

Bioengineering Division News

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[Summer Bioengineering Conference 2012](#)

[El Conquistador Resort](#)

[Fajardo, Puerto Rico](#)

[June 20-23, 2012](#)

[Early Registration Deadline: May 20, 2012](#)

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to navigate the PDF Newsletter:
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ASME International Bioengineering Division

Fall/winter 2011-2012

MESSAGE FROM THE CHAIR



John Bischof

Thank you all for the opportunity to serve as chair of your division this year. I have greatly enjoyed interacting with the division membership and especially want to thank my Executive Committee (EC) for their excellent work and input to the smooth running of our division. Our incoming chair Michele Grimm, an integral part of the EC, has deep experience in both running our meetings and administrating our division. She is now well positioned to take over and run the division. I am writing to give you a few comments on the status of our meetings, journals, awards and international engagement.

BED Meetings: We continue to offer our flagship annual Summer Bioengineering Meeting (SBC) with planning several years out. This year in June we will meet in Puerto Rico under the leadership of Dawn Elliot (Conference Chair) and David Steinman (Program Chair). We also have plans set for SBC 2013 in Oregon with Charles Lee (Conference Chair) and Ram Devireddy (Program Chair). In 2014 our incoming chair Michele Grimm will help run the SBC 2014 meeting to be held jointly with the World Congress of Biomechanics in Boston under the leadership of Roger Kamm. By all accounts SBC remains one of the best technical biomechanical engineering meetings in the world.

In addition to SBC, we are now also affiliated with four satellite or secondary meetings including: (1) the Design of Medical Devices (DMD) Meeting (Minneapolis), (2) the Frontiers Meeting, (3) the Nano Engineering in Medicine and Biology (NEMB) meeting, and (4) the IMECE. The DMD Meeting occurs annually in Minneapolis under the leadership of Art Erdman and continues to draw strong attendance and has even spawned a DMD sister meeting in Europe which will be offered in the Nether-

lands this coming year. The Frontiers Meeting is currently in transition from Irvine California to another venue under the leadership of Walt Baxter looking to potentially partner with the FDA on medical device regulation and testing. The newest BED sponsored meeting is the Nano Engineering in Medicine and Biology (NEMB) will be held in February in Boston 2013 with Markus Buehler and Mehmet Toner (Conference Chairs) and Guy Genin (Program Chair). This new meeting is expected to draw from BED and other ASME divisions and beyond ASME to help provide a technical engineering forum for this new and exciting discipline. Finally, the IMECE continues to be the annual meeting of the ASME, and we have some activity there particularly in design, and in NEMB through ongoing symposia. These meetings all have different appeal and impact including basic science (SBC, NEMB and IMECE), translational medical device work (DMD) and even regulatory science issues (Frontiers/FDA). I encourage all BED members to consider not only our flagship SBC meeting, but also our other meetings to expand horizons, meet new friends and collaborators and broadly disseminate your work.

BED Journals: Speaking of dissemination, BED helps support three journals: our flagship *Journal of Biomechanical Engineering* (JBME); the *Journal of Medical Devices* (JMD); and the new *Journal of Nanotechnology in Engineering and Medicine* (JNEM). JBME has steadily increased in impact factor and prestige under the leadership of Editor Michael Sacks who will transition out of his position this year. He will be replaced by two energetic new editors: Beth Winkelstein (approved) human movement, orthopedic (hard tissues), orthotic devices, hand mechanics, impact/crash injury, and Victor Barocas (nominated) for the area of biosolids (molecules, cells, soft tissues and biomaterials), biofluids, heat/mass transfer, nano-mechanics. Our second

[\(Continued on page 3\)](#)

MESSAGE FROM THE PAST CHAIR

ASME International Bioengineering Division

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Message from the Chair (CONTINUED)

Journal of Medical Devices (JMD) continues to do well under editors Art Erdman and Gerry Miller which is strongly tied to the DMD meeting in Minneapolis. Lastly, we have a new journal entitled the *Journal of Nanotechnology in Engineering and Medicine* (JNEM), which will be tied in part to the NEMB meeting and is supported by several other divisions besides BED.

Awards and International Engagement: Recognition of our members through honors at both the student and faculty level remains an important part of our BED culture and has become an integral part of the SBC. ASME Fellows, Fung, Mow and Lissner awardees, student awards and others will be celebrated with announcements made during the banquet. These awards, and indeed our meeting as a whole, are possible in part because of our strong custodial account and award account balances managed by our volunteers and ASME.

On another important note BED remains committed to international engagement in both our administration, meetings and journals. For instance, as our membership is increasingly international, we have created a new position on the executive committee entitled: "International Member at Large." We will be voting on candidates for this position in Puerto Rico. Furthermore, we are adding more international Associate Editors to the *Journal of Biomechanical Engineering*. Finally, opportunities for engagement in other meetings outside of US (i.e. World Congress of Biomechanics) and workshops (NEMB and others) are encouraged and fostered at the EC level.

Editor's NOTE

From palm trees to ocean breeze, Puerto Rico is an exciting venue for SBC 2012! Grab your presentation and your swim suit and join us for another outstanding conference experience! Whether exciting conference sessions, riding the (cover photo) El Conquistador catamaran, or just relaxing in the sun, you are sure to enjoy this conference. **Register by May 20** to receive the early registration discount.

This newsletter edition includes a feature story on volunteering. We all volunteer for ASME and with journal reviews, etc. Read about one who makes volunteering

I would like to close by thanking members of the EC, awards committees, technical committees and others who have provided service to our division especially through meeting organization and journal and abstract reviews. I would also like to thank ASME staff who provided assistance with our website, meetings, accounts and business interactions this year. I would particularly like to thank Michael Sacks for an excellent job as the outgoing JBME Editor. The BED remains strong because our members are willing to help volunteer time for this division. I encourage you to consider volunteering and leading by attending (SBC) or another meeting and engaging in technical and/or other committee work. Please contact your technical committee head, an EC member or visit our BED website for more information: <http://divisions.asme.org/BED/>.

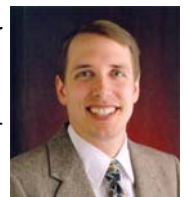
John Bischof, Chair
ASME Bioengineering Division

**Set Sail for Puerto Rico !
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El Conquistador Resort,
June 20-23, 2012**



a part of his "leisure" time in "Help for Project Cure" on page 7.

Thanks to all who contributed to this edition! Email your comments to me.



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Summer Bioengineering Conference SBC 2012, June 20-23, 2012

The 2012 Summer Bioengineering Conference (SBC) will take place June 20-23, 2012 in the beautiful El Conquistador resort in Puerto Rico. This is the first time that the SBC is being held outside the continental United States, and we are looking forward to sharing with you all that it has to offer. The resort is perched on a 300-foot cliff on the Island of Enchantment. It has a private island and beach, along with many recreational opportunities: the Coqui Water Park, Horseback Riding, Golden Door Spa,

discoveries and for translating them to clinical use. This year, for the first, time, SBC will highlight the theme of Imaging as a way to educate and inspire our attendees to consider the use and integration of imaging in the various biomechanical engineering disciplines. Dr. Mark Henkelman will deliver an exceptional plenary lecture entitled "Genes into Geometry: Genetics of Development and Disease through Mouse Imaging". Dr. Henkelman is a Professor at the University of Toronto, a Canada Research Chair,



Dawn Elliott
2012 SBC
Conference Chair



David Steinman
2012 SBC
Program Chair

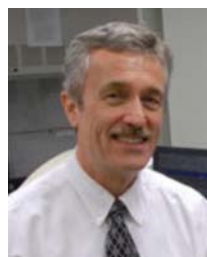
and a special workshop session will highlight the ASME Van C. Mow and Y.C. Fung medal winners. This year we have the pleasure to acknowledge the accomplishments and valued participation in the Bioengineering Division of David Butler (University of Cincinnati) as the winner of the Lissner Medal for his leadership in establishing success criteria for functional tissue engineering of damaged and diseased musculoskeletal tissues. The winner of the Mow medal for accomplishments at the mid-career level is John Bischof (University of Minnesota) for his contributions of biotransport and

Dr. Mark Henkelman will deliver an exceptional plenary lecture entitled "Genes into Geometry: Genetics of Development and Disease through Mouse Imaging".



Casino, and Golf. Nearby attractions include the El Yunque National Rain Forest, The Bioluminescent Bay, Las Cabezas de San Juan Lighthouse, and the Bacardi Rum Distillery. Bring your families to enjoy this fantastic setting!

The SBC is a great opportunity for our community to come together to discuss outstanding research, see old friends, and meet and network with new friends and colleagues. This year, we have selected **The Art and Science of Imaging** as it applies to biomechanical engineering as our theme. Medical imaging is fast becoming an essential tool, both for making fundamental



Prof. David Butler will present "Evolving Strategies in Mechanobiology to More Effectively Treat Damaged Musculoskeletal Tissues" as the Lissner Plenary Lecture at SBC 2012.

and Director of the Mouse Imaging Center at Toronto's Hospital for Sick Children. He is an internationally recognized pioneer in magnetic resonance flow and motion imaging, and lately has turned his attention to "phenogenomics": using various imaging technologies to phenotype mice as a critical complement to genome research.

A plenary session will highlight the ASME H.R. Lissner medal winner

nanomedicine to diagnosis and treatment of cancer, cardiovascular disease, reproduction, and regenerative medicine. Marissa Nichole Rylander (Virginia Technological Institute) is the winner of the Fung award for her work on bioheat transfer, nanomedicine, biomedical optics, tissue regeneration, and cancer engineering. Please join us in congratulating each of these awardees.

(Continued on page 5)

SBC 2012 (Summer Bioengineering Conference continued)

Submissions to this year's conference remained numerous and excellent. We again have a full program of over 650 outstanding contributed papers, posters, and workshops. As always, a particular highlight of the conference is the student paper presentations and competition, with 97 finalists presenting in the Bachelor, Masters, and Doctoral levels. The 2012 SBC will pay tribute to the achievements of Lloyd Back, Ken Diller and Robert Spilker through special podium sessions in their honor within their technical areas of contribution to our community. We are also excited to bring back the Undergraduate Student Design Competition, the Grand Challenge to Predict Knee Loads, and to

introduce a new Computational Fluid Dynamics Challenge. Several workshops will be presented, ranging from applications of imaging to biomechanics, bioengineering education, medical device translation, and career advice for new faculty. We are pleased to announce that Dr. Rita Patterson will be honored with the ASME Dedicated Service Award. Dr. Patterson will be recognized at the SBC banquet on the closing night of the conference.

We are fortunate to receive financial sponsorship from a number of industry sponsors as well as the National Institutes of Health (NIBIB) and the National Science Foundation (CBET, GARDE).

This conference is only possible through the tremendous efforts of the members of the SBC2012 Organizing Committee, Program Committee, session chairs, workshop organizers and the many reviewers who worked hard to bring us this high-quality program.

We look forward to welcoming you to Puerto Rico!

Dawn Elliott

2012 SBC Conference Chair

David Steinman

2012 SBC Program Chair



Rene van Donkelaar Luke Timmins Justin Vorp Jeff Weiss Patti Katsaros Jimmy Moore Alan Eberhardt Clark Hung Joel Berry Mike Moreno Danny Bluestein

IN CONCERT!

Friday, June 22, 2012, 7-10 PM
South Pool and Trellises of the El Conquistador Resort

The BED's unofficial rock-n-roll band will once again be jamming Oceanside! All are invited!

The American Society of Mechanical Engineers and the ASME Bioengineering Division are not responsible for the content of this concert or this advertisement. They do, however, suggest that you challenge band members to some beach volleyball!

SBC 2012 FINAL PROGRAM

SBC 2012 PROGRAM						
	Palominito	Icaco	Vieques	Siete Mares	Ceiba	Las Croabas
WEDNESDAY, June 20, 2012						
7:00 am-3:20 pm	Committee Meetings (Magnolia, Poinsettia)					
3:45-5:15 pm	Atherosclerosis (F,S)	Joint and Cartilage Mechanics (S,T)	Mechanotransduction and Sub-cellular Biophysics I (T)	Ocular Mechanics (S)	Imaging in Biotransport (B)	Rehabilitation and Clinical Devices (D)
5:15-5:30 pm	Break					
5:30-7:00 pm	Cardiovascular Imaging (F,S)	Computational Modeling of Human Joints (S)	Mechanotransduction and Sub-cellular Biophysics II (T)	Orthopedic Soft Tissue Mechanics (S)	BioMEMS and Microfluidics (B)	Device Design and Evaluation (D)
7:00-9:00 pm	OPENING RECEPTION (South Pool and Trellises)					
9:00-10:30 pm	Business / Open-Executive Meeting (Magnolia)					
THURSDAY, June 21, 2012						
7:00-8:00 am	Breakfast					
8:00-9:00 am	PLENARY - Mark Henkelman (Grand Atlantic Salon 1)					
9:00-9:15 am	Break					
9:15-10:45 am	Cerebral Aneurysm (F,S)	Spine Mechanics (S)	Imaging and Measurement with Nano/Microdevices (D,T)	Heart Valves (F,S)	Ken Diller 70th Birthday Tribute Session (B)	Modeling and Simulation of Human Movement (D)
10:45-11:00 am	Break					
11:00 am-12:30 pm	Abdominal Aortic Aneurysms (F,S)	Bone Mechanics (S)	Microsystems and Genetic Regulation in Biological Machines (T)	Reproductive Mechanics and Soft Tissues (F,S)	Nano-Medicine and Nano-Therapeutics (B)	Cardiovascular Diagnostics - A Session Honoring Lloyd Back (F)
12:30-3:00 pm	POSTER SESSION I -- WITH LUNCH (Grand Atlantic Salon 2/3) Includes BS & MS Student Paper Competitions					
3:00-4:30 pm	Computational Fluid Dynamics Challenge (F)	Grand Challenge to Predict In Vivo Knee Loads (D)	Undergraduate Design Competition (D)			
FRIDAY, June 22, 2012						
6:30-7:30 am	Breakfast					
7:30-9:00 am	WORKSHOP: 4D PCMR for Visualizing Hemodynamics (F)	WORKSHOP: Teaching Cell and Tissue Engineering (E,T)	Fung and Mow Award Lectures			
9:00-9:15 am	Break					
9:15-10:45 am	Cardiovascular Devices (D,F,S)	Computational Modeling of Biological Tissues - Tribute to Robert Spilker (S)	The Cellular Environment (T)	Brain Injury (S)	Vascular Mechanics (S)	Microscale Fluid Mechanics (D,F)
10:45-11:00 am	Break					
11:00 am-12:30 pm	PhD Paper Competition: Cardiovascular Tissue Engineering and Flow	PhD Paper Competition: Tissue Engineering and Mechanics	PhD Paper Competition: Tissue and Cell Solid Mechanics	PhD Paper Competition: Cardiovascular Solid Mechanics	PhD Paper Competition: Biotransport and Devices	PhD Paper Competition: Injury and Dynamics of Motion
12:30-3:00 pm	POSTER SESSION II -- WITH LUNCH (Grand Atlantic Salon 2/3)					
	Abaqus Scripting Course 2:30 - 7:00 pm					Industry Field Trip (off-site: meet in lobby) 2:00-7:00 pm
7:00-10:00 pm	BEDROCK CONCERT (South Pool and Trellises)					
SATURDAY, June 23, 2012						
11:30 am-1:00pm	WORKSHOP: Solid Mechanics Imaging at Hierarchical Scales (S,T)	WORKSHOP: Bringing Assistive Device Designs to Market (D)	WORKSHOP: Tips for Tenure in Bioengineering (E)	WORKSHOP: Biotransport Education (B,E)		
1:00-1:30 pm	Break					
1:30-3:00 pm	Injury Biomechanics I (S)	Muscle and Tendon Mechanics (S)	Organs, Morphogenesis and Development (T)	Pediatric Cardiology (F)	Small Animal Models in Cardiovascular Mechanics (F,S)	Human Movement Analyses (D)
3:00-3:15 pm	Break					
3:15-4:45 pm	Injury Biomechanics II (S)	Growth, Remodeling, and Repair (S)	Nano, Micro and Multiscale Mechanics (S,T)	Thrombosis (F)	Musculoskeletal and Interfacial Tissue Engineering (S,T)	Respiratory Fluid Mechanics (F)
4:45-5:00 pm	Break					
5:00-6:00 pm	PLENARY - Lissner Lecture (Grand Atlantic Salon 1)					
6:00-6:30 pm	Lissner Reception (Grand Caribbean Ballroom Foyer - Pre-Function South)					
6:30-9:00 pm	BANQUET (Grand Caribbean Ballroom)					
	Sessions (Co-)Organized by Technical Committees as Indicated:			IMPORTANT NOTES TO POSTER PRESENTERS:		
	B - Biotransport	F - Fluid Mechanics		The Poster room will be available to all participants Wed - Sat.		
	D - Design, Dynamics & Rehab.	S - Solid Mechanics		All posters must be set up before 12:30pm on Thursday, June 21		
	E - Education	T - Tissue & Cellular Engineering		All posters must be taken down by 6pm, Saturday, June 23		

Feature Article: BED Members Volunteer

HELP FOR PROJECT CURE



BED member Kevin Aroom volunteers on most Saturdays at Project CURE (<http://projectcure.org/>), a non-profit organization that provides medical equipment and supplies to clinics in developing countries that are chronically short of medical gear taken for granted in most industrialized nations. He works in the Houston distribution center (Others in Tempe AZ, Nashville TN and Denver CO.)

Most volunteers help by sorting disposable supplies that are donated by various institutions, items such as surgical drapes, syringes, IV tubing kits and needles. This requires very little training and walk-in volunteers can tackle it with few problems. However, Project CURE also receives medical devices that arrive in all conditions, from fully operable (sometimes not even used) to fully inoperable. Some examples include cardiac defibrillators, hospital beds, pulse oximeters oximeter that has been donated still needs to be checked for accuracy, then cleaned and made ready for shipment), vital signs monitors, electrosurgical units, centrifuges, EKG machines, fetal monitors and surgical microscopes. He works with other engineers to assess the condition of incoming devices, then troubleshoot and attempt to

repair any defective equipment. They also try and salvage as many parts as possible from devices that are beyond repair.

Testing a device may involve using a physiological signal generator, or several other tools to measure the accuracy of various devices. Usually they use our own bodies as test subjects, (clearly not on the defibrillators, they have a special tool for that).

Once they have ensured that a device works properly, they test its safety with an electrical safety analyzer to verify various parameters are within spec, including chassis leakage current and safety ground path resistance. In the photo, Kevin is checking electrical safety on a vital signs monitor). When fully functional and checked the devices are inventoried, packaged, and loaded onto shipping containers to various locations. Since Project CURE was founded in 1987, clinics in over 120 countries have received donated items coming from the organization. Each clinic undergoes a review prior to getting a container shipped in order to gauge the needs of the clinic and to ensure the most important items get packed into the container.

Kevin says, “Even though I work in research and design in a university setting, my knowledge in medical instrumentation and electronics gives me the confidence to work at fixing various devices and the ability to use my knowledge to do work that other volunteers may be either unable or unwilling to do. I have also gained a great insight into the design of many different clinical medical devices, which has helped me in my own design work at the University of Texas Health Science Center. My volunteer experience continues to be fulfilling and challenging, with the added benefit of knowing that my work can help save the lives of some of the poorest people on the planet.”

Bioengineering Division TECHNICAL Committees

BIOTRANSPORT

The Biotransport committee will hold their annual meeting at the 2012 SBC on Wednesday June 20, at 2.30 PM in Poinsettia A/B. At the committee meeting, we will discuss our 2012 SBC sessions, plan for the 2013 SBC sessions and workshops and deliberate on the future role of our committee in the ASME BED and HTD divisions. This is an open meeting and everyone with an interest in the transport of energy, mass, and momentum essential to the function of living systems, is encouraged to attend. The attendees are encouraged to advocate, exhort and opine on our future activities! Please, contact the committee chair, Ram Devireddy (devireddy@me.lsu.edu) for further details or clarifications.



Ram Devireddy
Committee Chair,
2010–2013

FLUID MECHANICS

The annual Fluids Committee meeting will be held 1:30-2:20 pm, Wednesday, June 20, in the Magnolia Room. Our main agenda item will be to get an early start on planning for sessions and workshops at SBC2013. This is an open committee meeting, and we especially encourage the participation of young investigators looking to get involved in the BED and SBC. If you have any suggestions for agenda items, please feel free email me at steinman@mie.utoronto.ca.



David Steilmann
Committee Chair,
2009–2012

In addition to our usual complement of podium and poster sessions, the Fluids Committee will also be running two Workshops this year at SBC2012. First is the CFD Challenge (Thursday, June 21, 3-4:30pm, Palominito Room), which will present a comparison of CFD predictions (from 26 groups!) and experimental measurements of pressure drops in a cerebral aneurysm model. This will be followed by an open discussion about plans for future challenges, and so we welcome the participation of any and all SBC2012 attendees who have an interest in verification and validation of cardiovascular models.

Second is a Workshop on 4D PCMR for Visualizing Hemodynamics (Friday, June 22, 7:30-9am, Palominito), for which we have assembled a "dream team" of PCMR experts to present, and answer your questions about, the hows & whys and tips & tricks of magnetic resonance velocity imaging. An essential part of this workshop will be a group discussion among PCMR and CFD users to discuss ways to better integrate these complementary approaches towards research and clinical applications.

Finally, I would like to thank our Vice-Chair, Frank Loth, and Theme Leaders, Keefe Manning and Brandon Dixon, for their tremendous efforts in helping to manage the reviewing and programming of the Fluids submissions, which went a long way towards preserving my sanity as SBC2012 Program Chair!

Enjoy ocean views,
even from the
resort elevator!



Bioengineering Division TECHNICAL Committees (continued)**SOLID MECHANICS**

The annual meeting of the Solid Mechanics committee will be held at the SBC on Wednesday, June 20, at 2:30 pm in the Magnolia room. We are always looking for people who want to get involved - reviewing abstracts, chairing sessions, organizing workshops - so please join us at this gathering for an overview of our 2012 SBC offerings and a beginning discussion of our programming for the 2013 SBC. If you want to get involved but can't attend the meeting, please email Rich Debski (genesis1@pitt.edu), Solids Vice-Chair. We hope to see you at SBC 2012!



Jeff Holmes
Committee Chair,
2010–2013

Tissue & Cellular Engineering

Who needs shells when you have cells? Take a break from the beach at the SBC in Puerto Rico and join in our annual meeting on Wednesday, June 20, at 12:30 pm, in the magnificent Magnolia room at the conference site. At the annual meeting, those of us without sunburn will pat ourselves on the back about the fantastic scientific offerings our committee has assembled for this year's SBC, including two workshops. We will discuss these and begin planning for next year's SBC. All are invited to attend, to join in the planning, and to join the committee. Can't attend but want to get involved? Email Guy Genin, chair (genin@wustl.edu), or Rob Mauck, co-chair extraordinaire (lemauck@mail.med.upenn.edu).



Guy M. Genin
Committee Chair,
2012–2015

Design, Dynamics & Rehabilitation

The Design, Dynamics, and Rehabilitation Committee will have its annual meeting Wednesday, June 20, at 1:30 pm, in the Poinsettia A/B Rooms. This committee covers a wide variety of topics including human movement measurement and modeling, rehabilitation, medical device design (orthopedic, cardiovascular, BioMEMS), engineering for surgery, and robotics. At the committee meeting, we will discuss our SBC 2012 sessions, goals for SBC 2013, workshops and special sessions for future meetings, and other strategic initiatives. Everyone with interest in design and/or rehabilitation is encouraged to attend, including students, post-docs, faculty members, and industry members. Those wishing to attend the fluids committee meeting (concurrent) but also interested in design are encouraged to contact the chair, Lorin Maletsky (maletsky@ku.edu).



Lorin Maletsky
Committee Chair,
2010–2013



Go ballistic with a wave-runner on the Puerto Rico coast!
Early Registration Deadline is Sunday, May 20!

Bioengineering Division ADMINISTRATIVE Committees

The BED has four administrative committees: Education, Honors & Awards, Membership, and New Directions. Additionally, the BED selects representatives to other bioengineering organizations and to committees within ASME. Within ASME, the BED has representatives to the Thurston Award Committee, the ASME annual meeting (IMECE),

and the Basic Engineering Group (see report in this section). Beyond ASME, the BED has representatives to the American Institute for Medical and Biological Engineering and the U.S. National Committee on Biomechanics.

Reports from these committees and representatives follow.



ASME IMECE

The Biomedical and Biotechnology Engineering track initially received over 210 abstracts, but only 145 were finally accepted in the track, split over 11 Topics. The first Topic was a Plenary Presentation Topic with two speakers recruited from the Denver area- Dr Clyde Oakley (W.L. Gore & Associates) from medical ultrasound industries and Dr Robin Shandas from the University of Colorado-Denver-both in the biomedical area. The other 10 topics included: BioMEMS, Micro and Nano Systems in Medicine and Biology, Vibration and Acoustics in Biomedical Applications; Application of Composites in Biomaterials and Bioengineering; Viscoelasticity of Biological Tissues; Dynamics and Control of Biomechanical Systems; Bioengineering and Clinical Applications; Analysis of Trauma Due to Blast, Ballistics, and Impacts; Biomedical Heat Transfer and Biomedical Fluid Mechanics; Computational Modelling and Device

Design. Also there were about 10 posters presented in a general poster session organised by the congress.

The Biomedical and Biotechnology Engineering track is a collaboration between the Bioengineering Division and the Design Engineering Division (DED). Also other divisions such as the Applied Mechanics, Dynamic Systems and Control and Heat Transfer Divisions have contributed to the track this year. This track spans a wide range of areas including assessment of the properties of biological tissues, design of cardiovascular devices, development of BioMEMS devices, the use of vibration and acoustics in medical applications, new therapy and imaging technologies, dynamics and controls in biomedical systems, the use of composite materials in bioengineering, biomedical heat transfer, fluid mechanics and computational biomedical modelling.

Over the last five years I have worked hard with the track co-organisers and Topic and Session organisers to make this Track one of the best at the congress. I believe both the BED and DE should give more support and recognition to this track as it attract many international authors and contribute significantly to the bioengineering area. It normally attracts authors who have another interest in addition to bioengineering such as design. This will help improve the medical devices area. May I suggest for next year to have some competition to select some good design papers and submit them in a special issue of the Journal of Medical Devices. I will be happy to give some more details and thoughts about this track during the 2012 BED summer meeting.

Ahmed Al-Jumaily
IMECE Representative

Bioengineering Division ADMINISTRATIVE Committees (continued)

American Institute for Medical & Biological Engineering

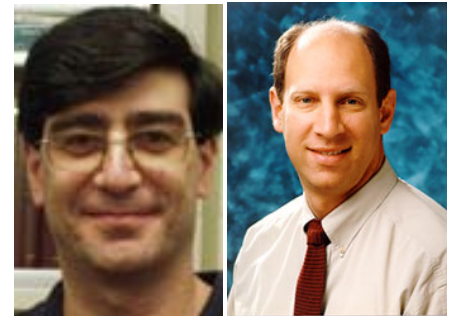
The BED is one of the 18 scientific organizations that comprises the American Institute for Medical and Biological Engineering's "Council of Societies." AIMBE aims to promote awareness of the field of biomedical engineering, public policy that furthers advancements in biomedical engineering, and cooperation within the field. The Council of Societies aims to coordinate positions on issues of importance to the entire community through establishing a dialogue at the AIMBE "Annual Event," held each winter in Washington, DC. The AIMBE's 20th Annual Event was held last February. A focus of AIMBE is supporting bioengineering research that makes a direct impact on public health.

AIMBE launched several new programs last year, including a Fellow-in-Residence program at AIMBE's National Headquarters, new programming for AIMBE's Women in Medical and Biological Engineering Committee and Committee on Under-Represented Minorities, and new tools for demonstrating the

value of medical and biological engineering to Congress.

The 2012 AIMBE Annual Event was held Feb. 19-21, with the theme "Building a New Economy through Medical and Biological Engineering: Improving Health and Creating Jobs in the Coming Decade." Session topics included: The Impact of Medical and Biological Engineering on the American Economy and Health, Manufacturing New Therapies, Bioengineering for Biodefense, Innovations in Medical and Biological Engineering, Sustaining 9 Billion People by 2050, and Bioengineering to Sustain the Environment. This was a well attended event including many BED members.

AIMBE's 2012 Federal Symposium will be held June 20-21, 2012 on Capitol Hill, Washington, DC. AIMBE is recognizing the 10th anniversary of the National Institute for Biomedical Imaging and Bioengineering on Capitol Hill. At this event, we will stand together with leaders from Congress, NIH, and



Gerard Ateshian

Lou Soslowsky

the private sector to celebrate what can be accomplished when the public invests in engineering science. The Federal Symposium is AIMBE's major advocacy event of the year when our Fellows, members, and partners meet directly with their Members of Congress to advocate for important medical and biological engineering (MBE) priorities.

Gerard Ateshian

**BED Representative to the AIMBE
2008 - 2011**

Lou Soslowsky

**BED Representative to the AIMBE
2009 - 2012**

**SBC 2012 early registration deadline, Sunday, May 20!
Enjoy incredible views of the Caribbean!**



Administrative Committee Reports

ASME International Bioengineering Division

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Membership Development Committee



Ozan Akkus

You may be eligible as an ASME Fellow if you have been an active and productive BED member for 10 years or more. Or you may know a fine colleague who is eligible as a Fellow (see <http://www.asme.org/about-asme/honors-awards/fellows>). The process of becoming a fellow involves

nominators who are generally an ASME fellow in BED. A list of existing fellows is accessible via the above weblink. Close to a dozen BED members joined the ranks of ASME fellows during the past year. A sneak preview of new fellows is available on the ASME website, the official announcements will follow during the SBC 2012 banquet and the citations of new fellows will be published in the fall edition of the SBC newsletter.

We also encourage you to become involved in your local ASME chapters to raise the interest of new members in BED. The BED membership development committee welcomes your feedback! Please contact me with your suggestions or any questions you may have at ozan.akkus@cwru.edu.

Ozan Akkus
Chair, BED Membership Committee
2011 – 2014

New Directions Committee



Gerard Ateshian

The New Directions Committee meets each year at the SBC to discuss new areas of focus for the BED for the upcoming year, and reports on these ideas in

the Fall newsletter. The meetings of the New Directions Committee are open to all BED members and their ideas. Yes, you are encouraged to attend!

This year's meeting will be held at SBC 2012 on Wednesday, June 20, from 10:30-11:20 am in room Poinsettia C. All are welcome.

Bring your ideas for new directions!

Gerard Ateshian
Chair, New Directions Committee
2009 – 2012



US National Committee on Biomechanics



David Vorp

The US National Committee on Biomechanics (USNCB) is celebrating its 30th anniversary this year, and is putting into place a historical chronology of past activities to date. Part of the previous activities has been the popular "Frontiers in Biomechanics" meetings. Two more are being planned for the near future, one on "Biomechanics of Infections" (organizers: Wendy Thomas,

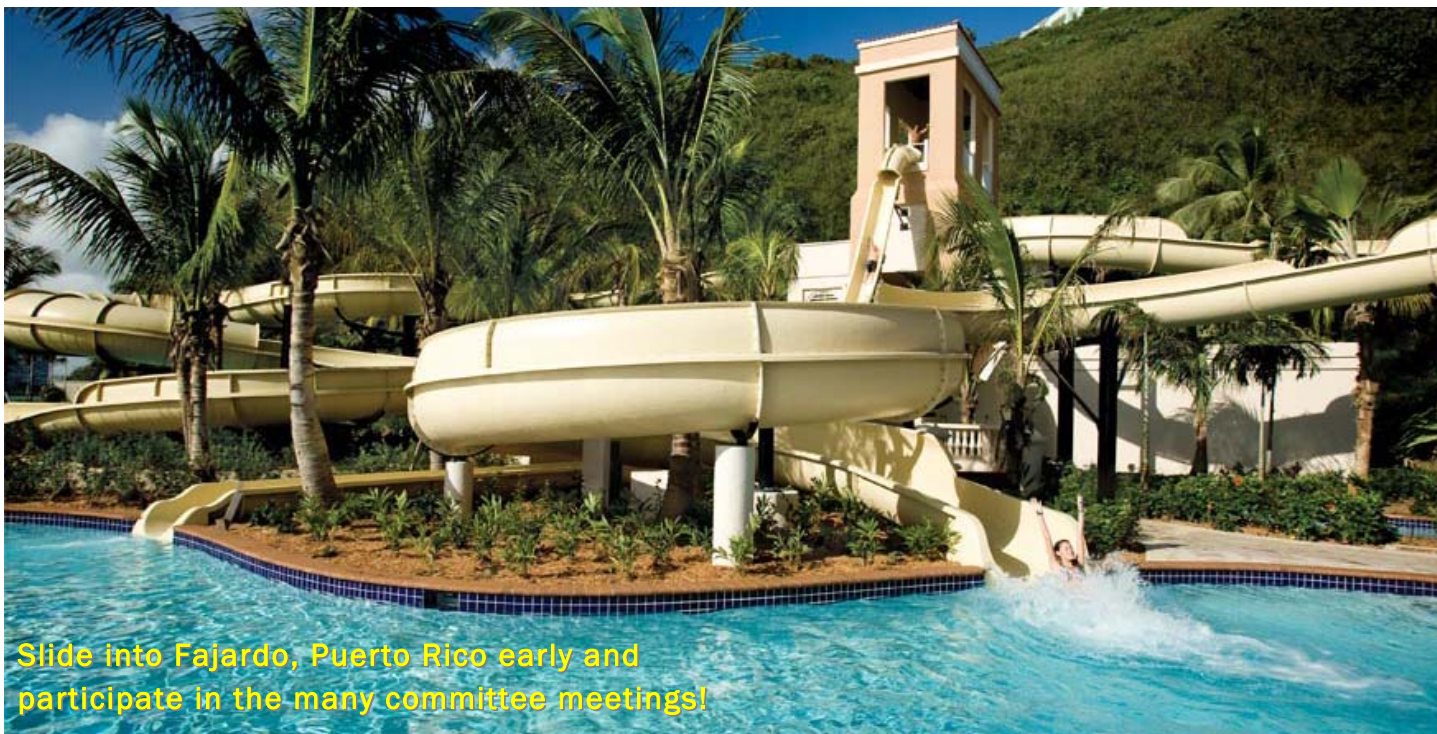
University of Washington, and Scott Simon, University of California, Davis), and the other is "Biomechanics of Cancer" (organizers: Cheng Dong, Penn State University, and Lance Mann, Harvard University). Stay tuned for details.

The USNCB is also excited to be helping to organize The 7th World Congress of Biomechanics (WCB), to be held July 6-11, 2014, in Boston, MA. The WCB is an international meeting held once every four years, rotating among Europe, Asia and the Americas. This, the

7th WCB, will once again bring together bioengineers, life scientists and medical researchers from around the world for 5 days of in-depth discussions and presentations. Vendor exhibitions will highlight the latest technologies, publications, and medical devices. Plan to join us in Boston, just following the US Independence Day festivities on July 4th. Check the WCB website (www.wcb2014.com) often for updates and details.

David Vorp
BED Representative to the USNCB
2007 – 2012

Bioengineering Division ADMINISTRATIVE Committees (continued)



Slide into Fajardo, Puerto Rico early and participate in the many committee meetings!

EDUCATION COMMITTEE

The Education Committee of ASME Bioengineering Division has continued to focus on incorporating biomedical and biomechanical engineering education activities into the annual SBC. There will be excellent opportunities for participation at the SBC2012 meeting during June 20-23 in Fajardo, Puerto Rico.

The Education Committee has organized and co-organized three workshops for this year's meeting:

- 1) A workshop on **"Tips for Tenure in Bioengineering"** (co-organized by Laurel Kuxhaus and ASME's Tatyana Polyak, Thomas Perry, Lee Hawkins, and the rest of ASME Bio-X Team) will present tips on how to start a successful academic career.
- 1) A workshop on **"Biotransport Education"** (organized by Rupak Banerjee, co-sponsored with Biotransport Committee and

funded by NSF) will address new and emerging topics in biological transport phenomena.

- 1) A workshop on **"Teaching Cell and Tissue Engineering"** (co-organized by Kris Billiar, Roland Kaunas, Ali Khademhosseini, and Robert Mauck) will present new and effective approaches in teaching of tissue and cellular bioengineering. This workshop is co-sponsored with the Tissue and Cellular Engineering Committee.

All of these workshops will feature speakers with distinguished backgrounds and experience in bioengineering education, and should generate good discussion and offer hands-on experience to SBC participants.

The committee participation continues to grow, and we welcome new members and of course new ideas and suggestions. In particular, we are eager to increase undergraduate and

graduate student involvement. Join us for a discussion of all this and more at our annual Education Committee meeting, which

will be held at the SBC 2012 on Wednesday, June 20 from 11:30 am – 12:20pm in Room Poinsettia A/B! Anyone who would like to join the committee, suggest and/or organize an education session, or contribute Web resources you have found valuable in your own teaching, please contact the Education Committee chair, Mohammad Mofrad, by email: mofrad@berkeley.edu.



Mohammad Mofrad

**Mohammad R. K. Mofrad, Chair
BED Education Committee
2009 – 2012**

Bioengineering Division ADMINISTRATIVE Committees (continued)**ASME Basic Engineering Group Operating Board**

The Bioengineering Division participates actively in the activities of the ASME Basic Engineering Group Operating Board (BEGOB), whose primary mission is to provide representation for a variety of technical divisions in the ASME administration.

Through its participation in BEGOB, in 2011 BED assisted ASME Publications with upgrading and implementing the new Event Planning and Approval Tool to function for the specific needs of the

Summer Bioengineering Conference. This tool was available for the organization of the 2012 SBC.

BED nominated Mohamed Samir Hefzy for the Board Operations Member-At-Large position of BEGOB, which voted in favor of his nomination; Dr. Hefzy will now be a larger voice for BED at the upper levels of the ASME administration.

Your BED representatives to BEGOB are Rita Patterson (at the University of North Texas Health Science Center) and Ender Finol (at

**Ender Finol****Rita Patterson**

the University of Texas at San Antonio).

***Ender Finol and Rita Patterson
BED Representatives
to the ASME BEGOB
2011 - 2012***



Sunset over the El Yunque Rainforest near Fajardo, Puerto Rico.

Industry Advisory Committee

The ASME BED Industry Advisory Committee (IAC) has been actively working to promote activities relevant to industry members within the BED, both at the SBC and in other conferences. Though many BED members may not realize this, ASME BED sponsors not just the SBC, but also the Frontiers of Medical Devices (FMD) conference, last held in September 2011 in Irvine, CA, and the Design of Medical Devices conference, last held in April 2012 in Minneapolis, MN. Both of these events are heavily attended by industry; and a key effort of the IAC is to promote these events, as well as further industry participation at

the largely academic SBC. The FMD group is looking to co-sponsor an event in 2013 with the FDA, recognizing the close tie between and shared interests of biomedical industry and the FDA. For the 2012 SBC, the IAC has arranged for tours of local manufacturing plants for major biomedical device companies, and we hope that many of you will take advantage of this opportunity to engage with your industry constituents. Additionally, at the opening reception of SBC, we look to identify all industry participants at the meeting, and provide the opportunity for industry networking for students interesting in moving into industry following

graduation, or academics interested in industrial-sponsored research. Those who are interested in becoming part of the IAC (students and faculty are welcome and encouraged!), please come to our committee meeting at the SBC and contribute to this effort.

**Jeff Bischoff**

***Jeff Bischoff
Chair, Industry Advisory and
External Affairs Committees
2009 - 2012***

Bioengineering Division ADMINISTRATIVE Committees (continued)

Honors & Awards Committee



Thomas Andriacchi

The BED Honors and Awards Committee is seeking nominations for the Division's three special recognition awards.

Nominations

from the pool of active members of the BED are now open for the 2013 awards! To nominate a colleague or yourself for a 2013 award, please submit the nomination form to the Chair of the appropriate Honors Committee no later than Sept. 1, 2012. In preparing nomination packages please note that Honors committee members cannot submit a candidate or provide a letter of support to the committee they are serving.

Nominations forms can be found at http://divisions.asme.org/bed/Honors_Awards.cfm and Honors Committee membership is at

<http://divisions.asme.org/bed/Committees.cfm> for the following special recognition awards.

The Y.C. Fung Young Investigator Award recognizes outstanding investigators, early in their careers, for significant potential to make substantial contributions to the field of bioengineering and a demonstrated commitment to bioengineering. Candidates must have earned a relevant Ph.D. or equivalent degree within seven years of their nomination and must be under 36 years of age on June 1 of the year of nomination.

The Van C. Mow Medal is bestowed upon an individual who has made significant contributions

to the field of bioengineering through research, education, professional development, leadership in the development of the profession, mentoring of young

bioengineers, and service to the bioengineering community. The individual must have earned a Ph.D. or equivalent degree between ten and twenty years prior to June 1 of the year of the award.

The H. R. Lissner Medal was created in 1977 by the Bioengineering Division of ASME to recognize significant contributions to bioengineering. These may be (1) research contributions; (2) new methods for measurement; (3) new equipment and instrumentation; (4) educational contributions; and/or (5) service to the BED and/or the bioengineering community.

Please join us this summer as we recognize the recipients of the 2012 awards at the SBC banquet and consider nominating a deserving colleague for the 2013 awards!

Tom Andriacchi
Chair, Honors & Awards Committee
2011 - 2014

SBC 2012 early registration deadline, Sunday, May 20!
Enjoy many beautiful Puerto Rican sunsets!



Administrative Committee Reports

ASME International Bioengineering Division

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Bioengineering Division ADMINISTRATIVE Committees (continued)

Student Affairs Committee



Matt Gounis

Student participation in the Bioengineering Division and Summer Bioengineering Conference is as strong as ever! Students and Trainees consistently represent more than half of the total attendance at the Summer Bioengineering Conference. Our Division, the SBC Organizing Committee, and the Student Paper Competition Committee are committed to making our conference informative, helpful and fun for our

student membership at multiple levels. In addition to the very popular Student Paper Competition for the BS, MS and PhD levels; the Undergraduate Design Competition and Grand Knee Challenge will take place again this year in Puerto Rico. An off-site tour of premier device engineering plants will be of keen interest to our students – please make sure to sign up for the tour when registering for the 2012 SBC. In addition to an outstanding technical program, workshops such as Tips for Tenure in Bioengineering are offered that will be of interest to our trainee and student par-

ticipants (it is never too early to start!).

Importantly, we ask our student participants at the SBC to get involved with the Bioengineering Division. Please plan to attend the open committee meetings to see how our all voluntary organization works. **The Student Advisory meeting will take place at the 2012 SBC on Wednesday June 20 from 2:30-3:20pm in Poinsettia C!** Please come by to help us implement student programs of the future.

Matthew Gounis
Chair, Student Affairs Committee

Visit the El Yunque Rainforest near Fajardo, Puerto Rico!



SBC2012 Student Paper Competition



Tammy Haut-Donahue

We are looking forward to another exciting Student Paper Competition at the upcoming annual summer meeting. We have almost 100 students competing onsite. There will

be six concurrent podium presentation sessions for the PhD finalists and a poster session for the MS and BS level. The competition is not possible without the effort of many delegates volunteering their time to judge. If you would be willing to judge either a poster or podium presentation onsite please contact Tammy Haut

Donahue. Thanks and we look forward to seeing you next month.

(Tammy.Donahue@ColoState.edu)

Tammy Haut-Donahue, Overall Chair
Sarah Kieweg, M.S. Chair
Andrew Anderson, B.S. Chair
2011 Student Paper Competition

Future Conference Announcements

NEMB2013 ASME 2013 2ND GLOBAL CONGRESS ON NANOENGINEERING FOR MEDICINE & BIOLOGY

February 4-6, 2013 • Boston, Massachusetts

Join us as the BED co-hosts the ASME 2013 2nd Global Congress on NanoEngineering for Medicine and Biology (NEMB 2013) on Feb. 4-6, 2013 in Boston. All are invited.

NEMB 2013 will focus on the integration of engineering, materials, and nanotechnology in addressing fundamental problems in biology and medicine. We will discuss devices, materials and methods for the early detection, imaging, understanding, and treatment of disease, and of physiologic mechanisms.

The conference is planned as a cross-disciplinary forum, and our goal is a healthy mix of engineers, life scientists, materials scientists, physicists, and clinicians, with representation from academia, government, healthcare, and industry.

The following areas will be the focus of NEMB2013:

- Bioengineering for Medical Diagnostics, Therapeutics and Imaging
- Nano-/Microfluidics in Biology and Medicine: Analysis, Diagnostics and Therapeutics
- Nanoengineering for Regenerative Medicine & Tissue Engineering
- Manufacturing and Materials for Nanomedicine, Biology and Nanoengineering
- Multiscale Modeling and Experiment in Biology and Medicine
- Biological Nanomechanics: Materials Factors in Physiology, Disease and Treatment

- Natural, Biomimetic and Bioinspired Materials and Structures
- Nanotechnology and Public Health

We have a fantastic array of plenary speakers already confirmed, including Bob Langer, CT Lim, Albert-László Barabási, Joanna Aizenberg, and Klaus Schulten, with more to come.

Please check our website for the latest updates:
<http://www.asmeconferences.org/NEMB2013>

Abstracts are due October 15th! See you in Boston!
Markus Buehler and Mehmet Toner, conference chairs,
and Guy Genin, program chair

Markus Buehler and Mehmet Toner, conference chairs, and Guy Genin, program chair



Markus Buehler



Mehmet Toner

NEMB2013 ASME 2013 2ND GLOBAL CONGRESS ON NANOENGINEERING FOR MEDICINE & BIOLOGY

February 4-6, 2013 • Boston, Massachusetts

Future Conference Announcements



7th WORLD CONGRESS OF BIOMECHANICS

IN CONJUNCTION WITH:

- World Council of Biomechanics
- American Society of Mechanical Engineers
- European Society of Biomechanics
- US National Committee of Biomechanics
- Global Enterprise for MicroMechanics and Molecular Medicine

**JULY 6-11
2014**

John B. Hynes Veterans
Memorial Convention Center
900 Boylston Street
Boston, Massachusetts 02215 (USA)

The World Congress of Biomechanics is an international meeting held once every four years, rotating among Europe, Asia and the Americas. This, the 7th WCB, will once again bring together bioengineers, life scientists and medical researchers from around the world for 5 days of in-depth discussions and presentations. Vendor exhibitions will highlight the latest technologies, publications, and medical devices.

Plan to join us in Boston, just following the US Independence Day festivities on July 4th.

www.wcb2014.com

<http://divisions.asme.org/bed/>

Bioengineering Division

Spring 2012

News Bulletin

American Society of Mechanical Engineers

ASME BED roster 2011-2012

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