Isaac Bashevis Singer

### Told you so

*The mark of a good action is that it  
appears inevitable in retrospect.*

Robert Louis Stevenson

## CONFERENCES

# 2011 International Conference on Plasma Science—Final Report

The 38<sup>th</sup> IEEE International Conference on Plasma Science (ICOPS 2011) and 24<sup>th</sup> IEEE Symposium on Fusion Engineering (SOFE 2011) were held in Chicago IL, USA, from June 26 to June 30, 2011.

The conference followed the successful tradition established in past meetings of fostering the close interaction between the plasma science and fusion energy communities and of providing a central gathering place for the international community of leading researchers in plasma applications and fusion energy development. The conference opening was preceded by the ICOPS minicourse on fundamentals of plasma-material interactions, a subject of interest to both plasma science and fusion energy researchers. Conference committees worked hard to facilitate the participation of students, scientists, and engineers from around the world and to make the conference both socially pleasurable and scientifically and technically memorable.

With a total of over 530 accepted abstracts from 38 countries, the ICOPS 2011 conference featured a rich technical program that spanned the gamut of the plasma science topical areas ranging from the fundamental to the applied. Over 80 student papers were presented at the conference. Support from numerous sponsors helped the conference committee with many expenses, including travel grants for 24 students from nine countries.

The Joint Conference was opened by Dr. Ahmed Hassanein (ICOPS General Chair, Purdue University) and Mr. Charles Neumeyer (SOFE General Chair, Princeton University), who provided a general synopsis of the Conference which included technical

sessions, participating countries, keynote speakers, awards, students' representation, and proceedings and publications.

About half of the total abstract submissions were contributed by authors from the USA, with the remaining half contributed by authors from 37 different countries. The meeting's technical sessions included "High Energy Density Plasmas and Applications" (135), "Industrial, Commercial and Medical Plasma" (122), "Basic Processes in Fully and Partially Ionized Plasmas" (91), "Microwave Generation and Plasma Interaction" (78), "Charged Particle Beams and Sources" (42), "Plasma Diagnostics" (40), and "Pulsed Power and Other Plasma Applications" (24). Details regarding the technical program and committee activities can be found on the conference web page at <https://engineering.purdue.edu/ICOPS2011>.

Following the conference opening was the presentation of the first IEEE Marie Sklodowska-Curie Award, which this year was awarded to Dr. Ned Birdsall. The award was presented by Dr. Brendan Godfrey, PSAC Chair, Dr. John Verboncoeur, and Dr. Y. Y. Lau, and was accepted by Ned's wife, Ms. Ginger Birdsall.

The ICOPS 2011 meeting had five plenary talks—three joint with SOFE.

The keynote speaker on Monday, Dr. Donald L. Cook—the Deputy Administrator for Defense Programs at the National Nuclear Security Administration (NNSA)—gave a very interesting talk on "The Importance of High Energy Density Plasma Science to NNSA's Defense Programs Mission."

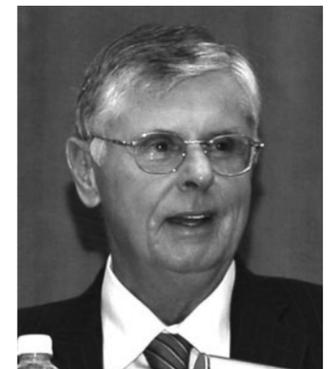
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Ahmed Hassanein  
ICOPS General Chair



Charles Neumeyer  
SOFE General Chair



Donald L. Cook  
Keynote Speaker

## CONFERENCES



Bryan J. Rice  
Plenary Speaker



Jiangang Li  
Plenary Speaker



Jane M. Lehr  
Women in Science and Engineering  
Keynote Speaker

(continued from page 13)

Tuesday morning featured a very interesting joint plenary. Dr. Bryan J. Rice, the Director of Lithography at SEMATECH, presented “EUV Lithography: A Semiconductor Industry Application of Plasma Physics,” and Dr. Jiangang Li, the Director of Institute of Plasma Physics, Chinese Academy of Science (ASIPP), discussed “The Future of Fusion.”

Two other ICOPS plenary talks were given on Wednesday and Thursday by, respectively, Dr. Thomas Katsouleas—“Hanging Ten to the Tenth on a Plasma Wave: the Grand Challenge of Extending the High Energy Frontier,” and Dr. Paul Bernhardt—“Probing the Ionosphere with Rockets and Radio Waves: A Study of Plasma Waves and Instabilities in the Upper Atmosphere.”

A Sunday Reception was held in the conference venue. Two groups of performers provided entertainment at this event, as well as at the Monday Reception for Women in Science and Engineering.

Dr. Jane M. Lehr, a distinguished scientist from Sandia National Laboratories who is chair of the Pulsed Power Technical Committee and Past President of NPSS, was the honored guest and keynote speaker at the Monday evening reception for Women in Science and Engineering. Her talk was devoted to the great scientist and Nobel Laureate Marie Sklodowska-Curie.

NPSS and PSAC awards were presented on Wednesday: Dr. Brendan Godfrey presented the PSAC Award to Dr. Tom Katsouleas; Dr. Steven Gold, the Technical Program Chair, presented the NPSS Early Achievement Award to Dr. Kostyantyn Ilyenko; the PSAC

Outstanding Student in Plasma Science Award was presented by Dr. John Verboncoeur to Dr. Chao Chang.

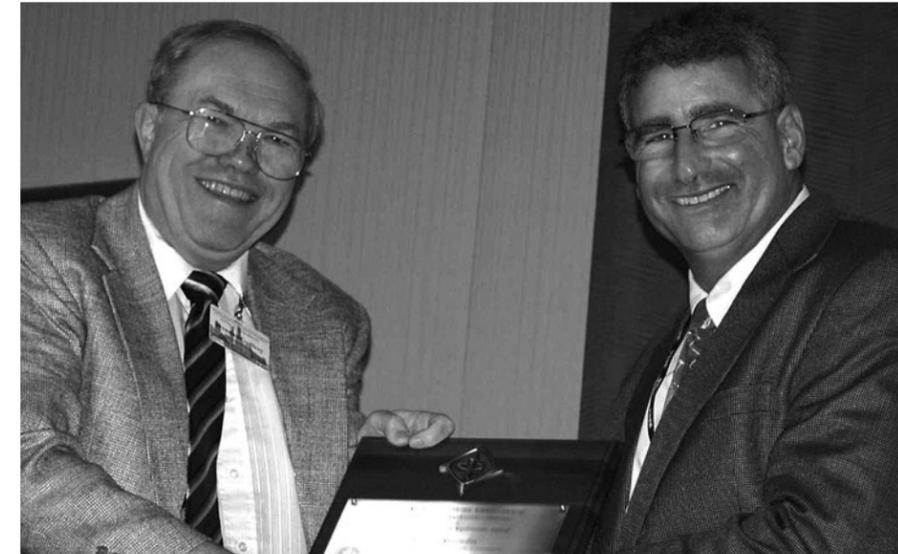
More than 80 student papers were presented at the oral and poster sessions. Two students, B. B. Yang (not in photo) and E. H. Martin, received outstanding paper awards of \$500 and certificates. Two runners-up, E. Nedanovska and K. McKay, received certificates. Phelps Grants allowed two students to attend the minicourse.

A special issue of *IEEE Transactions on Plasma Science* (TPS) will be published to document key technical content presented at ICOPS 2011. The issue will include Plenary and Invited Talks from ICOPS 2011. The Guest Editors are Dr. Ahmed Hassanein, Dr. Steven Gold, and Dr. Sivanandan Harilal. They will oversee production of this special issue together with Dr. Steven Gitomer, TPS Editor-in-Chief.

The conference also offered a rich social program including Tuesday morning’s 5K Fun Run for Endless Energy and Tuesday evening entertainment at the House of Blues with live music and refreshments. The ICOPS banquet was held on the Odyssey Cruise Ship, which featured live music with a night view of Chicago as backdrop and an ending crescendo of the famous Chicago City Fireworks. Photos of conference scientific and social events will be displayed at the conference website, <https://engineering.purdue.edu/ICOPS2011/>

*Dr. Ahmed Hassanein, General Chair of ICOPS 2011, can be reached at Purdue University, Department of Nuclear Engineering, West Lafayette, IN 47907 USA; Phone: +1 765 496-9731; E-mail: Hassanein@purdue.edu.*

## CONFERENCES



Brendan Godfrey, PSAC Chair, presents Tom Katsouleas the PSAC Award.



Steve Gold presents the NPSS Early Achievement Award to Kostyantyn Ilyenko.



Student Paper Award recipients E.H. Martin, E. Nedanovska and K. McKay.

### Solo mio!

*Great souls have wills, feeble souls have wishes.*

Chinese saying

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*People working together utilizing science, expanding the industry, furthering careers*

[www.ieee-npss.org](http://www.ieee-npss.org)



### Option not available

*If I had my life to live over again, I wouldn't.*

Gloria Swanson



Charles Neumeyer opens SOFE Conference.

## 24<sup>th</sup> Symposium on Fusion Engineering—Chicago, Illinois

Fireworks over Lake Michigan, viewed from the terrace at the Adler Planetarium overlooking the Chicago skyline, provided a spectacular finale to the 24<sup>th</sup> Symposium on Fusion Energy (SOFE), held jointly with the 38<sup>th</sup> International Conference on Plasma Science (ICOPS).

Charles Neumeyer of the Princeton Plasma Physics Laboratory (PPPL) served as SOFE General Chair and Ahmed Hassanein of Purdue University the ICOPS General Chair. Brad Nelson (ORNL) served as SOFE Technical Program Chair.

The meeting was well-attended with 222 SOFE and 483 ICOPS participants, amounting to a total of 705 attendees.

In organizing this year's SOFE program, four themes emerged, namely: reflection on history of SOFE and fusion research; review of worldwide status of fusion research; vigorous information exchange at the working level; and envisioning the path forward.

Beginning with history, the conference opening remarks quoted from the archives these prescient words in the Forward of the Proceedings of the first conference, which took place all the way back in 1965: "The vitality of the fusion research program depends on cross-fertilization of ideas and frequent exchanges of information." It is from these beginnings that the SOFE conference was launched. Building on this theme, a collection of vintage fusion videos were played during conference breaks and served to put the present program in perspective, and were quite entertaining as well.

To assess worldwide status it was decided to showcase the current major programs

in plenary sessions at which the entire SOFE audience was present. A total of 18 plenary talks in five plenary sessions were convened, where leading researchers from all of the world's fusion devices - including tokamaks, stellarators, lasers, and pulsed power—presented the state of their art. This unusual format provided an integrated worldview of the fusion program and was favorably received by conference attendees.

Vigorous information exchange occurred during the 16 oral and three poster sessions of the SOFE technical program. In addition, a unique joint SOFE-ICOPS forum was made available for the fusion and plasma science communities to exchange and cross-fertilize ideas at the working level.

Two items on the SOFE program highlighted the path forward. The first was the featured fusion talk during the joint plenary entitled, "The Future of Fusion," by Prof. Jiangang Li, Director of the Institute of Plasma Physics in China (ASIPP) who presented a global overview as well as an in-depth description of the very aggressive fusion program in China. The second was a SOFE Town Hall Meeting led by Dale Meade (PPPL, ret.) entitled "Accelerating the Development of Fusion Power." At this very stimulating panel session the technical issues of fusion development were set aside and the political and strategic issues took center stage. Over beer and chips, the fusion community discussed various means to accelerate the program with semiformal presentations by world leaders in fusion including Ned Sauthoff (Head of U.S. ITER), Ray Fonck (the former head of the U.S. DOE Office of Fusion Energy Science), Jiangang Li (Director of ASIPP), John Sethian (Leader of NRL's KRF Laser Fusion Program) and Mike

Dunne (Program Director for Laser Fusion Energy at LLNL).

At the FTC luncheon held during the conference the three finalists in the competition for best student paper made presentations of their work and the award recipient was W. Xu of University of Illinois at Urbana-Champaign, "Thermoelectric Driven Liquid Lithium Flow for Divertor Heat Handling."

The social events held jointly with ICOPS were very enjoyable including a 5K "Run For Endless Energy" where nearly 100 attendees showed up at 6:00 a.m. for an invigorating run along the shore of Lake Michigan, and a night of food and drink and dancing at the House of Blues.

The SOFE banquet maintained its tradition of providing a special opportunity for fusion researchers to gather in a social setting to establish and renew relationships on a personal level. After introductory remarks by Charles Neumeyer, the SOFE General Chair, Dennis Youchison, the FTC Chair, presented the Best Student Paper Award to W. Xu along with a plaque and \$500 check, and the 2011 Fusion Technology Award to Rem Haange, the Deputy



Dennis Youchison Presents 2011 SOFE Award to Rem Haange.

Director General of ITER, including a plaque with citation and \$3000 check. The Adler Planetarium provided a magnificent setting for the banquet, and after dinner the guests gathered on the terrace for an inspirational display of fireworks over Lake Michigan.

The SOFE Proceedings will be published on CD, and a Special Issue of *IEEE Transactions on Plasma Science* (TPS) will be published including selected papers from SOFE 2011. The Guest Editors are Mohamed Sawan (University of Wisconsin), Alice Ying (UCLA), and Dennis Youchison (SNL). They will be overseeing this special issue together with Dr. Steven Gitomer, TPS Editor-in-Chief. Links to the oral presentations made at the conference, as well as photos taken at the technical sessions and social events, will be provided at the conference web site <https://engineering.purdue.edu/ICOPS2011/>.

Charles Neumeyer, SOFE 2011 General Chair, can be reached at the Princeton Plasma Physics Laboratory, Forrestal Campus, US Rte 1 North at Sayre Drive, P.O. Box 451, Princeton, NJ 08543, USA; Phone: +1 609 243-2159; Fax: +1 609 243-3266; E-mail: [Neumeyer@pppl.gov](mailto:Neumeyer@pppl.gov).



Delegates enjoy Adler Planetarium Terrace.

### Not a chance!

*It is not bigotry to be certain that we are right but it is bigotry not to be able to imagine how we might possibly have gone wrong.*

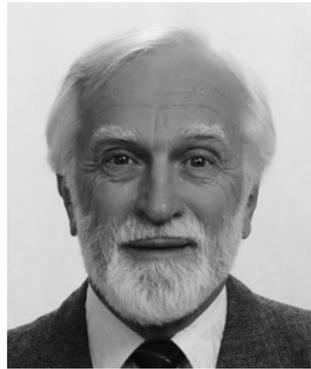
G. K. Chesterton

### Beyond understanding

*Seek not to understand so that you may believe; but believe in order that you may understand.*

St. Augustine

## Particle Accelerator Conference PAC'11



Stan Schriber  
Chair, PAST TC



Thomas Roser  
PAC'11 Chair



Vladimir Litvinenko  
Program Chair

Brookhaven National Laboratory hosted the 2011 Particle Accelerator Conference (PAC'11) from March 28 to April 1, 2011 at the New York Marriott Marquis Hotel located in midtown Manhattan. This was the 24th in the series of Particle Accelerator Conferences that started in 1965 in Washington, D.C., and is the first of the newly formed regional North American PACs. These will alternate with the International PAC when it is located in North America on a three-year cycle.

PAC'11 was a great success. Chaired by Thomas Roser, with Vladimir Litvinenko as Science Program Committee Chair and Michael Sivertz as Local Organization Committee Chair, it attracted 1040 accelerator scientists, engineers, students, including 162 industrial exhibitors. About 16% of the participants came from Europe and 4% from Asia. The event also continued the traditional strong emphasis on all aspects of accelerator science and technology by providing the opportunity for a large number of oral and poster presentations.

The conference opened on a sober note as Roser and Litvinenko expressed deep sympathy to all victims of the March 11<sup>th</sup> earthquake and tsunami in Japan and wished all Japanese a fast and full recovery to normality.

Three plenary talks brought to light the role and the future promise of accelerators for fundamental scientific discoveries in high-energy physics, nuclear physics, and photon sciences. Industrial and medical applications of accelerators were given a prime spot in the program. Speakers covered a wide range of benefits that accelerators bring to society: from homeland security to advanced cancer treatment facilities.

Big colliders—the Large Hadron Collider (LHC) at CERN, Switzerland;

the Tevatron at Fermi National Accelerator Laboratory; and RHIC—had their traditional spotlight in the program. The audience was excited to learn about steady LHC progress towards its luminosity goals, the top-notch performance at the Tevatron, and new milestones in RHIC's unique polarized proton program. During invited talks about the electron-positron collider at KEK, in Tsukuba, Japan, and the J-PARC facility in Tokai, Japan, the audience learned first-hand of the devastation to these facilities from the earthquake.

The success and plans of the X-ray Free Electron Laser (FEL) in SLAC National Accelerator Laboratory and the promise of the next cohort of light sources—at NSLS II and MAX-IV in Sweden—dominated the “photon” hemisphere of the conference. Future projects planning to utilize unique features of energy recovery linacs, or linear accelerators, were also presented. They ranged from plans for a traditional incoherent light source at Cornell University and a soft-X-ray FEL source in Thomas Jefferson National Accelerator Facility (JLab) to an X-ray FEL oscillator suitable for eRHIC.

Exciting topics covered in the advanced accelerator section included plasma accelerators that are now demonstrating dramatic progress both in the energy (reaching tens of billions of electron volts in a less than a meter) and the quality of the generated beams. Progress in novel methods of cooling muon and hadron beams was another highlight.

On the engineering side, two dominant themes were progress with superconducting radio frequency accelerators and also with synchronizing accelerator and laser components at the femtosecond time scale. All future accelerator facilities—from the Facility

for Rare Isotope Beams (FRIB) at Michigan State University to Project-X, a proposed high intensity proton accelerator complex at Fermilab—were presented at the conference. The wealth and diversity of accelerator research was covered in 147 talks and nearly one thousand posters.

As a new addition to the Particle Accelerator Conference, four excellent one-hour tutorials were added as introductions for junior members of the accelerator science community and, in fact, anyone who wanted to broaden his or her knowledge. The tutorials were very popular, filling the lecture hall at 8:30 AM each day.

Following longstanding tradition, PAC'11 held the Louis Costrell Honorary Awards Session, where winners of the APS-DPB outstanding doctoral thesis award in beam physics, and the IEEE-NPSS Particle Accelerator Science and Technology award and doctoral student award and new fellows were presented. The most prestigious award of the ceremony—the APS Robert R. Wilson prize for Achievements in the Physics of Particle Accelerators—was awarded to Yaroslav Derbenev from JLab.

On the evening before the official start of the conference, 90 graduate students participated in a student poster contest. The quality of the posters was so high that the number of the \$500 awards for best posters needed to be increased from two to three this year. PAC'11 offered student travel grants, sponsored by APS DPB and BNL, to 47 student participants.

On Wednesday evening a reception was held for the Women in Engineering and Science, sponsored by IEEE-NPSS, the BNL Diversity Office and Agilent Technologies. The event, attended by about 300 conference participants, was a great success.

One of the many achievements of the conference was the work of the editorial

team which, for the first time, processed and published PAC'11 pre-proceedings online before the closing bell of the conference.

During the conference, Derek Lowenstein, BNL, organized a very successful High School Teachers Day, sponsored by APS DPB. The event was open free-of-charge to high school physics teachers and 31 teachers from the area attended for a day of instruction and hands-on experiments.

Following the conference, approximately 100 conference participants joined a bus tour to BNL where they visited the new electron beam ion source (EBIS) preinjector and the NSLS-II project, as well as the Accelerator Test Facility and the Energy Recovery Linac test facility.

For more on PAC'11, including the online proceedings and conference photos: see <http://www.bnl.gov/pac11/>.

### Organizing Committee

Conference Chair: Thomas Roser

Local Organizing Committee Chair: Michael Sivertz

Scientific Program Committee Chair: Vladimir Litvinenko

Editor: Todd Satogata

Coeditor: Kevin Brown

Conference Secretary: Anna Petway

Industrial Exhibit Coordinator: Doreen Cantelmo

Treasurer: Susan Pankowski

*Thomas Roser, Chair of PAC'11, can be reached at Brookhaven National Laboratory, MS911B, Upton, NY 11973-5000; Phone: +1 631 344-7084; Fax: +1 631 344-5954; E-mail: roser@bnl.gov.*

### PULSED POWER CONFERENCE

News of the Pulsed Power Conference can be found under the Pulsed Power Technical Committee Report, p. 24.



Michael Sivertz  
PAC'11 Local Organizing Committee Chair



Susan Pankowski  
PAC'11 Treasurer



Anna Petway  
Conference Secretary



Albe Larsen  
NPSS Secretary and Newsletter Editor

## Secretary's Report

The IEEE NPSS AdCom held its second meeting of 2011 in Las Vegas, NV at the JW Marriott Resort following the very successful 2011 NSREC. See the December Newsletter for a complete report on NSREC.

Bob Reinovsky, our President, reported extensively on the June TAB meeting series. Bob does not have a report in this issue, but expect a report in December. Bob noted that IEEE is considered apolitical, which is viewed as a strength. It is also one of the world leaders in developing and maintaining standards. Here we both serve industry and have a lot of input and support from industry. In the past, standards were sponsored by a society, and NPSS has quite a few standards to its credit. Now there is a new Standards Board and the return from standards will stay with that board. IEEE is also a major publisher, with 146 periodical publication titles, including 110 journals and 36 magazines. There is also an increase in periodical publications at a rate of ~3.1 new titles a year.

There are changes related to publications. Authors are no longer permitted to post final published versions of their papers on their own or their company's web site. They can only post the accepted version before final IEEE editing and without IEEE data included on the pages. For Open Access that will allow full posting of final, published papers and free downloads from Xplore, there is a \$3000 per paper charge to recoup lost revenue from using Open Access. There are also discussions under way in TAB of new membership paradigms.

Peter Clout, Division IV Director, reported on the Sections Congress that will be held in San Francisco from August 19<sup>th</sup>-21<sup>st</sup>. We will be well represented and our work will

be presented in oral papers about the Distinguished Lecturer program (Steve Gold) and the Haiti Project (see pp 38-40 and the June issue) as well as at a poster for the Division with a slot for NPSS that will be attended by Vernon Price, Steve Gold and Bill Moses.

All financial and technical activities are going well.

### ADCOM ACTIONS

- It was moved and passed by voice vote that the radiation effects committee be permitted to make and distribute a copy-protected electronic media (DVD or USB) collection that includes all NSREC publications (TNS and Radiation Effects Data Workshop) through Dec. 2012 to all technical program attendees of NSREC 2013 at the conference.
- It was moved and passed by voice vote that IEEE NPSS support the creation of a fund within the IEEE Foundation's New Initiatives Fund that will support the work of the IEEE Power and Energy Society's Community Solutions Initiative through which the Haiti program is sponsored.

The final AdCom meeting of 2011, our Annual meeting, will be held in Valencia, Spain on October 29<sup>th</sup> following the NSS/MIC/RTSD meeting. If you have never attended an AdCom meeting and are curious about our Society's governance, ask to sit in. The meetings are open.

*Albe Larsen, NPSS Secretary and Newsletter Editor, can be reached at SLAC National Accelerator Laboratory, MS17, 2575 Sand Hill Road, Menlo Park, CA 94025; Phone +1 650 926-2748; Fax: +1 650 926-3570; E-mail: amlarsen@slac.stanford.edu.*

## Computer Applications in Nuclear and Plasma Sciences

Preparations for the next Real Time Conference RT12 are now fully underway. RT12 will take place from June 9<sup>th</sup> to 15<sup>th</sup>, 2012, in the Shattuck Hotel in downtown Berkeley, California. The local chair is Sergio Zimmermann (LBNL), the program chair is Réjean Fontaine (Univ. of Sherbrooke, Canada). Short courses are once again planned to cover some hot topics such as graphics card programming and fast waveform digitizing. Excursions to San Francisco and possibly to Napa Valley will be offered. The downtown location was chosen because of the close proximity to public transportation, and because there are many different hotels of all categories nearby. The CANPS committee continues to meet regularly via teleconferencing to develop program details, finalize the short courses and find nominees for our CANPS

award, which will be given during the conference. The conference will have a vendor exhibit, and our traditional "mini-oral" session, giving poster presenters the opportunity to highlight their posters in a three-minute oral presentation.

In 2014, the Real Time conference will go to Japan, probably to the Kyoto region. This was decided prior to the earthquake in Japan, and we now feel even more strongly that all possible support should be given to the country. RT14 will give visitors the opportunity to visit a very nice region of Japan and will support our Japanese colleagues.

*Stefan Ritt, chair of the Computer Applications in Nuclear and Plasma Science Technical Committee, can be reached at the Paul Scherrer Institute, CH-5232 Villigen, Switzerland. Phone +41 56 310 3728; E-mail: stefan.ritt@psi.ch.*



Stefan Ritt  
CANPS Chair

## Nuclear Medical and Imaging Sciences

Greetings! The 2011 IEEE NPSS MIC meeting is fast approaching. This promises to be a great meeting with many of us looking forward to visiting Valencia. Valencia is Spain's third largest city, situated on the eastern Mediterranean coast, with many cultural and recreational attractions. The meeting will be held in the Valencia Conference Center with the nearby Sorolla and Melia as the main conference hotels.

David Townsend is the NSS/MIC/RTSD General Chair, Alberto Del Guerra serves as MIC Chair and Juan José Vaquero serves as MIC Deputy Chair. An outstanding scientific program is being organized. This year there were 764 abstracts submitted and 683 were

accepted for presentation. There will be 126 MIC oral talks presented during 16 sessions and two joint NSS-MIC and MIC-RTSD sessions. This year there will be parallel MIC oral sessions during the conference. In addition to the oral sessions, there will be 554 MIC posters presented during five sessions at the conference. Two plenary sessions are planned with three invited speakers; these are outlined on p. 5 in the NSS/MIC/RTSD article. During the second plenary session we will also honor this year's Edward J Hoffman Medical Imaging Scientist and Bruce Hasegawa Young Investigator Medical Imaging

*(continued on page 22)*



Robert Miyaoka  
NMIS Technical Committee Chair

### But less pleasant

*It is often safer to be in chains rather than to be free.*

Franz Kafka

## TECHNICAL COMMITTEES

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Science award winners and recognize Dr. Harrison Barrett as the recipient of the 2011 IEEE Medal of Innovation.

In addition to the main scientific program, refresher courses will be offered in the mornings from Wednesday through Saturday before the main scientific sessions. The topics will be the European patent system, the basics of Radiotherapy, the basics of CT and the basics of PET/MRI imaging. The scientific program will be capped off with the 5<sup>th</sup> *International Workshop on the Molecular Radiology of Breast Cancer* which will take place on the Sunday after the closing of the MIC. Finally, Luis Fernandez-Galiano (Architect) will speak on *The laws of biology and the Spanish architecture* at this year's MIC banquet. We look forward to seeing many of our members at this year's meeting.

If you have ever wondered how you might become more involved in making the MIC meeting happen, one thing that you can do is become a member of the Nuclear Medical and Imaging Science Council (NMISC). The NMISC has oversight of the Medical Imaging Conference component of the annual IEEE NPSS NSS/MIC. This includes voting on site selection, approval of the MIC chair, and promotion of activities useful to all IEEE NPSS members who are interested in medical imaging. Each year five new individuals are elected to serve as committee members for the NMISC. Each member serves a three-year term. Self-nomination is accepted and encouraged. If you are interested in serving on the NMISC, or wish to nominate someone, with their consent, please contact George Kontaxakis, NMISC Secretary and Chair of the Nominations Subcommittee (E-mail: [gkont@die.upm.es](mailto:gkont@die.upm.es)).

Now on to news of upcoming MIC meetings: In 2012, the IEEE NSS/MIC meeting will be held in Anaheim, California at the Disneyland Hotel. Tom Lewellen is the General Chair, Vesna Sossi will serve as MIC Chair and Alex Converse will serve as MIC Deputy Chair. Along with having excellent facilities to host the meeting, the Disneyland Hotel will be undergoing a major renovation that will be complete for the 2012 meeting. Plans are progressing well. In 2013, the IEEE NSS/MIC meeting will be held in Asia for the first time. Host city for the meeting will be Seoul, Korea. Hee-Joung Kim is the General Chair for the meeting, Jae Sung Lee is the MIC Chair and Craig Levin is the MIC Deputy Chair. The meeting will be held at the Coex Convention Center within the Coex Mall. This site will provide us with plenty of space to host the meeting as well as offering many tourism opportunities. The 2013 organizing committee is working actively and plans are progressing well. In 2014, the IEEE NSS/MIC meeting will be held in Seattle, Washington. Tony Laviertes is the General Chair for the meeting. The meeting will be held in the Washington State Convention Center located in downtown Seattle. There are hotels for attendees to select among with a broad range of prices, all within walking distance of the convention center. Plans are underway for site selection for 2015. A proposal has been submitted for Strasbourg, France and a preliminary proposal has been submitted for Liverpool, England. In addition, we anticipate a proposal from a city in the eastern part of the USA.

Robert Miyaoka can be reached at University of Washington, Department of Radiology, Box 357987, Seattle, WA, 98195-7987 USA; Phone: +1 206-543-2084; Fax: +1 206-543-8356; E-mail: [rmiyaoka@u.washington.edu](mailto:rmiyaoka@u.washington.edu).

### Bargaining point

*Man will never be enslaved by machinery if the man tending the machine be paid enough.*

Karel Capek

### Private Lives

*It is a public scandal that offends: to sin in secret is no sin at all.*

Molière

## TECHNICAL COMMITTEES

### Pulsed Power Science and Technology

The Eighteenth International Pulsed Power Conference was held June 19-23, 2012 in Chicago, Illinois. We continued in the tradition of past conferences by offering an outstanding Technical Program and a large number of exhibitors. Attendees came from 22 countries with over half the papers coming from outside the United States. Professor Randy Curry, from the University of Missouri-Columbia, was the Conference Chair and Dr. Bryan Oliver, Sandia National Laboratories was the Technical Program Chair.

This year, the Pulsed Power Conference had a Student Paper Contest. This is a student award program distinct from the Arthur H. Guenther Pulsed Power Student Award and administered at the conference. Students were required to both enter the contest and solicit a letter of recommendation from their university advisor. The purpose of these awards is to encourage both outstanding student contributions and greater student participation as the principal or sole author of papers as well as to acknowledge the importance of student contributions to the field. The six Finalists selected from the complete entries were:

- Michael Parker, *A High-Power, High-Energy Pulsed Power Generator for High-Impedance Loads*, Loughborough University, Loughborough, United Kingdom
- Mark Wilson, *Weibull Statistical Analysis of Impulse-Driven Surface Breakdown Data*, University of Strathclyde, Glasgow, United Kingdom
- Sung-Roc Jang, *A Comparative Investigation of IGBT and MOSFET Devices for Fast Rising Time and High Repetition Rate Pulse Generation*, University of Science & Technology, Daejeon, South Korea

- Yulia Isakova, *Infrared Imaging Diagnostics for Parameters of Powerful Ion Beams Formed by a Diode in a Double-Pulse Mode*, Tomsk Polytechnic University, Tomsk, Russian Federation

- Jason Sanders, *Design and Optimization Techniques for the Generation of Intense, Ultrafast Pulses with Nonlinear Transmission Lines*, University of Southern California, Los Angeles, CA, United States

- Kevin O'Conner, *High Dielectric Constant Composites for High Power Antennas*, University of Missouri, Columbia, MO, United States

Jason Sanders and Sung-Roc Jang were awarded the top honors. Congratulations to all!

The PPST is soliciting nominations for the three-year committee term starting 1 Jan. 2012. The nomination form can be obtained at the Technical Committee website: <http://ewh.ieee.org/soc/nps/tc-ppst.html>

In other news concerning the Pulsed Power community, it has just been announced that Academician Gennady A. Mesyats has been awarded the 2012 IEEE Marie Sklodowska-Curie Award! Nominated by Edl Schamiloglu on behalf of the Pulsed Power Science and Technology Committee, the citation reads *For founding the field of nanosecond pulsed power and for seminal contributions to the physics of vacuum breakdown at high power levels*. An extended write-up will be forthcoming in a future newsletter. Congratulations to Academician Mesyats!

A one-day Pulsed Power Symposium will be held at Loughborough University in the United Kingdom on September 20, 2011. This will be the only event

(continued on page 24)



Jane Lehr  
Pulsed Power Technical  
Committee Chair

### No fool, he

*Any fool can tell the truth, but it requires a man of some sense to know how to lie well.*

Samuel Butler

## TECHNICAL COMMITTEES

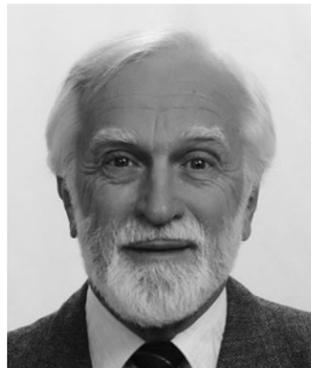
*(continued from page 23)*

on this topic in the UK this year, and will bring together the leading names in the UK Pulsed Power Physics and Technology community to highlight recent advances throughout the broad range of applications of pulsed power. The event will be cochaired by Dr. B. M. Novac (b.m.novac@lboro.ac.uk) and Prof. I. R. Smith (i.r.smith@lboro.ac.uk) of the Loughborough Pulsed Power Group, who may be contacted for further information. Although not affiliated with the IEEE NPSS Pulsed Power Science and Technology Committee, we are happy to assist in publicizing this

fine event organized by our European colleagues!

Lastly, the *IEEE Transactions on Plasma Science* is having a Special Issue on Pulsed Power Science and Technology to be published in December 2012. Relevant manuscripts are being solicited. Papers extended from those submitted to the Pulsed Power Conference Proceedings as well as original manuscripts will be considered for publication.

*Jane Lehr, Chair of the Pulsed Power Science and Technology Committee, can be reached at Sandia National Laboratories, P.O. Box 5800, MS1193, Albuquerque, NM 87185 USA; Phone: +1 5050 844-8554; E-mail: jmlehr@sandia.gov.*



Stan Schriber  
Particle Accelerator Science  
and Technology Chair

## Particle Accelerator Science and Technology News

The June Newsletter contains considerable information on the organization of the PAST TC and of their responsibilities, so that information won't be repeated here. That issue also discusses the introduction of the IPAC conferences and their relationship to our PAC conferences, so refer to that issue for a refresher. We focus here on the upcoming PAC and IPAC conferences.

### IPAC'12

IPAC'12, the third in the new international series of conferences and the 25<sup>th</sup> in xPAC conferences in North America, is hosted by LSU and will be held May 20<sup>th</sup>–25<sup>th</sup> at the Ernest N. Morial Convention Center in New Orleans, Louisiana. Budget is estimated for an attendance of 1200.

The Science Program Committee (SPC), under the Chairmanship of Jeff Corbett (SLAC), has been organized with approximately 20 members; half are from the Americas and half from Europe and Asia having been nominated by

their respective Organizing Committee delegations. The SPC has arranged a 90 member Scientific Advisory Board, again with appropriate International representation. The SPC selected a program of invited talks at their first meeting held in New Orleans, June 2011. The deadline for submission of abstracts is December 7, and the contributed orals will be selected at a meeting of the SPC to be held in California, January 2012.

In consultation with the IPAC and PAC committees, the main subject classifications have been reviewed and slightly refined to reflect current trends within the accelerator field. The program will consist of plenary sessions on Monday and Friday mornings. The remaining morning sessions will be structured in two parallel sessions for invited talks but each afternoon will be for contributed orals in three parallel sessions. Although each poster session will be for a half day, posters may remain mounted all day to give attendees full opportunity

## TECHNICAL COMMITTEES

to see them. A student poster session will be held Sunday afternoon. A "Lou Costrell" awards ceremony will be held on Thursday afternoon, when prizes will be given for IEEE, APS, USPAS awards and for the best student posters. One afternoon session will be directed towards industry.

As an experiment, approximately 15 posters per session will be selected (by the SPC) for electronic presentation on large flat screen displays. These "ePosters" are intended to display information such as video clips, animated charts and rotating 3D models, for example, that are not possible with traditional posters.

A local organizing committee, mainly from the LSU Center for Advanced Microstructures and Devices (CAMD) but including advisors from large accelerator laboratories, is now actively engaged in the detailed arrangements for the conference. A Chairman's invited reception will be held Monday evening. A conference reception with cash bar will be held Sunday evening and a reception hosted by the exhibitors will be held Tuesday evening. The conference banquet will be held at the convention center Thursday evening. A reception and seminar featuring the topic "Women in Engineering and Science" will take place on the Wednesday evening. Science teachers from the local area will be invited to a seminar on Wednesday on current science topics related to accelerators. A companions program will be arranged to take advantage of the Louisiana tourist opportunities. A scientific tour on the Saturday following the conference will be to the LIGO gravitational wave observatory in nearby Hammond.

An eye-catching design for the conference poster, handbook, etc. has been produced by holding a competition amongst the Graphic Design class at Louisiana State University. A basic website giving conference details has

been established, [www.ipac12.org](http://www.ipac12.org), and will be expanded over the ensuing months as data becomes confirmed.

### Organizing Committee

Conference Chair: Vic Suller (CAMD, LSU)

Scientific Program Chair: Jeff Corbett (SSRL, SLAC)

LOC Chair: Kevin Morris (CAMD, LSU)

### PAC'13

The Second North American Particle Accelerator Conference (PAC13) will be organized jointly by the Lawrence Berkeley National Laboratory (LBNL) and the SLAC National Accelerator Laboratory (SLAC). The conference will take place September 29–October 4, 2013 in the Pasadena Convention Center. Contracts with the Convention Center and hotels (Pasadena Inn, Sheraton and Hilton) have been signed. Government rates have been secured for all conference hotels. Projected attendance is 750. The conference program will be geared toward early career scientists, engineers and students but will retain the historic international flavor with invited speakers from around the world. We plan to offer a number of tutorials on the day before the conference and envision providing limited support to encourage attendance of minorities and students. A contract is being negotiated with Centennial Conferences for management of the conference and the budget is under development.

### Organizing Committee

Conference Chair: Steve Gourlay, LBNL

Scientific Program Chair: Alex Chao, SLAC

Local Organizing Committee Chair: Chan Joshi, UCLA

Conference Secretary: "Sam" Vanecsek, LBNL

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### Hard truth

*Difficulty is the excuse history never accepts.*

Edward R. Murrow

### Hear ye! Hear ye!

*Literature is news that stays news.*

Ezra Pound

## TECHNICAL COMMITTEES

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Proceedings Editor: Joe Chew, LBNL

Conference Management: Paula Pair, Centennial Conferences

Scientific Secretariat: Todd Satogata, Christine Petit-Jean Genaz

Treasurer: Glenna Rogers

### IPAC'15

This conference hosted May 3–8, 2015 by Thomas Jefferson National Accelerator Facility (TJNAF) and Fermi National Accelerator Laboratory (FNAL) is of historic significance because this will be the 50<sup>th</sup> anniversary of the PAC conferences which began in 1965. Contracts have been signed with six major hotels in downtown Richmond, Virginia, all near the Greater Richmond Convention Center, where the conference will be held. The City of Richmond has offered to provide transportation between the hotels and the Convention Center at little to no charge.

With anticipated attendance of about 1,250, the number of rooms blocked at the six hotels is adequate—Marriott (skywalk to convention center), Hilton Garden Inn, Crowne Plaza Richmond Downtown, Double Tree Hotel, Omni Richmond, and the historic Jefferson Hotel, where the Chairman's Reception will be held.

Excellent space is available for exhibits, posters and oral sessions. Ten ancillary rooms are available for small meetings.

### Organizing Committee

Conference Chair: Andrew Hutton, JLab

Scientific Program Chair: Stuart Henderson, FNAL

Local Organizing Committee Chair: Fulvia Pilat, JLab

Conference Editor: Todd Satogata, JLab

Conference Secretary: Erin Smith, JLab

Conference Coordinator: Mary Campbell, JLab

Treasurer: Joe Scarcello, JLab

### PAC'16

The third regional North American Particle Accelerator Conference (PAC'16) will be cohosted by Argonne National Laboratory, together with Fermi National Accelerator Laboratory and Michigan State University. The preferred venue is the Sheraton Chicago Hotel and Towers from October 9 to October 14, 2016. Conference details are being looked into by the Chair, Marion White of ANL. Projected attendance is 800. The program will be geared toward early-career scientists, engineers, technologists, and students. Short courses on the weekend before the conference, in collaboration with USPAS, and morning-session tutorials are foreseen. Also foreseen, a "Women in Engineering and Science" reception, and a short workshop for science teachers from the local area. A program for companions will be arranged. Scientific tours to Argonne or Fermilab will be held on the Saturday after the conference. Approval and signoff of the hotel contract by IEEE Conference Services, as well as assignment of key conference personnel, are anticipated in the near future.

### IPAC'18

The ninth International Particle Accelerator Conference (IPAC'18) will be hosted by TRIUMF in Vancouver, BC, Canada. It will take place in the spring of 2018 in downtown Vancouver, BC with the Hyatt Regency Vancouver hotel and the Vancouver Convention Center as possible venues. Lia Merminga, of TRIUMF, is IPAC'18 chair. Projected attendance is 1,250 and the conference program will be geared toward scientists, engineers, technologists and students

Stan Schriber can be reached at his home in Eagle, ID 83616 USA; Phone: +1-208-631-8208, E-mail: schriber@nscl.msu.edu

### The grim teacher

*Time is a great teacher, but unfortunately it kills all its pupils.*

Hector Berlioz

### If the shoe fits...

*It is a secret in the Oxford sense; you may tell it to only one person at a time.*

Lord Franks

## FUNCTIONAL COMMITTEES

## Awards

*The IEEE Awards Program provides peer recognition to technical professionals whose exceptional achievement and outstanding contributions have made a lasting impact on technology, society and the engineering profession.*

## Fusion Technology Committee

Michael Ulrickson, Principal Member of the Technical Staff at Sandia National Laboratories, Albuquerque, NM, was awarded the 2010 IEEE/NPSS Fusion Technology Award.

Ulrickson received his Ph.D. from Rutgers University in 1975. He worked at Princeton Plasma Physics Laboratory as a Research Physicist from 1975–1993. He then joined Sandia National Laboratories in 1993 and managed the Fusion Technology Dept. until 2003. In 2003, he was named Project Lead for the ITER blanket/shield program administered by the US ITER Project Office. His research interests include plasma physics, fusion engineering, and plasma-material interactions. He received the Certificate of Merit from the US ITER Home Team in 1995 and the Fusion Power Associates Excellence in Fusion Engineering Award in 1988. He is also a member of APS and ANS.

Ulrickson served as a member of the Fusion Technology Standing Committee between 1993 and 2009. In 1999 he was the General Chair of the 18<sup>th</sup> IEEE/NPSS Symposium on Fusion Engineering, and in 2007, the Technical Program chair for the 22<sup>nd</sup> IEEE/NPSS Symposium on Fusion Engineering. He was a member of the National Research Council Committee on Burning Plasma Assessment in 2003 and 2004.

**Citation:** *For his outstanding and innovative technical leadership in the development of plasma facing components for fusion energy, for his leadership contributions to the ITER Blanket*

**Integrated Product Team and the US ITER Domestic Agency, and for his many years of service to the fusion energy sciences community.**

Michael Ulrickson can be reached at Sandia National Laboratories, MS1129, P.O. Box 5800, Albuquerque, NM 87185-1129; Phone: +1 505 845-3020; Fax: +1 505 845-3130; E-mail: ulrickson@sandia.gov

Remmelt Haange, the new Principal Deputy Director of the ITER Project and formerly of the Max-Planck-Institute for Plasma Physics, was awarded the 2011 IEEE/NPSS Fusion Technology Award.

Haange received his Ph.D. from Rheinisch-Westfälische Technische Hochschule (RWTH) in 1973. He worked in numerous capacities at the Joint European Torus from 1979–1993. He then became a division head at the ITER Naka Joint Work Site and eventually head of the site in 2003. He was named Technical Director of the W7-X Stellarator Project in 2005 where he played a decisive role in bringing the project back on track.

**Citation:** *For his transformational technical leadership of international fusion experiments and lifetime dedication to furthering the development of fusion energy.*

Remmelt Haange can be reached at ITER Headquarters, Route de Vinon-sur-Verdon, 13115, St. Paul-lez-Durance, France; Phone: +33 4 42 17 67 02; E-mail: Doris.Spiegel@iter.org.



Michael Ulrickson  
2010 Fusion Technology  
Award recipient



Remmelt Haange  
2011 Fusion Technology  
Award recipient

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## FUNCTIONAL COMMITTEES



Wenyu Xu  
SOFE Student Award

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### WENYU XU RECEIVES SOFE STUDENT AWARD

Wenyu Xu received his B.S. in Modern Physics from University of Science and Technology of China in 2008. Since 2006, Wenyu's work has been focused on nuclear fusion and plasma physics. He investigated the relation between different wall conditioning methods and plasma disruptions during his internship in HT-7 tokamak during the summer of 2007 and 2008. He is currently working towards his Ph.D. degree in the Department of Nuclear,

Plasma and Radiological Engineering (NPRES) at University of Illinois at Urbana-Champaign (UIUC). Since 2008, he has been working on the Solid/Liquid Lithium Divertor Experiment (SLiDE) with focus on thermoelectric-magnetohydrodynamic (TEMHD) driven liquid lithium flow in the Center for Plasma Material Interactions (CPMI) under Professor David Ruzic. Currently, he works on Lithium/Metal Infused Trenches (LiMIT) concept aiming for the application of TEMHD driven liquid lithium flow as the liquid metal divertor in fusion devices.

## Pulsed Power Science and Technology

*At the biennial IEEE Pulsed Power Conference, two professional awards and two student awards are presented. The Peter Haas Award is given "for outstanding contributions to pulsed power technology in developing programs of research, education and information exchange." The Erwin Marx Award is given "for outstanding achievements in pulsed power technology over an extended period of time." The student awards, named for Arthur H. Guenther, are given "in recognition of outstanding contributions as a student in pulsed power engineering, science or technology."*

### ROGER WHITE RECEIVES THE PETER HAAS AWARD

Roger White was born in January 1939 in Llwynypia, in the mining valleys of South Wales. At 16, he entered a five-year Student Apprenticeship program at the Atomic Energy Research Establishment (AERE) at Harwell, near Oxford, England. There he trained as an electrical engineer while attending Oxford Polytechnic. He was awarded Higher National Certificates in both Electrical and Mechanical Engineering.

AERE employed him in the Plasma Physics Division after he completed his apprenticeship. For AERE he worked on high voltage switching, first at Harwell and at Culham when it opened in 1962.

In 1964, Roger emigrated to Canada and spent a year working on satellite systems for RCA in Montreal. He then

returned to high voltage engineering at Ion Physics in Boston. There he was first introduced to nuclear weapons effects simulators in the form of flash X-ray and electromagnetic pulse (EMP) systems.

Roger joined Maxwell Laboratories in San Diego, California, in 1967, and began a 35-year relationship with that company. Roger worked with many of the original thinkers in the field of Pulsed Power. The long list includes Alan Kolb, Richard Fitch, Richard Miller, John Shannon, John Harrison, Bob Hunter and Jorg Jansen. He made contributions to the Blackjack series of simulators and EMP generators for the US Department of Defense and foreign governments. This led to field installation and commissioning of such systems as Casino at NSWC White Oak, Maryland, Empress II at Little Creek, Virginia,

## FUNCTIONAL COMMITTEES

and systems in France at CEA and CEG sites, and in Germany.

At the same time, Roger managed up to 40 people in the Maxwell Engineering Department. This matrix organization prompted Roger to market and manage programs within the group, as well as to support the engineering needs of the entire company. His last major assignment, before Maxwell sold its pulsed power systems business, was to manage its group in Albuquerque and win a large contract for the Air Force Research Laboratory.

Roger chaired the 1991 IEEE Pulse Power Conference and was cochairman of the 1994 BEAMS conference, both in San Diego. He has served on the IEEE Pulse Power committee for twenty years.

Since the purchase by Titan Corporation in 2001 and Titan's purchase by L-3 Communications in 2005, Roger has directed the operation of the L-3 Pulse Sciences group in San Diego, originally Maxwell's pulsed power group.

### PATRICK CORCORAN RECEIVES THE ERWIN MARX AWARD

Patrick A. Corcoran is a Senior Scientist at L-3 Pulse Sciences where he has roles in both technical leadership and project management. He was first introduced to pulsed power as a summer hire at Pulse Sciences, Inc. (PSI) in 1983 after an internship as a mechanical engineer at the NASA Ames Research Center a year earlier led him to change his major emphasis to Physics. Mr. Corcoran received his B.A. in Physics from San Francisco State University in 1984 and then began full-time employment at PSI where he has remained through its acquisition by the Titan Corporation and later by the L-3 Communications Corporation.

Corcoran has distinguished himself in the design of large, high power,

pulsed machines where his expertise in, and development of, pulse power circuit modeling and simulation have been essential. He has authored and coauthored over 50 publications and is the coauthor of a patent. He is a member of the IEEE and is now serving on the NPSS Pulse Power Science and Technology Committee.

His work in pulse power technology development includes system design, pulse compression and pulse forming line design, vacuum power flow and diode design, high voltage and high current component design, empirical characterization and prototyping, design validation, and circuit model and code development to support design efforts. Notable contributions were made to Sandia National Laboratories' Proto2, Saturn, Z and Z Refurbishment and to conceptual designs for the future. Other notable contributions were to high voltage radiography and to Inductive Voltage Adder (IVA) design and operation through his work on a series of machines which have included Hermes 3 and RITS at Sandia, Cygnus at the Nevada National Security Site (NNSS), and Hydrus for AWE in the UK. Other notable contributions include those to the DARHT 1 and the DARHT 2 injectors at the Los Alamos National Laboratory (LANL), the AIRIX injector for the CEA in France, the NIKE laser at NRL, and FXR at Lawrence Livermore National Laboratory (LLNL).

Corcoran credits his association with his colleagues at PSI for the opportunity to participate in a wide range of prominent projects and is particularly grateful to Ian Smith, Phil Spence, Lee Schlitt, and Jim Fockler for patiently teaching him the art and science of pulse power.

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Peter Corcoran  
Erwin Marx Award recipient

### Pile-up

*I try to take one day at a time—  
but sometimes several days attack  
me at once.*

Jennifer Unlimited

## FUNCTIONAL COMMITTEES



Dr. Sarita Prasad  
2010 Arthur H. Guenther Pulsed  
Power Student Award recipient



Jonathan Foster  
2011 Arthur H. Guenther Pulsed  
Power Student Award recipient



Pascale Gouker  
Radiation Effects Technical Committee  
member-at-large

(continued from page 29)

### ARTHUR H. GUENTHER PULSED POWER STUDENT AWARDS

#### 2010–Sarita Prasad

Dr. Sarita Prasad specializes in High Power Microwave (HPM) Source research, particularly the virtual cathode oscillator, the backward wave oscillator and the relativistic magnetron. She earned her B.S. and her M.S. degrees in Electrical and Electronic Control Engineering in March 2001 and August 2003, respectively, from Nagaoka University of Technology, Niigata, Japan. She earned her Ph.D. degree in Electrical Engineering from the University of New Mexico (UNM) in December, 2010 where she worked under the supervision of Professor Edl Schamiloglu. Her Ph.D. research focused on the experimental demonstration of the operation of a short pulse magnetron driven by a transparent cathode and the title of her dissertation is: *Fast Start of Oscillations in a Short-Pulse Relativistic Magnetron Driven by a Transparent Cathode*. To-date she has published 3 refereed journal publications, 14 reviewed conference papers, 18 conference presentations and one patent.

She is a recipient of two prestigious scholarship awards from Japan: the full Japanese Government Scholarship (for a period of 4 years) and the Rotary Club of Japan Scholarship (for a period of 2 years). She received the IEEE NPSS Graduate Scholar Award in 2009 and the IEEE NPSS Arthur H. Guenther Outstanding Pulsed Power Student Award in 2010. She has been an IEEE member for 8 years.

Sarita is currently a Post Doctoral Fellow at the University of New Mexico and her responsibilities include being in charge of all laboratory experiments in the Pulsed Power, Beams and Microwaves Laboratory. She supervises graduate students and undergraduate assistants. She coordinates and plans upcoming

experimental campaigns with Professor Schamiloglu and other researchers at UNM. In addition, she performs particle-in-cell computer simulations to guide experimental work.

#### 2011–Jonathan Foster

Jonathan Foster is currently pursuing a Ph.D. in Electrical Engineering at Texas Tech University. He received his B.S. and M.S. both in Electrical Engineering from Texas Tech in 2008 and 2009, respectively. Currently, he is conducting research at the Center for Pulsed Power and Power Electronics in the area of high power microwave breakdown and surface flashover phenomena. His research interests include high power microwaves, microwave/plasma interactions, breakdown phenomena, compact pulsed power technology, as well as statistical and computational modeling.

### AWARDS NOMINATIONS SOUGHT BY RADIATION EFFECTS TECHNICAL COMMITTEE

Nominations are due January 31, 2012, for awards to be presented at the IEEE NSREC 2012 Conference July 16-20, 2012 in Miami, Florida.

Nominations are currently being accepted for the 2012 IEEE Nuclear and Plasma Sciences Society (NPSS) Radiation Effects Award. The purpose of the award is to recognize individuals who have had a sustained history of outstanding and innovative technical and/or leadership contributions to the radiation effects community. The \$3000 cash award and plaque will be presented at NSREC Miami. Nomination forms are available electronically at <http://www.nsrec.com/nominate.htm> and must be submitted by January 31, 2012.

*Additional information can be obtained from Pascale Gouker, Senior Member-at-Large for the Radiation Effects Steering Group. Pascale can be reached at 781-981-0460 or at [pgouker@ll.mit.edu](mailto:pgouker@ll.mit.edu).*

## FUNCTIONAL COMMITTEES

### PAUL PHELPS STUDENT GRANT NOMINATIONS

Nominations are currently being accepted for the 2012 Paul Phelps Continuing Education Grant. The purpose of the grant is to promote continuing education (attendance at the 2012 NSREC Short Course) and encourage membership in NPSS. University professors may nominate outstanding student members of NPSS. Unemployed members of NPSS who need assistance in changing careers can also be nominated for the award. The \$500 cash award will be distributed before the 2012 NSREC in Miami, so that the award recipient can apply the funds towards covering travel costs to the short course. The award includes complimentary short course registration.

Nomination forms are available electronically at <http://www.nsrec.com/steering.htm> and must be submitted by January 31, 2012. Additional information can be obtained from Vincent Pouget, Member-at-Large for the Radiation Effects Steering Group. Vincent can be reached at 33-5-4000-2859 or at [vincent.pouget@ims-bordeaux.fr](mailto:vincent.pouget@ims-bordeaux.fr).

*Teresa Farris, Radiation Effects Vice Chair for Publicity can be reached at [Teresa.farris@aeroflex.com](mailto:Teresa.farris@aeroflex.com).*

### DAVID A. WETZ PULSED POWER MEMBER RECEIVES ONR PRESTIGIOUS AWARD

David A. Wetz, a 2006 Ph.D. graduate of Texas Tech University's Center for Pulsed Power and Power Electronics, and a current University of Texas at Arlington electrical engineering assistant professor, received a 2011 Young Investigator

Research Award from the Office of Naval Research (ONR) in April of 2011.

Wetz joined the faculty of the University of Texas at Arlington in August 2010. His ONR research will focus on how electrochemical energy-storage devices age when they are charged and discharged at elevated rates, tens to hundreds of coulombs, in a pulsed fashion. New high-power electrochemical energy-storage devices, with ESR's less than 1 mΩ, are becoming a more efficient prime power source to drive pulsed-power applications. Wetz and his students have designed a new high-current test stand to understand the current limitations of these new electrochemical cells and how elevated cycling changes the manners in which the cells' lifetime and capacity degrades.

In addition to his work in pulsed power, Wetz is performing research in the MicroGrid area. Currently he and Professor Wei-Jen Lee at UTA are installing a MicroGrid testbed on the UTA campus for the Department of Energy. The testbed will be used to educate students and to develop new control strategies and architectures that will improve the future electrical grid's reliability, robustness, and efficiency.

*David Wetz can be reached at the Department of Electrical Engineering, University of Texas at Arlington, 701 S. Nedderman Drive, Box 19016 Nedderman Hall Room 537, Arlington, TX 76019 USA; Phone: +1 817 272-1058; E-mail: [wetz@uta.edu](mailto:wetz@uta.edu).*

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David Wetz  
2011 ONR Young Investigator  
Research Award recipient

### Sage sage

*Age doesn't always bring wisdom,  
but it certainly makes it easier  
to fake.*

Matthew McLachlan  
(82-year old writer)

## FUNCTIONAL COMMITTEES



Jane Lehr  
Fellow Evaluation Committee Chair

(continued from page 31)

## Fellows

I encourage you to nominate a deserving colleague for IEEE Fellow and begin the job of preparing the application and lining up references now. It is not too early. Each year, deserving nominations are rushed to meet the strict deadline. Nominating form, detailed instructions and frequently asked questions can be found at the IEEE Fellow Program website at [www.ieee.org/membership\\_services/membership/fellows/](http://www.ieee.org/membership_services/membership/fellows/).

At the time the nomination is submitted, a nominee must meet the following three basic qualifications: have accomplishments that have contributed importantly to the advancement or application of engineering, science and technology, bringing the realization of significant value to society; hold IEEE Senior Member grade; have been a member in good standing in any grade for a period of five years or more preceding 1 January of the year of elevation. Note: IEEE Society Affiliation membership does not apply. Members of the IEEE Board of Directors, or members who are prohibited from publishing in IEEE publications are not eligible to be elevated to the grade of Fellow.

It is surprising that one of the biggest stumbling blocks for a nominator is to find that the nominee is not a Senior Member. Fortunately, the application for Senior Member is not time consuming and is web based. If you are considering nominating a colleague for a grade elevation to Fellow, find out if he/she presently meets the Senior Member requirement, while there is sufficient time to rectify it. Senior Members are elevated numerous times per calendar year. Fellow applications are due 1 March.

In 2011, NPSS had 20 Fellow nominations. The quality of the

nominations was extremely high. The NPSS Fellow Evaluation Committee has finished its work for the year. All materials in support of NPS nominees have been forwarded to IEEE through its electronic database. In December, the IEEE Board of Directors will announce the names of the nominees who will be elevated to the grade of IEEE Fellow. As always, this is an extremely competitive process—only 0.1% of the total voting IEEE membership can be elected to the grade of Fellow each year.

I want to thank the dedicated members of the Fellow Evaluation Committee for all their efforts. They are: Paul K. Chu, Erik H.M. Heijne, Jean-Luc Leray, Ned R. Sauthoff, Stan Schriber, James Schwank, Peter Winokur and Peter Turchi. It is always a challenge to review these nominations. I hope you can make our job ever more difficult by increasing the number of nominations in 2012.

*Jane M. Lehr, Chair of the Fellow Evaluation Committee of NPSS can be reached at Sandia National Laboratory, P.O. Box 5800, MS1193, Albuquerque, NM 87185-1193; Phone: +1 505 844-8554; E-mail: [jmlahr@sandia.gov](mailto:jmlahr@sandia.gov).*

## IEEE-USA GOVERNMENT FELLOWSHIPS

Each year, IEEE-USA sponsors three qualified IEEE members to serve as government fellows: one Engineering & Diplomacy Fellow and two Congressional Fellows. The Fellows spend a year in Washington, serving as advisers to the U.S. Congress or key U.S. Department of State decision-makers. IEEE-USA's Government Fellowships link engineers with government, providing a mechanism for IEEE-USA members to learn firsthand about the public policy process through personal involvement.

The congressional fellowship consists of an appointment to the personal staff of a U.S. Senator or Congressman, or to the professional staff of a Congressional Committee. The Fellow along with the

## FUNCTIONAL COMMITTEES

Congressional sponsor and IEEE-USA, negotiates a starting date, although IEEE-USA recommends that Fellowship terms run from January 1st to December 31st. For an application kit for the 2013 Congressional Fellowship Program, visit: <http://www.ieeeusa.org/policy/govfel/cfapply.asp>.

The State Department fellowship begins in January of each year and offers an opportunity for an engineer to provide technical expertise to the State Department, and help raise awareness of the value of engineering input while learning about and contributing to the foreign policy process. For an application kit for the 2013 Engineering & Diplomacy (State Department) Fellowship Program, visit: <http://www.ieeeusa.org/policy/govfel/state.asp>

The postmark application deadline for 2013 Fellowships is 16 March 2012. For more information, visit: <http://www.ieeeusa.org/policy/govfel/default.asp>

## Membership

Each of several hundred Nuclear and Plasma Sciences Society members has a dozen or more years of active professional experience after receiving college degrees and is working in a field of interest recognized by the IEEE. Yet, many of these people are listed as 'Regular' members. As such, they are not limited in terms of any IEEE activities in which they may participate, nor would they gain any reduction in payable dues to IEEE were they to be elevated to senior grade.

Elevation to the grade of senior member<sup>1</sup> is an honor bestowed by IEEE upon qualified members and when requested, notification of the award can be given by IEEE to the member's employer so that this award can be listed among the employee's accomplishments. Further, it is one of the steps necessary for those

members who would be awarded the prestigious Fellow of the IEEE grade.

During the first six months of this year, the following NPSS members were awarded the Senior member grade:

### January:

Martin Given  
Seetharamaiah Ramisetty  
George Nelson  
Patrick LeDû  
Stanislav Pospisil

### February:

Jefferey Calame  
Ingrid Maria Gregor  
Paul Leroux  
Yiping Shao

### March:

Gianmaria de Tommasi  
Ivor Ramsay Smith  
Maxim Titov

### April:

Stefan Ritt  
Robert Lawson

### June:

Marcela Bilek  
Mark Crawford  
Stuart Lansley  
C. Rangacharyulu  
André Sopczak  
Vladimir Sotnikov

Congratulations are extended to each of these members. Should you desire to change your status to 'Senior,' you may nominate yourself and select three IEEE senior or Fellow members to be your referees. If someone nominates you, then only two others will be needed as referees. If you have further questions regarding this procedure, contact me for answers and I will try to help.

*Vernon Price, NPSS Membership Committee, can be reached by phone at +1 408 737-0778; E-mail: [v.price@ieee.org](mailto:v.price@ieee.org).*

<sup>1</sup>Procedures for IEEE member grade elevation are found at: [http://www.ieee.org/membership\\_services/membership/grade\\_elevation.html](http://www.ieee.org/membership_services/membership/grade_elevation.html)



Vernon Price  
Membership Committee

## Non-reciprocity

*The love that lasts the longest is the love that is never returned.*

William Somerset Maugham

## All talk and no...

*It can be laid down as a general rule that those who speak most of liberty least use what they have.*

John Kenneth Galbraith



This photo, taken late February 2011, shows the final excavation phase of Tokamak Complex Seismic Isolation Pit. This last step involves “milling” the rock in order to achieve a flat surface on which to commence the construction of the base slab for the Tokamak, Tritium and Diagnostics buildings. When finished, the horizontal rock surface will be as smooth as a billiard table.



The Poloidal Field Coil Winding Facility is the first building to go up on the ITER platform. 252 m long, 45 m wide and 17 m high, construction will be completed in November 2011. Photo: F4E (March 2011).



ITER Director—General Osamu Motojima (left) unveiling the foundation stone with the help of Igor Borovkov, the Head of the Russian Delegation to the ITER Council. In the background are Robert-Jan Smits, Head of the European Delegation, William Brinkman from the US Department of Energy and Evgeny Velikhov, the Chairman of the ITER Council.

## ITER—Building the World’s Largest Fusion Device

### ITER and Rene Rafferty

In a global context of rising oil and gas prices, decreased accessibility to low-cost fossil fuel sources, and an estimated three-fold increase in world energy demand by the end of this century, the energy question finds itself propelled to the front of the stage. How will we supply all this new energy, and how can we do so without adding dangerously to atmospheric greenhouse gases?

To the sustainable energy mix of the future, fusion scientists believe that they can make an important contribution. Fusion, the nuclear reaction that powers the sun and the stars, would provide a safe, non-carbon-emitting and virtually limitless source of energy. Over the next thirty years, the world will be watching the ITER project in southern France, where a consortium of nations is building the world’s largest fusion device.

### THE ITER PROJECT: A GLOBAL COLLABORATION

ITER is a large-scale scientific experiment intended to prove the viability of fusion as an energy source, and to collect the data necessary for the design and subsequent operation of the first electricity-producing fusion power plant. Six nations plus Europe have agreed to pool their financial and scientific resources to realize this unique research project; although ITER will never produce electricity, it will take fusion to the point where industrial applications can be designed.

The ITER project was the fruit of a 1985 summit in Geneva between Soviet Secretary General Gorbachev and U.S. President Ronald Reagan, during which the leaders agreed to cooperate to develop fusion as a “source of energy...for the benefit of all mankind.” The design for

a large, international fusion facility was collaboratively developed by the Soviet Union, the US, the European Union and Japan from 1988 to 2001; this design provided the basis for the ITER project that is taking shape today.

The ITER Members are: China, the European Union, India, Japan, Korea, Russia and the United States—a truly international endeavour. The seven ITER Members together represent over half of the world’s population and 80% of the world’s GDP. At 30 meters in diameter and nearly as many in height, the ITER Tokamak will be the flagship device of the world fusion program.

Each of the seven ITER Members contributes components to the machine, and shares in the management aspects of the project including scientific collaboration, finance, staffing, and auditing. The ITER Organization in southern France is staffed by approximately 500 people from the Member communities and nearly as many contractors. Domestic Agencies located in each ITER Member organize procurement activities and conclude contracts with industry.

### CONSTRUCTION IN FULL SWING

Construction of the ITER scientific buildings began in summer 2010. The excavation works for the tokamak complex were completed in February 2011 and will be followed by pouring the concrete slab over the next months. The 14,000 m<sup>2</sup> facility that is especially built to wind ITER huge Poloidal Field Coils is also rapidly taking shape, as is the future Headquarters building. By 2012 the ITER team will move into this beautifully designed and fully functional building. “This is the place where we, as



Employees manipulate a length of stainless steel cable jacket at ASIPP, Institute of Plasma Physics, in Hefei, China. This facility was designed to handle 900 metre lengths of superconducting cable for ITER’s magnet system.



Butt welding of two toroidal field conductor jackets at Nippon Steel Engineering in Kyushu, Japan.



A prototype cryogenic vacuum pump is inspected at the Karlsruhe Institute of Technology, Germany.

the responsible Organization, will work as hard as we can to meet our deadlines and make ITER happen,” the ITER Director-General, Osamu Motojima, said on the occasion of the Foundation Stone ceremony on 17 November 2010. “This Foundation Stone will bear witness, for centuries to come, to this great human, scientific and technological adventure.”

Over the next eight years, the other 35 ITER facilities will be erected, and components shipped from the four corners of the world will be assembled at the ITER site. At present, more than 65% of all components have been procured and are being manufactured. After the completion of construction,

a commissioning and testing phase will ensue. The operational campaign will begin with First Plasma in 2019, followed by twenty years of physics experiments.

One of the tasks awaiting ITER is to explore fully the properties of super-hot plasmas and their behavior during the long pulses of fusion power the ITER machine will enable. The challenge will be very great. ITER’s plasma pulses will be of a much longer duration than those achieved in other devices, creating intense material stress. ITER will be used to test and validate advanced materials and key technologies for the industrial fusion power plants of the future.

### Clear the cobwebs

*Only that day dawns to which we are awake.*

Henry David Thoreau

### Cave Kenem!

*Beware of thinkers whose minds function only when they are fuelled by a quotation.*

E. M. Cioran



Erik Heijne

## Nucleation: 1961, the Origin of the Nuclear Science Symposium

This year, just 50 years ago, in September 1961 the first “Joint Nuclear Instrumentation Symposium” was held, sponsored by the various predecessors of the IEEE. The Figure shows the cover and title page of the *Transactions* in the October issue, number 4 of the *IRE Transactions on Nuclear Science* (TNS8). These had been distributed in advance of the Symposium, in order “to promote informed discussion at the meeting.” This model of handing out *Transactions* at or before the meeting is still in use today at the IEEE electronics conferences IEDM and ISSCC. The *Transactions on Nuclear Science* were, at the time, supervised by the Professional Group on Nuclear Science (PGNS), a body within the Institute of Radio Engineers (IRE). The Editor was R.F. (Dick) Shea from General Electric. He took over the Editor position from founder Sidney Krasik, starting with the March 1959 issue. The IRE would merge two years later with the American Institute of Electrical Engineers (AIEE) into the IEEE.

This Proceedings issue TNS8-4 illustrates the background of the earliest Symposium and the presentations. It was held 6-8 September 1961, at North Carolina State College, in Raleigh, NC. The Nuclear Committees of the AIEE, the Nuclear Instrument Division of the Instrument Society of America ISA and the Professional Group on Instrumentation and the Professional Group on Nuclear Science of the IRE joined to supervise this Symposium. The Chairman was C.S. Lisser from ISA and he worked at the Oak Ridge National Laboratory. The Program Chairman was J.A. Dever and E.G. Manning was the Local Arrangements

Chair. The organizational structure was even then remarkably similar to that of the current Nuclear Science Symposia (NSS). The 26 contributions cover a wide range of subjects, including reactor and accelerator instrumentation, space instruments, electronics and computing, plasma instrumentation and safety systems. In the Introduction, the Chairman states that “the three sponsoring societies decided on the cooperative venture as a step toward eliminating parallel conferences.” It was hoped that this 1961 Joint Nuclear Instrumentation Symposium would “be the first of an annual or biennial series.”

That this ‘nucleation’ of a new phase in the field was not, however, without complications, and required several iterations before becoming our well-known annual event, as is clear from the naming of the second similar Symposium, with Lou Costrell as General Chairman, held in the Philadelphia Sheraton, 28-30 October 1964. In the first issue 1965 TNS12-1, the Proceedings are published “of the first combined annual meeting,” and the *Transactions* Editor Dick Shea writes:

**The Nucleus**  
*Our highly successful 11<sup>th</sup> Nuclear Science Symposium is now history and the tremendous variety of papers presented there, and almost completely included in this issue of these TRANSACTIONS testifies to the almost unlimited scope of our activities.*

*As a result of this ever-widening scope, we are this year embarking on a more ambitious publication program, with plans for six issues per year. Three of these issues will be devoted to papers presented at our symposia, the other three will be open issues, including submitted papers of general interest to our membership.*

*This year the other symposium issues will be the June issue, which will include papers from the Accelerators Symposium, and the October issue, which will contain the papers from the second Radiation Effects Symposium. It is sincerely hoped that this interleaving of symposium issues and open issues will best serve the interests of our readers and also hold down the waiting time for our contributors to a minimum.*

—R. F. Shea

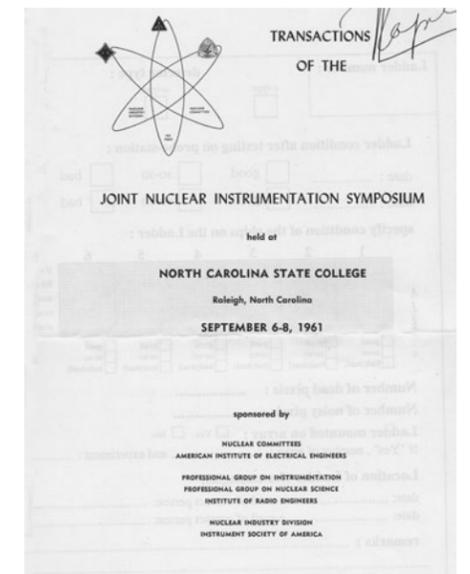
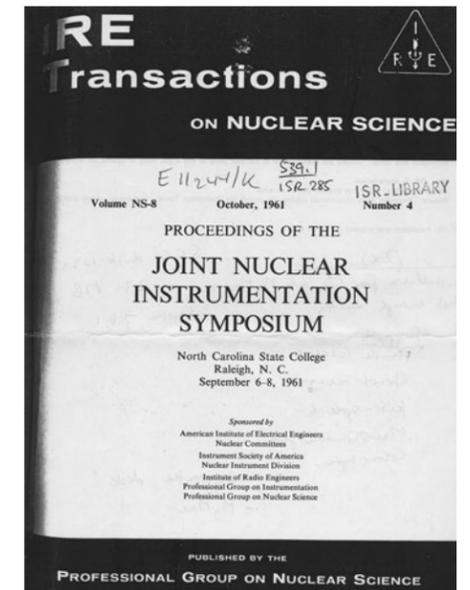
In the meantime, the 9<sup>th</sup> and 10<sup>th</sup> annual meetings of the IRE PGNS had been held, respectively on 15-18 October 1962 in the Statler Hilton in Detroit: “Symposium on Space Phenomena and Measurement” with Proceedings published in TNS10-1, January 1963, and 29 October - 1 November 1963 in San Diego, dedicated to plasma science and published in TNS11-1. Also in 1962 was held the eighth biennial Scintillation (and Semiconductor) Counter Symposium (SSCS) in Washington, 1-3 March: TNS9-3, June 1962. Apparently, the merger of IRE and AIEE entailed a difficult integration process for the conferences as well as for the *Transactions on Nuclear Science*, because the first issue in 1963 was published by the IEEE, as well as the issues 3 and 5. But the issues 2 and 4 still appear to be IRE publications. Nevertheless, Shea was Editor-in-Chief for all of these. At least, this is what one can conclude from the way these issues are available from IEEE Xplore. Consulting the IRE TNS volumes 1-8 on paper (still at the CERN library) from the covers it is somewhat easier to see what was going on. As for the conferences, it was decided to morph the IRE PGNS annual meetings, which used to have topical subjects, into a more general instrumentation Symposium, and call the Philadelphia Symposium in 1964, the 11<sup>th</sup>. The first formal IRE-PNGS meeting had been 6-7 October 1954 in Chicago. From this ‘a posteriori’ reckoning, the 60<sup>th</sup> Nuclear Science

Symposium will be coming in 2013, and will be held for the first time in Asia. The historical overviews by Lou Costrell and Merry Keyser can be found on the NPSS website and give a lot more detail. But, in that list of Symposia the first real Instrumentation Symposium in Raleigh in 1961 does not appear. It is true that some NSS traditions such as the yearly AdCom dinner, still testify of the Annual PGNS meetings of old.

The integration of the various conferences into one main, large Symposium has been a long and continuous process. Lou Costrell documented the arguments that the older (from 1948) Scintillation (and Semiconductor) Counter Symposium (SSCS) in 1974 finally should also be incorporated in the NSS, rather than be held separately as a ‘Spring’ conference. And now, already for some time the Room Temperature Semiconductor Conference, originally not an IEEE meeting, has joined as well. The result has been a steady increase in attendance. In the 1980s and 1990s this hovered between 700 and 1000, but since the Symposium has been held regularly in Europe since 2000, participation has more than doubled. Nobody, 50-60 years ago, would have dreamed about such a large Symposium in Spain in 2011.

*nucleation, the initial process that occurs in the formation of a crystalline phase from a solution, a liquid, or a vapour phase, in which a small number of ions, atoms, or molecules become arranged in a pattern characteristic of a crystalline solid, forming sites upon which additional particles are deposited as the crystal grows. (following wikipedia)*

*Erik Heijne has been a member of IEEE and NPSS since 1977 when he participated for the first time in the Nuclear Science Symposium in San Francisco. He can be reached at CERN at erik.heijne@cern.ch.*



The cover and title page for the Proceedings of the “First” Nuclear Instrumentation Symposium in 1961.

### But no ends

*If we continue to believe that the goals of the modern industrial system and the public policies that serve these goals are coordinate with all of life, then all our lives will be in the service of these goals.*

John Kenneth Galbraith



Raymond S. Larsen  
NPSS Liaison to Humanitarian  
Technology Challenge, and Society  
for Social Implications of Technology  
(SSIT)

## IEEE/Sirona Haiti Electricity Project: New Success—New Challenges

### NEW SUCCESS!

The mobile solar electricity generator project which began in June 2009 under the IEEE Humanitarian Technology Challenge and received first funding in November 2010 has just deployed the first six stations as small businesses in six different locations in Haiti. This has raised tremendous excitement and raised expectations in rural Haiti among the new local entrepreneurs and populace. From June 20<sup>th</sup> to July 4<sup>th</sup> 2011, home lighting was successfully established for 240 homes representing 1400 people. Most rural areas of Haiti have no electricity whatever; country-wide 80% of the population lacks electricity and 80% are unemployed. The advent of basic affordable lighting into rural homes at the same time providing new jobs is life-changing. See the exciting new reports of the first Haiti deployments at [www.sironacaresblog.com](http://www.sironacaresblog.com).

### CSI Background

The IEEE Community Solutions Initiative (CSI), established in late 2009 under the Humanitarian Technology Challenge (HTC) and in early 2010 becoming a separate IEEE nonprofit under the Power and Energy Society, designed, built, delivered and helped deploy the generator units in collaboration with its partner for Haiti, Sirona Cares Foundation. See details of the broad CSI electricity program at [www.communitysolutionsinitiative.org](http://www.communitysolutionsinitiative.org).

### CSI & Haiti Programs

CSI is developing a variety of affordable energy solutions, the smallest of which to date is a Light Cycle generator and the largest of which is the 1.5 kW solar station charging battery packs for 40 homes per station. For the latter each

battery pack powers a home lighting kit of two 4.2 W LEDs lighting up two rooms per home, with power left for other uses. The franchisee operator is responsible to find, serve and maintain the full customer base, while a new in-country entity Sirona-Haiti (SH) manages the operation, services the equipment and collects a monthly fee to cover costs and amortization of the equipment.

### Sirona Entrepreneur Development

Sirona was established in Haiti two and a half years ago to develop sustainable jobs through Jatropha seed farming (for biodiesel production) as well as to support orphanages and schools and, because of the community partners developed during this period, was in an ideal position to quickly recruit community partners as electricity entrepreneurs. See Sirona background at [www.sironacares.org](http://www.sironacares.org). Pilots are deployed in a wide variety of rural settings to thoroughly test the business model.

### Technical Model Success

The technical model of a highly mobile and quickly deployable unit is a resounding success. The 1.5 kW stations built at Nextek in Bohemia NY, a partner in the IEEE PES Community Solutions Initiative which manages the project, fully met all specifications and all units survived extremely hostile road and off-road deployment conditions without failures. The only early failures to date are that 6 of the 240 home batteries did not hold charge to specifications and are being replaced. The rough shipping and transport conditions resulted in damage to some outrigger stabilizing jacks that take pressure off the tires when situated and stabilize the unit from rocking in windy conditions. Welding repairs were



Orphans in Jérémie, Haiti, ringed by 20 of the 40 battery packs and their lights, stand beneath extended SunBlazer solar panels. These children have never had electric light before and they celebrated.

made quickly on-site by resourceful local Haitians and replacements have been ordered for two units that were lost in shipping. Altogether these minor issues did not impact the electrical system operation which was basically flawless.

### NEW CHALLENGES

#### Funding

The generous year-end funding of 2010 left CSI in the position of having both Phase 1 and Phase 2 funds for hardware in 2010 but with virtually no operating funds for 2011. Additional operating funds were needed for shipping, duties and taxes along with travel expenses for IEEE CSI people for training and deployment. PES, NPSS and HTC have contributed to offsetting some of these needs but high duties, VAT and shipping costs have eaten more than available. Thus the project has overrun the Pilot 1 budget (but also delivered twice the originally planned number of stations) and is now under pressure to complete Pilot 2 construction by the end of 2011. New funds from NPSS and Region 9 are earmarked for Pilot 2 so new funds are needed to plug the Pilot 1 deficit.

#### Transfer of Assembly to Haiti

The ultimate goal has always been for Sirona to establish operations in Haiti. Now that the high costs of shipping, duties and taxes on finished product are apparent, all agree on the need to begin in-country manufacturing even during Pilot 2. This is ahead of the original plan but will be a huge milestone for venture fundraising to establish manufacturing jobs-creation early. The goal is to ramp to 100 units per month in the third year of operation.

#### ROAD AHEAD

As this is written the seventh SunBlazer has just left Bohemia, New York for the IEEE Power and Energy Society General Meeting in Detroit, July 24-29 2011. The trailer and posters will be on display inside the Marriott Hotel for four days. CSI members and speakers will host a half-day session, participate in open seminars and deliver formal papers on affordable energy solutions. In parallel CSI is requesting an ear-marked fund within the IEEE

(continued on back cover)

### I've heard that song before

*Anything too stupid to be said  
is sung.*

Voltaire

### The missing piece

*The fate of a people depends much  
more on their character than on  
their intelligence.*

Gustave Le Bon

### What did you say?

*...it is possible to be impeccably  
transparent without ever being  
comprehensible.*

Nicholas Fraser

*(continued from page 39)*

Humanitarian Technology Foundation (HTF) to receive donations, and Sirona Cares Foundation already has an earmarked fund. After the GM, Sirona will tow SunBlazer #7 to Washington, DC for a demonstration request by venture firms and government program principals.

The road ahead is challenging, much like the roads in Haiti, but the SunBlazer has already proven its mettle and the results in Haiti could not be more exciting. We in CSI offer a huge thank-you to NPSS for its crucial support at a crucial time in the life of this program. We trust the ROI on your investment will prove very satisfactory.



First six SunBlazers at Grand Goave, Haiti. Operators were trained here in classes and hands on sessions, and the units deployed from here to their hometowns.