



BMES Bulletin

BIOMEDICAL ENGINEERING SOCIETY NEWSLETTER

VOL. 30, No. 1 2006

President's Column

Frank C-P Yin, MD, PhD



As winter's cold begins to give way to the first hints of spring, this is a reminder to all of us that another new year is upon us. It hardly

seems possible but the first quarter of my term has raced by. This time has been marked by many activities at our national headquarters as this transition year continues. Via weekly phone calls with Barbara and biweekly teleconferences of the Executive Committee of the BMES board, many discussions have occurred and several important decisions have been made. The following are some of the highlights.

As we all are aware, this year marks the closing of the Whitaker Foundation. After the Foundation closes its door in mid-year, the BME community will continue to benefit for years to come from some of their initiatives. One legacy is the academic curriculum database - a compilation of data for each of the schools at which there is an active educational program. By the time you read this, the BMES rather than the Whitaker Foundation, website will be the portal to this database. The database itself will also be moved temporarily from the

Foundation's server to one at Washington University. This will facilitate the overhauling of the database in preparation for its eventual transfer to a more permanent server under the auspices of the BMES. Going forward, the BMES national office will support this database since we envision that this will continue to be a useful source of data for the entire community. This arrangement was agreed upon by the Executive Committee and the Foundation over the past few weeks. I want to thank Alan Norman, David Butler of the Center for Engineering Computing at Washington University and David Hagerty, consultant to the Whitaker Foundation, for all their efforts that made this possible. Other than the link, the user will not notice anything different. Those with administrative passwords at each school will continue to be able to update their data and others will be able to quickly review the data for each school. The Whitaker Foundation also deserves special thanks for implementing this extremely useful initiative.

Please join me in extending a hearty welcome to Ms. Stephanie O. Darby, Director of Marketing and Communications in our national office. She brings with her many years of experience and wisdom to this job. We eagerly look forward to new energy and the many new initiatives that will be forthcoming. Her efforts will be critical in helping us improve the society on both fronts. One of the first tangible signs of this will be a streamlining of the membership solicitation, application, renewal and retention activities. In fact, some of you may have already received reminders to renew your membership -- which did not always happen in the past. If you received such a notice by mistake, however, please be patient and bear with us as we go

Tribute to Steven Slack, Editor of the BMES Bulletin



Steven M. Slack, PhD

Having begun his tenure in 2002, Steven Slack wrote his final Editorial for the Bulletin in the last issue of

2005. After taking over from Jerry Collins, Steven led the Bulletin during several years of rapid growth in the Society, and equally rapid change in our profession. In his first editorial Steven addressed the revolution in molecular biology, and the challenging ethical issues it raises with an editorial on US policies regarding cloning. More recently he entered into the debate on "intelligent design". These are indicative of Steven's tendency to force us all to think about the more perplexing consequences of the advances of our field, often provoking us to consider the more difficult ethical questions and causing us to stop and ponder the implications of what we do.

Steven was keenly aware of his audience, recognizing that many of his readers were just embarking on their careers in bioengineering. He often paid special attention to this younger generation, in one editorial removing the shroud of secrecy that often surrounds the process of application to a graduate program. In the process, he provided valuable advice to those about to make the transition into graduate school. Periodically, he provided thoughtful advice, addressing some of the more difficult questions that arise at that stage in one's career.

Steven will now focus his attention on his other professional roles. During his tenure as Editor of the Bulletin, he became associate dean

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Editorial

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for graduate studies and research at the University of Memphis' Herff College of Engineering and also serves on the editorial board of the Journal of Biomedical Materials Research. At the same time, he has continued to teach and do research in the field of biomaterials. He will no doubt find more time for these other activities now, but he leaves behind a legacy of thoughtful

comment that will long endure.

We know we speak for all the members of BMES, but especially those of us involved with its publications, when we express our sincere gratitude to Steven for all his years of faithful service, and wish him continued success as he moves on to other endeavor.
Frank Yin, *President*
Roger Kamm, *Chair, Publications Board*

AIMBE January 2006

Jason Rivkin, *Director of Communication and Outreach, AIMBE*

Each winter the American Institute for Medical and Biological Engineering (AIMBE) hosts a unique forum to explore the expanding field of bioengineering and the many challenges the discipline faces. Whether discussing new technologies or analyzing federal trade policies, AIMBE has established its Annual Event as a medium for bringing together academic, industrial and federal leaders.

AIMBE's upcoming 15th Annual Event, Accelerating Society's Benefits from Innovations in Medical and Biological Engineering, to be held February 28-March 3 in Washington, DC, will continue the bold traditions of years past. Topic areas represent a broad spectrum of interests of the AIMBE membership and expected attendees. Speakers are internationally-known experts in their fields. Key prestigious speakers and panel attendees include: Peter Katona, President of the Whitaker Foundation; Rep. Anna Eshoo (D-CA); and Janet Woodcock, Deputy Director of the Food and Drug Administration (FDA).

The Annual Event is the premier event combining medical and biological engineering with public policy issues. The AIMBE Annual Event is open to all with interests in medical and biological engineering - not just for Fellows and member representatives. The Event provides a unique setting, allowing more personal interaction among attendees and participants. The personal dimension that unites people in industry, government, health care, and academia also brings together students with potential mentors. As always, the Annual Event will also host the College of Fellows, Academic Council, and Council of Societies meetings, providing an opportunity to communicate, analyze, and unite in confronting common issues.

Coinciding with the excitement of the Annual Event is the release of AIMBE's new Web site. AIMBE launched its new site, www.aimbe.org, on January 31, 2006 to much ovation. The Web site features in-depth news coverage of important issues in the bioengineering discipline while serving as a portal for the broader biotechnology community. With features like discussion boards, surveys, fact databases, and interactive search engines, AIMBE is meeting the growing needs of the scientific community. The new site clearly illustrates the revolutionary changes and progress at AIMBE. **Please stop by the new Web site and register for the Annual Event!**

BMES Bulletin

BIOMEDICAL ENGINEERING
SOCIETY NEWSLETTER

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BMES Board Talk

This column is a sampling of our newly rejuvenated 'Board Talk'. This publication is intended to keep the lines of communication between BMES Board, Committees, National Office and other Leaders - open! We'll let you know - every quarter - what we have been working on, and in return, we hope to hear from you with questions, suggestions and your progress in your BMES initiatives.

Here, is a summary of activities since October 1st:

- By acclamation, BMES' Board voted to filled Shu Chien's remaining 2004-2007 Board term with an Industry partner. Donnie Currington, Senior Associate at Stress Engineering Services in Houston is looking forward to working with us on our Industry and Board initiatives for the upcoming year.
- BMES drafted and sent a letter to the NRC suggesting a taxonomy for bioengineering (copy in this newsletter).
- BMES drafted and sent a letter to NSF supporting the AIMBE position that 'Bio' should be included in their re-organizational efforts (copy in this newsletter).
- BMES sent a formal letter of thanks to Sue Van at the Coulter Foundation for the "Hurricane Relief" funds that brought over 45 participants to the 2005 BMES Annual Fall Meeting in Baltimore that would otherwise not have been able to attend.
- BIROW – BMES representative Kathy Ferrara attended the November 29th BIROW Strategy meeting in Chicago as well as participated in the February BIROW V meeting.
- BioTech Council – BMES continues to maintain limited participation in this Council to stay tuned-in. Frank Yin & Barb Dunlavey attended a November BioTech Council meeting in Chicago – held in collaboration with RSNA show.
- BMES' 2006 Annual Meeting in Chicago, is already successful, thanks to Rob Linsenmeier and his strong team. Exhibiting, sponsoring and advertising opportunities have been marketed since October and Rob's team has already secured 2 sponsors as well as over 10 exhibitors! Their website has already debuted, so take a moment to review: <http://www.bme.northwestern.edu/bmes2006/>
- 2007 Annual Meeting facility plans in Los Angeles are being reviewed in light of the overwhelming growth and success of our meeting. BMES' options will be outlined and reviewed at the BMES Spring Board meeting.
- 2008 Annual Meeting plans are also well underway, with a great hotel offering special 'student' housing incentives having been selected in St. Louis, MO.
- BMES sent a new Request for Proposal for a host for the 2009 [and beyond] Annual Meeting. At least 5 programs and venues have expressed interest to date, and a compilation of these proposals will be reviewed at the BMES Spring Board meeting.
- BMES' Finance Committee, Chaired by Rick Waugh, moved quickly to select an Auditor for the 2004, 2005 years. Field work began promptly early in 2006, in preparation of having reports later this Spring.
- The Whitaker curriculum database will be inherited by BMES. Washington University in St. Louis has generously agreed to support this effort. The database will appear, fully functional, as a seamless part of the BMES website. The database was beta-tested in January and is now live – please take a moment to visit!
- BMES will be migrating to a new, more user-friendly membership database system. This new system is an Application Server Provider [ASP] model – in which online dues renewals and integrated meeting registration will now be offered to members.
- In November, BMES welcomed our new Director of Marketing & Communications, Ms Stephanie O. Darby. After consulting with the BMES Executive Committee, we all agreed that her 14 years of non-profit experience would serve BMES corporate and member growth initiatives very well.
- In January, BMES welcomed a new Accounting Manager: Ms Mary-Louise Czarniewy principal of Accounting and Management Services. She comes to BMES highly recommended from Ms Pat Ford-Roegner at AIMBE. She will serve as a part-time, permanent consultant. ■

Dr. Art Johnson has graciously agreed to serve as the Bulletin's Interim Editor; however BMES needs a permanent Editor. Do you or anyone you know have an interest in writing, editing and making sure the most current information is regularly communicated to BMES members?

Please email Dr. Roger Kamm, our Publications Board Chair to either express your interest or nominate someone. Please contact Roger at rdkamm@mit.edu.



February 2006 Industry Report:

Gabrielle G. Neiderauer, PhD, Public Affairs Chair

Largest Venture Capital Transaction in Orthopedics Viscogliosi Brothers, LLC (VB) have announced that Small Bone Innovations Inc. (SBI) has completed its Series B financing, raising a record total of \$42.2 million. Based on data provided by Venture Source, this is the largest venture capital investment ever recorded in the field of orthopedic devices. SBI was one of the first companies to focus purely on the orthopedic care of arthritis and trauma in small bones and joints. VB, which led SBI's Series A financing, invested additional capital in SBI as part of the Series B financing round. www.totalsmallbone.com.

B. Braun Medical Awarded Emerging Leader of the Year Frost & Sullivan presented B. Braun Medical Inc. with its 2005 Medical Devices Emerging Leader of the Year Award for its commitment in addressing healthcare professionals' needs with superior quality products, and novel educational services and training programs to improve patient and clinician safety. B. Braun has one of the highest 2004 industry-wide growth rates. An established market leader in Europe, B. Braun is now building its U.S. market presence. While its U.S. subsidiary, B. Braun Medical Inc., is the regional anesthesia market leader, it is now emerging as a formidable competitor in other segments such as infusion therapy, drug delivery, dialysis equipment and interventional cardiology. B. Braun Medical Inc. demonstrates true health-sector leadership, producing innovative products that achieve operational excellence and protect patients and health professionals from risks associated with medication errors. www.frost.com.

510(k) FDA Clearance for Brain Oximeter CAS Medical Systems Inc. has received 510(k) clearance from the FDA to market its Near Infrared Spectroscopy (NIRS) adult cerebral oximeter monitor. The oximeter is a continuous, non-invasive monitor measuring absolute levels of brain tissue oxygen saturation. The Company plans to launch the product in late 2006. www.casmed.com.

Allergan/Inamed Merger Allergan Inc.

and Inamed Corp. have entered into a definitive agreement and plan of merger regarding the acquisition of Inamed by Allergan. Pursuant to the definitive merger agreement and consistent with the exchange offer previously commenced by Allergan, Allergan will exchange for each outstanding common share of Inamed, either \$84 in cash or 0.8498 of a share of Allergan common stock, at the election of the holder. www.allergan.com.

Rexroth Acquires Nyquist BV Bosch Rexroth has acquired the Dutch company Nyquist BV, a leading provider of industrial motion control solutions specifically for the semiconductor and medical manufacturing industries. The acquisition gives Bosch Rexroth the full capability to supply complete motion control solutions for the semiconductor and medical manufacturing markets, two industries that are typically served by companies offering only individual components. www.boschrexroth-us.com.

FDA Considers Easing Industry Burden In AF Ablation Catheter Trial Design FDA may be willing to accept a reduction of symptoms as the primary endpoint for atrial fibrillation (AF) ablation catheter clinical trials, according to CDRH Cardiac Electrophysiology & Monitoring Devices Branch Medical Officer Randall Brockman, MD. An endpoint requiring a percent reduction of AF symptoms seems to represent a shift from the 2004 FDA guidance on clinical study designs for AF catheter ablation. In that document, the agency called "burden reduction . . . problematic as the primary endpoint" because it could be "strongly influenced by non-therapy related factors." The guidance recommends "the relatively unambiguous endpoint of freedom from symptomatic atrial fibrillation at one year"—a goal that has been criticized by industry and clinicians as too stringent.

There are currently no ablation devices approved by FDA to treat atrial fibrillation, a chaotic rapid heartbeat that can affect quality of life and lead to serious complications. However, radiofrequency

catheters that have a general ablation indication are used off-label for treatment.

Bard Acquires Nitinol Stent Technology Firm will record a charge of approximately \$6 million in the first quarter related to its acquisition of certain assets for self-expanding nitinol stent technology from Gainesville, FL-based PST, the firm announces Jan. 18. Bard plans to launch a carotid stent in Europe in the second half of 2006 and in the U.S. in 2009.

Glucose Meter Alert Roche Diagnostics updates a November safety announcement for its Accu-Chek Aviva blood glucose meter to include an unspecified number of units in Europe and Canada with the potential for an "electronic malfunction which can cause the meter to report an erroneous result or shut down and no longer be used." In November, the firm announced a U.S. recall for the product, which launched in August 2005. The action, based on the same root cause, affected approximately 150,000 units with specific serial numbers that the company will replace for customers who call a toll-free number.

DePuy Makes Handy Acquisition J&J subsidiary buys privately-held, Miami-based Hand Innovations, to gain access to the wrist surgery market, where 200,000 procedures are performed each year. DePuy will market Hand's Distal Volar Radius plates, more than 50,000 of which have been implanted since February 2001. The J&J unit plans to integrate with the Hand sales team to broaden worldwide distribution.

Advatech Corporation Begins First Chronic Wound Trial Advatech Corporation (OTC: ADVA) today announced that it has entered into a research relationship and has begun its first clinical trial at Advanced Wound Recovery of Boston (TM). Principal Investigator, Dr. Ikram Farooki, M.D., CWS, in concert with Clinic Director, Suzanne Leaphart, RN, BSN, CWS will conduct tests using Advatech's patented Field Therapy Accelerator (FTA) device

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BME - Alliance for Industrial Internships

Charla Triplett, BME-AII

As many of you may know, I am currently the National Director of an organization called The Biomedical Engineering Alliance for Industrial Internships. Our mission is to introduce companies to the unique skills and abilities of biomedical engineers, to provide companies with additional ways to recruit entry-level employees, interns and co-ops, and to facilitate the growth and success of our university member's industrial interactions.



In this issue, I would like to let members know about some upcoming BME Career Development events The Alliance is sponsoring. These events are intended to strengthen regional ties of BME programs with sectors of industry and to educate BME students about the variety career paths available to them. They are not intended to be solely career fairs, though companies will be recruiting at these conferences. The Alliance is offering a limited number of \$50 travel stipends for students traveling more than 100 miles for these events (details on the website).

Southwest Biosciences & Bioengineering Career Day

February 24th, 2006, Houston, Texas

Hosted by Rice University, Texas A&M and the University of Texas at Austin, this unique event targets students and scholars in disciplines related to biosciences and bioengineering at various stages of their academic careers: undergraduates through postdoctoral fellows. The morning sessions will include a series of presentations and panels that focus on career options in biosciences and bioengineering, while the afternoon session will follow a traditional career fair format. Finally, the day will end with a BME Alliance industry reception.

Midwest Biomedical Engineering Career Conference

March 24th, 2006, Ann Arbor, Michigan

MBEC 2006 is designed to bring together students & practitioners of Biomedical Engineering and the Life Sciences for panel discussions, technical sessions, and informal extended exchange of ideas important to the future of Biomedical Engineering in the Midwest. Some conference highlights include: assisting participants in planning their academic and industrial careers, introducing regional companies to the talents of Biomedical Engineering students in the Midwest and exposing participants to innovative research and development in biomedical engineering and allied areas. This event is hosted by the University of Michigan.

- **For more information about these conferences and other Alliance Sponsored events please visit the website at: <http://www.aii-bmes.org/conferences.asp>**

If you would like to sign up to receive periodic update about Alliance news and Events subscribe to the mailing list, by simply sending a message with the word 'subscribe' in the message body to allianceinfo-request@aii-bmes.org. ■

DIRECTOR Department of Biomedical Engineering

The Johns Hopkins University School of Medicine is seeking an exceptional individual to lead the Department of Biomedical Engineering who is dedicated to discovery and innovation in research and teaching and who demonstrates outstanding leadership abilities. The successful applicant must share our unwavering commitment to excellence, integrity, collegiality and respect for and inclusion of individuals of diverse backgrounds.

Our goal is to recruit a talented Director with strong interpersonal and communication skills who also has demonstrated accomplishments in research and teaching. A track record of working effectively with faculty members and leadership from a variety of scientific and clinical disciplines is particularly important. As we continue the School of Medicine's efforts to increase the diversity of our leadership, we are also interested in identifying minority and women candidates."

Please send letter of application, curriculum vitae and bibliography by April 17, 2006, to:

Lloyd B. Minor, M.D.
Chair, Biomedical
Engineering Search
Johns Hopkins University School
of Medicine
733 North Broadway, SOM 100
Baltimore, MD 21205

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2006 BMES Annual Fall Meeting

Paul Fagette, 2006 Meeting Public Relations

Chicago is a city famous for architecture, meat packing, sports, eclectic weather, great restaurants, interesting politics, and now the site of the 2006 BMES Annual Fall Meeting, 11-14 Oct. The three Chicago hosting universities, Northwestern, Illinois Institute of Technology, and the University of Illinois at Chicago, cordially invite you to this year's meeting.

Once upon a time, Graham Nash sang, "Come to Chicago if you want to change the world." Written for another time, indeed these words echo true for BME today. "Unlimited Horizons" is the forward-looking theme of this meeting and the program and events reflect the growth and breadth of the discipline. Over 100 platform and over 700 poster sessions will cover the diverse areas of biomedical engineering and bioengineering, Thursday, 12 Oct. through Saturday, 14 Oct. Workshops

begin on Wednesday, 11 Oct. As last year, special events for students are planned.

This year's special event will be held on Friday night at the Field Museum, one of the great science and paleontology centers in the country. Come meet Sue (the most complete T. Rex skeleton to date) and see the special King Tutankhamen exhibit.

The conference will be headquartered in the Hyatt Regency Chicago. This hotel is strategically located right off Michigan Ave., overlooking the Chicago River where it meets Lake Michigan. The Magnificent Mile is a short walk north and other lakefront and downtown shopping and cultural attractions are also convenient. October is usually a mild month for Chicago. The cool but pleasant weather will require sweaters and coats.

Abstracts will be handled, as in

previous years, by the Community of Science. The abstract body should be 1600 characters or less (about 200 words). The site opens around 1 March and 15 May 2006 will be the firm deadline for submission.

This year, the Biomedical Engineering Society welcomes more exhibitors to the meeting. Demonstration of their products, services and programs will be located in the Regency Ballroom in the West Tower of the Hyatt. Exhibits will be assigned location on a first-come, first-served basis. Applications must be received, along with 50% deposit by 15 June 2006. Space will be assigned by 31 July.

All details on abstracts, program, the hotel, events, can be found at the official conference site: www.bme.northwestern.edu/bmes2006. Visit and bookmark it now. ■

University of Connecticut School of Engineering, Biomedical Engineering Program

ASSISTANT PROFESSOR IN RESIDENCE POSITION

University of Connecticut is seeking an exceptional candidate for an Assistant Professor in Residence in Biomedical Engineering in the School of Engineering. This is a Teaching focused faculty position with an emphasis in teaching undergraduate biomechanics and senior design, and opportunities in teaching graduate biomechanics. The candidate must have an outstanding record of accomplishment in teaching.

Preference will be given to candidates with a Ph.D. and B.S. degrees in biomedical engineering with a biomechanics emphasis. Consideration will be given to candidates with Ph.D. and B.S. degrees in mechanical engineering, provided a strong and broad background in biomedical engineering is demonstrated.

Nomination letters and applications that include a letter of interest describing teaching experience, research activities and career goals, a current curriculum vita, and the names of at least three references, should be sent to:

Dr. Ian Greenshields
Chair, Biomedical Engineering Search Committee,
Office of the Dean,
261 Glenbrook Road Unit 2237
University of Connecticut
Storrs CT 06269-2237
Phone: (860) 486 5091
Email: ian@engr.uconn.edu

Salary will be commensurate with the record of the applicant. This is a full time, non-tenure track position for an initial term of three-years. Applicant screening will begin immediately and will continue until the position is filled. The University of Connecticut is an Equal Opportunity and Affirmative Action Employer, and encourages applications from minorities, women and people with disabilities.

The Biomedical Engineering program offers B.S., M.S. and Ph.D. degrees and has over 50 faculty members. Detailed information about the Biomedical Engineering program is available at <http://www.engr.uconn.edu/bme>.



2005 Poster Awards

Congratulations!

Upon the recommendation of the 2005 Annual Meeting Awards Committee, the Biomedical Engineering Society has selected the following group as recipients of the BMES 2005 Poster Awards. These Awards are supported by Annual Reviews along with BMES and consist of a certificate and a check for \$100 [mailed to first author]. Please help us congratulate this group on receiving this honor.

The Awards Committee was unable to present the Poster Awards at the 2005 BMES Annual Fall Meeting due to the time constraints of reviewing over 800 posters! Along with this announcement, BMES will announce the award recipients at the next BMES Annual Fall Meeting in 2006 in Chicago.

Congratulations on this well-deserved honor and best wishes for continued success.

A. Moreno-Gonzalez [Poster P1.91. "Mechanical properties of cardiac tissue transplanted into infarcted hearts" by A. Moreno-Gonzalez, C.E. Murry, and M. Regnier (University of Washington, Seattle)]

J. W. Nichol [Poster P5.91. "Elevated axial strain induces elongation, MMP-2 & 9 expression in intact arteries engineered ex vivo" by J. W. Nichol and K. Gooch (University of Pennsylvania, Philadelphia)]

Hassan Deni [Poster P3.125. "Development Of A Pulse Oximeter Analyzer For The Developing World" by H.M. DENI, D. MURATORE AND R.A. MALKIN (Western New England College, Holyoke, MA)]

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TENURE TRACK FACULTY POSITION BIOMEDICAL ENGINEERING

The College of Engineering at the University of Texas at El Paso is actively engaged in developing a graduate Biomedical Engineering program and invites applications for a biomedical engineering faculty member who will enthusiastically contribute to that goal. Candidates with expertise in tissue engineering and biomaterials are particularly encouraged to apply, although other candidates with fields of expertise in biomedical engineering will be considered. Additional expertise in biocompatible polymers, cellular biology, and tissue scaffold design, fabrication and testing (in vitro and in vivo) would add considerable strength to the application.

Applicants must have a Ph.D. or equivalent degree in biomedical engineering, chemical engineering, electrical engineering, mechanical engineering or a related area. Applicants should also have the ability to establish an independently funded research program and have a strong commitment to teaching in the undergraduate and graduate programs in the College of Engineering. UTEP encourages inter-disciplinary research with other College of Engineering and university-wide programs. The search is focused at the assistant professor level, but exceptionally qualified applicants at higher levels may also be considered.

UTEP is a Carnegie doctoral-intensive university with an enrollment of 19,000 students. The UTEP campus, situated where the Rocky Mountains meet the Rio Grande, echoes the beauty of the surrounding high desert. El Paso is a highly livable, bi-cultural community of 700,000 people offering affordable homes and is a major meeting point for the United States and Latin America.

Candidates should send a letter of application, detailed curriculum vitae, names of at least three references, a statement of teaching philosophy, and a description of proposed research to: UTEP, College of Engineering, El Paso, TX, 79968-0517, Attention: Biomedical Engineering Search Committee. Review of applications will begin upon receipt and search will continue until the position is filled. The nominal starting date for the position is September 1, 2006. Specific inquiries on the position can be directed to Dr. Ryan Wicker, Chair of the Biomedical Engineering Search Committee, at 915-747-7099 or rwicker@utep.edu. Additional information about the College of Engineering and El Paso is available at <http://www.utep.edu/academics/>. EOE.

CENTER FOR
REHABILITATION NEUROSCIENCE AND
REHABILITATION ENGINEERING

THE biodesign INSTITUTE
ARIZONA STATE UNIVERSITY

ASSISTANT RESEARCH PROFESSOR ARIZONA STATE UNIVERSITY

The Center for Rehabilitation Neuroscience & Rehabilitation Engineering of the The Biodesign Institute at Arizona State University seeks an assistant research professor to participate in on-going research in neurological disorders, to initiate new research projects, and to teach/direct undergraduate/graduate student research.

Assistant Research Professor: Required: PhD in Bioengineering or a closely related field. Desired: educational emphasis on neurological disorders; extensive knowledge of nonlinear dynamics with an emphasis on the application of techniques from chaos theory and fractals to neuronal and biomedical data toward understanding neural control systems and neuromotor dysfunction; experience: investigating postural and locomotion control mechanisms in people with neurological disorders such as Parkinson's disease and spinal cord injury, in grant writing, and in guiding/supervising students in research projects, interacting with medical doctors and carrying out experiments with human subjects in a clinical atmosphere; knowledge of numerical methods and strong programming ability in MATLAB, FORTRAN and C.

Deadline is March 31 2006, if not filled, every week until search closed.

Submit CV, letter of interest with background, qualifications, and names/contact information for three references to: Dr. James Abbas, The Biodesign Institute, Arizona State University, PO Box 879709, Tempe, AZ 85287-9709.

Telephone: 480-965-9521, FAX: 480-727-8395; email: jimmy.abbas@asu.edu

This is a grant funded position. A background check is required for employment.

Arizona State University is an Equal Opportunity/Affirmative Action Employer.



Student Affairs



As I write this column, I realize that we are only weeks away from Spring break and in the final stretch of the academic year. Many of our BME students are interviewing for jobs, positions in graduate or professional school, or just starting to think about the next stages in professional development. This is a good time of year for the BMES student chapter leaders to start considering transfer of knowledge to the next year's leaders. All BMES student chapters should have completed renewal of their charter (due March 1) and election of new officers. Information on how to renew your charters can be found in the Operations Manual available at the BMES website. We're also available to answer any questions to keep you active in this process.

Speaking of the Operations Manual, we are in the process of considering some changes to the recommended process for filing student chapter progress

reports. Many of you will recall that we changed the format from one that required all detailed minutes, announcements, budgets, and more, to be sent to the national office. We initiated this change to reduce the administrative burden on chapters and to save some trees. Right now, we have adopted a 4-page PDF form that can be filled out and mailed to the national office (in some cases, you provided us with a website link that has also helped us to learn more about the activities of your chapter). Shirley Lee, our BMES student representative to the Board, is currently soliciting input from you on suggested formats for the progress report. What information do you think is important to document for the national office? What forms, documents, photos are useful for illustrating achievement or success? The progress reports form the basis for evaluating chapter awards, so we all have a stake in deciding what is best for the

students and student chapters. Feel free to write to me or Shirley at s7lee@ucsd.edu and give your opinion.

This column is a great place to highlight what students are doing at your institution, so we welcome submissions from you about activities and learning experiences for student chapters at your school. Please send an email to Lori Setton or Victor Barocas with an idea for a column, focusing on even one innovative or creative thought or event. We'll work with you to complete it for the newsletter and bring your chapter into the spotlight!

Lori A. Setton, PhD

2004-2005 Student Affairs Chair
setton@duke.edu

Victor Barocas

2005-2006 Student Affairs Chair
baroc001@umn.edu

Poster Awards

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Susan L. Napier [Poster P3.73. "Variant Isoforms Of CD44 Are Functional Selectin Ligands On Colon Carcinoma Cells" by S.L. NAPIER, W. HANLEY AND K. KONSTANTOPOULOS (Johns Hopkins University, Baltimore, MD)]

Jhanvi H. Dangaria [Poster P1.51. "Shear-Induced Changes In The Nano-Scale Dynamics Of Endothelial Cell Membranous Organelles" by J.H. DANGARIA AND P.J. BUTLER (Pennsylvania State University, University Park, PA)]

Felim Mac Gabhann [Poster P5.141. "A Computational Model Of VEGF And Semaphorin Interactions With Endothelial Cell Receptors" by F. MAC GABHANN AND A.S. POPEL (Johns Hopkins University, Baltimore, MD)]

D.A. Christian [P3.115. "Altering Pharmacokinetics Of Therapeutic Proteins Via Degradable Polymersomes" by D.A. CHRISTIAN, F. AHMED AND D. DISCHER (University of Pennsylvania, Philadelphia, PA)]

Peter Ghoroghchian [Poster P4.142. "Fundamental Mechanisms Underlying Macromolecular Luminescence In NIR-Emissive Polymersome Assemblies" by P.P. GHOROGHCHIAN, T.V. DUNCAN, I.V. RUBSTOV, F.S. BATES, D.A. HAMMER AND M.J. THERIEN (University of Pennsylvania, Philadelphia, PA)]

A. Tomei [Poster P3.21. "A Tissue Engineered Airway Mucosa Model" by A. TOMEI, P. MORGENTHALER, M.A. SWARTZ, AND M.M. CHOE (École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland)]

Milicent Ford [Poster P5.21. "Poly(Ethylene Glycol)/Poly(L-Lysine) Hydrogels Promote Formation Of A Microvascular Network" by M.C. FORD, J.P. BERTRAM, Q. LI, S.S. SEGAL, J.A. MADRI AND E.B. LAVIK (Yale University, New Haven, CT)]

Roxanna M. Webber [Poster P5.84. "Thalamocortical Transformations Of Tactile Patterns In The Rat Vibrissa System" by R.M. WEBBER AND G.B. STANLEY (Harvard University, Cambridge, MA)]

Jason Maikos [Poster P2.34. "Characterization Of Immediate Blood-Spinal Cord Barrier Damage Due To Mechanical Trauma" by J. MAIKOS, D. PATEL, A. SENERES, W. YOUNG AND D. SHREIBER (Rutgers, The State University of New Jersey, Piscataway, NJ)] ■



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BIOMEDICAL ENGINEERING SOCIETY

October 20, 2005

Dr. John A. Brighton
Assistant Director
The National Science Foundation
4201 Wilson Boulevard
Arlington, Virginia 22230

Dear Dr. Brighton:

On behalf of the Officers and Board of Directors of the Biomedical Engineering Society (BMES), I wish to convey our full support for the American Institute for Medicine and Biological Engineering, (AIMBE) Official Response to the Strategic Directions for Engineering Research, Innovation, and Education delivered on September 22, 2005.

Specifically, to facilitate the implementation of 'Biology in Engineering', BMES supports the development of a mechanism that coordinates and emphasizes bioengineering across the National Science Foundation in its Conceptual Framework for Reorganization Overview and Rationale. BMES believes it is important to maintain the visibility of the NSF defined field, bioengineering, and therefore support AIMBE's recommendation that the NSF's new coordinating unit include bioengineering in its title.

Should you have any questions, do not hesitate to contact us through the national office.

Thank you for your consideration.

Sincerely,

Frank C-P Yin, MD, PhD
President

Cc: Dr. Arden L. Bement, Jr., NSF Director
Dr. Kathie Olson, NSF Assistant Director
Ms Pat Ford-Roegner, AIMBE Executive Director



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2005-2006

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January 27, 2006

Ms. Charlotte Kuh
Study Director, Assessment of Research Doctorate Programs
National Research Council
The National Academies
500 Fifth St., NW
Washington, D.C. 20001

Dear Ms. Kuh:

It has been brought to my attention that your office is seeking suggestions for the draft taxonomy in preparation for the NRC's decadal assessment of research doctorate programs. As the president of the Biomedical Engineering Society, I am writing to provide suggestions for the taxonomy for biomedical engineering. This is entirely appropriate for many reasons. First, we are the lead society for biomedical engineering, and are charged by the Accreditation Board for Engineering Training to be responsible for coordinating and overseeing all accreditation activities related to biomedical and bioengineering. Second, as you may know, biomedical engineering (BME) is undergoing explosive growth across the country. Evidence for this is the increase from about 30 to nearly 100 departments offering bachelors and advanced degrees in BME. At these schools, almost without exception, it is the most popular engineering field. Third, the establishment five years ago of the National Institute for Biological Imaging and Bioengineering, on whose National Advisory Council I serve, is tangible proof of the importance and stature with which Congress and the government view this rapidly growing field.

Parallel to the rapid growth in numbers of researchers and trainees in BME, the fields encompassed by BME, which is intrinsically interdisciplinary, are now far greater than the two currently listed in the taxonomy. Therefore, after extensive consultation and feedback from our society's executive committee, I am pleased to suggest the following list of subfields for the portion of the taxonomy dealing with biomedical engineering:

- Bioelectrical and neural engineering
- Bioimaging and biomedical optics
- Biomaterials
- Biomechanics and biotransport
- Biomedical devices and instrumentation
- Molecular, cellular and tissue engineering
- Systems and integrative engineering

This list is by no means exhaustive, but it is representative. Indeed, nearly every BME department in this country has active research programs in several of the above areas – even though they may bear slightly different names.

If you have any questions or require further information, please feel free to contact me at the society or by email at yin@biomed.wustl.edu. I would be happy to discuss any aspect of this with you and appreciate your consideration of our suggestions.

With best regards,

Frank C-P Yin, PhD/MD
President

The Full Service Professional Society for Biomedical Engineering and Bioengineering



SCHOOL OF CHEMICAL, BIOLOGICAL AND MATERIALS ENGINEERING UNIVERSITY OF OKLAHOMA FACULTY POSITION OPENING Assistant, Associate or Full Professor (Tenure-Track)

The School of Chemical, Biological and Materials Engineering (CBME) at The University of Oklahoma invites applications for a tenured/tenure track faculty position to build on a research emphasis in the School on cardiovascular tissue engineering. Candidates must hold an earned doctorate in chemical engineering or closely related discipline with a strong background in the biological sciences. Rank and salary will be commensurate with experience and qualifications.

Successful candidates will be committed to excellence in both research and teaching, and they will function effectively in a multi-disciplinary research environment. Candidates should have previous research experience in cardiovascular tissue engineering and be able to collaborate with researchers in engineering, health sciences and biology. Experience in technology transfer is desirable. CBME offers competitive startup packages, exciting opportunities for research collaboration, and a supportive environment for new faculty.

Candidates should send a resume, description of research plans, teaching interests, and names of three references to: Search Committee, School of Chemical, Biological and Materials Engineering, The University of Oklahoma, 100 East Boyd, SEC T335, Norman, OK 73019-1004. Applications will be reviewed until candidates are selected and recommended for appointment.

The University of Oklahoma is an equal opportunity/affirmative action employer. Women and minorities are encouraged to apply.

President's Column

Continued from page 1

through this shakeout period. At the suggestion of Susan Margulies, chair of the Membership Committee, the national office is exploring the possibility of changing the membership year so as to fit better with the timing of our annual meeting and fiscal year. The intent is to synchronize things to enable the national office and officers to have ready access to an up-to-date list of members in all categories at the crucial times of the year. I will keep members apprised about the progress and any decisions related to this proposal.

Over the years, we have grown from a smallish organization, which could operate in a rather informal manner, to one considerably larger and more complex. This larger scope, along with the changed climate of increased oversight for all organizations, necessitates operational changes. This is consistent with Barbara's and my goal of bringing more professionalism, transparency and accountability to the national office. As a consequence, the Board has authorized the first complete financial audit of the BMES in many years. Richard Waugh, chair of the Finance Committee, headed a group of officers who interviewed and

selected the audit firm. The formal audit is about to get underway and should be completed in the coming months. When that is complete, we will all have better and more complete guidelines on how to proceed with many aspects of the BMES functions. Along the same vein, with feedback from the chairs of all of the committees of the Board, I am updating the Policy and Procedures Manual of BMES so that future officers and committee chairs will have much clearer directives and guidelines about their respective jobs. We hope to have all of these tasks completed before the beginning of summer.

The other committees are actively meeting to discuss the various tasks assigned to them for the year. We will hear about their progress at the upcoming Board meeting on March 4, after which I will have more to report. The Strategic Directions Committee, headed by Shu Chien, which I mentioned in my last column, has already made a contribution by bringing to the Executive Committee's attention two issues involving national organizations. In the fall, in response to the National Science Foundation's Conceptual Framework for Reorganization Overview and Rationale,

BMES voiced its support of AIMBE to maintain bioengineering in the title of the new coordinating unit of NSF. The original proposal had dropped the word bioengineering from the unit. More recently, the National Research Council, in conjunction with their decadal assessment of Doctorate Research Programs was seeking suggestions for their taxonomy of fields of specialization. Their proposed taxonomy for bioengineering contained only two subfields that we felt vastly underrepresented our diverse field. After some discussion among the Executive Committee members, an expanded list of subfields was sent to them for consideration. The letters to the both the NSF and NRC are contained in this issue.

Finally, I wish to thank Arthur Johnson, our current secretary, for agreeing to serve as the interim editor of our Bulletin. As you saw in my last column, Steven Slack has stepped down after many years of service (see tribute about this elsewhere in the Bulletin). The Publications Committee, chaired by Roger Kamm, is in the process of soliciting a permanent editor. Anyone interested in serving BMES in this position should contact Roger. ■



Industry Report

Continued from page 4

appearance will be used to determine the effect of the treatment. The patients have been selected from a group of individuals with chronic wounds who have not responded to previous standard treatment. Since all patient treatment will not run concurrently, the results of the trial are not expected until mid-Spring 2006. Additional trials are also planned at the University of Miami Medical School to test the benefits of FTA to increase healing rates after MOHS surgery (an

advanced treatment procedure for skin cancer) and to activate changes in genetic regulation that are diagnostic precursors of chronic wound healing. www.advatechco.com

Editor's Note: This report is intended to serve the BMES readership and always welcomes news from its subscribers. If you wish to contribute to this column, please email your press release to gabi.niederauer@obi.com. ■

The NATIONAL RESEARCH COUNCIL

OF THE NATIONAL ACADEMIES

is seeking applications for

Postdoctoral Research Awards

tenable at

US Army Center for Environmental Health Research at Ft. Detrick, MD

Research Opportunities include:

1) **Cell-based sensors** that integrate biological systems with electronic monitoring can, in principle, respond rapidly to the presence of toxic chemicals in air or water. The goal is to develop a cell-based toxicity sensor to help protect Army water supplies in both field and domestic locations. Evaluations are currently being conducted on the ability of biological systems to respond rapidly to industrial chemicals with varying modes of toxic action at concentrations relevant to the protection of human health. Of particular interest are biological systems using vertebrate cells (e.g., fish, rodent, and human). Endpoints include changes in electrical activity (e.g., by neurons or cardiomyocytes) and light output (e.g., constitutive luminescence, fluorescent bioreporters, etc.). Research opportunities include novel approaches for cell preservation and maintenance to facilitate fielding and transportation of cell-based systems; designing, testing, and optimizing toxicity sensing systems; and developing approaches to minimize biological response variability. In addition, creative approaches are sought for miniaturizing and fielding a cell-based sensor platform and for identifying analysis techniques to

evaluate and interpret signals to increase accuracy and decrease false alarms. Laboratory work is done in a newly renovated research facility, and there are opportunities for evaluation of emerging technologies in Army-relevant field situations. A Ph.D. in biomedical engineering is preferred.

2) **Bioremediation** research aimed at identifying biologically relevant microbes of exposure and effects to environmental health hazards, principally toxic industrial chemicals and pesticides and other military relevant chemicals. These bioremediation research opportunities are identified in the model systems using the latest advances in genomics, proteomics, and bioinformatics.

3) **Bioremediation** research aimed at identifying biologically relevant microbes of exposure and effects to environmental health hazards, principally toxic industrial chemicals and pesticides and other military relevant chemicals. These bioremediation research opportunities are identified in the model systems using the latest advances in genomics, proteomics, and bioinformatics.

For further information on these opportunities, contact:

Opportunity #1

William H. van der Schelde, Ph.D.

Tel: 301-619-7570

Fax: 301-619-7606

E-mail: william.vanderSchelde@us.army.mil

Address: USACERH

568 Doughlass Drive

Ft. Detrick, MD 21740-5010

Applications are to be submitted online directly to the NRC. CVs may not be accepted.

Deadlines are February 1, May 1, August 1 and November 1.

For detailed program information, including instructions on how to apply, can be found at:

www.national-academies.org/rap

Questions should be directed to the NRC at 301-304-2700 (fax) or rap@naa.edu

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2005-2006

AWARDS AND DESCRIPTIONS

- **DISTINGUISHED LECTURER (2007)** *These are the most prestigious BMES awards to recognize outstanding achievements and leadership in the science and practice of biomedical engineering.*
- **DISTINGUISHED ACHIEVEMENT (2006)** *BMES membership is required.*
- **RITA SCHAFFER YOUNG INVESTIGATOR (2006)** *To stimulate research careers in biomedical engineering (within 5 yrs of receiving highest degree).*
- **DISTINGUISHED SERVICE (2006)** *Awarded for meritorious service by a BMES member in good standing.*

For detailed information on awards visit
www.bmes.org/awards

Deadline for Submission is May 31, 2006

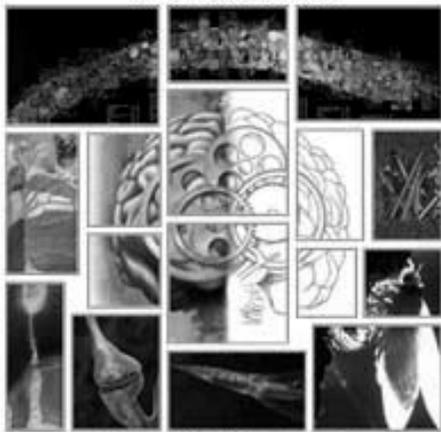
Note:

Awards will be presented during the Annual Fall BMES Meeting.
The BMES Awards Committee and the Board of Directors will select the final award recipients.

Send Nominations to:

BMES, 8401 Corporate Dr, Ste 140, Landover, MD 20785-2224 or fax 301-459-2224;
or email to bmes2006@bmes.org

CALL FOR ENTRIES



SCIENCE & ENGINEERING VISUALIZATION CHALLENGE

Science & Engineering Visualization Challenge Deadline: May 31st, 2006

The ability to convey the essence and excitement of research in digitized images, color diagrams, multimedia and animation has given researchers the perspective needed to set new research directions and equipped other citizens to see and understand complex science concepts.

The National Science Foundation and Science, published by the American Association for the Advancement of Science, invite you to participate in the fourth annual Science and Engineering Visualization Challenge. The competition recognizes scientists, engineers, visualization specialists, and artists for producing or commissioning innovative work in visual communication.

Award categories: Photographs, Illustrations, Interactive Media, Non-Interactive Media and Informational Graphics. Winners in each category will be published in the September 22, 2006 issue of Science Magazine and Science Online and displayed on the NSF website.

Complete Entry Information: http://www.nsf.gov/news/special_reports/scivis/index.jsp



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Enquiries Only To: Associate Professor Doreen Thomas, Head of Department, tel. +61 3 8344 6699, email d.thomas@ee.unimelb.edu.au

Applications: by 30 April 2006 quoting position no. G0004366

The Council reserves the right to make no appointment or to fill the Chair by invitation at any stage.

HOW TO APPLY

- For a position description and application details visit www.unimelb.edu.au/jobs
- Applicants must address the selection criteria in the position description, quote the relevant position number and include contact details of three referees.
- Applications to hr-applications@unimelb.edu.au

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MARQUETTE UNIVERSITY



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FACULTY POSITION IN BIOMEDICAL ENGINEERING AT MARQUETTE UNIVERSITY

The Biomedical Engineering Department of Marquette University invites applications for a tenure-track faculty position at the Assistant Professor level to begin as early as June 15, 2006. Candidates must have a Ph.D. in Biomedical Engineering or Bioengineering with expertise in biomechanics, rehabilitation, biocomputing, or bioimaging. Experience with orthopedic, cardiac, cardiovascular, or neurological applications is highly desired. Many opportunities exist for highly interdisciplinary collaborative research at Marquette University and local research institutions, including the Medical College of Wisconsin.

The Department of Biomedical Engineering has an ABET accredited undergraduate program with approximately 260 undergraduates and 100 graduate students. Graduate studies include joint degree programs with the Medical College of Wisconsin in Functional Imaging, Rehabilitative Bioengineering and Healthcare Technologies Management. Primary faculty duties include teaching at the undergraduate and graduate levels and leadership in the growth of interdisciplinary, collaborative research-based scholarship that encourages undergraduate and graduate participation. Applicants will be expected to develop an externally funded, independent research program.

Consideration of applications will begin on January 1, 2006. Interested individuals should send a letter of application along, statement of research and teaching interests, curriculum vitae, and the names, addresses, phone, and e-mail addresses of three references to:

Kristina M. Ropella, Ph.D., Professor and Chair
Department of Biomedical Engineering, Marquette University
P.O. Box 1881, Milwaukee, WI 53201-1881

Marquette University does not discriminate in any manner contrary to law or justice on the basis of race, color, sex, religion, disability, veteran's status or national origin in its educational programs or activities, including employment and admissions. At the same time Marquette cherishes its right and duty to seek and retain personnel who will make a positive contribution to its religious character, goals, and mission in order to enhance the Jesuit, Catholic tradition.



**FACULTY POSITION
BIOMEDICAL ENGINEERING & ORTHOPAEDICS**



The Orthopaedic Department in the School of Medicine and the Department of Biomedical, Industrial and Human Factors Engineering at Wright State University invites applications for a tenure-track position at the assistant, associate or full professor level in biomedical engineering and Orthopaedics. For the position of assistant professor the candidate should have an earned doctorate degree in biomedical engineering or a closely related discipline with evidence of specialization in biomechanics. For the positions of associate and full professors the candidate is required to have an earned doctorate degree in biomedical engineering or a closely related discipline with evidence of specialization in biomechanics. Experience in Orthopaedic biomechanics is preferable. Applicants must have background to teach and conduct sponsored research in Biomedical Engineering. Consideration for the rank of associate and full professor requires significant experience and demonstrated proficiency in scholarship, sponsored research, and teaching. Consideration for rank of associate professor, the candidate must have at least four years experience at the rank of assistant professor at another educational institution or equivalent industrial experience with demonstrated record of scholarship and external funding. Consideration for rank of full professor, the candidate must have at least four years experience at the rank of associate professor at another educational institution or equivalent industrial experience with demonstrated record of scholarship and external funding. This faculty member must be able to supervise Orthopaedic surgical residents' research, have the background to teach and conduct sponsored research in biomedical engineering, and have the interest in enhancement of educational programs.

The School of Medicine at WSU is affiliated with 28 hospitals and health care facilities in the Dayton-Miami Valley region and features a four-year interdisciplinary curriculum with instruction in 21 departments and programs, including Orthopaedic surgery. The Department of Biomedical, Industrial and Human Factors Engineering is one of four departments in the College of Engineering and Computer Science. There are 13 faculty members, 130 undergraduate majors, and approximately 145 M.S. and Ph.D. students in the department. Active research projects in Biomedical Engineering are being conducted in several areas including: medical ultrasound imaging, biomechanics, quantitative measurement of bone, and bio-mimetic modeling. Wright State University, an institution of 17,000 students, is located in a growing high-tech suburban community, and is surrounded by commercial and government research and development facilities. The University is proactively committed to industrial and government partnerships for research and development ventures.

Consideration of candidates begins February 1, 2006 and continues each month until the position is filled. Applicants should provide a brief statement of their research and teaching interests, complete vitae, and the names, addresses, telephone numbers, and e-mail addresses of three references. Inquiries and applications should be directed to: Chair – BME/Orthopaedic Faculty Search Committee, Department of Biomedical, Industrial and Human Factors Engineering, 207 Russ Engineering Center, Wright State University, 3640 Colonel Glenn Hwy., Dayton, OH 45435, Telephone: (937) 775-5044, Fax: (937) 775-7364, E-mail: s.narayanan@wright.edu, www.cs.wright.edu/bie.

Wright State University is an equal opportunity/affirmative action employer.

Calendar of Meetings

BMES Meetings:

- **BMES Board Meeting** at AIMBE
Annual Event March 4, 2006, Westin
Grand Hotel, Washington, DC
- **BMES Spring Meeting at
Experimental Biology**
April 1-5, 2006, Moscone Convention
Center, San Francisco, CA
www.faseb.org/meetings/eb2006/call/
- **2006 BMES Annual Fall Meeting**
October 11-14, Hyatt Regency
Chicago, Chicago, IL
www.bme.northwestern.edu/bmes2006
- **2007 BMES Annual Fall Meeting**
September 26-29, Wilshire Grand,
Los Angeles, CA www.bmes.org

- **2008 BMES Annual Fall Meeting**
October 1-4, Renaissance Grand Hotel,
St. Louis, MO www.bmes.org

Meetings of Interest:

- **AIMBE 15th Annual Event**
February 28-March 3, 2006, National
Academy of Sciences & Westin Grand
Hotel, Washington, D.C.
www.aimbe.org
- **FASEB's Experimental Biology**
April 1-5, 2006, Moscone Convention
Center, San Francisco, CA
www.faseb.org/meetings/eb2006/call/
- **D2H2: Transdisciplinary Conference
on Distributed Diagnosis and Home
Healthcare**, April 2-4, 2006, Crystal
Gateway Marriott, Arlington, VA
www.icsl.ee.washington.edu/d2h2
- **2006 Summer Bioengineering
Conference** June 21-25, Amelia Island
Plantation, Amelia Island, FL
[www.divisions.asme.org/bed/events/
summer06.html](http://www.divisions.asme.org/bed/events/summer06.html)
- **World Congress on Medical Physics
& Biomedical Engineering** August
27-September 1, 2006, Seoul, Korea
www.wc2006-seoul.org



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