IN MEMORIAM – EDWARD HUNT

Edward L. Hunt, 82, one of six founders of the Bioelectromagnetics Society, and its first secretary/treasurer, died Dec. 29 at his home in Olney, MD. Mr. Hunt was a retired research psychologist at Walter Reed Army Institute of Research who studied the biological effects of electromagnetic radiation. He also held roles on public policy advisory committees for the Environmental Protection Agency and other federal and scientific bodies. Mr. Hunt also was a key member or consultant for various NIR human exposure standards setting committees under ANSI, IEEE and NCRP. He had metastatic melanoma.

Mr. Hunt worked at the Institute from 1975 to 1988, spending the first two years as chief of the microwave research department. His research on non-ionizing radiation, which includes microwaves and radio waves, helped establish standards in the field of bioelectromagnetic research and determine safe exposure levels for humans.

Edward Lawrence Hunt was a native of East Lansing, Mich., and a 1946 philosophy and psychology graduate of Michigan State University. He did graduate work in psychology at the University of California at Los Angeles.

He spent much of his early career as a biological and experimental research psychologist at the old Naval Radiological Defense Laboratory in San Francisco conducting research on the biological effects of ionizing radiation (IR).

See Edward Hunt Continued, p8

BEMS 2007 PROGRAM CHAIR ANNOUNCES NIH FUNDING

Richard Nuccitelli, Technical Program Chair, recently announced that two divisions of the National Institutes of Health have agreed to provide funding for the upcoming BEMS Annual Meeting in Kanazawa. Dr. Nuccitelli remarked that NCCAM gave us $10,000 and NIEHS $3000. I have also contacted NIA-MS and NIBIB to ask for contributions since our conference plenary speakers fall into their domains as well... The best thing is that we finally convinced the NIH that our yearly meeting is worth supporting!

See Eleanor Adair Continued, p9

ELEANOR ADAIR NAMED 2007 D’ARSONVAL AWARD RECIPIENT

The Board of Directors of the Bioelectromagnetics Society announced this month that Eleanor Reed Adair, a charter member of the Bioelectromagnetics Society, will receive the 2007 d’Arsonval Award in recognition of her accomplishments in the discipline of bioelectromagnetics. The award, which consists of an illuminated testimonial, a silver medallion, a silver lapel pin and an honorarium, will be formally announced at the upcoming annual meeting in Kanazawa, Japan.

Dr. Eleanor Adair earned her B.A. from Mount Holyoke College and her M.A. and PhD. in physics and psychology from the University of Wisconsin. Her work in the area of bioelectromagnetics research spans nearly 50 years, beginning in 1960 with her research on the physiological effects on primates of microwave radiation at Yale University’s John B. Pierce Laboratory. Collectively, she has published over 100 scientific papers, books, book chapters, reviews and technical reports.

See Eleanor Adair Continued, p9

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BOARD RESOLUTION OF ISSUES ASSOCIATED WITH JIM LIN

On November 29, 2006, the NIH Office of Research Integrity (ORI) released a Notice indicating final administrative action in a case involving Dr. James C. Lin. The Notice, a statement by Dr. Lin providing an explanation of his actions and the circumstances surrounding the ORI investigation, and a statement by BEMS President Ben Greenebaum, were made available to BEMS members in the November/December BEMS Newsletter (Number 193).

The ORI Notice indicated that Dr. Lin had engaged in research misconduct when he used a figure from a colleague for a NIH grant application describing proposed work on the effect of cellular phone radiation on blood-brain barrier integrity. The ORI indicated the figure caption and text in the application had violated accepted practice by falsely claiming the figure represented preliminary results of his independent experiments that used conditions different from those used in experiments producing the data shown in the figure. The Notice also indicated that Dr. Lin had entered into a Voluntary Exclusion Agreement with ORI in which, without admitting guilt, he agreed for three years to include and submit to ORI a supervision plan for any proposals to NIH, NIH-funded grant activities, or presentation of data from NIH-funded research studies, as well as not to serve on NIH committees.

Dr. Lin’s explanation indicated that academic politics at his university had resulted in a dean unexpectedly closing Dr. Lin’s lab and moving all materials into storage. In the process, some papers and materials lost. Taking full responsibility for not clearly labeling the illustration, Dr. Lin’s explanation stated that he had been sloppy, but had no intent to deceive the NIH or to misrepresent his work, and that he had permission to use the figure from its authors. He added that he believed it was a minor slip-up, which he regrets, and that it was blown out of proportion. Rather than continue fighting he finally decided to accept what he characterized as ORI’s rather minor constraints.

During the recent BEMS Board Meeting, a closed session was held to discuss these events and their implications for Dr. Lin’s work as Editor-in-Chief of the BEMS journal, Bioelectromagnetics. In a protracted session, Dr. Lin presented his position to the Board and responded to their questions. The Board considered the implications of the ORI finding concerning Dr. Lin for the journal and the Society. It also considered communications from Society members that had been sent to the President, various members of the Board, Publications and Journal Committee, and Editorial Board members. Dr. Lin was present for the first part of the closed session meeting, but left while final discussion, motions and voting occurred.

The Board released the following statement concerning the outcomes of their deliberations.

Two Motions were considered:

• A Motion to ask for Dr. Lin’s resignation from the Editor-in-Chief position failed to pass.
• Another motion was approved by the Board, which stated: “After almost four hours of deliberation, a closely divided Board, having considered the NIH ORI finding of research misconduct against Dr. Lin and its implications, decided that at the end of one year it will reevaluate his service as Editor-in-Chief of Bioelectromagnetics.”

In the week following the Board Meeting, the President circulated a proposal to the Executive Committee on how to best implement the intent of the Motion, and it was agreed to via e-mail. The approved procedure will be: (1) The Publications Committee, in consultation with the Journal Committee and any other persons or groups it deems helpful, will begin a review of Dr. Lin’s service as editor in November or December, and complete their review in time to report and present any proposals that seem appropriate to the Board at the February meeting. (2) The review of Dr. Lin’s service will include both his effectiveness as Editor-in-Chief of Bioelectromagnetics during the past year and whether his continued service has caused adverse consequences, for the journal or Society. Since some BEMS members are concerned that the NIH ORI finding could have a negative impact within the scientific community on the perception of the integrity of the journal editorial process of BEMS itself, the review will attempt to determine if any adverse perception has actually occurred.

– Robert Goldberg, Secretary of BEMS

NOTE TO CONTRIBUTORS

The Bioelectromagnetics Society newsletter is published and distributed to all members of the Society. Institutions and libraries may subscribe to the newsletter at an annual cost of $85USD. The newsletter serves as a forum for ideas and discussion of issues related to bioelectromagnetics research. Contributions may include news items, meeting reports, short notes on research, book reviews, and relevant items of historical or other interest. All submissions must be signed. While it is understood that contributions by individual authors reflect the views of the contributor, the editors may require that contributing writers submit a statement of affiliation and/or disclosure of possible conflict of interest at the time an article is submitted for consideration. Advertisements included in the newsletter are not to be considered endorsed by the Society.

To submit items for the newsletter, please send electronic files to bemsnewsletter@gmail.com or bemosoffice@aol.com or (by surface mail) to The Bioelectromagnetics Society, 2412 Cobblestone Way, Frederick, MD 21702-2626 USA.

BEMS Newsletter Managing Editor, Janie Page, is an independent consultant in Oakland, CA. Tel. (510) 917-2074.

BEMS Newsletter Editor, Mays Swicord, Ph.D. (954) 831-4645 is a retired employee of the U.S. Food and Drug Administration and of Motorola Research Laboratories, Ft. Lauderdale, FL, where he is also a consultant.

For other Society business or information, contact: Gloria Parsley, Executive Director, Tel. (301) 663-4252; FAX: (301) 694-4948, or see the BEMS Web site: www.bioelectromagnetics.org
REPORT FROM THE PRESIDENT

Editor’s note: This report was given by Ben Greenebaum (BEMS President 2007) to the Board of Directors at its annual meeting in Washington, DC on February 10, 2007. As it addresses issues of interest to all BEMS members, it is presented here in its entirety.

By and large the affairs of the Society seem to have gone about as well as we might have expected since the Board met last. There has been good news and bad, some expected successes and problems and some unexpected ones. Though Board meetings tend with good reason to be dominated with day-to-day details, behind those details are strategic concerns that are more important in the long run. The details and the good and bad news will be reported in various parts of our agenda and some may require considerable discussion. So I’ll briefly mention only a few.

The Cancun meeting was programmatically and socially successful, thanks in great part to Executive Director Gloria Parsley, with considerable credit also going to everyone she was working with; and recent financial settlements seem to have made it a fiscal success as well. As we’ll hear later, the number of abstracts for the Kanazawa meeting indicates the high interest in both bioelectromagnetics and the Society’s first meeting in Asia, particularly in Japan, that we expected when planning to go there. The anticipated programmatic success will be wasted, however, if it is a one-time event. This Board and our Japanese colleagues should begin thinking about the long-term role of the Society in ensuring continuing and increased involvement of Eastern and Western bioelectromagnetics scientists with each other. The Kanazawa meeting seems to carry more financial uncertainty than some others we’ve planned; but even if we have to dig into our financial reserves somewhat, that would be well-justified if the meeting produces some long-term relationships.

We have two continuing strategic issues that we should not overlook, even when pressed concerning details of immediate concern:

• First, how should the Society adapt to the continuing changes in the bioelectromagnetic research world?
• Second, how can the Society maintain itself as the place where everyone interested in bioelectromagnetic science can comfortably report, discuss and critique the research, independent of individual opinions about the results’ possible implications beyond science?

I’ll address the second question first. Many of the public, press, and legislators, see all science having questionable ethics due to practices that have come to light of some firms in a number of industries, of some politically-influenced agencies, and of some scientists whose opinions appear to have been for hire. We can’t overcome this trend by ourselves, but both as individuals and as a Society, we can help by being as open and honest as possible about our work and its implications. I’m more concerned that differences of opinion among ourselves about scientific results or about their implications for public policy produce tensions within the Society. This isn’t new, but it may have increased recently. If those differences are clearly delineated and stated honestly and openly, they can produce useful discussions or at least agreements on where people disagree. Our worst tensions arise when a person or group feels, whether correctly or not, that another person or group is withholding their true reasons for an opinion about a scientific result.

Concerning the first issue, we are all aware of the continuing shifts in the bioelectromagnetic research world. When the Society was founded, research was heaviest in the US and the former USSR, and was most heavily on RF effects. We’ve seen public interest, funding and consequently the amount of research into effects of lower frequencies rise and then fall, just as we’re seen the center of gravity of bioelectromagnetic research shift from North America to Europe, and the long tradition in East Asia is increasing quickly. The Society and our meetings have primarily depended on grants associated with possible hazardous effects, which have been waning. Although we’ve encouraged interest in medically-oriented uses, we’ve had varying success in both program and support. One reason is the syndrome of, “what have you done for me lately?” There have been few recent applications of fields in medicine that are visibly successful. In addition, scientists studying emerging areas of bioelectromagnetics with some medical promise have often used other societies as homes. For example, we’ve had success in attracting work on ultra-short high-power pulses, but less so with electroporation and related membrane studies.

In thinking about future meetings, we should look not only at the planning details, but also think about whether to alter aspects of how we do things in view of changes in the bioelectromagnetic world. Some of us remember that the old BRAGS society, built around orthopedic use of pulsed fields for bone healing, lost attendance to BEMS as its meetings continued to present mostly work with pulsed fields on bone tissue and bone healing, while BEMS emerged as a broader stage for high quality, basic science concerned with all electromagnetic effects on all cells and tissues. Is there a lesson here for us? Probably that we should continue to bring in speakers who can introduce our members to new directions for their research and continue to cultivate participation of people who are trying to open new fields of research.

However, bringing in new ideas may not be enough. I know from personal experience that an old dog is most likely to learn a new trick if it is not too different from the tricks he already knows. Can the meetings do more to link the new ideas of speakers in plenaries or emerging areas to what many members already doing? For instance, can we encourage members modeling RF distributions in tissue (or non-members modeling electroporation) to adapt these techniques to studying ultra short pulsed fields or tissue-healing pulses applied to realistic tissue models? Can we get cell and molecular biologists, physical chemists, and quantum theoreticians actively interested in figuring out tests for each others’ ideas and results? The most effective meetings are ones where the attendees walk away with ideas that they want to try and questions that they want to puzzle out. If we can increase the number of times this happens, we’ll see results in the form of new strength in bioelectromagnetic research results that attract notice from scientific funding sources and that lead to applications which answer what we’ve done lately, and lead to both stronger meetings and a healthy Society.

– Ben Greenebaum
PLAN NOW TO ATTEND THE BEMS MEETING IN KANAZAWA, JAPAN

This year’s annual meeting in Kanazawa, Japan will be a little different from past meetings. The traditional western image of Japan gleaned from samurai films and books written by early foreign visitors, can be hard to find in this day and age. Sadly, the ravages of time, history and progress have swept away much of the lamp lit, geisha & cherry blossom world tourists come to Japan expecting to see. The faces on visitors to Kanazawa, however, register a flicker of relief. You can almost hear them sigh “Ah, here it is!” For Kanazawa, untouched for 400 years by any form of disaster, is one of the last bastions of old Japan. Entire areas of town function much as they have for hundreds of years, not as a tourist gimmick but because that is how life still is here. Geisha still ply their trade in teahouses whose addresses have remained unchanged since pre-Meiji times. Craftsmen still stoke out bolts of silk in the river to rinse, not for the cameras but simply because that is the way they were taught to do it. Elderly ladies still sell vegetables in some neighborhoods door to door on handcarts at dawn. Couple this firm grip of tradition with a thoroughly modern infrastructure & transport system, easy accessibility from abroad and a comprehensive local accommodations industry that has honed its hospitality on our thriving domestic tourism business and you’ll wonder why everyone doesn’t know the name Kanazawa.

Accessing Kanazawa is getting steadily easier thanks in part to Komatsu Airport 30 minutes south, accepting regular scheduled flights from Seoul & most major domestic Japanese airports. A daily flight to and from Tokyo’s Narita international airport makes access for international travelers even easier. Rail access to Kanazawa is smooth, simple and fast from all major centers via the flawlessly efficient JR rail system. Additionally, speedy highway bus lines connect Kanazawa and all points domestic.

Travel By Air to Komatsu

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<th>Destination</th>
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<td>Tokyo (Haneda)</td>
<td>1 hour</td>
<td>11 flights daily</td>
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<td>Tokyo (Narita)</td>
<td>1 hr 15 min</td>
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<td>Sendai</td>
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<tr>
<td>Fukuroka</td>
<td>1 hr 15 min</td>
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<tr>
<td>Sapporo</td>
<td>1 hr 30 min</td>
<td>1 flight daily</td>
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<tr>
<td>Naha (Okinawa)</td>
<td>2 hrs 10 min</td>
<td>1 flight daily</td>
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<tr>
<td>Seoul (S. Korea)</td>
<td>1 hr 30 min</td>
<td>4 flights weekly</td>
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<td>Shanghai</td>
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Travel By Rail to Kanazawa

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<td>Kansai Int’l Airport</td>
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<td>Tokyo (via Maibara)</td>
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The easiest way for international attendees to begin their trip would be to fly into Tokyo Narita Airport, and then find a connecting flight into Komatsu Airport. A good Japanese airline to search for flights on is ANA, www.fly-ana.com. Komatsu Airport is a short 45 min motorcoach bus ride away from the Kanazawa Train Station. Once you arrive at the Kanazawa Train Station you can take a city bus or a taxi to your hotel.

For spouses and family members there are a diverse variety of local attractions in Kanazawa. For more travel information and a link to the Kanazawa Convention Bureau, log on to the BEMS website: www.bioelectromagnetics.org and visit the Annual Meeting page.

The BEMS Annual Meeting will be held in Bunka Hall. Nippon Travel Agency (NTA) has blocked hotel rooms at several Kanazawa hotels. They will accept reservations online as soon as the web site is ready. Hotel accommodations need to be paid for in advance and NTA will accept secure credit card payments online. The hotels are all very clean and safe. The rooms are small but have everything a traveler may need. While there are several hotels within walking distance of Bunka Hall, don’t worry if you are a few miles away: taxis from the hotels at the train station are 700 yen which is about US$6. Buses also run all over the Kanazawa city. The public bus stop is near Bunka Hall and only costs about 200 yen, which is less than US$2.

BEMS office staff, Gloria and Kelly, conducted a site visit in Kanazawa and report the following: We arrived in Kansai Int’l Airport, and after passing through customs, exchanged money, and walked over to the train station, which is conveniently located at the airport. At first arriving in Japan was a bit overwhelming because nothing was in English, but we asked people for help, and everyone was kind and very polite. We went into the train ticket office to purchase tickets to Kanazawa because all the automated machines were in Japanese. You should purchase reserved seats on express trains whenever possible and note that some train cars are smoking and others non-smoking. We transferred trains at the Shin Osaka station, then traveled onto Kanazawa. The trains are efficient, comfortable, safe, and reliable with restrooms and food service available. Please make sure that you keep your tickets handy while traveling by train for the conductor to punch and you also need them to exit the station upon arrival.

When we arrived in Kanazawa at 9:30pm we exited the train station and found the public bus route right outside, along with a taxi stand. We located the bus route which took us to the stop closest to our hotel. We lined up at the bus stop and asked the bus driver (who did not speak english) to help us purchase our tickets and he chose the appropriate coins from my hand and put them into his vending machine. When we arrived at our bus stop he made sure we got off. Then we walked a block to the hotel where they greeted us very warmly in English.

– Kanazawa Convention Bureau, Gloria Parsley, and Kelly Husser

Bunka Hall
Kanazawa, Japan
BEMS 29th ANNUAL MEETING
Technical Program
Bunka Hall, Kanazawa, Japan

SUNDAY, JUNE 10, 2007

8:30am-12:30pm: U.S. AIR FORCE WORKSHOP: TERAHERTZ BIOEFFECTS AND EM THEORY

2 PM-5 PM: TASER INTERNATIONAL WORKSHOP: NEUROMUSCULAR INCAPACITATION BY HIGH VOLTAGE ELECTRICAL PULSES
- James Sweeney, Florida Gulf Coast University
- Dorin Panescu, St. Jude Medical Corp
- Jeffery Ho, University of Minnesota

1pm-7pm REGISTRATION
5pm-7pm WELCOME RECEPTION

MONDAY, JUNE 11, 2007

8:30-10:30am PLENARY I: ELECTROMED SESSION: BIOELECTROMAGNETIC APPLICATIONS TO CANCER DIAGNOSIS AND TREATMENT
- Keith Paulsen, Dartmouth University
- Marvin Ziskin, Temple University
- Isamu Nagano, Kanazawa University, Japan

10:30-12:30pm POSTER SESSION A (odd numbered posters presented)

1:30pm-3:30pm
- Session 1: Cancer Detection, Therapy & other Human Studies
- Session 2: Dosimetry I

4:00pm-6:00pm
- Session 3: EMF Exposure and Standards I
- Session 4: Electromed: Nanosecond pulsed electric fields trigger apoptosis and influence gene expression

TUESDAY, JUNE 12, 2007

8:30-10:30am PLENARY II: ELECTROMED SESSION: BIOELECTROMAGNETIC STIMULATION OF WOUND HEALING AND REGENERATION
- Luther Kloth, Marquette University
- Min Zhao, University of Aberdeen
- Richard Borgens, Purdue University

10:30-12:30pm POSTER SESSION B (even numbered posters presented)

1:30pm-3:30pm
- Session 5: Mechanisms of cell interactions with EMF I
- Session 6: Mobile Phone Studies

4:00pm-6:00pm
- Session 7: Mechanisms of cell interactions with EMF II
- Session 8: Magnetic Field Effects

6:30pm SOCIAL EVENT & SPONSOR RECOGNITION CEREMONY

WEDNESDAY, JUNE 13, 2007

8:30-10:30am PLENARY III: BIOELECTROMAGNETICS: HUMAN EXPOSURE STANDARDS AND HEALTH CONSIDERATIONS
- Maila Hietanen, Finnish Institute of Occupational Health, Finland
- Naohito Yamaguchi, Tokyo Women's Medical University, Japan
- Martine Vrijheid, International Agency for Research on Cancer, Lyon, France

11:00-1:00pm
- Session 9: EMF Exposure and Standards II
- Session 10: EMF effects on animal systems

1:00-2:30pm BEMS Annual Business Meeting

THURSDAY, JUNE 14, 2007

8:30-10:30am PLENARY IV: ELECTROMED SESSION: BIOELECTROMAGNETIC EFFECTS ON THE NERVOUS SYSTEM I:
- Ann Rajnicek, University of Aberdeen
- Andrei Pakhomov, Frank Reidy Research Center for Bioelectrics
- Mark Kroll, Taser International

11:00-1:00pm
- Session 11: EMF effects on the genome
- Session 12: Dosimetry II

2:00-6:00 pm Workshop 1: Basic Techniques in Cytogenetics Research, Dr. Vijayalaxmi Organizer
- Isabelle Lagroye, Laboratoire de bioélectromagnétisme
- France, Guenter Obe, Univ. of Essen, Germany
- Maria Rosaria Scarfi, Naples, Italy
- Junji Miyakoshi, Hirosaki Univ., Japan

2:00-6:00pm Workshop 2: Practical Implementation of ELF and RF Guidelines
- Rob Kavet, USA
- William H. Bailey, USA
- T. Dan Bracken, USA
- Osamu Fujiwara, Nagoya, Japan

Posters removed by 6pm

FRIDAY, JUNE 15, 2007

8:30-10:30am PLENARY V: BIOELECTROMAGNETIC EFFECTS ON THE NERVOUS SYSTEM II:
- Andrew Cei Ahn, Harvard Medical School
- Anthony Barker, Royal Hallamshire Hospital, UK
- Shoogo Ueno, Kyushu University, Japan

11:00-12:30pm
- Session 13: Dosimetry III
- Session 14: In Vitro Studies

12:30pm AWARD CEREMONY AND CONCLUDING REMARKS
WINTER WORKSHOP COMBINES EMF AND MAGNETISM IN MEDICINE

This year’s BEMS Winter Workshop was held in Washington, DC on February 9, 2007. Organized by Society member Michael McLean, the session combined a look at how electric and magnetic fields are being used in some advanced medical applications (morning session) with a look at various aspects of EMF research, standards setting, and intervention technologies.

Leonardo G. Cohen, MD of the National Institute of Neurological Disease and Stroke, National Institutes of Health (Bethesda, MD) began the morning session with a look at the use of Transcranial Magnetic Stimulation (TMS) for the repair of nervous system injuries such as those associated with chronic stroke or ALS. He began with a discussion of the use of transcranial direct current stimulation (tDCS), noting that while precise interaction mechanisms are not yet completely understood, certain protocols can bring out improvements in motor control whose magnitude is proportional to the degree in interhemispheric inhibition brought about by the original injury. He noted that the control of heavy motor activity involves an interaction between both hemispheres of the brain, so that full treatment appears to require immobilizing the intact functions while stimulating those previously injured. Work reported by Dr. Cohen is generally not yet in clinical use.

Next, Franz Baudenbacher, Ph.D., Assistant Professor of Biomedical Engineering and Physics at Vanderbilt University (Nashville, TN) discussed the horizons, limits, and alternatives for using superconducting quantum interference devices (SQUIDS) to better understand the physiological processes behind generation of the biomagnetic field. The goal behind his research is to find better ways to use SQUIDS in an extremely low noise environment to determine the source of small signals, and thereby attempt to characterize the behavior of various membrane ion channels. Using parallel loops to reduce the system inductance, he can reduce the size of the probe to gain system spatial resolution without comparable noise issues. He noted that his lab is presently a factor of two from the intrinsic noise limit of their SQUIDs. Designs on which he is presently working have reduced the sample to sensor spacing to the order of 100 mm, comparable to the size of a cardiac myocyte. Field sensitivities of on the order of 20 fT/Hz ½ are expected to be small enough to detect the field generated by one neuron. Early results from his work include high resolution images from magnetic mapping of net action current in cardiac tissue. He notes that the magnetic cardiogram signals appear to arise from sheets of current parallel to the wave front, not from current dipoles perpendicular to the wave front.

Then Robert Knowlton, M.D., Director of Magnetoencephalography in the Department of Neurology at the University of Alabama (Birmingham, AL) examined the benefits and limitations of magnetoencephalography (MEG) as a clinical tool. A distinguishing feature of MEG, in contrast to electrical potentials used in EEG, is that magnetic fields are not attenuated or distorted by intervening tissues between brain and scalp, so it can be more effectively used to localize normal and abnormal cerebral function. Dr. Knowlton indicated that the anticipated uses of this noninvasive technique were concentrated in epilepsy treatment, presurgical mapping, and the long range goal of mapping cerebral functional disturbances in neuropsychiatric and cognitive disorders. Through improved localization, surgical procedures in each of these areas can be made less invasive and more accurate.

After lunch, Mays Swicord, Ph.D., an independent consultant formerly with Motorola in Ft. Lauderdale, FL gave a retrospective of EMF exposure research programs and lessons learned from over fifty years of radio frequency (RF) research. Taking what he called a simplified mechanistic review of the ways RF might interact with biological systems, he identified four categories: processes that lead to a thermal increase within the system, processes that modulate endogenous fields in a biologically significant way, processes that lead to excitation of modes or breaking of bonds and processes that might “pump” some mode of the system to affect a molecular process. Dr. Swicord noted that his examination of over fifty years of research in epidemiology, human provocation, in vivo and in vitro studies of RF interactions with biological systems showed no consistent or repeatable research to support the existence of low-level non-thermal effects.

See Winter Workshop Continued, p7

Wayne C. Drevets, M.D., of the Neuroimaging Section in the Mood and Anxiety Disorders Program in the National Institutes of Health (Bethesda, MD) provided a broad look at the use of functional magnetic resonance imaging (fMRI), magnetic resonance spectroscopy (MRS), and positron emission tomography (PET) to bridge from syndrome to physiology to etiology of a variety of mood disorders. Noting that the methods are not yet useful for specific diagnoses or treatments, he showed how work is “chipping away” at the goal of making more clear distinctions between different kinds of depression through distinguishing characteristics of brain involvement. He noted a surprising reduction in glial cells with certain mood disorders identified through MRS studies of glutamate cycling. Discussions focused on particular regions of the brain anticipated to correlate with particular mood disorder. Responding to a question from the audience, Dr. Drevets noted that while some post mortem studies indicated evidence for necrotic cells in certain regions, there was no evidence of unusual levels of apoptosis in depressed patients.

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See Winter Workshop Continued, p7

The Bioelectromagnetics Society Newsletter January/February 2007
Next, Cindy Bir, Ph.D., Associate Chair for Biomedical Engineering at Wayne State University (Detroit , MI) discussed the physiological effects of conducted electrical weapons in conjunction with excited delirium typically associated with illegal drug use. She focused on “less-lethal weapons …[that have been]… developed to provide law enforcement, corrections, and military personnel with an alternative to lethal force… designed to temporarily incapacitate, confuse, delay, or restrain an adversary in a variety of situations. They have been used in riots, prison disturbances, and hostage rescues.” Noting that under typical use, repeated exposure to these weapons result in transitory respiratory acidosis, metabolic vasodialation, and an increase in blood lactate, she noted that targets with excited delirium (a condition that involves agitation, incoherence, hyperthermia, paranoia, great strength, constant motion, imperviousness to pain, inappropriate behavior, often associated with use of PCP or methamphetamines) displayed different results, and described plans for future studies to better understand the causes of these differences.

James C. Lin, Ph.D. of the University of Illinois at Chicago’s Departments of Bioengineering and Electrical and Computer Engineering concluded the winter workshop with a look at EMF exposure standards. His report looked at some possible causes for the resurgence of interest in standards and different philosophical approaches to setting exposure limits. He compared the features of the ICNIRP guidelines with the new IEEE standards, noting that philosophical and scientific differences between IEEE and ICNIRP lead to different safety standards with an associated difference in protection offered by each.

– Janie Page, photos and text

BEMS COMMITTEE REPORTS FEWER NEW MEMBERS IN 2006

Junji Miyakoshi (Chairman of the Membership Committee) reported that in the past year, The Bioelectromagnetics Society welcomed 39 new members (including 2 upgraded members). This represents a continuing decline in the number of new memberships since 2004:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Full</th>
<th>Associate</th>
<th>Student</th>
<th>(Upgrade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>78</td>
<td>34</td>
<td>15</td>
<td>29</td>
<td>(6)</td>
</tr>
<tr>
<td>2004</td>
<td>83</td>
<td>39</td>
<td>12</td>
<td>32</td>
<td>(10)</td>
</tr>
<tr>
<td>2005</td>
<td>59</td>
<td>28</td>
<td>16</td>
<td>15</td>
<td>(2)</td>
</tr>
<tr>
<td>2006</td>
<td>39</td>
<td>11</td>
<td>9</td>
<td>17</td>
<td>(2)</td>
</tr>
</tbody>
</table>

BEMS JOURNAL IMPACT FACTOR GOES OVER 2.0 MARK

The Journal’s Impact Factor increased significantly in 2005 over the 2.0 threshold. This is a major accomplishment for the Journal! A summary of the historical impact factor and ranking performance for the Journal is as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Category</th>
<th>Impact Factor</th>
<th>Ranking</th>
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</thead>
<tbody>
<tr>
<td>2005</td>
<td>Biophysics</td>
<td>2.193</td>
<td>#33 of 65</td>
</tr>
<tr>
<td>2004</td>
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<td>1.243</td>
<td>#52 of 64</td>
</tr>
<tr>
<td>2003</td>
<td>Biophysics</td>
<td>1.526</td>
<td>#45 of 66</td>
</tr>
<tr>
<td>2002</td>
<td>Biophysics</td>
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</tr>
<tr>
<td>2001</td>
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<td>1.309</td>
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<td>#26 of 55</td>
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<tr>
<td>1998</td>
<td>Biophysics</td>
<td>1.625</td>
<td>#26 of 57</td>
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<tr>
<td>1997</td>
<td>Biophysics</td>
<td>1.193</td>
<td>#29 of 45</td>
</tr>
<tr>
<td>1996</td>
<td>Biophysics</td>
<td>1.605</td>
<td>#18 of 39</td>
</tr>
</tbody>
</table>

In comparison, the Journal’s competitors are ranked as follows:

- Bioelectrochemistry
  Formerly Bioelectrochemistry and Bioenergetics
  2005 Impact Factor: 1.558
  Ranked in the Biophysics category #46 of 65

- Electromagnetic Biology and Medicine
  Formerly Electro-and Magneto-Biology
  2005 Impact Factor: 0.649
  Ranked in the Biophysics category: #58 of 65

Bioelectromagnetics continues to publish at a frequency of 8 issues per year. To improve print publication times for the Journal in calendar year 2006, the Society purchased 65 extra pages for a total of 673 pages for 91 published articles.

Volume 28, Issues 1 and 2 (January and February 2007) have already published. Bioelectromagnetics implemented EarlyView last year to facilitate rapid online publication and currently has 13 articles published online ahead of print publication. In addition, the submission of supplemental material for the online version of the Journal is also accepted.

In addition, Wiley continues to provide an electronic proofing service to facilitate rapid turnaround of author corrections; and the submission of supplemental material for the online version of the Journal is also accepted.

Full Text Access to a Single Article
For those who do not subscribe to the Journal, Wiley provides options for the purchase of access to single articles through Wiley InterScience in two ways: Article Select and Pay Per View.

See Journal Impact Factor Continued, p9
NEW EDITOR SOUGHT FOR BEMS NEWSLETTER

Mays Swicord has announced that he is stepping down as editor of the BEMS Newsletter, effective as soon as a successor is named. The Society asks all members to consider nominating themselves or a willing colleague.

Position Description:

The Newsletter Editor is responsible for ensuring that members have an interesting, informative, accurate, and respectable newsletter on a prompt, periodic basis. The editor must have good English writing and editing skills, a broad knowledge of bioelectromagnetic science, an understanding of the interplay between the science and public issues, and the ability to work with people, including those holding a variety of opinions on the implications of bioelectromagnetic science for public policy, some of whose ideas the editor may disagree with. The editor may express personal opinions, but must allow others to express theirs within bounds appropriate to the newsletter. Email and the Internet mean that the editor’s country of residence is not a factor.

Process:

Members should volunteer or send nominations of candidates who have said they are interested to Carl Blackman, chair of the Board’s Publications Committee, email: Blackman.Carl@epa.gov. A brief description of the candidate’s credentials (or a c.v.) would be useful. Suggestions (nominations without the candidate’s consent) may also be sent to Carl, but should be clearly identified as such; these will receive attention but attention will be needed first. Names should be received by April 1, including credentials and the candidate’s approval, to ensure full consideration, though late submissions will be considered as time permits.

Beginning April 1, the Publications Committee (presently Blackman, Dariusz Leszczynski, Janie Page, Johnathan Kiel, John Male, Lee Rosen, and myself ex officio; Page will not participate if she becomes a candidate) will consider the candidates and by May 1, will forward to the Board of Directors a list of people considered qualified, as well as its assessment of the strengths and weaknesses of each. The Board of Directors will appoint at its first June meeting in Kanazawa, taking into account the committee’s assessments. Editors serve 3-year, renewable terms. The Editor may nominate an Associate Editor for approval by the Board.

Other Considerations:

Since the newsletter is now in a primarily-electronic format, a new editor could but need not necessarily decide to target a different number of issues, use more flexibility in page count, etc. The few who still receive paper copies have to be taken into account. Mays Swicord has begun setting up a network of contributors to supplement his and the Associate Editor’s contributions; a future editor will probably want to build upon this. The editor may continue using an Associate Editor to help write/rewrite contributions and gather additional information or may take over any of those functions personally. This Newsletter, which brings in no subscription funds, has a small budget for the present associate editor’s labor, layout work in the Society office, and other costs. The editor is unpaid, though the Society can negotiate for reimbursement of out-of-pocket costs and, to the extent that associate editor or layout labor costs are reduced, may consider other reimbursements. The editor attends the winter and June Board meetings, without vote, and may be reimbursed for travel expenses to the winter meeting.

– Ben Greenebaum, BEMS President

EDWARD HUNT
– continued from page 1

He received a laboratory award for his work on X-rays and their effect on the nervous system. With Donald J. Kimeldorf, he wrote “Ionizing Radiation: Neural Function and Behavior” (1965). Mr. Hunt also had articles about ionizing radiation published in such journals as Nature and Science.

From 1969 to 1975, Mr. Hunt directed his research efforts to the biological effects of nonionizing radiation (NIR) as a research psychologist at Battelle-Northwest in Richland, Wash. In this capacity he conducted research on the behavioral effects of microwave exposure on laboratory animals and helped develop a powerful measuring device called a twin-well calorimeter to measure amounts of absorbed microwave energy in the exposed animals. The device provided an important means to relate observed biological effects in exposed animals to safe exposure standards for humans.

He was a member of the Randolph Lions Club in Rockville, where he did fundraising work to help the needy buy glasses. He also had a key role in the growth of Lions Camp Merrick in Charles County. Even in that role, Mr. Hunt was able to apply his expertise in behavioral science to build and deploy devices for the eradication of mosquitoes from the camp.

His avocations included gardening, salmon fishing, camping, polka dancing and hosting crab feeds.

His marriage to Shirley Williams Hunt ended in divorce.

Survivors include his partner, Peggy White of Olney; a daughter from his first marriage, Stephanie Hunt of San Francisco; and a son he helped raise with White, Joshua Rose of Olney.

– The Washington Post
The Bioelectromagnetics Society Newsletter January/February 2007

JOURNAL IMPACT FACTOR
— continued from page 7

Article Select is a token-based service providing access to articles in non-subscribed titles for institutional subscribers. Article Select has been available to our EAL customers since 2000 and was made available to Basic Access License subscribers in mid-2003. In 2006, Article Select for Bioelectromagnetics was used 298 times.

Pay Per View allows users, not affiliated with institutional customers, the opportunity to purchase access to articles published in Bioelectromagnetics for a fee, without the need for a subscription. This feature was initiated to increase online exposure and usage to the Journal, and in 2006 it was used 153 times.

Online Usage
Over the past year the number of downloads of tables of contents, abstracts and full text articles for the Journal has continued to increase. See below for more information regarding usage.

Bioelectromagnetics Online Usage Statistics*(number of downloads)

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<th>Abstracts</th>
<th>Full Text Articles</th>
<th>Month</th>
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<td>193,838</td>
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<td>54,314</td>
<td>72,886</td>
<td>43,491</td>
<td>170,691</td>
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</tbody>
</table>

*Data presented is COUNTER compliant

HINARI
Bioelectromagnetics also continues to participate in HINARI (Health InterNetwork Access to Research Initiative), a project undertaken in collaboration with the World Health Organization (WHO) to provide free access to investigators at institutions in more than 100 developing countries. For more information about HINARI, please visit www.healthinternetwork.org.

— Colette Bean, John Wiley & Sons, Inc. and James Lin, Editor-in-Chief of the Bioelectromagnetics Journal

ELEANOR ADAIR
— continued from page 1

When IEEE Edison Medalist and first BEMS d’Arsonval honoree, Prof. Herman P. Schwan, presented an insightful overview of all the microwave/thermoregulation research with a warning that work on human exposure in the hot-spot range (0.3-3 GHz) might involve insurmountable obstacles, Dr. Adair accepted that challenge. With the support of the United States Air Force, she focused her research on the human thermoregulatory responses to microwave exposure. At the Air Force Research Laboratory in Brooks Air Force Base, Texas, Dr. Adair studied human thermoregulatory response to 100, 220, 450, and 2450 MHz exposure at power densities as high as eight times the current human exposure standards. Her research at 2450 MHz also included a comparison of the effects of pulsed versus continuous wave fields and the interaction between microwave-induced heating and metabolic heating due to exercise. Dr. Adair is one of the few scientists in the world who has studied in detail the response of humans and primates to thermal RF-field exposures. The results from Dr. Adair’s thermal regulation work form the cornerstone that anchors current human RF field exposure limits to hard science (in the 100 to 2450 MHz region of the electromagnetic spectrum).

In addition to her research, Dr. Adair has been active in the development of health and safety standards for electromagnetic energy for more than 20 years, largely through her association with the Institute of Electrical and Electronics Engineers, Inc. (IEEE) where she has been an active participant in the IEEE Committee on Man and Radiation for many years. She co-chaired the committee that developed the C95.1-1991 “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz” and served as Vice-Chair of the main committee, formerly named “IEEE Standards Coordinating Committee SCC28.” During the late 1990’s she organized two workshops to study possible links between standards for microwaves and for lasers. She was named a Fellow of the IEEE in 1994 “for contributions to understanding the effects of radio frequency energy on biological thermoregulation and to the formulation of safe-exposure standards for man.” In 2001, she was named an Air Force senior scientist emeritus. Dr. Adair was a cofounder of the annual (Sol) Michaelson Research Conference (now in its fourteenth year) and contributed significantly to the World Health Organization EMF project, as a member of the WHO EMF Collaborating Center at Brooks AFB. Dr. Adair now lives in Connecticut with her husband, Yale physics professor emeritus Dr. Robert Adair.

— Compiled from Contributions made by James McNamee, Michael Murphy, Sheila Johnston, and Alumnae Association of Mount Holyoke College

Mount Holyoke College
Michael Murphy, Sheila Johnston, and Alumnae Association of Mount Holyoke College
CRC ANNOUNCES....
THIRD EDITION OF HANDBOOK OF BIOLOGICAL EFFECTS OF ELECTROMAGNETIC FIELDS

With this third edition, published November 28, 2006, the best-selling Handbook of Biological Effects of Electromagnetic Fields remains a definitive reference for researching bioeffects of static, low-, and high-frequency fields. Editors Frank S. Barnes and Ben Greenebaum (BEMS President, 2007) present a well-rounded perspective on the biological effects of electromagnetic (EM) fields, authored by active contributors to the field with a wide variety of interests and backgrounds, approaches, and interpretations.

The Handbook incorporates up-to-date data, results, and discussions—many based on studies performed since the 1995 publication of the previous edition—into two cohesive volumes. The first focuses on bioengineering and biophysical aspects, including molecular-level mechanisms. It contains new material describing the physics, engineering, and chemistry aspects of electromagnetic fields to explain their interactions with biological systems. The second concentrates on biological and medical aspects, including physiological effects, medical applications, and exposure standards. It examines some of the latest applications of EM fields, particularly for medical treatment and diagnostics. Improved cross-referencing across both volumes facilitates the association of interrelated concepts.

The Handbook of Biological Effects of Electromagnetic Fields, Third Edition forms a comprehensive, yet accessible source leading to a greater knowledge of electromagnetic hazards, potential applications of EM fields, and a better understanding of biological processes.

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Endogenous Electric Fields in Animals; R. Nuccitelli

Dielectric and Magnetic Properties of Biological Materials; C. Gabriel

Magnetic Properties of Biological Material; J. Dobson

Interaction of Direct Current and Extremely Low Frequency Electric Fields with Biological Materials and Systems; F. Barnes

Magnetic Field Effects on Free Radical Reactions in Biology; S. Engström

Signals, Noise, and Thresholds; J.C. Weaver and M. Bier

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Computational Methods for Predicting Field Intensity and Temperature Change; J.C. Lin and P. Bernardi

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Electromagnetic Imaging of Biological Systems; W.T. Joines, Q.H. Liu, and G. Ybarra

VOLUME 2: BIOLOGICAL AND MEDICAL ASPECTS OF ELECTROMAGNETIC FIELDS

Effects of Radiofrequency and Extremely Low-Frequency Electromagnetic Field Radiation on Cells of the Immune System; T. Paunesku and G.E. Woloschak

Evaluation of the Toxicity and Potential Oncogenicity of Extremely Low-Frequency Magnetic Fields in Experimental Animal Model Systems; D.L. McCormick


Behavioral and Cognitive Effects of Electromagnetic Field Exposures; S.A. Johnston and J.A. D’Andrea

Thermoregulation in the Presence of Radio Frequency Fields; D. Black

Epidemiologic Studies of Extremely Low-Frequency Electromagnetic Field; L. Kheifets and R. Shimkhada

Epidemiological Studies of Radio Frequency Fields; M. Feycht

EMF Standards for Human Health; E. van Deventer, D. Simuníc, and M. Repacholi

Electroporation; J.C. Weaver and Y. Chizmadzhev

Electrical Shock Trauma; R.C. Lee, E. Bodnar, P. Betala, and S. Blom-Eberwein

Mechanisms and Therapeutic Applications of Time-Varying and Static Magnetic Fields; A.A. Pilla

Therapeutic Heating Applications of Radio Frequency Energy; C-K. Chou
UPCOMING MEETINGS

SOUTH AFRICAN MOBILE PHONE SYMPOSIUM MOBILE TELEPHONY AND ITS RELATION TO HEALTH, COMPLIANCE WITH STANDARDS, STANDARDS & PRECAUTION.
7–9 October 2007, Johannesburg, South Africa
Co-Chairs:
• Dariusz Leszczynski, STUK - Radiation and Nuclear Safety Authority, Helsinki, Finland
• Zen Fourie, SABS - South African Bureau of Standards, Pretoria, South Africa
Rapporteurs:
Zen Fourie, South Africa
Dariusz Leszczynski, Finland
Niels Kuster, Switzerland

Background
The purpose of the Symposium is to provide an opportunity to all interested parties (especially from the Southern African Development Community (SADC)) to obtain the latest information on aspects of mobile telephony as it relates to health, standards, compliance and precaution.

The South African Mobile Telephony Symposium will be presented as a workshop supported by presentations by invited speakers of international stature. Each presentation will reflect the latest scientific findings and will be further supported by topical posters. The objective is to provide a holistic overview that will enable delegates to ascertain the latest status of mobile phone technology.

Rapporteurs will prepare summary report that will be presented to the Convention of the SABS - South African Bureau of Standards held on October 11th in Johannesburg.

Invited speakers:
Barney de Villiers - Public Health – A South African perspective
Joachim Schüz - Epidemiological studies
Alan Preece - Volunteer provocation studies
Zenon Sienkiewicz - Animal studies
Dariusz Leszczynski - Mechanisms and biochemistry of effects
Martin Röösli - Sensitive subpopulations
Alastair McKinlay - Safety limits - ICNIRP’s position
C.K. Chou - Safety Limits ICES’ position
Niels Kuster - Dosimetry testing of mobile phones
Michael Kundi - Precautionary approach or Precautionary principle
Emilie van Deventer - WHO’s position

At the end of the meeting, a round table discussion will be held with invited participation of scientists, representatives of the industry and representatives of consumer organisations.

Contact information:
Scientific program issues: Dariusz Leszczynski (dariusz.leszczynski@stuk.fi)
Registration and local arrangements issues: Verna Schutte (schuttev@sabs.co.za)

HEALTH RISK MANAGEMENT OF OCCUPATIONAL EXPOSURE TO ELECTROMAGNETIC FIELDS (EMFS). 5–9 March 2007, Hotel Riekonlinna, Saariselkä, Lapland, Finland

Background
Along with telecommunication applications and other new technologies, the exposure of workers to electromagnetic fields (EMFs) has rapidly increased. The new Directive of the European Parliament and of the Council (2004/40/EC) defines occupational exposure limits for EMFs which are intended to create a minimum basis of protection for all European Community workers. This course offers advice for the application of the Directive requirements in various work situations.

Objectives
The course will provide a broad understanding of EMF health risks and their assessments at workplaces, and will introduce the newest multidisciplinary research findings and best practices.

Target group
Researchers, occupational health and safety personnel, engineers involved in exposure measurements, and officials in regulatory authorities.

Main topics
- Overview of sources and occupational exposure to EMFs
- Characteristics of present and emerging technologies
- Health effects caused by EMFs
- Exposure measurements and health risk assessment
- Analyses of “real-life” cases in work environment
- Specific problems in the application of the EMF Directive (medical surveillance, sensitive workers)
- State-of-the-art of EMF-NET, COST 281 and other European co-operation

LAUNCH OF THE SWISS NATIONAL RESEARCH PROGRAMME ON RISKS RELATED TO ELECTROMAGNETIC RADIATION.

Swiss National Research Programmes (NRPs) are governmental programmes that support targeted research contributing to the solution of current problems of national importance.

NRP 57: Non-Ionising Radiation – Health and Environment will complement international research efforts by clarifying some of the open questions on potential health effects of electromagnetic radiation. In the framework of this 4-year, 5 Mio Swiss franks programme, 11 research projects covering the fields of dosimetry, epidemiology, human laboratory studies and in vitro research, as well as risk perception have been selected and have started in January 2007. The focus lies on radiofrequency electromagnetic fields (RF EMF) and interaction mechanisms, avoiding cancer-related endpoints. First results are expected to be available in 2009.

For more information on NRP 57 and its research projects, please visit the programme’s website: www.nrp57.ch
EMPLOYMENT OPPORTUNITY

General Dynamics seeks a Ph.D. or MS level Experimental Psychologist, Psychophysiologist, or Biomedical Engineer. Experience with mechanisms and consequences of bioelectromagnetics preferred. Apply at www.gdit.com Job #130363

CALENDAR


May 21–23, 2007. 4th European Symposium on Non-Lethal Weapons. Stadthalle Ettlingen, GERMANY. Organized by Fraunhofer ICT and The European Working Group on Non-Lethal Weapons (EWG-NLW), this Symposium will include such topics as Current and desired Capabilities, Advanced Technologies, Operational and Tactical Aspects, Effects on Targets, Evaluation of Effects and Legal and Public Acceptability. Abstract deadline is October 13, 2006. Contact: Symposium Chair Dr. Klaus-Dieter Thiel, Tel.:+49 (0)721 4640 375; Fax:+49 (0)721 4640 575. E-Mail: klaus-dieter.thiel@ict.fraunhofer.de. http://www.non-lethal-weapons.com/sy04index.html.

THE BIOELECTROMAGNETICS SOCIETY

2412 COBBLESTONE WAY
FREDERICK, MD 21702-2626 USA

June 10–15, 2007. The Bioelectromagnetics Society 29th Annual Meeting. Bunka Hall, Kanazawa, JAPAN. Contact: Technical Program Chair Richard Nuccitelli, E-mail: RNuccitelli@odu.edu, or The Bioelectromagnetics Society, 2412 Cobblestone Way, Frederick, MD 21702-2626 USA. Tel. (301) 663-4252; FAX: (301) 694-4948. Email: bemsoffice@aol.com http://www.bioelectromagnetics.org.


September 10–12, 2007. EHE’07, II International Conference on EMFs, Health & Environment. Wroclaw POLAND. Contact: Prof. Andrzej Krawczyk, Polish Society of Applied Electromagnetics Warsaw. E-mail: ehe07chair@onet.eu. Scientific Secretariat: Prof. Slawomir Wiak, Technical University of Lodz. E-mail:  למערי@p.lodz.pl. Lodging at Hotel Sofitel Wroclaw, http://www.wroclaw.pl/Abstract deadline January 30, 2007. Send to: 互利@p.lodz.pl. or see: http://www.imsi.pl/ehe07

7–9 October 2007. South African Mobile Phone Symposium Mobile Telephony and its Relation to Health, Compliance with Standards, Standards & Precaution. Johannesburg, South Africa (see article on p. 11 of this newsletter) Contact information for scientific program issues, Dariusz Leszczynski (dariusz.leszczynski@stuk.fi); for registration and local arrangements issues, Verna Schutte (schuttev@sabs.co.za). http://www.who.int/peh-emf/meetings/SA_mobile_phone symposium_Oct_2007.pdf