

Nuclear & Plasma Sciences

Number 3 • September 2006

SOCIETY NEWS

CONFERENCES

2006 IEEE NUCLEAR SCIENCE SYMPOSIUM, MEDICAL IMAGING CONFERENCE, AND ROOM TEMPERATURE SEMICONDUCTOR DETECTOR WORKSHOP

October 29 - November 5, 2006

Town and Country Resort & Convention Center, San Diego

<http://www.nss-mic.org/2006/>

The 2006 IEEE conference will incorporate the Nuclear Science Symposium (NSS), Medical Imaging Conference (MIC) and Room Temperature Semiconductor Detector (RTSD) Workshop, and also host shorter workshops that provide timely presentations on Micro-pattern Detectors, Compton Scatter Imaging, Dual-modality PET/MRI, Hadron Therapy and the Nuclear Radiology of Breast Imaging (NRBC). The entire conference runs from Oct 29 - Nov 5 at the Town and Country Resort & Convention Center in San Diego. The focus is geared toward a first-class scientific program, with an atmosphere where original and outstanding work can be presented in an informative and comfortable manner. The Town and Country provides an ideal venue, with ample lecture space, accommodation and restaurants on an attractive site that is also compact enough to

San Diego 2006



NSS•MIC•RTSD

permit attendees to walk leisurely from one session to another. Much of the meeting space, and many of the hotel rooms, have recently been redecorated. The delightful San Diego climate provides more than enough encouragement for discussion with colleagues over a cup of coffee beside one of the hotel's outdoor pools. Next door to the Town and Country is a multitude of shops in Fashion Valley Mall, as well as a trolley stop for transportation to much of the San Diego area, including the Mexican border.

SCIENTIFIC PROGRAM

We have received close to 1300 high-quality submissions for the symposium, conference and workshops. Our thanks go to these many contributors. The program chairs are now organizing the papers with an

continued on page 3



Graham Smith
General Chair



Chuck Britton
NSS Program Chair



John Aarsvold
MIC Program Chair



Bonnie Sherwood
Conference
Coordinator

TABLE OF CONTENTS

2006 IEEE Nuclear Science Symposium, Medical Imaging Conference, and Room Temperature Semiconductor Detector Workshop	1
Radiation Effects on Components and Systems: RADECS 2006 Workshop	9
2006 IEEE International Conference on Plasma Science (ICOPS 2006)	9
2007 IEEE NSREC is Planning for Honolulu . . .	11
President's Report	13
Secretary's Report	14
Nuclear Medical and Imaging Sciences Technical Committee (NMISTC) Update	14
Nuclear and Space Radiation Effects News . .	15
Awards Committee	16
Fellow Evaluation Committee	17
Standards Committee	18
2006 NSREC Radiation Effects Award	19
Phelps Grants	19
The Coalition for Plasma Science	20
Statements from IEEE Candidates	23
Candidates for 2007 Technical Activities Vice President Elect	28
Pulsed Power and Plasma for Medical and Environmental Applications	30
Remembrance of John F. Osborn	31
Mentoring Children: Inspiring That First "Aha" Moment	34
Promoting NPSS	35

IEEE NUCLEAR AND PLASMA SCIENCES SOCIETY NEWS

is published three times per year by The Institute of Electrical and Electronics Engineers, Inc., 445 Hoes Lane, Piscataway, NJ 08855.

NEWSLETTER EDITOR:

Albe Dawson Larsen
Stanford Linear Accelerator Center
MS-66
2575 Sand Hill Road
Menlo Park, CA 94025
Tel: +1 650 926 2748
Fax: +1 650 926 5124
E-mail: amlarsen@slac.stanford.edu

EDITOR EMERITUS:

W. Kenneth Dawson
TRIUMF, 4004 Wesbrook Mall
Vancouver, British Columbia
Canada, V6T-2A3.
Tel: +1 604 222 7455
Fax: +1 604 222 7307
E-mail: k.dawson@ieee.org

IEEE MAGAZINES AND NEWSLETTERS:

Robert Smrek, Production Manager
Paul Doto, Newsletter Coordinator

Contributors to September 2006 IEEE NPSS Newsletter in Alphabetical Order: Igor Alexeff, Jes Asmussen, J. Roberto Boisson De Marca, Peter Clout, Albe Dawson Larsen, Teresa Farris, Veronique Ferlet-Cavrois, Harold L. Flescher, Juergen Kolb, William W. Moses, Jane Osborn, Gerald Rogoff, Ronald Schrimpf, Graham Smith, E.G. Stassinopoulos, Lew Terman, S.T. Tsitomeneas, John Vig, Peter Winokur.

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 January 3, 2007.

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.

© 2006 IEEE. Information contained in this newsletter may be copied without permission provided that the copies are not made or distributed for direct commercial advantage, and the title of the publication and date appear. Printed in U.S.A.

expected schedule as follows. A one-day workshop will take place on Sunday, October 29th, the NSS will begin on Monday, October 30th, and continue through Thursday, November 2nd. NSS plenary sessions and luncheon will occur Monday. The RTSD workshop also begins Monday, October 30th, and runs through Friday, November 3rd, with a luncheon on Thursday. The MIC will begin Tuesday afternoon with joint sessions, and run through Saturday, November 4. The MIC plenary sessions are Wednesday, and the MIC dinner is Friday. Other workshops take place Thursday, November 2nd through Sunday, November 5th. The details are:

THE NUCLEAR SCIENCE SYMPOSIUM (NSS), Mon., Oct. 30 - Thurs., Nov. 2:

This year's Nuclear Science Symposium promises to be one of the best ever. We have received 565 submissions and are well along in their review. There will be, as always, an excellent set of informative short courses and the venue of sunny (we hope!) southern California will surely be a great draw. For plenary sessions, we have timely topics from three excellent plenary speakers. They are:

- Thom Mason - Director of the Spallation Neutron Source
- Tony Tyson - Spokesman for the Large Synoptic Survey Telescope (LSST)
- Dan Ingersoll - Advanced Reactors

The range of topics to be covered this year includes the following:

- Instrumentation for Homeland Security
- Analog and Digital Circuits
- Detectors and Electronics for the SNS
- Astrophysics and Space Instrumentation
- Data Acquisition and Analysis Systems
- Environmental Health and Safety Instrumentation
- Gaseous Detectors
- High Energy and Nuclear Physics Instrumentation
- Nuclear Measurements and Monitoring Techniques
- Photodetectors and Radiation Imaging
- Radiation Damage Effects
- Scintillators and Scintillation Detectors
- Solid State Tracking Detectors
- New Solid State Detectors
- Synchrotron Radiation Instrumentation
- Trigger and Front-End Systems
- Instrumentation for Medical and Biological Research

- Accelerators and Beam Line Instrumentation
 - Computing and Software for Experiments
 - Neutron Imaging and Radiography
- The NSS luncheon with award presentations and topical speaker, will be held Monday, October 30th.

You can reach Chuck Britton (ORNL), the NSS Program Chair, at brittoncl@ornl.gov; Phone: +1 865 574 1878 and Vince Cianciolo, the NSS Deputy Program Chair, at cianciolotv@ornl.gov; Phone: +1 865 574 4712.

THE MEDICAL IMAGING CONFERENCE (MIC), Tues., Oct. 31 (pm) - Sat., Nov. 4:

The MIC is the premier research gathering for scientists and engineers interested in the physics and engineering of medical imaging involving ionizing radiation. It is one of the two major components of the annual IEEE NSS/MIC (Nuclear Science Symposium/Medical Imaging Conference).

A primary focus of the 2006 MIC will be a vibrant program of oral and poster presentations, including a plenary session and joint sessions with the NSS and RTSD. The daily MIC schedule for Wednesday through Saturday will include four oral or poster sessions (8:00-10:00, 10:30-noon, 1:30-3:00, and 3:30-5:30), with lunch scheduled noon-1:30 each day. Three MIC oral sessions and one MIC or joint poster session will be scheduled each day. In addition to the MIC sessions, there will be two NSS/MIC oral sessions, one MIC/RTSD oral session, and one NSS/MIC/RTSD poster session. Approximately 90 MIC submissions will be assigned to the MIC, NSS/MIC, and MIC/RTSD oral sessions. Oral presentations will be 12 minutes with 3 minutes for questions. The program will be drawn from 588 abstracts and summaries submitted from well over 1500 investigators representing at least 35 countries. Authors of 73 of this year's MIC submissions requested assignment to NSS/MIC or MIC/RTSD joint sessions.

The MIC Plenary Session will be Wednesday from 10:30 AM-12:15 PM. Two visionary scientists and outstanding researchers, Ron Nutt, PhD, and Jan Schnitzer, MD, have agreed to give presentations during the plenary session on Wednesday morning. Ron Nutt, PhD, Chairman and CEO, Advanced Biomarker Technologies, LLC, formerly President and CEO, CTI Molecular Imaging, Inc., Knoxville, TN, is known to most of the MIC community as



Vince Cianciolo
NSS Deputy
Program Chair



Bruce Hasegawa
Deputy MIC
Program Chair

Remote control

Technology is a way of organizing the universe so that man does not have to experience it.

Max Frisch

Political geography

We are halfway down the road but we don't know how long the road is.

Saskatchewan Member of Legislative Assembly



Ralph James
Co-Chair, RTSD



Eugenio Perillo
Co-Chair, RTSD

he has made numerous contributions to the development of clinical PET and PET/CT instrumentation, to the development of the reality of routine FDG imaging, and to the development of small animal PET and PET/CT instrumentation and its use in preclinical research. Jan Schnitzer, MD, Scientific Director, Professor, Sidney Kimmel Cancer Center, San Diego, CA, (see <http://www.skcc.org/schnitzer.html>) is well known within the broader biomedical community for numerous contributions including the use of radioisotope imaging for delineating the role of the surface proteins of vascular endothelium in normal and pathological processes, and for development and use of genomic and proteomic techniques for in vitro and in vivo analysis of vascular endothelium.

The Awards Session will be Friday, 10:30 AM -12:00 noon. At this session, the MIC community will honor recipients of various IEEE, NPSS, and NMISTC awards, including this year's recipients of the Edward J. Hoffman Medical Imaging Scientist Award and the Young Investigator Medical Imaging Scientist Award. Also, at the session, will be public announcement of the young investigator recipients of awards made for partial support of their attendance at the MIC. There will also be public acknowledgment of the companies and organizations whose generous support made such awards possible.

The MIC Dinner will be held Friday evening, November 3. While specific plans are not yet final, we anticipate a most enjoyable evening of dining and entertainment most likely at a location away from the conference's main venue. Following the practice of earlier years, MIC Dinner attendees will be charged a fee for the dinner/evening. However, we are very pleased that Siemens Medical Solutions has offered significant support that will allow us to expand our activities for the MIC evening beyond that which could be supported through the normal conference fee structure.

Critical to creation of an excellent scientific MIC program are those who volunteer their time and expertise in the assessment of the submissions. The 2006 MIC Chairs acknowledge the essential role of the 220 scientists/engineers who devoted time and expertise in reviewing and scoring this year's MIC submissions. The contributions of all these colleagues are necessary for the success of the MIC. Many thanks! The MIC Chairs thank and acknowledge the helpful and gener-

ous assistance of all members of the organizing committee. Everyone's contributions and dedication certainly will help to insure that the MIC continues to be the preeminent scientific conference devoted to the physics and engineering of X-ray and radionuclide medical imaging, and that of novel medical imaging technologies. The 2006 MIC should be, as the MIC usually is, an excellent meeting of communication and discussion of science and engineering. All interested in the physics and engineering of emission and transmission medical imaging, of multimodal medical imaging involving such, and of novel medical imaging technologies are invited to San Diego to participate in the 2006 IEEE MIC.

John Aarsvold (Emory University), the MIC Program Chair, can be reached at jaarsvol@emory.edu; Phone: +1 404 329 2213, and Bruce Hasegawa (UC, San Francisco), the MIC Deputy Program Chair, at bruce.hasegawa@radiology.ucsf.edu; Phone: +1 415 353 9472

15TH INTERNATIONAL WORKSHOP ON ROOM-TEMPERATURE SEMICONDUCTOR X-AND GAMMA-RAY DETECTORS, Mon., Oct. 30 – Fri., Nov. 3:

It is our pleasure to announce to you the 15th International Workshop on Room-Temperature Semiconductor X-Ray and Gamma-Ray Detectors. This biennial workshop represents the largest forum of scientists and engineers working to develop new solid-state radiation detectors and imaging arrays that operate at room temperature. As Chairs for the workshop, we are particularly delighted to make the acquaintance of new contributors, as there are many challenges that lie ahead, some of which will be solved by those who are now relatively new to the subject area.

It is our sincere hope that this conference will facilitate cross-fertilization of research and spawn creative ideas, and that these ideas will be incarnated into knowledge, leading to new directions and thrusts. We urge you to take time at this meeting to build on the commonality of your work with colleagues within the RTSD, NSS and MIC conferences, and to share your data, energy and experience, and explore ways to enhance cooperation and collaboration with others. The registration fees and methods of payment will be the same for both the Workshop and the NSS/MIC confer-

ences. A special banquet for workshop attendees and their guests is being scheduled.

The objective of this workshop is to provide a forum for discussion of the latest results to advance the state-of-the-art of this technology. We have chosen to hold this meeting 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 between the NSS and MIC are planned to help bring together people with common interests and offer the right environment for the creation of new and fruitful associations.

Ralph James (Brookhaven National Laboratory), RTSD Co-Chair can be reached at rjames@bnl.gov; Phone: +1 631 344 8633 and Eugenio Perillo (University of Napoli), the RTSD Co-Chair, can be reached at perillo@na.infn.i.; Phone: +39 081676346.

SPECIAL FOCUS WORKSHOPS

1. Micro-Pattern Gas Detectors: High Energy Physics and Beyond.

Sun., Oct. 29

This one-day workshop will bring together experts from around the world to discuss and describe the latest results from micro-pattern gas detectors. The topics include:

- High precision tracking for TPCs
- High rate tracking and aging studies
- Gaseous photomultipliers
- Detector simulation
- System aspects: detector and electronic integration
- Astrophysics and dark matter searches
- Medical imaging
- Industrial applications

Maxim Titov (University of Freiburg) and Archana Sharma (CERN) are the workshop organizers. E-mail: titov@mail.desy.de.

2. Compton Scatter Imaging for Medicine, Astronomy and Industry.

Thurs., Nov. 2 (pm)

This half-day workshop will present the latest developments in Compton scatter imaging for applications in medicine, astronomy and industry. The format will include invited overview talks and submitted presentations. The workshop will include a question and answer session with a panel of experts.

Gary Royle (University College, London) and Tumay Tumer (Nova R&D) are the workshop organizers. E-mail: groyle@medphys.ucl.ac.uk.

3. Bimodality PET and MRI Workshop. Thurs., Nov. 2 (evening)

Interest in truly simultaneous PET and MRI imaging has increased particularly as the technology of solid state detectors and photodetectors for PET has matured. This short workshop will include invited speakers detailing the potential benefits of PET-MR imaging for medicine (covering both sequential and simultaneous approaches), as well as the particular challenges posed by the MRI environment for simultaneous imaging. The workshop is not intended to present the status of the various efforts underway (which will be covered in the regular conference sessions), but will be more issue-focused.

Paul Vaska (Brookhaven National Laboratory) is the workshop organizer. E-mail: vaska@bnl.gov.

4. Innovative Techniques for Hadron Therapy.

Fri., Nov. 3.

The treatment of inoperable and radio-resistant cancer tumors using particle beams like protons and light ions is becoming a medical reality. The number of clinical facilities is growing very rapidly around the world. After the first successful workshop organized during the 2003 IEEE NSS/MIC/RTSD conference in Portland, we propose this year to review the evolution of technological ideas and instrumentation around this emerging topic. This is a perfect illustration of a merging of nuclear and detectors experts with the medical imaging community. The goal of the workshop is to provide a forum for interested participants to discuss in a convivial way the progress in the field and to exchange recent experiences. The format of the workshop will consist of invited speakers, oral and posters presentations. The agenda will include:

- Hadrontherapy: a clinical introduction
- Survey of new facilities and projects around the world
- New machine concepts (FFAG, portable proton linac)
- Instrumentation for beam control and real time dose monitoring
- In-beam PET systems
- Proton CT imaging
- Advanced dosimetry (micro and nano

Square fact

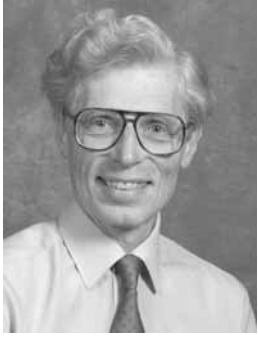
Round numbers are always false.

Samuel Johnson

Duck!

One doesn't know how many hot potatoes will appear over the horizon.

David Madel, MP



Steve Derenzo
Short Course Co-chair



Jennifer Huber
Short Course Co-chair



Ron Keyser
Exhibits Chair

dosimetry)

- Modeling of the space radiation environment using ions
- Simulation using GEANT
- New ideas using antiprotons and neutrons.

Patrick Le Dû (CEA Saclay), Anatoly Rozenfeld (University of Wollongong) and Stephen Peggs (Brookhaven National Laboratory) are the workshop organizers. E-mail: ledu@hep.saclay.cea.fr

5. The Third Workshop on the Nuclear Radiology of Breast Cancer.

Sat., Nov. 4 (pm) and Sun., Nov. 5

The goal of this one and a half day workshop is to present an update on the technology and applications of dedicated nuclear radiology breast imaging systems. Specifically, the program will cover topics such as breast cancer biology, clinical state-of-the-art in radiology, potential diagnostic and treatment roles of nuclear medicine, existing and promising breast cancer radiotracers, clinical trial results with commercial nuclear emission cameras dedicated to breast imaging, international research groups working on improving nuclear breast cancer imaging, long-term industrial outlook of dedicated breast imaging modalities, and research funding opportunities.

Ray Raylman (West Virginia University), Craig Levin (Stanford University) and Martin Tornai (Duke University) are the workshop organizers. E-mail: rraylman@hsc.wvu.edu.

SHORT COURSE PROGRAM

There are currently six, one-day, short courses planned, covering topics that are of interest to all the scientific programs. They will take place during the first three days:

1. Interaction of Radiation with Matter: theory and practice - Bill Dunn (Sun., Oct. 29).
2. Nuclear Science for Homeland Security - Tony Peurrung with Eric Smith (Sun., Oct. 29).
3. Biology for Imaging Scientists - Caius Radu (Mon., Oct. 30).
4. Detectors for PET and SPECT - Harry Barrett with Lars Furenlid (Mon., Oct. 30).
5. Small Animal Imaging: detectors and technical aspects - Arion Chatziioannou (Tues., Oct. 31).
6. Image Quality - Harry Barrett (Tues., Oct. 31).

Stephen Derenzo (Lawrence Berkeley National Laboratory), the Short Course Co-chair, can be reached at sederenzo@lbl.gov, tel: +1 510 486 4097 and Jennifer Huber

(Lawrence Berkeley National laboratory) the Short Course Co-chair, can be reached at jshuber@lbl.gov, tel: +1 510 486 6445.

PUBLICATIONS

A Program Handbook will be available that lists the title and authors of accepted papers. Abstracts will be available on USB memory sticks as part of the registration material handed out on-site. Full papers will be published in the Conference Record, a non-peer reviewed journal of the conference proceedings, available only as CD-ROM. Authors are also encouraged to submit their papers to *IEEE Transactions on Nuclear Science (TNS)* or *IEEE Transactions on Medical Imaging (TMI)*, the peer-reviewed journals most appropriate for this conference.

EXHIBITS PROGRAM

The 2006 NSS/MIC/RTSD Exhibits Program will take place in the Town & Country Room (part of the Atlas Ballroom) on Tuesday, Wednesday and Thursday with the Exhibits Reception on Tuesday evening. The space is located near the registration desk and between the session rooms and the poster area. The spacious area will give easy access to all the booths with the maximum of comfort and visibility for the exhibitor and visitor alike. The program of technical seminars and product presentations associated with the exhibition will be held in a seminar room near the exhibit area. In addition to the exhibits, all poster sessions and general coffee breaks will be held in the Atlas Ballroom and Atlas Foyer space, providing convenient access to the exhibits. Up-to-date information on the Industrial Program including the list of exhibitors, their contact information and profiles, the exhibition floor plan, as well as details of the technical seminars and product presentations, is available on the conference web site (<http://www.nss-mic.org/2006>). For all information concerning the exhibits program, please contact the Exhibits Chair.

Ronald Keyser (ORTEC), the Exhibits Chair, can be reached at Ron.keyser@ortec-online.com, tel: +1 865 483 2146 .

COMPANION PROGRAM

San Diego and its surroundings offer a broad range of cultural, cosmopolitan, natural and special attractions. The companion program will have daily trips to places of interest for everyone.

Sunday, October 29: Sightseeing in Old Town San Diego

Old Town San Diego, the first European settlement in what is now California, is called the state's birthplace. In 1769, Spanish priest Father Junipero Serra founded California's first mission here. The mission eventually moved further inland, and in the 1820s settlers moved closer to the water into the Gaslamp Quarter, leaving "Old Town" behind.

Today's Old Town San Diego centers on the oldest area. It includes a state historic park and related historic sights outside the park. History aficionados will find plenty of interest, but most people come to shop and eat in the restaurants.

The State Historic Park occupies nine square blocks and preserves many historic buildings, five built of adobe (mud) bricks. Other buildings include California's first schoolhouse, a blacksmith shop, the state's first newspaper office and a stable. These preserved buildings, each a small museum in itself, give a glimpse of life here from 1821 to 1872. Interspersed between museum buildings, you'll find shops, with emphasis on Mexican-style pottery, tinwork and the like. If you just want to stroll and shop, it will be easy, and you can extend your route outside the park and down San Diego Avenue.

Monday, October 30: Jewels by the Sea

Our first stop in beautiful La Jolla is the Birch Aquarium at Scripps. Overlooking the Pacific Ocean this facility presents undersea creatures in realistic habitats. Afterwards, guests will enjoy a California Tapas Buffet at Azul, nestled above La Jolla Cove and featuring spectacular views. After lunch, they will explore the boutiques, galleries and designer studios or beachcombing on their own at the famous La Jolla Cove.

Tuesday, October 31: Orfila Vinyards

At Orfila Vinyards guests are introduced to the entire wine-making process, from grape to bottle, firsthand. This 120-acre pristine urban reserve produces some of San Diego's finest wines including Merlot, Chardonnay and Sauvignon Blanc.

Sailing Aboard a Catamaran

Aolani is the prettiest 49-passenger, USCG-certified day sailing catamaran in the Southern California. Its spacious saloon lets you get out

of the "elements" if wet or cold. Seating is available for 30 inside the saloon with 360° views and seating for 10 in the adjacent cockpit. She is light-weight and strong (foam & fiberglass). Catamarans are extremely stable with dual hulls, offering speed, comfort and fun; you won't even know you are on the water. Choose to walk around the boat and mingle or find a peaceful and quiet corner and watch San Diego's most beautiful sites. Fun guaranteed.

Wednesday, November 1: South of the Border Adventure

Spent a casual day in Baja California along Mexico's northern coastline. There will be a one-hour tour through the festive town of Tijuana and the spectacular scenery of Baja's coastline. Our first stop is Rosarito Beach where guests will have an opportunity to browse through the bazaars or stroll along the beach and visit the cantinas. After a short ride along the coast, guests will partake in a delicious Mexican lunch at Calafia. Here our guests are surrounded by breathtaking ocean and coastline views in which to relax and enjoy a tasty Margarita.

Thursday, November 2: Sea World

With more than 100 million visitors since its opening on March 21, 1964, SeaWorld is San Diego's No. 1 tourist attraction and one of the most popular marine parks in the world. The founding principles of education, entertainment, research and conservation make SeaWorld San Diego an ideal place to learn about, enjoy and gain an appreciation for some of the ocean's most fascinating creatures.

Spread out over more than 189 acres on beautiful Mission Bay Park, SeaWorld is known for spectacular animal shows, interactive attractions, aquariums, rides and dining facilities. Over the years, the park has grown from a small display of marine animals into one of the largest and most respected marine zoological facilities in the world. The highest standards of animal husbandry, education and marine-life display have earned SeaWorld San Diego accreditation from the American Zoo and Aquarium Association (AZA). SeaWorld is now home to more than 20,000 animals, including 16 species of marine mammals, more than 430 species of fishes and more than 100 species of birds. The world-famous killer whale Shamu has been thrilling guests from around the world since 1965 as the star of the



Anne Smith
*Companion Program
Co-chair*



Carolyn Hoffman
*Companion Program
Co-chair*



Christina Sanders
Registration Chair



Bo Yu
Web Coordinator

Shamu Adventure show. California sea lions Clyde and Seamore, Dolly Dolphin and O.P. Otter are among other beloved SeaWorld animals that have entertained audiences over the years.

Friday, November 3: Palomar Observatory
Palomar Observatory is a world-class center of astronomical research that is owned and operated by the California Institute of Technology. The observatory is home to five telescopes that are used nightly for a wide variety of astronomical research programs. The research is conducted by Caltech's faculty, post-doctoral fellows and students, and by researchers at Caltech's collaborating institutions. Palomar Observatory is a privately-owned observatory located in San Diego County, 90 miles (145 km) southeast of Mount Wilson Observatory, on Palomar Mountain. The observatory currently consists of four main instruments: the 200 inch (5.08 m) Hale Telescope, the 48 inch (1.22 m) Samuel Oschin Telescope, the 18 inch (457 mm) Schmidt telescope, and a 60 inch (1.52 m) reflecting telescope. In addition, the Palomar Testbed Interferometer is located at this observatory.

San Diego Zoo

There are some "Beastly Wonders" going on at the world-famous San Diego Zoo and guests will be a part of it during their private Behind-the-Scenes tour! The San Diego Zoo, founded by Dr. Harry M. Wegeforth in 1916, has grown from modest beginnings. Today, guests will enjoy a private tour; an extraordinary way to see the San Diego Zoo. Following the Behind-the-Scenes tour, guests can further explore the zoo and visit new innovative exhibits, trademarks of the San Diego Zoo. Recent additions and renovations to the Zoo include: the Giant Panda Research Station, Gorilla Tropics, Hippo Beach, Polar Bear

Plunge, Scripps Aviary, Tiger River, and Sun Bear Forest.

Saturday, November 4: San Diego City Tour

First-time visitors to San Diego have a dazzling array of choices to make. Between the natural beauty of the beaches, parks, countless shopping and dining options, and a bustling nightlife, there's a world of possibilities. Our City Tour runs through Old Town, Balboa Park, the Gas Lamp District, Seaport Village, and the San Diego Zoo among other important sights.

Anne Smith and Carolyn Hoffman are the Companion Program Co-chairs

REGISTRATION

Registration for all activities at the conference will be handled electronically through the conference web-site at <http://www.nss-mic.org/2006>. The discounted registration fees, and special hotel conference rates, will end on Friday October 13. As an aid and incentive to young scientists, a number of trainee awards will be available to assist with hotel/registration costs.

Other Key Players:

Jean-Francois Pratte, Assistant to General Chair; Ed Lampo, Local Arrangements Chair; Tony Lavietes, Treasurer.

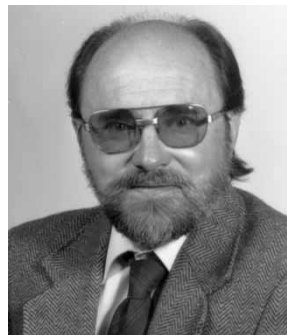
Please keep an eye on <http://www.nss-mic.org/2006> for up-to-date news.

Graham Smith can be reached at the Instrumentation Division, Brookhaven National Laboratory, Upton, NY 11973-5000, USA; Phone: + 1 631 344 4253; e-mail: gsmith@bnl.gov.

Bonnie Sherwood can be reached at the Director's Office, Brookhaven National Laboratory, Upton, NY 11973-5000, USA; Phone: +1 631 344 7250; e-mail: sherwood@bnl.gov.



Jean-Francois Pratte
Assistant to General Chair



Ed Lampo
Local Arrangements Chair



Tony Lavietes
Treasurer

RADIATION EFFECTS on COMPONENTS and SYSTEMS: RADECS 2006 WORKSHOP



Glyfada, Athens, Greece
September 27-29, 2006



The international organization RADECS (Radiation Effects on Components and Systems), is holding its RADECS 2006 Workshop on September 27-29, in Athens, Greece. This Technical Conference will be held at the Training and Conference Centre of the National Bank of Greece in Glyfada, a coastal suburb of Athens. This event features a Technical Program consisting of eight sessions of contributed papers that describe the latest observations and research results in radiation effects, and an Industrial Exhibit.

A complete technical program is being planned in the area of radiation effects on Devices & ICs, Dosimetry and Facilities, Material Interactions, Hardened by Design, Single Event Effects, Photonic Devices, and Space Radiation Environments. The Technical Program includes 38 oral and 58 poster papers, and additional "Late News" papers are expected.

Additionally, three Invited Talks and three Special Papers are scheduled.

Accommodations are provided by five hotels within walking distance to the Conference Centre, and at a guesthouse on site.

Supporters of the Workshop include NASA, the University of Southern California, the Municipality of Glyfada, and the National Bank of Greece. Cooperating Institutions are: Vanderbilt University, University of Montpellier, University of Padova, University of Madrid, AEROFLEX, CNES, EADS ST, ESA/ESTEC, QinetiQ, Onera, Tima, Sandia National Laboratories.

A formal gala dinner is planned at the unique Zappeion Exhibition Hall on the last day of the conference, Friday, September 29, 2006.

Additional Information on the workshop is available on the Web at <http://www.radecs2006workshop.gr>.



S.T. Tsitomeneas
General Chair



E.G. Stassinopoulos
General Co-chair and Organizer

2006 IEEE International Conference on Plasma Science (ICOPS 2006)

The 33rd IEEE International Conference on Plasma Science (ICOPS 2006), sponsored by the Plasma Science and Applications Committee and IEEE Nuclear and Plasma Sciences Society, was held at Grand Traverse Resort and Spa near Traverse City, Michigan from June 4 through June 8, 2006.

I am delighted to report that ICOPS 2006 proved to be a very successful event. The conference welcomed over 400 attendees, having received almost 500 abstracts. Approximately 30% of the registrants were non-US participants in keeping with the international nature of the conference. As in prior years, the number of non-US participants could have been higher if it were not for time-consuming visa application procedures. We are pleased to report that approximately 30% of the total registrants were students, evidence that the conference appeals to our future plasma scientists.

The ICOPS 2006 technical program was

superb with the technical topics organized into seven broad areas. Each area was headed by a Technical Area Coordinator (TAC) who also served as a member of the technical committee. The technical areas were:

- 1) Basic Processes in Fully and Partially Ionized Plasmas,
- 2) Microwave Generation and Plasma Interaction,
- 3) Charged Particle Beams and Sources,
- 4) High Energy Density Plasmas and Applications,
- 5) Industrial, Commercial, and Medical Plasma Applications,
- 6) Plasma Diagnostics,
- 7) Pulsed Power and Other Plasma Applications

Across these technical areas, there were a total of 31 separate technical topics representative of the wide scope of scientific endeavor embraced at the conference.

Each topic was managed by an individual



Jes Asmussen
ICOPS 2006 Chair

Absenteeism

To get something done a committee should consist of three men, two of whom are absent.

Unknown

Session Organizer (SO), who was responsible for organizing the technical sessions. This included reviewing submitted abstracts, selecting the invited talks, determining oral and poster papers, ordering the sessions and communicating with other SO's. The full session list can be viewed at www.icops2006.org. The topics attracting the highest number of abstracts were: Atmospheric-pressure Nonequilibrium Plasmas, Z-pinches and Radiation Sources; Low-pressure Nonequilibrium Plasmas, Medical, Biological, & Environmental Applications. The technical success of the conference can be largely attributed to the SO's and TAC's who diligently solicited high-quality contributions and organized the sessions. See www.icops2006.org for a list of the SO's and TAC's.

Five plenary talks enriched the technical program, addressing a variety of topics which were presented by well-respected members of the plasma science community.

A Special Issue of *IEEE Transactions on Plasma Science* (TPS) will be published to document ICOPS 2006, in addition to the Conference Record-Abstracts Book. The Special Issue is devoted to Invited and Plenary talks from ICOPS 2006. Steve Gitomer of Los Alamos National Laboratory and the Editor of TPS, along with guest editors Jes Asmussen (Michigan State University and Fraunhofer USA Center for Coatings and Laser Applications), Timothy Grotjohn (Michigan State University), and Thomas Schuelke (Fraunhofer USA Center for Coatings and Laser Applications) are overseeing this Special Issue.

ICOPS 2006 also featured a 2-day mini-course on Plasma Processing Technologies, organized by Thomas Schuelke of Fraunhofer USA Center for Coatings and Laser Applications. The course attracted 40 attendees from industry and academia which was an excellent participation and was found to be both interesting and useful by participants.

ICOPS offers a Student Grant Travel program to encourage student participation to the conference. The Chair of the Student Travel Grant Committee (a PSAC/EXCOM function) was John Luginsland of NumerEx. Grants were awarded to 10 students which assisted their attendance to the conference. The on-site IEEE membership booth was run by Tony Peratt, and a total of 28 new members to IEEE were signed.

To facilitate networking and social interac-



Chris Deeney, Recipient of 2006 Plasma Sciences Award with Piper

tion, the conference hosted a welcome reception on the Sunday evening and a banquet on the Tuesday evening. Both were extremely well attended. Ron Gilgenbach of University of Michigan received the IEEE Fellow Award at the banquet as did Chris Deeney of Sandia National Laboratories. It was an eventful evening for Chris Deeney who was the winner of the annual Plasma Science and Applications Committee Award which was also presented by Dan Jobe (Chair PSAC/EXCOM) at the ICOPS banquet. The occasion was marked with the presence of a Scottish bagpiper, heralding Chris's nationality.

ICOPS 2006 benefited greatly from the generous support of a number of organizations. Supporters of ICOPS 2006 included: Michigan State University, Fraunhofer USA Center for Coatings and Laser Applications, Air Force Office of Scientific Research, Tech-X, and IOP Publishing. Volunteers from Sandia National Laboratories and K-tech also provided invaluable hands-on support at the conference.

Grand Traverse Resort and Spa provided an excellent and beautiful location for this meeting. The wonderful weather allowed everyone to appreciate the impressive grounds at this Michigan facility. The staff at Grand Traverse Resort was efficient, supportive, responsive and more than capable of handling this type of conference.

Sincere thanks go out to all those involved,

Passing the buck

A sure sign of bureaucracy is when the first person who answers the phone can't help you.

Kenneth Fabian

in particular the Local Organizing Committee who were Timothy Grotjohn, Co-Chair, Thomas Schuelke, Treasurer, Beth Fohrman, Administration, and Claire Rosser, Conference Manager. Their contributions were crucial in

ensuring the success of ICOPS 2006.

For additional information, please visit the website at www.icops2006.org.

Jes Asmussen, ICOPS 2006 Chair, may be contacted at asmussen@egr.msu.edu.

2007 IEEE NSREC is Planning for Honolulu, Hawaii July 23 - 27, 2007

The 2007 IEEE Nuclear and Space Radiation Effects Conference will be held July 23-27, 2007 in Waikiki Beach, Honolulu, Hawaii at the Hilton Hawaiian Village Resort. The conference features a Technical Program consisting of eight to ten 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 23, a Radiation Effects Data Workshop, and an Industrial Exhibit.

The conference hotel is located on Waikiki Beach in Honolulu on the southern side of the Hawaiian island of Oahu. A complete technical and social program is being planned to maximize opportunities for information exchange and networking in the area of radiation effects on microelectronic and photonic devices, circuits, and systems. Supporters of the conference include the Defense Threat Reduction Agency, Sandia National Laboratories, Air Force Research Laboratory, the NASA Electronic Parts and Packaging Program, NASA Living With a Star Program, and the Jet Propulsion Laboratory.

TECHNICAL PROGRAM

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

- Ionizing Radiation Effects
- Materials and Device Effects
- Displacement Damage
- Single-Event Charge Collection Phenomena and Mechanisms
- Radiation Transport, Energy Deposition and Dosimetry
- Processing-Induced Radiation Effects

Radiation Effects on Electronic and Photonic Devices and Circuits

- MOS, Bipolar, and Advanced Technologies
- Isolation Technologies, such as SOI and SOS
- Optoelectronic and Optical Devices and Systems
- Methods for Hardened Design and Manufacturing
- Modeling of Devices, Circuits and Systems
- Particle Detectors and Associated Electronics for High-Energy Accelerators
- Cryogenic or High Temperature Effects
- Single-Event Effects
- Novel Device Structures, such as MEMS and Nanotechnologies

Space, Atmospheric and Terrestrial Radiation Effects

- Characterization and Modeling of Radiation Environments
- Space Weather Events and Effects
- Spacecraft Charging
- Soft Error Rates (SER)

Hardness Assurance Technology and Radiation Testing

- Testing Techniques, Guidelines and Hardness Assurance Methodology
- Radiation Exposure Facilities
- Dosimetry

Commercial Space Systems

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



And vice versa?

A pessimist is one who has been intimately acquainted with an optimist.

Elbert Hubbard

Wrong focus

It isn't that they can't see the solution. It is that they can't see the problem.

G.K. Chesterton

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 2007 NSREC for either the Technical Sessions or the Data Workshop can be found at www.nsrec.com. The deadline for submitting summaries is February 2, 2007.

SHORT COURSE

Attendees will have the opportunity to participate in a one-day Short Course on Monday, July 23. The theme for the 2007 short course is: "Hardened Electronics for Tomorrow's Strategic and Space-Based Systems" and is being organized by Prof. Hugh Barnaby of Arizona State University. Planned topics include:

- Process Technologies and Hardening
- Radiation Effects and Mitigation Strategies in Digital ICs
- Radiation Effects and Mitigation Strategies in Analog/Mixed Signal
- Hardening at the System Level.

The course will be of interest both to radiation effects specialists and newcomers to the field alike.

INDUSTRIAL EXHIBIT

An Industrial Exhibit will be included as an integral part of the conference. The exhibit will be held on Tuesday and Wednesday. It will include exhibits from 35-40 exhibitors that 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

Lloyd Massengill
Vanderbilt University
615-343-6677

Technical Program

John Cressler
Georgia Tech
404-894-5161

Local Arrangements

Susan Crain
Aerospace Corporation
310-336-4457

Short Course

Hugh Barnaby
Arizona State University
480-727-0289

Publicity

Teresa Farris
Aeroflex Colorado Springs
719-594-8035

Finance

Lew Cohn
DTRA
703-767-2886

Awards

Clive Dyer
QinetiQ
44-1252-393774

Industrial Exhibits

Barry Templeton
ISDE
615-322-3833

Guest Editor

Jim Felix
Sandia National Labs
505-844-6132

Dream on

Reality takes a lot of imagination.

John Lennon

PRESIDENT'S REPORT

As I once again take pen in hand (well, computer in lap) to write this letter, I realize that my term as NPSS President will expire before the next Newsletter, so this will be the last President's Report that I will be writing to you. This naturally makes me reflect on my time as President, and so that will be the subject of this letter.

I became the NPSS President nearly three years ago. The normal term of office is two years as Vice President followed by two years as President, but I assumed office early because of the untimely death of Ed Hoffman. His death was a real blow to me as a friend and colleague, and stepping into office sooner than expected also meant I was a lot less prepared than I would like to have been. However, Peter Winokur (a former President) quickly pulled me aside and gave me some sage advice, which was not to try to fix everything, but to concentrate on a single issue/task and feel happy if you can get that accomplished in your term of office. I have since heard that virtually every incoming President has received this advice from their predecessor, but this seemed like an excellent plan at the time (and still does).

My mission became apparent almost immediately. Ed Hoffman had been Editor for all of the medical imaging manuscripts submitted to TNS, so getting those manuscripts processed became a major issue. John Valentine had been performing a similar function for the radiation detector papers in TNS, and he also needed to step down. We suddenly had a major crisis, as we were missing editors for nearly half of the papers submitted to TNS. What also became obvious was how "thin" we were in these positions—both Ed and John had been doing a huge amount of work essentially without assistance, and so we had almost no trained backup people for their positions. Vern Price, our Membership Chairman, was also doing a huge amount of work without any assistance and he too announced his intention to step down. Thus, my mission was to fix these immediate problems, fix them in a way that would provide backup, and look through the rest of the NPSS activities and try to identify and add more depth to activities where we were too thin.

Fast forward two and a half years, and my mission is nearly (although not entirely) accomplished. During the time that Paul Kinahan did

yeoman's work filling in for Ed Hoffman and John Valentine extended his tour of duty for an additional six months, Paul Dressendorfer and Steve Gold led a team that put together an entirely new editorial structure for TNS—one that replaced a group of ~5 Editors with ~35 Editors. This system has now been in place for 18 months, and while the bugs aren't 100% removed, this system will cope much more easily with the sudden loss of one or two people, and should ultimately improve the review quality and decrease the time to publication. Steve Gitomer and Ron Jaszczak subsequently led a team that has nearly finished expanding the TPS editorial staff. Vern Price was persuaded to extend his stay as Membership Chair, but a replacement system with ~10 people is close enough to being in place that Vern can finally step down at the end of this year. Finally, we have also given Ed Lampo some backup at the Treasurer's position by adding Tony Lavietes as the Treasurer for Conferences, and that is working out quite well.

Thus, I feel that the NPSS is in excellent shape right now. I would love to take credit for this, but it wouldn't be at all right, as all of the work has really been done by an outstanding cadre of volunteers. Our conferences are very strong both technically and financially. From the NPSS President's perspective, they pretty much organize themselves—each NPSS conference has a very strong community that organizes it, and the less I concern myself with "their" conference, the better they like it. As for Publications, Paul Dressendorfer and Steve Gitomer (the TNS and TPS Editors-in-Chief) provide similar roles, and their new editorial staff is forging itself into a strong, well-contained unit. And so it goes through the rest of the NPSS. I have also been given a lot of guidance and support from a number of sources. Whenever I'm presented with a question that is too hard for me to handle (which is what usually happens), I pass it off to appropriate people for advice and they provide me with the solution. The definition of "appropriate" depends a lot on the question, but some people whose names are almost always on the email list are Hal Flescher, Jane Lehr, Albe Larsen, Peter Clout, Peter Winokur, and Ed Lampo, and I would like to thank them personally for all



Bill Moses
NPSS President

A little knowledge...

If I had known I was going to live this long, I would have taken better care of myself.

Eubie Blake

A new twist

First you get your facts then you can distort them at your leisure.

Mark Twain

their help and support. I have a hard time restricting this list to just a few people, as I have sought and received advice from many, many more people, and hope they understand that I value and appreciate their help even if I can't thank them all by name. Finally, I would also like to say that working with the NPSS AdCom has been quite rewarding personally. I don't know how we get so many extremely talented and hard-working people to donate their time to the NPSS, but they are really who have made the NPSS the success that it is today. Just working with and being with

these people is an absolute pleasure, and being selected as their spokesman (I refrain from using the term "leader," as they are not the kind of people who are easily led), has been a real honor.

As usual, if you have any thoughts on these or any other issues, please feel free to contact me.

Bill Moses, IEEE NPSS President, can be reached at Lawrence Berkeley National Laboratory, One Cyclotron Road, MS55-121, Berkeley, CA 94720-8099; Tel.: +1 510 486 4432; Fax: +1 510 486 4768; E-mail: wwwmoses@lbl.gov.

SECRETARY'S REPORT

In the July issue of the Newsletter, among the sidebar quips and quotes, there appeared a quote that caused distress to a few of our members, feeling that we were advertising and supporting an atheist web site. To any and all of you who felt this, I offer my heartfelt apologies. There was no such intention. Both the provider of the quip and I felt that there was amusement in the contradiction in the statement that noted "atheist beliefs." We deeply regret that this was found offensive, and I will screen the quips and quotes more rigorously in future.

The AdCom meeting for July was held in Ponte Vedra Beach, FL, following the 2006 NSREC conference. The Newsletter deadline precludes including a report of this meeting, but it will be included in brief summary in the March Newsletter.

Albe Larsen, the IEEE NPSS Secretary, can be reached at the Stanford Linear Accelerator Center, MS 66, 2575 Sand Hill Road, Menlo Park, CA 94025; Phone: +1 650 926 2748; Fax: +1 650 926 5124; E-mail: amlarsen@slac.stanford.edu.



Albe Dawson
Larsen
NPSS Secretary

TECHNICAL COMMITTEES

NUCLEAR MEDICAL AND IMAGING SCIENCES TECHNICAL COMMITTEE (NMISTC) UPDATE

We are finally close to closing out the 2005 NSS/MIC conference. It always takes much longer than one expects. The new bylaws are in effect and we will continue to review them for any further changes that are needed to keep us "in tune" with the times. Other administrative tasks attacked over the last couple of months include the identification of two outstanding candidates to run for the elected AdCom position for NMISTC. I am happy to report that Eric Fry and John Aarsvold have agreed to run even with their many tasks as MIC chairs for 2006 (John) and 2007 (Eric). We are now working on a slate of candidates for the other NMISTC positions for the Fall elections.

Once again I am impressed how much is done by the volunteers who make NPSS a viable organization within IEEE. We can continue to expect improvements in the review process for MIC sub-

missions to the *Transactions on Nuclear Science* due to the huge effort by Joel Karp, his associate editors, and the new support staff help at IEEE headquarters. The NSS/MIC meeting is a huge undertaking with budgets running well over half a million dollars a year (for 2005 the cost of the meeting was just over \$700,000). The amount of work and the responsibility to put on such a successful meeting year after year is incredible – and rewarding. It would not happen without our hard-working volunteers. I urge anyone associated with the MIC who enjoys the annual meeting to find ways to contribute to the volunteer effort to keep it going and improving.

MIC 2005

The 2005 NSS/MIC conference was successfully held from October 23-29, 2005 at the Wyndham El Conquistador resort in Las Croabas, Puerto Rico. The conference did well with a return of



Tom Lewellen
NMISTC Chair

\$130,224 (18%) in spite of many unbudgeted expenses due to the larger number of attendees than planned. For example, the shuttle bus fees ran close to \$50,000. The good news is that we did follow on the tradition of budgeting for the meeting and had allocated contingency accounts that covered much of the more interesting expense items that arose. But, we feel that the 2005 NSS/MIC meeting was quite a success, particularly in view of the experiment with holding the meeting in full-scale (and captive) resort.

MIC 2006

Details on the 2006 conference are covered elsewhere in this newsletter, but it will once again be a popular and highly successful meeting.

MIC 2007

This meeting will be held at the Hilton Hawaii Village, Honolulu, Oct 26-Nov 3, 2007. The general chair for the meeting is Ben Tsui (Johns Hopkins), who is forming the organizing committee. Eric Frey (Johns Hopkins) is the MIC chair, and Magnus Dahlbom is deputy MIC

chair. The web site is up and the first flyer available for downloading. Site visits have been made and planning is well underway.

MIC 2008

The general chair for this meeting will be Uwe Bratzler. The meeting will be held at the conference center in Dresden. The contract with the conference center is under review and should be ready for submission to IEEE in the near future.

MIC 2009

The site selection committee is working on the 2009 site and is looking at properties in Orlando, Atlanta, and Knoxville. Site visits to Orlando are being done immediately after the AdCom meeting in July and the other sites in September. Final recommendations should be presented at the AdCom meeting in October.

Tom K. Lewellen, NMISTC Chair, can be reached at University of Washington, P.O. Box 356004, Seattle, WA USA 98195-6004; Phone: +1 206 598 6249; Fax: +1 206 598 4192; E-mail: nss2005@u.washington.edu.

NUCLEAR AND SPACE RADIATION EFFECTS NEWS

Annual Report from the Radiation Effects Committee

The IEEE Radiation Effects Committee (REC) held its annual Open Meeting on July 21, 2006 at the Sawgrass Marriott in Ponte Vedra Beach, Florida, during the 2006 Nuclear and Space Radiation Effects Conference (NSREC). The meeting included reports from the chairmen of the 2005 through 2009 NSRECs.

The members of the RESG who completed their terms were recognized for their contributions. Dale Platteter of NSWC-Crane, Outgoing Past Chairman, was also honored for his service as the founding "Webmeister" for NSREC and his work on the NSREC Short Course Notebook CD compilations. Ron Schrimpf of Vanderbilt University served as RESG Chairman and will now become Past Chairman. Tim Oldham of NASA Goddard, who completed his term as Executive Vice Chairman, becomes the new Chairman. Taking Tim's place as Executive Vice Chairman, will be Dan Fleetwood of Vanderbilt University. Kay Jobe of Boeing will be the new RESG Secretary, taking over from Jeff Black of Vanderbilt University/ISDE. Steve Clark of the Air Force Research Laboratory was honored for completing his three-year term in

the Member-at-Large positions.

An election was held during the Open Meeting for Junior Member-at-Large to the Radiation Effects Steering Group (RESG). The RESG welcomes Marty Shaneyfelt from Sandia National Laboratories as its newly elected Junior Member-at-Large. Marty joins Veronique Ferlet-Cavrois from the Commissariat à l'Energie Atomique (CEA) and Wayne Abare from Harris Corporation, who are serving as Senior-Member-at-Large and Member-at-Large, respectively.

During the Open Meeting, Ron Schrimpf mentioned the General Chairs of the upcoming NSRECs. Lloyd Massengill of Vanderbilt University, Paul Dodd of Sandia National Labs, Mark Hopkins of the Aerospace Corporation and Joe Benedetto of ATK are the General Chairs of the 2006-2010 NSRECs, respectively.

Fred Sexton of Vanderbilt University, 2005 Conference General Chairman, recognized each member of his conference committee with an award plaque. Fred and his team organized an outstanding conference in Seattle.

Janet Barth, 2006 Conference General Chair, summarized some statistics from the 2006 conference. A total of 517 people attended the tech-

True for many

Don't say I was honest, just say I never got caught.

Meade Esposito



Ron Schrimpf
Chair, Radiation Effects



Teresa Farris
Vice Chair, Publicity

Ad-vice

Without publicity
there is no
prosperity.

Yakov Zeldovich

nical sessions, the short course, or both. In addition, we registered 67 people for the exhibits, for a grand total of 584 attendees. The technical sessions were very strong, with 144 papers presented during the four-day conference (53 orals presentations, 57 posters, 34 data workshop) and four 90-minute presentations during the short course. The international attendance totaled 82 people, led by France with 26 and Japan with 11. U.S. attendance was 435, with the largest numbers of attendees coming from California (107), New Mexico (50), Tennessee (35), Virginia (34), Maryland (27), and Texas (24).

Lloyd Massengill, 2007 Conference General Chairman, announced that the Nuclear and Space Radiation Effects Conference will be held on July 23-27, 2007, at the Hilton Hawaiian Village in Honolulu. The Technical Program Chairman will be John Cressler from Georgia Tech. Hugh Barnaby of Arizona State University is organizing the tutorial Short Course. Once again, NSREC 2007 is planning a Poster Session (chaired by Dale McMorrow of NRL), a Radiation Effects Data Workshop (chaired by Christian Poivey of NASA Goddard) and an Industrial Exhibit (chaired by Barry Templeton of Vanderbilt University). Susan Crain, Aerospace Corporation, is handling local arrangements and

assembling the social program for NSREC's first conference in Hawaii.

We continue to look for ways to encourage NPSS membership among the members of our community. As we have in recent years, we distributed a QuickTime video recording of the previous year's Short Course on CDROM (playable on your Mac or PC), and provided this CD to each NPSS member who attended. We encouraged our NPSS members to show this Short Course video to their non-NPSS colleagues. Tim Holman of Vanderbilt University leads this effort and the videos from the 2005 NSREC Short Course will be mailed shortly.

Minutes from the REC Open Meeting are available at www.nsrec.com. For the most current information on the Nuclear and Space Radiation Effects Conference, including information on paper submission, please visit this web site.

Ron Schrimpf completed his service as Chairman of the Radiation Effects Steering Group, which oversees the NSREC Conference and technical chairman of the NPSS Radiation Effects Committee in July. Ron can be reached at Vanderbilt University, ISDE Elec. Eng. & Comp. Sci. Dept., 5635 Stevenson Center, Nashville, TN 37235; Phone +1 615-343-0507; Fax +1 615-343-0601, E-mail: ron.schrimpf@vanderbilt.edu.

FUNCTIONAL COMMITTEES

AWARDS COMMITTEE

How Your Award Application is Processed

This explains how your award application is processed and will be sent to all nominators and nominees.



Igor Alexeff
Chair, IEEE NPSS
Awards Committee

Thank you for submitting your award application. Below we have outlined the IEEE NPSS Award Process. Since the process is carried on by volunteers in their spare time, the process is slow, and the awards are generally presented at meetings during the subsequent year.

1. Awards applications received (May 15)
2. Packages duplicated and mailed to members of award committee.
3. Rankings received back from the committee. A spread sheet is prepared.
4. Awardees decided upon by mutual discussions in the committee.
5. Both nominators and nominees are notified of the decisions of the committee.
6. Awardees' names submitted to IEEE. Kathy Colabaugh prepares certificates and plaques. Rosanne Loyal prepares checks.
7. Proposed citations on plaques and certificates checked for accuracy.

8. Certificates and Plaques are prepared.
9. Rosanne Loyal sends out Income Tax Forms to awardees. Check cannot be sent out until signed Income Tax Form is returned by the awardee.
10. Certificates, plaques and checks are mailed to the awardees directly to avoid possible loss. If a presentation is desired at a given meeting, the nominator or the awardee is responsible.
11. Names, brief biographies, citations and high resolution digital photographs of the awardees are to be submitted to the IEEE newsletter by each awardee. Material should be sent to amlarsen@slac.stanford.edu by July 5 for the September Newsletter, and by January 3 for the March Newsletter.

Igor Alexeff, the Awards chair, can be reached at the University of Tennessee, Ferris Hall 315, Middle Drive, Knoxville, TN 37996-2100; Phone: +1 865 974 5467; E-mail: Alexeff@utk.edu.

FELLOW EVALUATION COMMITTEE

IEEE FELLOW NOMINATIONS ARE DUE BY MARCH 1, 2007

In my first year as Chair of the NPSS Fellow Evaluation Committee (FEC), there were 19 nominations from NPSS, an all time high. This year there were only 9, a bit disappointing. For the record, in calendar years '99 through '06, the NPSS FEC evaluated 12, 11, 18, 13, 11, 12, 19, and 9 nominations, respectively. The average is 13, so by any standards this year's total was below par. NPSS isn't guaranteed that a certain percentage of our nominations will be elected to the grade of Fellow, but a rule of thumb is about 40%. As I've said in the past, that's higher than other societies. Hopefully, NPSS will have 4 or 5 new Fellows announced at the Board of Directors meeting in December!

I want to thank the members of the FEC for all their efforts. They are Victor Granatstein, Ron Huesman, Osamu Ishihara, Stan Schriber, Jim Schwank, and Peter Turchi. It's always challenging to review these nominations. I hope you can make our job ever more difficult by increasing the number of nominations in 2007.

I encourage you to nominate a deserving colleague and begin the job of preparing the application and lining up references now. Nominating forms, detailed instructions, and frequently asked questions can be found at the IEEE Fellow Program Web Site at www.ieee.org/fellows.

To be nominated, the candidate must meet the following three basic qualifications: hold Senior Member grade at the time the nomination is submitted; be an 'active' member (that is, dues must be current); and must have completed five years of service in any grade of IEEE membership. Note: IEEE affiliate membership within an IEEE society does not apply. I'm often shocked to learn that folks who have made significant contributions to our Society aren't even Senior Members. It only takes a few minutes to prepare an application to be a Senior Member and it is web based.

A nomination must be supported by at least five, but no more than eight references from active IEEE Fellows. The biggest stumbling point for nominations is getting five references. If possible, nominators should list eight references. That way, if one or two references can't meet the deadline, the nomination still has the required five references. A

list of IEEE Fellows can be found at the IEEE Fellow Program Web Site or in the current IEEE Membership Directory. In addition, a Fellow Nomination Resource Center (FNRC) was established. The purpose of the Center is to assist nominators in locating the required number of references to support a nomination to IEEE Fellow Grade. The Center will operate on an experimental basis for a 3-year period. It is a volunteer support group comprised of a Chair and Case Managers, all of whom must be IEEE Fellow-Grade members. Nominators wishing assistance from the FNRC must initiate a request by sending an e-mail to FNRC@ieee.org.

IEEE hopes its Electronic Fellow Nomination Process to be fully implemented in 2007, which will make it even easier for you to complete the nomination form. I say "hope" because we expected a fully electronic nomination process two years ago, and it hasn't happened yet. It will happen some day soon.

The IEEE Board of Directors recently approved changes to the process for nominating and electing IEEE members to Fellow Grade. The goal of these changes is to increase the number of nominations received for members from industry and to make the process more receptive to nominations received for application engineers or engineering practitioners who have made contributions of unusual distinction to the profession. Specifically, the changes established a new nomination category for individual contributions, "Application Engineer/Practitioner." This category recognizes significant contributions in "product development, advancement in system, application or operation, project management or construction activity, process development, manufacturing innovation, codes or standards development, or other application of technology."

Also, the existing designation; "Engineer/Scientist" was changed to, "Research Engineer/Scientist." The other existing categories, "Educator" and "Technical Leader" remain the same. So, the IEEE now recognizes contributions in four distinct categories.

On behalf of the NPSS Fellows Evaluation



Peter Winokur
*Fellow Evaluation
Committee Chair*

**But fools buy
them**

**Any fool can
write a novel but
it takes a genius
to sell it.**

J.G. Ballard

Committee, I urge you to consider making an IEEE Fellow nomination next year. March 1, 2007 will be here sooner than you think.

Peter S. Winokur, Chair, NPSS IEEE Fellow

Candidate Evaluation Committee, can be reached at the National Nuclear Security Administration, Washington DC Office; Phone: +1 202 586-5480; E-mail: p.winokur@ieee.org.

STANDARDS COMMITTEE

The NPSS Standard Development Process



Ron Keyser
Chair, Standards
Committee

A standard begins with a project idea based on an identified need for uniformity in operation or supplies. Uniformity in operation means easy exchange of information, signals or equipment among different groups working in the same area. Uniformity in supply means manufactures are able to design, build and specify devices to meet the needs of different groups. One example of operation is the NIM Standard and one of supply is the Germanium Detector Standard. The project idea is formally known as a project authorization request (PAR). This PAR is developed by the NPSS Standards Chairman with the help of others interested in the standard. A working group is formed at this time. The working group Chairman leads the development process. The PAR is submitted to the IEEE Standards Board for approval. The Standards Board determines if it is needed and if enough volunteers are available to develop it (the working group).

The document produced can be either a standard containing mandatory requirements, a recommended practice outlining preferred procedures, or a guide offering suggestions for working with technology. Projects can be new standards, revisions of existing standards or amendments to existing standards. Standards have a five-year life after which they must be reaffirmed.

The IEEE Standards Board reviews PARs at the regular quarterly meetings. A project should be completed within four years after the PAR is approved.

With PAR approval, the development of the standard begins. Working groups are open to the public and have well-publicized procedures for membership, voting, officers and other areas. To assure openness, agendas for working group meetings are distributed before the meetings and the results of the group's deliberations are publicly available.

Balloting begins when the NPSS Standards Committee Chairman determines the full stan-

dard is finished. The Chairman forms a balloting group containing persons interested in the standard. While anyone can contribute comments, the approval is based on votes of the eligible members of the balloting group.

Balloting is a balanced process that prevents any one group or company from dominating the process. Balloters are separated into three classes: producers, users, or general interest. The general interest group is a broad category that includes government officials, consultants and end users. No interest category can be more than half of the balloting group. The balloting goal is to obtain the greatest consensus. A standard must have at least 75% response to the ballot for the ballot to be valid. At least 75% of the returned ballots must vote "yes" for the standard to be approved. In addition, to be approved, no more than 30% of the returned ballots can be abstentions.

The balloting process lasts from 2 to 3 months to allow ample time for comments. The balloters can approve, disapprove, or abstain. They can also add comments to the approval or disapproval. All comments received are reviewed and resolved. If there are any technical comments, the comments or proposed changes are recirculated.

Anyone can appeal actions and decisions made during the standard development process at any time. Before IEEE-SA Standards Board approval, complaints are handled by the NPSS Standards Committee. After approval, they are handled by the IEEE-SA Standards Board if the issue is procedural or by the NPSS Standards Committee if the issue is technical.

The IEEE Standards Board approves or disapproves standards based on the recommendation of its Standards Review Committee. This committee makes certain that working groups follow all the procedures and guiding principles in drafting and balloting a standard. The Board reviews standards quarterly. After approval, the standard is given a final edit, then published.

Then silence

The older I grow,
the more I listen
to people who
don't say very
much.

Germain Glidden

To start the process of making or modifying a standard, just send me your ideas and I will start the process.

Ron Keyser, Chair, IEEE NPSS Standards

Committee, can be reached at ORTEC, 801 S. Illinois Ave., Oak Ridge, TN 37830-7985; Phone: +1 865 483 2146; E-mail: ronkeyser@ieee.org.

AWARDS

2006 NSREC RADIATION EFFECTS AWARD

Received by
DENNIS BROWN

The 2006 Radiation Effects Award was presented to Dennis Brown from the National Reconnaissance Office. Dennis has made many important contributions to the radiation effects community, and has done important work in areas such as time and energy dependence of radiation effects, radiation dose enhancement, kinetics of radiation induced interface state generation, annealing of radiation induced trapped charge, and the mechanisms of low dose rate effects in bipolar semiconductor devices. He has been active in the IEEE Nuclear and Space Radiation Effects Conference (NSREC), and

has served the NSREC as an author, reviewer, session chair, short course presenter, Short Course Chairman, Technical Program Chairman, General Chairman, member of the Radiation Effects Steering Group, and most recently as AdCom representative for the NPSS Radiation Effects Committee from 2002-2005.

His citation reads "For contributions to the dissemination and advancement of radiation effects research and by his leadership in all aspects of the IEEE Nuclear and Space Radiation Effects Conference and the Radiation Effects Steering Group."



Dennis Brown

PHELPS GRANTS

Phelps Grants Awarded to Student Members from Radiation Effects Community

On behalf of NPSS, we are proud to announce two recipients for the Paul Phelps Continuing Education Grants.

Xing Zhou is in the process of completing her research in the interdisciplinary graduate program in materials science at Vanderbilt University. She has made significant contributions to the understanding of the separate and combined effects of bias-temperature stress and ionizing radiation exposure for MOS devices with high-K dielectric materials. Xing has authored 11 publications, and was first author on four of them. Last July, a paper on which Xing was first author, "Bias-temperature instabilities and radiation effects in MOS devices," was one of 11 papers nominated for the Outstanding Conference Paper Award at the IEEE NSREC in Seattle, WA. Her thesis advisor, Dr. Daniel M. Fleetwood, Professor of Electrical Engineering, nominated her for this award.

Andrew Wroe is completing his studies in medical radiation physics and dosimetry at the Centre for Medical Physics, University of Wollongong, Australia. He has been performing research on micro- and nano-dosimetry with protons and heavy ions for therapeutic and space applications. He expects to receive his PhD in June 2007. Andrew has authored ten publications, and was first author on three of them. Andrew recently presented a paper entitled "Silicon microdosimetry in heterogeneous materials: simulation and experiment" at the Nuclear and Space Radiation Effects Conference (NSREC) in Ponte Vedra Beach. His professor, Dr Anatoly Rosenfeld, nominated Andrew.

At the opening of the NSREC technical sessions (July 18, 2006), both students were presented with the Phelps Grant. The grant included tuition for the short course and a check for \$500.

It should be noted that both students have



Xing Zhou



Andrew Wroe

Mission impossible

Nobody ever drowned in his own sweat.

Tex McCrary

submitted papers for publication in the December 2006 issue of the *Transactions of Nuclear Science*. Both are members of IEEE and NPSS.

The purpose of the Phelps Grant is to promote continuing education and encourage membership in the Nuclear and Plasma Sciences Society (NPSS).

The basis for judging is exceptional promise as a graduate student working in the fields of the NPSS, "exceptionally good work" in those fields, and an expectation that attendance at an

NPSS-sponsored short course will result in an improved possibility of obtaining a job.

Professors should consider nominating their most promising students before May 15, 2007. Forms can be found on the NSREC web site (www.nsrec.com).

Veronique Ferlet-Cavrois, Member-at-Large and Phelps Award chair for the Radiation Effects TC, can be reached at CEA, BBP12, Bruyeres, LeChatel 91680, FRANCE; Phone: +331 69264265; Fax: +331 69267115; E-mail: veronique.ferlet@cea.fr.

LIAISON REPORTS

THE COALITION FOR PLASMA SCIENCE

The IEEE Nuclear and Plasma Sciences Society has been and continues to be one of the strongest member supporters of the Coalition. NPSS AdCom recognized early in the Coalition's history that CPS's effort to educate nontechnical people about our field is important and valuable for the technical community NPSS represents. CPS's efforts are also in step with the broad IEEE vision and mission, which are stated in terms of benefiting members' careers, humanity worldwide, and the profession.

It was a dark and stormy night. The sky over Washington looked angry and threatening. Suddenly a bright flash lit up the sky. "What was that?" asked Mr. Congressman. "That was from plasma" answered Young Staffer. "Who is plasma? Is he from my District?" asked Mr. Congressman. "Plasma's not a Who," answered Y.S., "it's a What. Plasma is the stuff that makes up most of our visible universe. It's critical in manufacturing things we use every day, like computers, and someday it will generate huge amounts of electricity in fusion power plants. Plasmas are critical to a number of industries that are important to the economy. You're probably not familiar with plasma since it is not widely taught in schools." "Well, how do you know so much about plasma?" asked Mr. Congressman. "I've been going to a series of barbeque lunches with educational talks about plasmas sponsored by the Coalition for Plasma Science," said Young Staffer. "The Coalition also has a great website aimed at nontechnical people like you and me, and it puts out a series of short write-ups on different types of plasmas." "Barbeque!" said Mr. Congressman. "Tell me more."

Well then, here's some more:

First of all, Mr. Congressman, you're not alone. Outside the technical community, most

people don't know anything about plasmas. They don't know what a plasma is; they don't know where plasmas are found, either in nature or in applications; and they don't know about the importance of plasmas to their lives and to the economy. At the present time when someone encounters the term "plasma," he or she often thinks of blood plasma – or nothing at all. Plasma as an ionized gas, the fourth state of matter, is a new concept for many people.

Many of those most unfamiliar with plasmas are people who are important to the field of plasma science. These include:

- Government policy-makers in Washington, DC, who determine research funding;
- Members of the media, who provide information to the general public and can affect the public's attitudes (which in turn can influence research funding levels and priorities);
- K-12 teachers, who can educate, influence, and inspire their students to become the future plasma researchers and engineers;
- K-12 students, who may work in this field someday or may become the government policy-makers, teachers, or members of the media.

The lack of knowledge about plasma impedes education, support for basic research, and the pace of technological innovation in the field.



Photo courtesy of Kevin Ambrose, WashingtonPrints.com

Plasma goes to Washington

The Coalition for Plasma Science (CPS) has been formed to help solve this problem for a broad range of plasma science interests. CPS works to educate nontechnical people about plasmas in order to increase public awareness and understanding of plasma science and its many applications and benefits for society. Its audience includes all the groups listed above. The Coalition introduces that audience to the wide range of natural and man-made plasmas and to their importance. CPS's goal is to have a significant impact on plasma education and on the public and Congressional awareness of plasma science. The Coalition's membership is made up of universities, national laboratories, companies and professional organizations that are concerned in some way with plasmas.

CPS carries out various activities and events. The following are some of those efforts -- some underway, others completed or planned.

CURRENT ACTIVITIES AND EVENTS

Among the current CPS activities and events are:

Capitol Hill Educational Luncheon Presentations

CPS presents educational talks for Members of Congress, their staffs and other governmental representatives to help them understand the everyday presence and importance of plasmas, and the possibilities plasmas hold for the future. These talks have been held in the U.S. Capitol Building and the House Office Buildings. Topics have included Fusion, Plasma TV, Plasma Propulsion in Space, Environmental Applications, the Aurora Borealis, Lightning and K-12 Plasma Education.

Web Site

The CPS web site ("plasmacoalition.org") contains numerous items about plasmas and about CPS. The information about plasmas includes general introductory material, information about commercial and industrial applications, and links to other plasma-related web sites. Included in those links are the NPSS site, the NPSS Plasma Science and Applications Committee (PSAC) site and PSAC's list of plasma conferences. The information about CPS includes its mission, goals, meetings, membership requirements, events and activities, web links to members' sites, and its newsletter.

One important part of the web site is: *A Teacher's Guide to Plasma Science Resources*. This is a comprehensive list of plasma education web sites, each rated against national science standards. These sites are intended primarily to help K-12 teachers integrate a study of plasmas into their curricula. Students enjoy the site as well. With help from K-12 teachers the site is updated annually.

The site also contains a number of downloadable CPS-published items. Some of these are described below. Numerous requests for hard copies of these items are received for classroom use and for distribution at tours of plasma-related facilities, as well as for personal use and for science projects.

CPS Publications

CPS literature that can be downloaded from the web or requested in hardcopy includes:

Two-Page Plasma Articles -- *About Plasmas*

CPS produces a series of brief two-page introductions to various types of natural and man-made plasmas and plasma applications written for nontechnical audiences. Currently available topics include Plasmas for Welding, Plasma Display Panels, Cleaning the Environment, Destroying Biological Hazards, Fusion, Lightning Plasmas, Lightning, and Space Plasmas.

Educational Brochure and Poster -- *Plasmas Are Everywhere*

The two-sided tri-fold brochure includes on one side a large image showing examples of plasmas in our universe, where they are found, and how they are used in various technologies. That image is also available as a poster.

Newsletter -- *CPS Plasma Page*

This semiannual newsletter reports on recent and future CPS activities, with occasional features about specific plasma science and applications topics. The complete archive can be found on the web site.

Science Fair Award

In 2005, CPS established an award for the best plasma-related project at the annual Intel International Science and Engineering Fair. Judging assistance is provided by members of the plasma community, including members of

Home schooling

You can learn many things from children. How much patience you have, for instance.

Franklin Jones



Gerald Rogoff,
NPSS Liaison
Representative to the
Coalition for Plasma
Science

Future imperfect

History teaches us the mistakes we are going to make.

Lawrence J. Peter

Or move upwind

Tolerance is like saying "You smell, but I can hold my breath."

David See-Chai Lam

PSAC through the PSAC ExCom.

Inquiries and Requests

CPS typically receives a few questions each month regarding plasmas via the CPS e-mail address or its toll-free phone number – in addition to requests for copies of its educational literature for distribution.

Coordination

The Coalition coordinates its activities with other organizations in order to complement efforts and assist or join forces where appropriate. For example, CPS co-sponsors and its members annually participate in the American Physical Society - Division of Plasma Physics Science Teachers Day and Plasma Sciences Expo - for middle and high school teachers and their students. The free teacher training workshops typically support about 100+ participants, while the Expo, filled with hands-on demonstrations of plasma-related physics, attracts 1,000 – 2,500 students. CPS also coordinates efforts with some CPS member organizations that are independently active with educational and outreach activities. Occasionally CPS will suggest to another organization an activity relevant to both that group's mission and CPS's goals.

PAST CPS EVENTS AND PROJECTS

These include: a review of K-12 and college textbooks to determine the extent to which plasmas are being introduced; a plasma exhibit in the Rotunda of the Cannon House Office Building on Capitol Hill; and a reception and interactive plasma exhibit with hands-on plasma demonstrations in the Rayburn House Office Building.

CPS has also worked with ICOPS organizers to arrange special sessions and events at their conferences. These include plenary panel sessions at the 1999 ICOPS in Monterey and the 2000 ICOPS in New Orleans. Those sessions addressed the importance of communi-

cating about plasma science to nontechnical audiences, and offered ways to do it effectively. Also, with considerable support and assistance from the conference organizers, receptions were held at both the Banff ICOPS in 2002 and the Baltimore ICOPS in 2004 to inform conference attendees about the Coalition.

PLANNED PROJECT – STATE SCIENCE EDUCATION STANDARDS

Much of the general lack of knowledge about plasmas stems from the absence of even the word "plasma" as the fourth state of matter in K-12 curricula. CPS is initiating a review of the education standards of all fifty states in an effort to get the topic – or at least the word – inserted where it is missing.

CPS's activities depend to a great extent on the interests of the individuals involved, and the organization is open to new ideas and suggestions. If you are interested in being involved and you would like information on participating in an ongoing CPS activity, or if you have a suggestion for a new activity, please contact the author (g.rogoff@ieee.org). The planned project to improve state science education standards is one area where members of the technical community can help with very little time obligation. Also, please contact the author if you would like information on how your organization can become a member of the Coalition.

Needless to say, at some point during this discourse, Mr. Congressman hurried away to his office, presumably eager to look up the CPS web site to learn how plasmas and the Coalition for Plasma Science can help the voters in his District, the people of our great nation, the U.S. and global economies, and our understanding of the vast universe around us.

Gerry Rogoff, IEEE NPSS's liaison to the Coalition for Plasma Science, can be reached at g.rogoff@ieee.org.

STATEMENTS FROM IEEE CANDIDATES

Each year we solicit comments from the candidates for the IEEE offices of President-elect, TAB Vice President-elect and, if a contest for Division IV Director-elect. Each candidate has been asked to submit a statement for the NPSS Newsletter readers. This year, the chair of the IEEE Newsletter Committee asked the candidates for President-elect to answer 10 questions and requested Newsletter editors to use those questions and answers, which we have done here at the request of both candidates, following my request for individual responses.

Please let me know whether this format appeals or whether you would prefer an NPSS-directed response. Two of the three candidates for TAB VP-elect have responded, including our own Hal Flescher.

Questions and Answers from 2007 IEEE President-elect Candidates

QUESTION: WHAT ARE IEEE'S STRENGTHS?

Lew Terman: The volunteers are perhaps the most important strength; it is their enthusiasm, expertise, and time which is key to the success of the Institute.

Another major strength is the IEEE's generation and dispersion of high quality Intellectual Property, including archival publications, conferences/meetings, and standards. It is this IP which produces the revenue streams that financially enables the IEEE and create the information flow which is so valuable to the technical community. The IEEE publishes over 30% of the published material in IEEE's fields of interest, and its conferences/meetings around the world enable rapid dispersal of new results, as well as networking and face-to-face discussions.

A third major IEEE strength is globalization: RAB's structure of geographical based entities extends around the world in over 150 countries, allowing networking and the interchange of technical information at the local level.

Fourth, the IEEE has recovered from the recent downturn to a strong overall financial position. Reserves are at an all-time high, though some problems remain for specific O/Us. The financial performance of the Societies and Councils has been very important.

Finally, the IEEE has an excellent staff supporting the volunteers and working with them for the Institute and its goals.

John Vig: The IEEE's main strengths include:

1) That we are a non-profit membership organization; we have ~50,000 volunteers who contribute to the IEEE's >350 conferences, >100 journals, >300 sections, >900 standards, >40 societies and councils, etc.

- 2) The breadth and quality of products & services: publications, conferences, workshops, standards, educational products and services, sections, chapters...
- 3) Our diversity – i.e., that we have ~360K members, in 150 countries. The membership includes not only engineers but also computer/IT professionals, scientists...; men and women; members of all cultures..., and that our activities transcend national borders.

QUESTION: WHAT ARE THE MAJOR CHALLENGES FACING THE IEEE?

Lew Terman: Membership has been essentially flat in recent years, and the number of higher grader members has been decreasing. A major problem has been the retention of new graduates, now below 25% three years after graduation. Society membership continues to decline, and the fraction of IEEE members without society membership is now over 43%. Much of this can be attributed to a perceived lack of value of IEEE membership relative to its cost. Increased support of member career development is important. IEEE membership will be 50% in Regions 7-10 within 10 years with current trends; the implications (and opportunities) need to be thoroughly examined. The long-term impact of IEL on membership could become significant.

Open Access is the major long-term question for publications - if all publications are available for free on the web, the IEEE publication business could collapse. Publication timeliness has been a problem, new publications are launched too slowly, and there is a strong need for practical publications to engage the practitioners/"bench-top engineers". Finally, there is the impact of going to



Lew Terman



John Vig

Tough school

War is God's way of teaching Americans geography.

Ambrose Bierce

And chew tobacco too!

You can't think and hit at the same time.

Yogi Berra

Boomerang!

Problems that go away by themselves come back by themselves.

Marcy Davis

full electronic publishing and on what schedule it might occur.

While the overall IEEE financial position is good, there are specific units with problems; further reduction of the infamous Infrastructure Charge is needed through continual evaluation of the efficiency of our operations. With the continuing growth of reserves, long term financial plans/goals for the reserves and their use must be developed.

Finally, the IEEE needs to react to new technologies faster to claim leadership positions in these technologies as they emerge. We must continue our search for effective and fair governance.

John Vig: How to provide sufficient value to justify the membership dues is a major challenge. A growing number of members who work for institutions which provide "free" access to IEEE's publications and conferences are asking, "I get everything I want from IEEE for free, so, why should I be a member?"

About 80% of IEEE members don't read IEEE journals on a regular basis. "The articles are by academics, for academics." Half of IEEE members work in industry. Providing more practical content without diluting the quality of our publications is a major challenge.

Half of IEEE's revenues result from the sale of publications. "Open access," the worldwide movement to disseminate scholarly research literature online, free of charge, threatens these revenues.

QUESTION: WHAT ARE THE MAJOR CHANGES IEEE NEEDS TO BE MAKING?

Lew Terman: Membership: increase (and actively market) membership benefits around the world, broaden the base of membership such as aggressively moving into software, services, applications and solutions. Follow up the China initiative with similar efforts for India and Eastern Europe.

Publications: establish a faster track for new publications, pilot new publications that are more practically-oriented, and establish a reward system for reducing the submission-to-publication time. Develop the best search capability for technical material, and make it a membership benefit.

Education: the Expert Now program for continuing education is off to an excellent

start; aggressively push it and make it available to members.

Financial: drive good financial behavior for Operating Units with reserves by giving them more access to those reserves – as the ratio of the O/U's reserves to expenses increases, allow access to an increased percentage of the reserves. Continue to work on decreasing the Infrastructure Charge and increasing revenues, though not at the cost of making IEEE's prime goal increased surpluses/reserves. Develop a long-term financial plan/goals for the IEEE reserves.

Governance: the current governance structure is not egregiously broken; continue to work towards streamlining operations and governmental efficiency.

Finally, work across the IEEE major Boards to establish a spirit of working together, understanding each others problems, and working with staff on identifying and solving tactical and strategic problems.

John Vig: To improve the IEEE's agility, e.g., with respect to entering new technologies, I have proposed that we establish an IEEE Venture Capital Fund. Any person could propose an idea, and, if the idea is judged to be worthy, receive up to \$100,000 to implement, or show the feasibility of, the idea.

To provide practical content, I have proposed that we create a new category of peer-reviewed publications, "application notes" - which would include "how-to's," and case studies; and that we digitize many of the ~600 IEEE Press books and make them available to members, and members only, for free.

The IEEE should be more willing to take prudent risks, and it should be more willing to terminate unsuccessful activities.

To explore new ideas, the IEEE should experiment more – with new membership models, dues structures, publication models (e.g., new forms of peer review), etc.

The IEEE needs to improve its communications with members. The Institute should become a real newspaper, i.e., it should report both the good and the bad, and it should publish controversial views, even when such views may displease the leadership.

The IEEE should join with other engineering and scientific organizations to establish a public relations campaign to improve the image of engineering and science.

QUESTION: WHAT ARE SOME OF THE IMPORTANT CHALLENGES FACING IEEE AS A PUBLISHER IN SERVICE TO ITS MEMBERSHIP?

Lew Terman: Issues raised by Open Access will need to be anticipated and managed. A major implication is to at least maintain the revenue stream which our publications generate. IEEE needs to help members navigate the mass of data available from IEEE, other technical publications, and on the web. Practical publications need to be developed with the collaboration of RAB and TAB. Goals for article publication timeliness must be set, and rewards established for publications to meet or exceed the goals. Establish a fast approval track for new publications. Maintain the importance of peer review. Keep monitoring the possibility of going to all electronic publishing, and establish when or if it should occur well before any critical point occurs.

John Vig: Open access, the worldwide movement to disseminate scientific and scholarly research literature online, free of charge is a serious challenge because half of IEEE's revenues result from the sale of publications. Google, at www.scholar.google.com and similar services, now make it easier to find the free copies of publications. Papers can be read without having to pay the publishers.

Delayed open access, e.g., making publications open access two years after publication, would not be as damaging. It would allow the IEEE to maintain most of its publication revenues while fulfilling its mission of being "for the benefit of humanity and the profession."

A frequently heard criticism of IEEE publications is that they are primarily "by academics, for academics;" they are not useful for practitioners. About half of our membership is from industry. If our publications are not useful for the majority of our members, then we have a serious problem.

I have proposed three solutions to this problem. One is to ask authors to provide, voluntarily, a "practical impact statement" with their papers. The second is to create a new class of peer reviewed publications, "application notes," and the third is to digitize IEEE Press books and make them available to the membership.

The mean time between an author's submission and the date of publication of an article is too long for some of our journals; the

delay for five of our journals has been >120 weeks. This must not be allowed to continue, and it need not continue, as evidenced by the fact that the mean is <50 weeks for 31 of our journals.

QUESTION: DO YOU SEE IEEE IN FUTURE YEARS AS AN ORGANIZATION BASED ON ITS STRONG MEMBERSHIP BASE, OR DO YOU FORESEE OTHER MODELS?

Lew Terman: IEEE should remain a membership-based organization. Membership is critical – it is the members through whom we serve our technical communities, and who provide the volunteers that are critical to the success of IEEE. Members also provide a means of measuring how relevant we are to the technical world, and provide the mechanism for engaging emerging technical and geographic areas.

John Vig: I see the IEEE continuing to be a membership-based organization - with its tens of thousands of volunteers and its membership diversity as its pillars of strength.

I do, however, see a need to experiment with membership and dues models. Some members, for example, may be willing to receive Spectrum and The Institute electronically if the dues were lowered by the costs of producing the paper copy of those publications. We have >\$160M in reserves. Therefore, we can afford to experiment.

The success of our IEEE Electronic Library (IEL) is hurting membership recruitment and retention. (IEL subscribing institutions, which include many of the largest universities and corporations, provide "free" access to IEEE publications.) I hear more and more "I get everything I want from IEEE for free, so, why should I be a member?" Therefore, another experiment I would propose is to offer reduced dues to those working or studying at a few IEL organizations and measure the effects on membership numbers.

QUESTION: WHAT CHANGES IN IEEE WOULD YOU ADVOCATE IN RESPONSE TO QUICK INDUSTRIALIZATION AND POTENTIAL IEEE PRESENCE IN LARGE ASIAN COUNTRIES?

Lew Terman: The two major Asian countries of interest are quite different in technical environment and social structure. I believe the current China initiative is appropriate; we need to understand the environment and the cur-

How about left of centre?

Everybody's private motto: It's better to be popular than right.

Mark Twain

Deep thought

The only job where you start at the top is digging a ditch.

Unknown

They succeed,
alas

In politics one
must learn to
rise above
principle.

Albert Goodman

rent approach seems a good first step. We need a deeper understanding of the specific needs and opportunities and how to involve that community to effectively stimulate IEEE membership and volunteerism.

India is also a key growth area in the 21st century, and currently has more IEEE members than any country outside the US. We need to understand why they join, and focus on the appropriate member and technical services to support their interest. India has a strong university structure with which we should be working.

John Vig: IEEE's presence in large Asian countries is actual, not just "potential." For example, in 2005, we held 59 conferences in China, and a total of 129 in China, India, Japan and Korea. Our publication sales, in China alone, amounted to ~\$5M in 2005. Total sales to the four countries was ~\$20M. In 2005, our combined membership in these four countries was ~45K.

Although the IEEE has made inroads in China and India, it is a long way from realizing the potential presence in these and other countries. Membership is too expensive for many in Asia, Latin America, Eastern Europe... We need a membership strategy for potential members who can't afford our dues, not just in Asia, but, throughout the world.

QUESTION: WHAT DO YOU SEE AS THE POWER OF THE IEEE PRESIDENT AND HOW WOULD YOU EXERCISE THIS POWER?

Law Terman: The IEEE President has three major responsibilities/opportunities:

- a) Running the Board and ExCom meetings effectively, including setting up the meetings. This is important as the members of the governing bodies of the IEEE meet for only a short time, and it is important the meetings be efficient for the most effective interaction.
- b) Providing leadership to the Institute: setting directions, establishing committees and study groups to get information and sift through alternatives, work with the staff, work with the IEEE Boards and governance levels. It is in this area that the President can have the most effect. I would focus on bringing the various groups in IEEE together, and on listening to their input, getting an open airing of issues and sug-

gested solutions, and generating and following through on new ideas.

- c) "Showing the flag" around the world, to both IEEE geographies/groups and non-IEEE entities - geographical, technical and political. The interactions with IEEE groups are very important to generate mutual understanding, and the interaction with non-IEEE entities is important to present the IEEE and the technical community it represents, and to understand their needs, views, and to understand possible opportunities.

John Vig: The president's duties are to: chair the meetings of the IEEE Board of Directors, Executive Committee and Assembly; perform ceremonial functions such as meeting with dignitaries, presentation of awards, opening remarks at conferences, etc.; promote the objectives of the IEEE; and be "the Chief Executive Officer of the IEEE."

I would make maximum use of the presidency to advocate the IEEE's agenda, both within and outside the IEEE.

I would set at least one lofty (man-on-the-moon-like) goal for the IEEE, aimed at inspiring and mobilizing the volunteers and staff.

The Board of Directors has been too inward-focused. I would propose the establishment of a council of advisors - consisting of prominent, mostly outside experts and leaders - to advise the IEEE leadership.

QUESTION: IN THE 2005 IEEE ELECTIONS, ONLY 14% OF THE MEMBERSHIP VOTED. WHAT, IF ANYTHING, WOULD YOU DO TO INCREASE MEMBERS' PARTICIPATION IN IEEE ELECTIONS?

Law Terman: I think what we are doing this year is pretty good - talking to the Regions and other entities which invite us (with Q&A sessions where time permits), sending these 10 questions to the Newsletters, participating in the Philadelphia debate and making available recordings of the debate and presentations of the candidate platforms on the IEEE web site, and making additional information available on our personal web sites.

John Vig: In 1975-77, when a controversial candidate, Irwin Feerst, ran for IEEE president, 36% voted. In those days, the member-

ship was more involved in IEEE issues than they are today.

Today, the membership is rarely informed of controversial issues. For example, last year, I received reports of meetings where readings from the Koran and Christian prayers were parts of the program. Why not report such events and ask the membership whether or not such religious expressions should be allowed as parts of IEEE events?

"THE INSTITUTE is the newspaper of the IEEE" claims The Institute's website but, The Institute is more a "house organ" than a newspaper. As president, I would propose to the Board of Directors, and The Institute's Editorial Board, that The Institute become a real newspaper of the IEEE.

The office holders in IEEE, especially the President and the other members of the Board of Directors, make decisions about matters that are important to the membership and the future of IEEE. Voting in the annual IEEE election is the chance members have to choose the decision makers. With only 14% voting, 7+% of the members can decide the fate of IEEE.

QUESTION: WHAT HAVE BEEN YOUR THREE MOST IMPORTANT CONTRIBUTIONS TO IEEE?

Lew Terman: In the late 1990's, I was instrumental in the conversion of the Solid-State Circuits Council to the Solid-State Circuits Society. This was very successful; the SSCS is now the 5th largest Society in the IEEE, and the Journal of Solid-State Circuits records the highest number of hits in IEL. I served as the first SSCS president elected by the Society.

In the mid 90's, IEEE and TAB were going through financial difficulties. I was appointed TAB treasure, stabilized the situation and improved the communication with TAB, and served a second term as Treasurer.

In 2001, I was on the Board as the bottom

fell out of the IEEE financial situation. As part of a team effort, we were able to put in place a number of changes which arrested the slide.

John Vig: My three most important contributions are:

The IEEE Sensors Council, i.e., I proposed it, shepherded it through the approval processes, and was elected its founding president, in 1999. In 2005, the Council's journal published 1500 pages, and its conference had >500 registered participants.

Between 1999 and 2002, the IEEE's reserves declined >\$50M (>40%), due, in large part, to the decline in the value of IEEE's investments. Up to this point, the IEEE had no formal investment policy. I wrote the first draft of the Investment Operations Manual (IOM), then worked with investment professionals, volunteers and staff to finalize it and get it passed by the Board. Contained in the IOM is an investment policy which has reduced the risks and increased the transparency of IEEE's investments.

I brought what is now the IEEE Int'l Frequency Control Symposium into the IEEE. I negotiated the takeover of this conference by an IEEE society (UFFC). This conference is now the premier international conference in its field.

QUESTION: WHAT WOULD BE YOUR SINGLE AND MOST RECOGNIZED CONTRIBUTION THAT WILL DISTINGUISH YOUR IEEE PRESIDENCY FROM THOSE OF OTHERS?

Lew Terman: I would like my presidency to result in the elimination of any silos between IEEE operating units, and attacking IEEE problems with coordinated efforts across IEEE.

John Vig: The president under whose leadership innovation flourished in IEEE.

Not our Albe!

An editor is a person who knows more about writing than writers do but has escaped the horrible desire to write.

E.B. White

CANDIDATES FOR 2007 TECHNICAL ACTIVITIES VICE PRESIDENT ELECT

J. Roberto Boisson De Marca



J. Roberto Boisson
De Marca

IEEE technical societies and councils face significant and immediate challenges that must be addressed in the next two to five years. Some of these challenges are internal to its technical organizational structure, some are due to changes in IEEE modus operandi and yet others, probably the most threatening ones, are caused by advances in technology and a changing attitude in industry. The most visible challenge is how societies can have a viable and healthy future in light of IEEE's new financial reality. However there are several other threats which have compounded this issue and will require very creative solutions, namely: (i) the shift to electronic media and centralized products such as IEL and Enterprise and the associated threat to the visibility of societies and councils and to the ownership of the intellectual products they create; ii) maintaining society and council memberships when they are no longer required for access to IP; (iii) the growth of open access publishing and the associated threat to publication products and income; (iv) the attitude change in industry where pre-competitive research is no longer a priority and as a consequence IEEE society products and activities are perceived as less critical by industry top management; (v) the need for the IEEE Technical Activities Board (TAB) to organize itself better so that it can be more effective in achieving its goals within IEEE and in influencing IEEE Board of Director (BoD) decisions and; (vi) the need for TAB to truly act as a single and cohesive entity where Societies/Councils can spontaneously develop joint strategies and foster evolutions, while making sure our members and the engineering community are always provided the best services possible.

It is clear to me that these difficulties equally affect S/Cs of all sizes. Therefore there is a need for a joint and concerted effort by everyone concerned in IEEE technical activities to find the most effective and enduring solutions

that will guarantee the collective well-being of the Societies and Councils for many years to come. These solutions will most likely come from ideas and contributions of volunteers representing different S/Cs. If elected I will lead a joint, concerted and focused effort to identify effective and enduring solutions that will guarantee a healthy future for IEEE Technical Activities and high quality, high value member services.

In addition to serving as chair of the Technical Activities Board, the VP- Technical Activities (VP-TA) is a key player in IEEE management structure. I am a firm believer that IEEE must remain a member-driven organization and that volunteers are the organization's most valuable asset. I have also been a longstanding and vocal defender of the importance of strong and vital Societies/Councils (to attract the world leading volunteers and the IP they produce to IEEE's success. As an IEEE Board member I pledge to continue to be a firm advocate of these concepts as well as always demand that the BoD actions are guided by fiscal responsibility (please see editorial in IEEE Communications Magazine – Is IEEE strangling its golden geese? - <http://www.comsoc.org/livepubs/ci1/public/2001/sep/cipresmess.html>). Finally, as VP-TA I will always make sure Societies/Councils concerns as well as member needs are heard and properly addressed by the IEEE Board of Directors.

I have proven management and leadership skills as demonstrated by my achievements as ComSoc President (<http://www.comsoc.org/livepubs/ci1/public/2001/dec/cipresmess.html>), including the best Society year ever in terms of total revenue, IEEE Division Director and IEEE Secretary. For the past two and half years, as a very active IEEE Board member I have taken the initiative, or collaborated with other Directors, in sponsoring more than twenty motions, most of them successful.

Harold L. Flescher

MY IEEE BACKGROUND: WHY I WANT TO SERVE AS VP OF TECHNICAL ACTIVITIES

My experiences in industry and throughout IEEE give me a unique understanding of our technical activ-

ities needs. Our Technical Societies and Technical Councils produce excellence in conferences and publications; each a successful business that collectively produce over three-quarters of IEEE's revenues.

Overboard

You never know what is enough unless you know what is more than enough.

William Blake

IEEE is entering a difficult time where large-scale change will be not a choice but will happen whether we like it or not. I am the right person to help lead us through this change in a manner that best preserves the functioning of our principal IEEE businesses – the IEEE Societies/Councils.

WE HAVE A PROBLEM WITH MEMBERSHIP.

Full price IEEE memberships and society memberships are slowly declining. Today's easy electronic access to journals and the steadily increasing cost of membership are significantly responsible. We need to lower the cost of membership by instituting a menu approach to dues – buy what you want to use for a reasonable price not the whole lot whether or not you want the whole lot for a lot more. From our societies perspective, in order to add value to our cost of membership, NPS is giving electronic subscriptions to both of our journals with membership next year.

OUR CONFERENCES ARE GREAT

Our 350 conferences IEEE runs each year are second to none in quality. Our conference publications receive as many hits as our technical journals. Conference organizers must have the freedom to manage their conferences without burdensome oversight, and IEEE must facilitate this. I know first hand that our organizational volunteers cherish their independence in running our conferences, and in spite of the requirements of our auditors, IEEE needs to preserve as much of this independence as possible.

OUR PUBLICATIONS ARE OUTSTANDING

Above all we must keep the quality of our journals outstanding. The multi-governmental push for “open access” threatens our publication income. We must make our electronic product, IEL, sufficiently valuable that it is worth buying even if open access becomes universal. I won't bore you with a long list of biographical things I've, but here are a few points pertinent to my candidacy.

SUMMARY

I know our societies and their activities from the perspective of a “doer” rather than as an observer. I know that I will perform as TAB V-P as well as I have in every job you and IEEE has thrown at me. I want to be involved in solving the problems currently on our collective table, but I need your vote to do so. If you believe that I am the best person to do this job, I would very much appreciate if you would also ask your peers to vote for me.

MORE ABOUT ME

Conferences – My first involvement with IEEE and with NPS after grad school was serving on a committee of the Nuclear and Space Radiation Effects Conference in 1966. I served on or chaired several other committees of this conference as well as serving several terms on the Radiation Effects Steering Committee, and was General Chairperson of the NSREC in 1980. I was technical chairman of a technically allied classified conference, HEART, in 1985. I understand our conferences and the desires of the volunteers that make them so successful.

Publishing – My first paper was published in TNS in the mid-1960s. I remember the thrill of finally being accepted after passing through our peer review process. I understand our author's desire to publish promptly in a renowned peer reviewed journal, and our society's desire to have well-respected and profitable journals.

IEEE Management – I was President of NPS in the early 1990's. I know our technical committees and the things that they need to be successful. Since then I have served on the IEEE Board of Directors and more importantly I am in my second term as TAB Treasurer. I understand the issues IEEE faces today and am currently working to implement solutions that will provide benefit to TAB and our societies. In the last three years I wrote and got IEEE Board approval for the spending rule which permits Societies to budget up to 3% of their reserves for initiatives. Recently I wrote and got IEEE FinCom approval (goes to the Board in November) for a rule which will permit societies to spend up to 50% of the previous year's operational surplus. Both rules give us more money to spend and less to put into reserves.

I seek your support to add my contribution to those of past Vice Presidents in leading the necessarily multi-level effort towards a bigger and brighter future for IEEE.

Good grief!

I love mankind. It's the people I can't stand.

Charles Shulz



Harold L. Flescher

And they keep it that way

The comfort of the rich rests upon the abundance of the poor.

Voltaire

PULSED POWER AND PLASMA FOR MEDICAL AND ENVIRONMENTAL APPLICATIONS

Frank Reidy Research Center for Bioelectronics

Juergen F. Kolb



Karl Schoenbach,
Director of Frank
Reidy Research
Center



Juergen F. Kolb
Frank Reidy
Research Center

Recent discoveries of subcellular biological effects induced by submicrosecond pulsed electric fields with field strengths of several megavolts per meter have opened new avenues for applications of pulsed power technologies in medicine and biology. The discoveries and their potential for medical applications have led to the establishment of a Center for Bioelectronics in 2002 in the College of Engineering and Technology at Old Dominion University, in partnership with Eastern Virginia Medical School.

“Bioelectronics” refers to the use of pulsed power and/or plasma technologies to manipulate cells, tissues and organisms. The application of intense pulsed electric fields with ultrashort duration has been proven to target intracellular structures and functions without permanent damage to the cell membrane. Possible applications include the killing of cancer cells. Recent experiments on this topic, led by Richard Nuccitelli, who joined the Center for Bioelectronics in 2004, mark an important step towards this goal. His research shows that melanoma tumors can be eliminated by treatment with 300-ns pulses of 40-kV/cm amplitude without lasting side effects. This example also demonstrates the necessity of the close interaction of engineers, biologists and clinicians in the emerging field of bioelectronics. Understanding the interaction of electric fields with cells requires the skills and knowledge of the different disciplines, pulsed power being the enabling technology for bioelectronics. The Center for Bioelectronics is the first institute of its kind to combine the different skill sets of engineers, physicists, biologists and clinicians under one roof. Beyond that, it has, through a Multidisciplinary University Research Initiative (MURI), established collaborations with other research centers in the US, including Massachusetts Institute of Technology, Washington University, University of Texas, Michigan University, University of Perdue-Calumet, and University of Wisconsin-

Madison. A second focus of bioelectronics research is the use of cold plasmas in biological and environmental applications. A cold plasma pencil, developed by Mounir Laroussi at the Frank Reidy Research Center for Bioelectronics, was recently presented which can be used for the treatment of delicate surfaces such as skin. In other experiments, microhollow cathode-discharge-based discharges are being explored as ultraviolet light sources for use as efficient and gentle methods of bacterial decontamination.

The research at the center has already attracted substantial federal agency support, including the aforementioned \$5 million MURI grant from the Air Force Office of Scientific Research, in which the Center for Bioelectronics at Old Dominion University serves as the lead institution. Additional funding and support has been provided by industry contracts and private sources. With a generous donation from the entrepreneur and philanthropist, Frank Reidy, the Center for Bioelectronics has now become the Frank Reidy Research Center for Bioelectronics. A naming ceremony will be held in October this year. Frank Reidy has been a supporter of research projects in bioelectronics for many years, in particular to further the development of clinical applications.

In addition to the renaming, the year 2006 is also marked by two other important developments in the history of the Frank Reidy Research Center for Bioelectronics. The center has recently been designated a University Center. However, the faculty members employed at the center will continue to fulfill teaching obligations in the Electrical and Computer Engineering department. The next highlight is the signing of agreements with institutes at Kumamoto University, Japan, and the Research Center in Karlsruhe, Germany to establish an International Consortium on Bioelectronics. Other institutes have already expressed an interest in joining this consor-

tium. This increasing interest in the US and around the world demonstrates potential and possibilities that the research in bioelectrics offers. The director of the Frank Reidy Research Center for Bioelectrics, Karl Schoenbach, is confident that cell electromagnetic manipulation by ultrashort, intense pulsed electric fields "will end up in your doctor's office with applications, not only for tumor treatment, but also for gene therapy, wound heal-

ing, removal of warts, treatment of fungal infections and even cosmetic uses. The effects that have been observed so far are only the tip of the iceberg."

Juergen Kolb, the author of this article, can be reached at the Frank Reidy Research Center for Bioelectrics, Old Dominion University, 830 Southampton Avenue, Suite 5100, Norfolk, VA 23510; Phone: +1 757-683-2414; E-mail: jkolb@odu.edu.

But you don't have

You know children are growing up when they start asking questions that have answers.

John L. Plomp

OTHER NEWS

John F. Osborn 1914 - 2006

In the last issue we included a brief obituary of Jack Osborn. This article is a more personal reflection of his life written by his daughter, Dr. Jane Osborn. As Jack served this community and was part of it for so many years, we thought you might like to know a bit more about this very special gentle man.

John F. Osborn (Jack), a long time IEEE--Nuclear and Plasma Sciences Society member, died at the age of 91, on March 4, 2006, five days after being hospitalized unexpectedly for pneumonia. Jack served as

the Editor in Chief of the IEEE-NPSS newsletter for 26 years until 1994. He was involved with planning and attending various society meetings, including serving as arrangements chairman at one time. He was the recip-



Snapshots from the life of Jack Osborn: Photos clockwise from upper left: Jack and Eleanor at daughter Jane's wedding, 1974; Jack, without his usual coat and tie, along the Yuba River, 1990s; Jack and Jane - Jane's doctoral ceremony, 1984; Jack (center) with other GE "interns" on field 'test' - 1937; Jack at his desk, GE, 1960s; Jack and granddaughter Staci about 1985.

That nails it

Politics is the skilled use of blunt objects.

Lester Pearson

ient of the IEEE divisional professional leadership award for outstanding service and leadership in 1992, and the IEEE-NPSS Richard F. Shea distinguished member award in 1994. Jack was registered as a professional engineer in California in three different disciplines: Electrical, Control Systems and Nuclear Engineering. After retirement, Jack advocated for the California Board of Professional Engineers and Land Surveyors (BPELS) to issue a new category of license for “retired” electrical engineers. He was the very first recipient of the new “retired” license in 2001 after he elected to “retire” his California electrical engineering license--although he continued to hold his active Nuclear Engineer license.

Jack worked for General Electric Company for 45 years, before retiring in 1983. He held many positions within that company, including control design engineering (until 1947), supervising a small group doing engineering and manufacturing of control equipment (until 1951), and heading up a local GE office in northern California until the company discontinued all local offices in 1955. He held a marketing assignment which included managing GE’s relationship with Bechtel Corporation as a customer until 1961--which he especially enjoyed. Subsequently, he held assignments in systems engineering and project management at the GE Nuclear Energy Division in San Jose, California until retirement in 1983. At one point, he traveled throughout California to do presentations to local organizations on GE’s contribution to the development of nuclear power. During this period, he was teamed with Bechtel Corporation to partner in the development of nuclear power plants. In the 60’s, Jack was offered a position with the Atomic Energy Commission in Maryland. However, he chose to stay in California and remain with GE. Jack commented on the fact that engineers of his generation tended to stay with one company and change assignments within the company, whereas more recent generations of engineers are more likely to change companies.

Jack was born in 1914 in Montmartre, Saskatchewan, Canada. His father was a banker manager who was transferred frequently to small towns throughout Saskatchewan,

and Jack grew up in these towns. He graduated from the University of Manitoba with a degree in electrical engineering in 1936. He then went to work for General Electric, and moved to the site of the Canadian GE headquarters in Peterborough, Ontario, Canada. In Peterborough, he met Eleanor Stacey, who was to become his wife of 63 years until the time of her death in July 2003. Jack and Eleanor met at a tennis tournament in which they both were playing. They were married in 1940, and continued to live in Peterborough until 1948. Their son John and daughter Jane were born during this time.

During World War II, Jack designed the electrical controls for the minesweepers used by the Canadian Navy. While in Canada, Jack also was involved with designing the electrical controls for the Abegweit, a car ferry which was the largest ship ever built in Canada at that time--and which was in service from 1947 until 1982.

Jack was attracted to the more temperate marine climate of the San Francisco Bay area in California, and in 1948 he accepted a job with GE in San Francisco. His family moved to Piedmont, across the Bay from SF. Eleanor was a pianist and organist, and she joined the faculty of the San Francisco Conservatory of Music, and then founded the Piedmont branch of the SF Conservatory, and taught many piano students over the years.

Jack moved to San Jose, California in 1963, after accepting a position with GE’s Nuclear Energy Division in SJ. He lived in San Jose for 28 years, before he and Eleanor moved to Sacramento in 1991 in order to be closer to their grandchildren, Staci and Mike Osborn--who currently are both college students. Jack was a devoted and proud father to both of his children, son John Osborn, M.D., a plastic and reconstructive surgeon in Sacramento, California, and daughter Jane Osborn, Ph.D., a developmental and school psychologist living in the Mountain View and Los Altos, California area.

Both Jack and Eleanor shared an interest in life-long learning and in staying mentally active. In the early 1970s, Jack was making plans to attend law school at night -- while continuing to work full time, but these plans were derailed due to an unexpected health crisis. He continued to work full time until finally retiring at the age of 69, after experiencing a

20/20

You come to love not by finding a perfect person, but by seeing an imperfect person perfectly.

Sam Keen

second health crisis. After retirement, Jack continued to work as Editor in Chief of the NPSS newsletter until he was 80 years old, and continued to contribute to the newsletter as Editor Emeritus for a few more years into his 80's. After retirement, Jack enrolled as a graduate student and took several creative writing classes at two different California State University campuses--in both San Jose and Sacramento. During this time, Eleanor also took classes at San Jose State University--in art history--and she was a volunteer docent at the San Jose Museum of Art for several years, in addition to continuing to teach piano into her 80s and helping with fund raising activities to benefit the San Jose Symphony, until she and Jack moved in 1991.

Writing was one of Jack's primary interests, and he wrote prodigiously, on diverse topics and for various purposes--including expository and creative pieces, and including numerous letters written to authors and politicians. He corresponded with such authors as H.G. Wells, Sinclair Lewis, and Loren Eiseley. One of the replies he received from H.G. Wells during a period of ongoing correspondence in the 1930's and early '40's included a carbon copy of an unpublished piece Wells was working on in 1943, accompanied by a note asking for Jack's feedback on the ideas expressed in the piece. In the early 1960s, he wrote a lengthy letter on the topic of profit sharing that was published in the *Harvard Business Review*. His favorite writing project, however, was the memoir and commentary he wrote regarding what life was like when he was growing up in the Canadian prairie in the 1920s. He worked on this manuscript--titled "Prairie Chronicles--Goodbye Pinto Creek" for several years. During the time that he was taking creative writing classes at Sacramento State, Jack received the 1995 Dominic J. Bazzanella Literary Award in the "graduate, expository prose" category for a piece he wrote based on a chapter from his Prairie Chronicles manuscript--"Requiescat for Dad D'Abel." Jack also enjoyed attending meetings of the California Writer's Club--of which he was a member. In addition, he always was an avid reader.

Jack was very handy and adept at designing, making and fixing things, (which probably is not a surprising characteristic for an engineer). He would usually order the technical manuals



Jack and Eleanor with son John and granddaughter Staci.

(the ones with the circuit diagrams) for major appliances--and he could make an electrical appliance last for several decades--well beyond its period of planned obsolescence--through numerous home repairs. In particular, he enjoyed wood working, and was very proficient at designing and making furniture for his family, such as cabinets and desks. He and Eleanor were from the "do it your self" frame of mind, and together they completely remodeled and renovated their house in Piedmont. The family became accustomed to living amidst chunks of plaster and rolls of wallpaper for a number of years. Jack also greatly enjoyed photography throughout his life, and would develop and enlarge black and white photographs in his own makeshift darkrooms at home.

For many decades, Jack had been a strong proponent of using nuclear energy as a peacetime power source. He began writing and speaking to groups on this topic as early as the mid 1950s. During a movement in California to try to curtail the use of nuclear power (through the California Nuclear Initiative which was on the ballot in 1976), Jack was active in speaking to groups and to individuals to try to educate them to the benefits of nuclear power and to try to allay any fears which he felt were unfounded. He would comment that if there was ever a major earthquake, he felt that he would be best off inside of a nuclear power plant.

Jack will be remembered fondly as an intelligent, talented, dignified, kind and gentle person.

Jane Osborn can be reached at josborn@rcsd.k12.ca.us.

Downhill all the way

The problem with beauty is that it's like being born rich and getting poorer.

Joan Collins

Who is boss?

A wise man rules his passions, a fool obeys them.

Publius Syrus

Mentoring Children: Inspiring That First “Aha” Moment

Glenn S. Tenney

Win-win situation??

One of the funny things about the stock market is that every time one person buys, another sells, and both think they are astute.

William Feather

Most of us have, at one time or another, been mentored and taught on-the-job. Some of us have also been “mentored” back in high school, middle school, or even grade school — an experience akin to that “aha” moment when you realized that this is what you enjoy and want to do when you grow up. What I want to do here is to ignite each of you reading this to do something in your community or your schools that might help share that “aha” moment with children so that they, too, can become engineers or scientists.

A huge difference exists between mentoring adults on-the-job and “mentoring” kids. It’s important to do something to help kids want to be involved with engineering and science whether or not you call it “mentoring.” It’s a combination of mentoring, teaching, helping teachers and in general helping kids get excited about engineering and science — and to understand that it can be “cool” to do science “stuff.” Your challenge, then, is: What can you do now that will get just one kid excited about science? Imagine “what if” that child wouldn’t have gone into science or engineering. Remember what about science made your eyes light up when you were a kid.

Each grade level has different needs and represents different challenges. At the grade-school level, it’s common for a class to have the same teacher throughout the year teaching a single group of students a broad curriculum from history and geography to math and science. At the middle-school level, subject areas tend to be taught by different teachers with a more specialized background, and even more so at the high-school level. Even though a science teacher might have 30 or 60 college-level units in science, they are not necessarily well trained in your specific field of expertise — which is where you come in.

Some schools encourage the parents to get involved with the classes, but schools rarely have enough parents involved who have science and engineering experience. Many schools also welcome members of their community to get involved even if they’re not a parent of a child in the school. Contact a

teacher or principal at a nearby school to see how you can be involved.

Some people think that “being involved” in mentoring school children means just coming in once a year to describe to a class what it’s like being an engineer or scientist. While that’s a good thing to do, it barely scratches the surface. First, the teachers at each grade level have very different needs, and their needs might not be satisfied by one visit a year. For example, a middle-school science teacher might have three or four different classes per day where they teach the same curriculum to each of class.

Think back to your first “aha” moment. Was it when you heard about what an engineer does? Or was it when you saw or participated in an experiment or science project? A hands-on experience, especially for children, is going to be a more emotional experience and will be remembered longer than just hearing a “career talk.”

Depending on grade level, some examples of projects that children can experience — even if they just have to watch from a safe distance — might be:

- a thermos of liquid nitrogen (readily available at your local welding supply shop) and ask the children to tell you what they think will happen when you put a flower, a piece of paper or bouncy-ball into the liquid nitrogen
- switches, different color LEDs, resistors, and wire to show how basic electric circuits function
- magnets and iron filings
- lenses

There are dozens of ideas like these, and numerous foundations teach teachers how to do such simple and useful experiments. The teacher with whom you want to work might already have lesson plans for several great science projects and might appreciate having a real scientist or engineer help present it to their classes. [www.pa.uky.edu/~sciworks/intro.htm and www.science-house.org/middleschool/links.html].

The FIRST (For Inspiration and Recognition of Science and Technology)

Robotics Contests are very popular with high-school students [www.usfirst.org/]. This type of project requires volunteers able to make a longer-term commitment than just a day or two a semester.

Another thing that you can do to help your local teachers at all levels is to talk with them and volunteer to be a knowledge resource — someone who the teacher can call or e-mail to discuss science and engineering. Teachers often know the material that they're going to teach and can do a great job teaching it, but their students often ask questions that they can't answer — questions that you might deal with every day at work.

The important thing is to talk with the staff at your local school to find out how you can help inspire that first "aha" moment in a young student about engineering and science. If you can do that, you've mentored a new scientist or engineer into the profession.

IEEE MENTORING RESOURCES

The IEEE's Educational Activities Board is committed to providing quality educational resources for educators, parents, students, IEEE volunteers and the public through its Pre-University programs [www.ieee.org/web/education/preuniversity/home.html].

The IEEE and IBM have collaborated to launch a new Web site that combines interactive activities with information on careers in engi-

neering. Tryengineering.org [www.tryengineering.org] is designed to educate a variety of audiences about the different engineering disciplines and the impact engineers have on society. Targeted toward teachers, school counselors, parents and students, TryEngineering.org lets site visitors explore how to prepare for an engineering career, ask designated experts engineer-related questions, and play interactive games. Tools for teachers include lesson plans and engineering projects as well as a list of student competitions and science and engineering-oriented summer camps. The site offers a searchable list of accredited engineering programs in the United States and Canada, and will be expanded to include programs in other English-speaking countries as well as Germany and France.

IEEE-USA's Precollege Education Committee (PEC) seeks to effect improvements in the nation's quality of precollege education and to raise U.S. students' level of technological literacy by placing emphasis on precollege math and science courses. IEEE-USA's PEC Teacher-Engineer Partnership Award recognizes collaborative activities between K-12 teachers and technical professionals [www.ieeeusa.org/volunteers/committees/pec/t-e-partnership.html]. IEEE-USA's PEC also provides precollege education teacher grants [www.ieeeusa.org/volunteers/committees/pec/teacher-grants.html] and has produced a new careers brochure for 11-to-13-year-old students [www.ieeeusa.org/communications/ia/ia-06-23-06.asp].

Keep trying

Genius does what it must, and talent does what it can.

Edward Bulwer-Lytton

Coping strategy

One lies to oneself more than to anyone else.

Lord Byron

Promoting NPSS

From IEEE-USA Today's Engineer On-line, July 2006

With the turn of the year we will be preparing new material to promote the Society to both members and nonmembers. Before getting into the details of the work, I would like to solicit input on the materials we have prepared in the past and thoughts for new items.

For each of our conferences, we ship a booth and a supply of brochures, leaflets, samples of journals and membership forms. I am sure that many of you have seen these at the meetings

and I would appreciate hearing your views!

Should we have a new booth?

Should we print a leaflet or brochure with a different view of the Society?

Your thoughts please.....

Peter Clout, Chair of the Communications Committee, can be reached at Vista Control Systems, Inc., 176 Central Park Square, Los Alamos, NM 87544-4031; Phone +1 505 662 2484; Fax: +1 505 662 3956; E-mail:clout@vista-control.com



Peter Clout
Communications
Committee Chair

2006 Nuclear and Plasma Sciences Society

Administrative Committee

President	William W. Moses
Vice President	Jane M. Lehr
Secretary	Alberta M. Dawson Larsen
Treasurer	Edward J. Lampo
Most Recent Past President	Peter S. Winokur
Division IV Director	Stuart A. Long

Elected Administrative Committee Members

Terms expiring 2006: Joseph Benedetto (RE), Sandra G. Biedron (PAST), Grant Gullberg (NMIS), Glenn F. Knoll (RI)

Terms expiring 2007: Steven H. Gold (PSA), Allan H. Johnston (RE), Jane M. Lehr (PPST), Charles L. Neumeyer (FT)

Terms expiring 2008: Uwe Bratzler (Transnational), Christopher Deeney (PSA), Ronald J. Jaszczak (NMIS)

Terms expiring 2009: Daniel M. Fleetwood (RE), Richard Jacobsson (CANPS), Anthony Peratt (PSA), Robert E. Reinovsky (PPST), Craig L. Woody (RI).

Technical Committee Chairs

Computer Applications in Nuclear and Plasma Science (CANPS): Jean-Pierre Martin; Radiation Instrumentation (RI): Richard Lanza; Fusion Technology (FT): Mark Tillack; Nuclear Medical and Imaging Sciences (NMIS): Tom Lewellen; Particle Accelerator Science and Technology (PAST): Ilan Ben-Zvi; Plasma Science and Applications (PSA): Daniel O. Jobe; Pulsed Power Science and Technology (PPST): Gerald Cooperstein; Radiation Effects (RE): Timothy R. Oldham.

Functional Committee Chairs

Awards: Igor Alexeff; Chapters and Distinguished Lecturers: Charles Neumeyer; Communications: Peter N. Clout; Fellow Candidate Evaluation: Peter S. Winokur; Finance: Harold Flescher; Conference Policy: Raymond S. Larsen; Membership: Patrick LeDü; Nominations: Peter S. Winokur; Publications: Paul V. Dressendorfer; Standards: Ronald M. Keyser; Students & Careers: Edl Schamiloglu & Kenneth A. Connor; Transnational: Uwe Bratzler.

Publications

Editor-in-Chief: Paul V. Dressendorfer; Editor, IEEE Transactions on Nuclear Science: Paul V. Dressendorfer; Editor, IEEE Transactions on Plasma Science: Steven J. Gitomer; Editor, IEEE Transaction on Medical Imaging: Max A. Viergever; Conference Editors, Transactions on Nuclear Science: Zane Bell; John Cressler; Joel Karp; Jean-Pierre Dufey; Editor, Newsletter: Albe Dawson Larsen; Editor Emeritus: W. Kenneth Dawson.

Liaison Representatives on other IEEE Committees

Coalition for Plasma Science: Gerald L. Rogoff; Distinguished Lecturer Program: Charles Neumeyer; Energy Policy: Richard Lanza and Charles Neumeyer; R&D Policy: Sandra G. Biedron; RADECS Liaisons: Harold Flescher and Ronald Schrimpf; Sensors Council: Anthony D. Lavietes; Social Implications of Technology: Raymond S. Larsen; Standards: Michael Unterweger; TMI: A. Bertrand Brill and Ronald J. Jaszczak. Medical: Benjamin M. W. Tsui.

The Institute of Electrical & Electronic Engineers, Inc.
445 Hoes Lane • Piscataway, NJ 08854

Non-Profit Org.
U.S. Postage
PAID
Easton, PA
Permit No. 7