

BIOMATERIALS FORUM!

OFFICIAL NEWSLETTER OF THE SOCIETY FOR BIOMATERIALS

First Quarter 2009 • Volume 31, Issue 1

Giving *LIFE*
to a world of *materials*

2009 Annual Meeting
and Exposition



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BIOMATERIALS FORUM



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We are now in the worst economic downturn since the Great Depression. Who got us in this mess? There is plenty of blame to go around. Besides the creative financiers, accountants and consenting economists, we engineering professors should also bear some responsibility.

7 2009 Officer Nominees

The task of selecting the slate of Officer Nominees for 2009 has been completed. Following are the nominees for President-Elect, Secretary-Treasurer-Elect and Member-at-Large. The Society encourages all members to cast their vote for the candidate of their choice. Ballots may be cast electronically via email to headquarters, via the Members Only section of the Society's Web site (www.biomaterials.org) or via mail.

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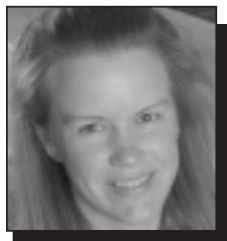
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But Wait... There's More... Reasons to Attend SFB 2009



"Conference" is a word derived from the Latin word "conferre," which means "to bring together" or "compare," which in turn was derived from "com," meaning "together," and ferre, "to bear." The sense of "taking counsel" led to the word "conference" in 1555. The idea of being together and seeking, taking or providing counsel remains the heart of

a conference. If we assume this is a worthy activity, the only question we have to answer is how to best (most cost-effectively) achieve this exchange of counsel. One could easily ask if electronic gatherings, e.g. Webcasts, will take the place of on-site conferences. In some capacity, the answer is yes. However, I feel there is an important human component that will be lost. By way of example, education experts have found even well-run online courses must offer periodic face-to-face course participant meetings, coupled with the online lectures, in order to most effectively serve the enrollees. The face-to-face meetings are the glue connecting the electronic experiences, and these radically raise the value of the course. I believe we, the SFB members, have plenty of impersonal technical communications through journals, newsletters, grant proposals, Webinars, Web sites, advertisements and conference transaction CDs—it is now time to meet face-to-face in order to complete this exchange of ideas.

The value in attending a conference is in the human interactions. Attending a conference allows one to confirm one's own work is unique, valuable, relevant and yet dependant on others. Attendance also provides an opportunity to generate new ideas. I try to attend a majority of sessions not directly related to my own research—the rationale being diversity is the flavor of innovation. I find it is in the talks and posters directed toward some unrelated topic one can find a gem of an idea, an idea that can be translated to one's own work. Being present in person means I can immediately ask

questions of many and therefore digest a wide variety of new topics in an extremely time-efficient manner. It is, in fact, rarely the "in discipline" conversations that lead to the leaps forward or the disruptive technologies.

It was and is the participants of SFB meetings who made and continue to make each conference valuable. It is now your turn, both to capitalize and to make the meeting worth everyone's while by proactively participating.

Top 10 reasons you should attend this year's meeting:

- 10: To be able to say, post-trip and post-Fiesta... "What happens in San Antonio stays in San Antonio."
- 9: To improve your line-dancing groove at the Institute of Texan Cultures.
- 8: To demonstrate your off-the-charts SIG enthusiasm by attending early a.m. SIG meetings.
- 7: To congratulate the Clemson and SFB awardees. Did I mention receptions and food?
- 6: To meet vendors... and extract marketing freebies!
- 5: To meet the JBMR editors and learn how to review manuscripts.
- 4: To participate in regulatory and industrial panels and symposia and tour local biotech industry sites.
- 3: To discuss real-world biomaterials issues with real world surgical panelists.
- 2: To prepare for enhanced water cooler/coffee break conversation at your place of business, e.g.: "I met the inventor of the first commercially successful intravascular stent."
- 1: To avail yourself for unpredictable opportunities.

Best wishes from Clemson – see you in San Antonio!

Karen J.L. Burg
Hunter Endowed Chair & Professor of Bioengineering
Interim Vice Provost for Research & Innovation
Clemson University

From the President

See you in San Antonio!



The Society For Biomaterials' Annual Meeting at the Grand Hyatt in San Antonio, Texas, promises to be one of the Society's biggest and most exciting scientific events in recent memory. An absolutely outstanding program of oral presentations has recently been published on the Web, and it will soon be supplemented by an exciting host of poster presentations and exhibits. The

oral program features presentations by leading scientists and physician-scientists working in both basic and translational aspects of biomaterials science in topics spanning novel therapeutics and their delivery, bioactive materials, nanomaterials for imaging and therapeutics and biomaterials surfaces. Additionally, there will be presentations on advances in clinical topics such as cardiology, orthopedics,

ophthalmology, urology, dentistry, neurosurgery, immunology, wound healing and other areas in regenerative medicine. Here, advances from both the materials science side and the stem-cell biology side, both led by members of the Society, will be presented. This combination of innovation in the materials and in the cell, as well as the molecular biology involved in their application, has come to be a hallmark of the meeting—something found neither at cell biology meetings nor at other materials science meetings. I invite you to join us in San Antonio to experience the combination of both! The contributions will be rewarding for both members from industry and academia alike. The meeting will continue to explore alternative presentation formats, such as panel discussions and rapid-fire sessions, to provide the most rewarding experience possible.

Jeffrey A. Hubbell

Hello from the Society For Biomaterials headquarters! By providing a regular update of staff and membership activities, it is our sincere wish for all the Society's members to stay abreast of current Society activities, and we encourage more members to take an active role in the Society For Biomaterials! Several new initiatives are underway, including the development of a new book series and the formation of a new Special Interest Group in nanomaterials.

This quarter, headquarters staff has been active in its support of the following committee activities:

The **Awards, Ceremonies and Nominations Committee** evaluated many wonderful nominations for officers and awards and presented its recommendations to Council at the Nov. 11, 2008 Council Meeting. Officer candidates are listed on page 6. The Committee believes the officer nominations represent a strong slate for the membership, reinforcing excellence in leadership and SFB.

2008 Award recipients are listed on page 4. While there were no nominations for the Hospital Intern, Residence or Clinical Fellow Award, there were many, many nominations for the other awards, and the committee had many difficult choices. SFB has a deep pool of excellent individuals worthy of recognition in future years.

Council unanimously ratified all recommendations of the committee. The committee would like to thank those who took the time to nominate their colleagues and sincerely appreciates the officer candidates' willingness to serve the Society For Biomaterials.

The **Bylaws Committee** is reviewing the Society's bylaws to eliminate inconsistencies in the current document and streamline the operations of the Society. Your input/comments on the bylaws are welcome.

The **Devices and Materials Committee** is collaborating with ASM on a new research materials database module and working to identify other areas of collaboration.

Education and Professional Development Committee (E&PDC) goals for 2009 are to:

- Develop programmatic content for a new Webinar series
- Assist the student chapter with program development for the 2009 Annual Meeting
- Re-establish as many student chapters as possible
- Re-examine the Student Chapter Bylaws
- Explore other opportunities for student programming

In addition, the committee will continue to evaluate endorsement requests from other organizations and will explore other opportunities for program activity.

The **Finance Committee** is overseeing the implementation of the Board-approved investment and reserve policies. The *Liaison Committee* continues to interact and discuss

possible joint meetings with other organizations including WBC 2012, ORS, MRS, BMES and ASTM and is seeking input from members on Liaison activities for the 2010 Annual Meeting.

The **Long Range Planning Committee (LRPC)** continues to engage in strategic planning relating to membership and meetings. Approaches for increasing the value of SFB membership and enlarging the membership base have been advanced. Improvements in development, operational procedures and program offerings for the annual meeting have been discussed. Furthermore, the LRPC is proposing program guidelines for meetings held in the World Congress year. Funding for regional Biomaterials Days was approved in this year's budget. The submission and review processes for these meetings are currently being developed with assistance from the E&PD Committee.

The **Meetings Committee** is preparing to assess the funding and sponsorship revenue of our Annual Meetings and provide recommendations for increasing these sources of revenue to better offset meeting attendee registration costs.

The **Membership Committee** has laid out goals for the year with its continuing plan of recruiting new members, including advertising in related publications (*Journal of Biomechanics*, *MRS Bulletin*, *Nanotech Letters*), as well as a retention plan for current, active members. The committee is working to establish new student chapters for the upcoming year, with a particular focus in Texas, as we draw nearer to the San Antonio meeting in 2009.

The **Presidents' Advisory Committee** goals for 2009 are to:

- Provide support to the President and Council in the review of the Society's publications to determine how well the SFB and the intellectual field are currently served by them and suggest changes.
- Complete an archival monograph describing the history of the Society.
- Address mechanisms to assure the financial support of scholarships and education activities of the Society.

All goals have been pursued and are anticipated to be met by the end of the Council year. The archival monograph on the history of the Society is being edited and will be forwarded to the Publications Committee for review. Publication of this document is planned for Fall 2009. A drive to encourage past Presidents and past Council members to contribute to the education activities of the Society by supporting the C. William Hall Scholarship fund has been initiated. The C. William Hall Scholarship honors the memory of the Society's first president C. William Hall.

The **Program Committee** has spent considerable time in the planning and organization of the 2009 Annual Meeting. This year, the committee is experimenting with a new process for session development and the formatting of the sessions presented. The draft program of events has been published on

continued on page 4

continued from page 3

the Society's Web site, and the complete registration brochure is on page 12. You will notice the program contains more invited speakers for panel discussions and tutorials than past meetings. The rapid fire format, which was well received at its debut in Atlanta in 2008, will be introduced at the Annual Meeting for the first time.

The **Publications Committee** is working to make recommendations to Council for a new editor for the *Journal of Biomedical Materials Research – Part B Applied Biomaterials*; revamping the editorial processes of both journals (Part A and B), identifying an editor for the forthcoming book series; and continuing to review all Society publications.

If you are interested in knowing more about a particular issue, policy or committee activity, or if you have any suggestions for improved membership services, please contact me directly at the SFB headquarters office:

Sincerely,



Dan Lemyre, CAE
Executive Director
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2009 Award Winners



Founder's Award

John Brash, PhD – McMaster University

*Awardee Address: Proteins at Interfaces:
at the Core of Biomaterials Science*

Saturday, April 25, 2009

Plenary Session II • Grand Hyatt San Antonio – Lone Star Ballroom
11:00 am – 11:20 am



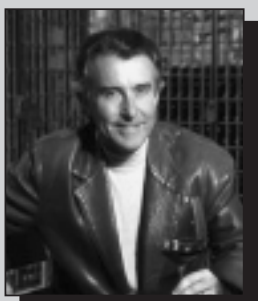
C. William Hall Award

Harold Alexander, PhD – Orthogen LLC

*Awardee Address: Society For Biomaterials Journals:
Past, Present and Future*

Saturday, April 25, 2009

Plenary Session II • Grand Hyatt San Antonio – Lone Star Ballroom
10:35 am – 10:55 am



Technology Innovation and Development Award

**Julio Palmaz, PhD – The University of Texas
Health Science Center at San Antonio**

*Keynote Presentation: 20 Years of the Intravascular Stent:
Has it Been Sufficient Progress?*

Wednesday, April 22, 2009

Opening Ceremony • Grand Hyatt San Antonio – Lone Star Ballroom
6:45 pm – 7:30 pm



Clemson Award for Basic Research

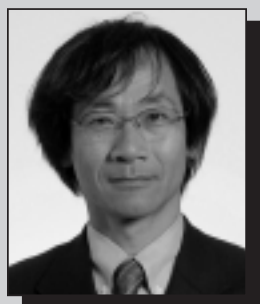
**Linda Griffith, PhD –
Massachusetts Institute of Technology**

*Awardee Address: Tissue Engineering:
From Bench to Bedside and Back*

Thursday, April 23, 2009

Plenary Session I • Grand Hyatt San Antonio – Lone Star Ballroom
11:25 am – 11:45 am

2009 Award Winners



Clemson Award for Applied Research

Kazuhiko Ishihara, Ph.D. – The University of Tokyo

Awardee Address: Bioinspired Phospholipid Polymers for Controlling Biological Responses on the Medical Devices

Thursday, April 23, 2009

Plenary Session I • Grand Hyatt San Antonio – Lone Star Ballroom
11:00 am – 11:20 am



Clemson Award for Contributions to the Literature

Tae Gwan Park, PhD – Korea Advanced Institute of Science & Technology

Awardee Address: Smart Nano-biomaterials for Drug, Gene, Cell Delivery

Thursday, April 23, 2009

Plenary Session I • Grand Hyatt San Antonio – Lone Star Ballroom
10:35 am – 10:55 am



Young Investigator Award

Niren Murthy, PhD – Georgia Institute of Technology

Awardee Address: New materials for Treating and Imaging Inflammatory Diseases

Saturday, April 25, 2009

Plenary Session II • Grand Hyatt San Antonio – Lone Star Ballroom
11:25 am – 11:45 am



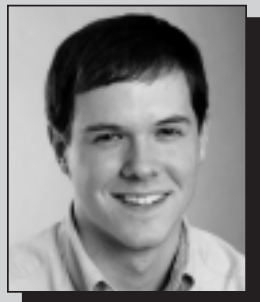
Student Award for Outstanding Research PhD Candidate

Amy Chung – University of Wisconsin

Fibroblasts Regulate Monocyte Response to ECM-derived Matrix: The Effects on Monocyte Adhesion and the Production of Inflammatory, Matrix Remodeling and Growth Factor Proteins

Poster # 453

Poster Sessions I & II • Grand Hyatt San Antonio – Texas Ballroom



Student Award for Outstanding Research Masters Degree Candidate

Benjamin Reves – The University of Memphis

Composite Chitosan-Calcium Phosphate Scaffolds for Local BMP-2 Delivery and Enhanced Bone Regeneration

Poster # 516

Poster Sessions I & II • Grand Hyatt San Antonio – Texas Ballroom

A Once-in-a-Lifetime Opportunity to Re-Engineer Engineering Education

Feature

By Guigen Zhang, University and Research Institution News Contributing Editor

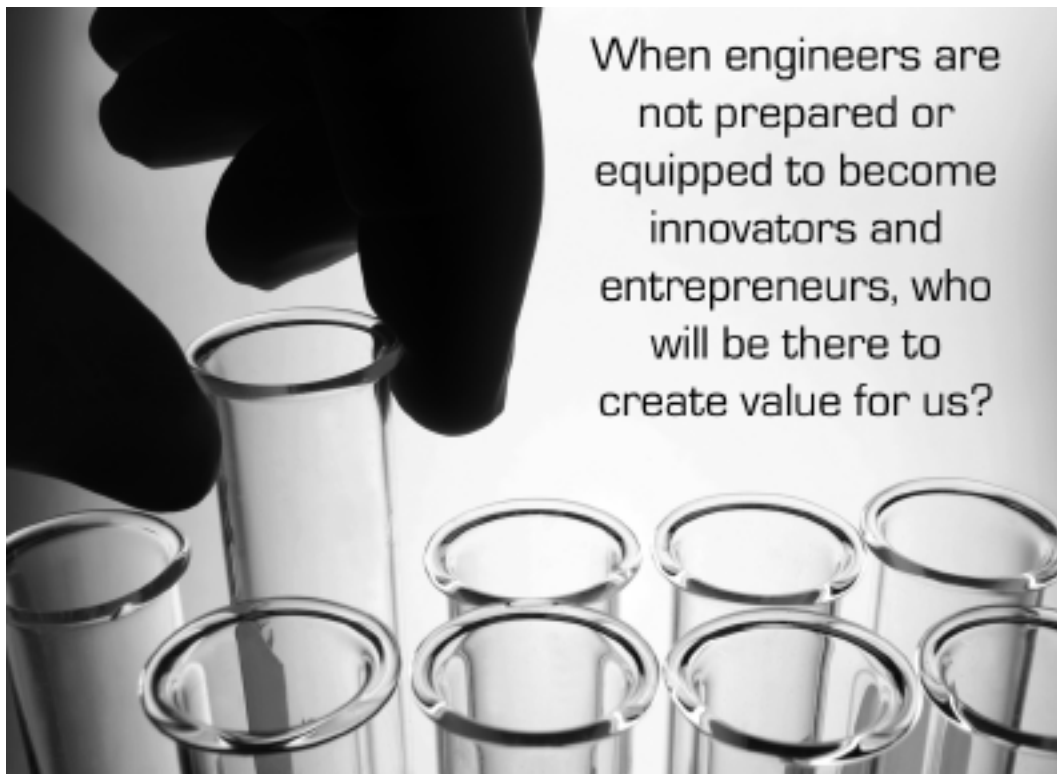
We are now in the worst economic downturn since the Great Depression. Who got us in this mess? There is plenty of blame to go around. In my opinion, besides the creative financiers, accountants and consenting economists, we engineering professors should also bear some responsibility.

Engineering professors? Why?

Over the past decades, engineering schools have been fighting a losing innovation battle against business schools. As a result, we have witnessed many bright students flocking to business schools instead of engineering schools. Who can blame the students when a business degree can fetch them a much higher salary than an engineering degree? Not many people questioned, though, why business graduates are better compensated than engineering graduates, because we were all made to believe business graduates create more value. Now we know what kinds of values the financiers and accountants on Wall Street have been creating for us all these years.

What did engineers do during the times these financiers and accountants were busy innovating ways to create unsustainable values? Engineers were either complaining that the work they have been doing all their life suddenly pays only \$7 per hour or arguing that the death of U.S. engineering was due to the spread of globalization, attributed to corporations moving their manufacturing offshore. What did engineering professors do? Similar things! They were either complaining that the engineering students of today do not have the same in-depth training on certain specific topics as they had, or they were arguing against bringing some innovation and entrepreneurship content into the engineering curricula.

Several years ago, I recall a survey of CEOs of many *Fortune* 500 companies that revealed that most of these CEOs expressed they would rather be the founder of their company than its managing executive. My instant reaction was, “Most of you may know how to run an existing company, how many of you actually have what it takes to start a venture and make it successful—creating true value to its customers and sustainable wealth to its stakeholders?” Then I wondered, “Who would be better suited to do this—business graduates or



When engineers are not prepared or equipped to become innovators and entrepreneurs, who will be there to create value for us?

engineering graduates?” The recent remarks by Andy Grove, one of the founders of Intel, seem to provide insight for this question. “These days, people cobble something together. No capital, no technology. They measure eyeballs and sell advertising. Then they get rid of it. You can’t build an empire out of this kind of concoction.” A successful venture like Intel has to be built on innovative technologies over a long period. In this sense, the engineering graduates seem to have some advantage. Unfortunately, most of today’s engineering graduates are not prepared to do so because of the limitation of the current engineering curricula. This is why I think we engineering professors should also bear some responsibility for the current economic crisis. When engineers are not prepared or equipped to become innovators and entrepreneurs, who will be there to create value for us?

To me, engineering schools should encourage and prepare their students to take on this value-creating responsibility. They should use a new motto to challenge the students (paraphrasing John F. Kennedy)—“Ask not what job you can find, ask what jobs you can create.” We now have a rare opportunity in our hands to right whatever we have done wrong in engineering education so we can attract more bright and creative students to engineering and help them develop sufficient technical competences, innovative minds, and entrepreneurial senses so they can create true and sustainable value and wealth for all of us.

2009 Officer Nominees

The task of selecting the slate of Officer Nominees for 2009 has been completed. Following are the nominees for President-Elect, Secretary-Treasurer-Elect, and Member-at-Large. The Society encourages all members to cast their vote for the candidate of their choice. Ballots may be cast electronically via e-mail to headquarters, via the Members Only section of the Society's Web site (www.biomaterials.org) or via mail.

Following are brief descriptions of the responsibilities of each position, along with a description of the nominees' biographical background and their vision for the Society's future.

President-Elect

The President-Elect shall become familiar with the duties of the President and shall, at all times, cooperate and assist with the duties of that office. In the absence of the President, the President-Elect shall preside at the meetings of the Society, the Council, and the Board of Directors, and perform the duties and exercise the powers of President. The term of office is for a period of one year without succession. The President-Elect is the chairperson of the Long Range Planning Committee.

Nominees for President-Elect



Jeremy L. Gilbert, PhD
*Professor of Biomedical
and Chemical Engineering,
Syracuse University*

Jeremy L. Gilbert, PhD, is a Professor in the Department of Biomedical and Chemical Engineering at Syracuse University and founder of the Syracuse Biomaterials Institute. He obtained a concurrent PhD degree in Metallurgical Engineering and Materials Science and Biomedical Engineering in 1987 from Carnegie Mellon University. He was an Assistant and Associate Professor of biomaterials at Northwestern University from 1988 to 1999 in the Department of Biological Materials in the Dental School with a joint appointment in the Biomedical Engineering Department. In 1999, he took an appointment as Professor in the Department of Bioengineering and Neuroscience at Syracuse University, and, in 2002, became Chair of the department. From July 2004 until October 2008, he was appointed Associate Dean for Research and Doctoral Studies in the College of Engineering and Computer Science at Syracuse University. He was elected to the College of Fellows of the American Institute for Medical and Biological Engineering in 2004 and has served on various government panels including the FDA advisory panel on medical devices, the NIH Consensus Development Conference on Total Hip Replacements, and NIH grant review panels for the SBIR program (as chair), as well as several other study sections for NIAMS and NIBIB. He is an assistant editor for the *Journal of Biomedical Materials Research – Part A* and on the editorial board for the *Journal of Biomedical Materials Research – Part B (Applied Biomaterials)*. He has worked on the fundamental and applied aspects of biomaterials used in medical devices. This includes the study of retrieved medical implants and their modes of failure and corrosion. He has also studied metal oxide thin films in biomaterials, their modes of degradation and the physics of their surfaces using electrochemical atomic force microscopy and other techniques. He is exploring the role of electrochemical processes on the behavior of the biological system adjacent to the metal implant surface including cell and protein response to surface electrochemical (corrosion) reactions. He has also focused on development of polymeric biomaterials, self-reinforced composites, novel orthopedic bone

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Alan S. Litsky, MD, ScD
*Associate Professor of
Biomedical Engineering and
Orthopaedics, Ohio State University*

Alan S. Litsky, MD, ScD, is Associate Professor of Biomedical Engineering and Orthopaedics at Ohio State University (OSU). He leads the Orthopaedic BioMaterials Laboratory and serves as Director of Orthopaedic Research and Director of Graduate Education for the BME program. He earned his medical degree from Columbia University's College of Physicians and Surgeons and his ScD in Materials Science and Engineering from M.I.T. His research focus is hard-tissue biomaterials with an emphasis on new materials for orthopaedic and dental applications. His teaching includes courses on biomaterials, tissue mechanics, and a course on professional and ethical issues in biomedical research.

He has served on the Orthopaedic study section at NIH, the Arthritis Foundation's Technology and Biomechanics study section and the American Academy of Orthopaedic Surgeons' Basic Science Evaluation subcommittee. He is a member of editorial boards of the *Journal of Biomedical Materials Part B (Applied Biomaterials)*, *Veterinary and Comparative Orthopaedics and Traumatology*, the *Journal of Dental Biomechanics*, and the *Annals of Improbable Research*. He is a regular reviewer for these journals and several granting agencies. He is a Fellow of the American Institute for Medical and Biological Engineering and was recently elected to serve as the OSU faculty representative to the Federal Demonstration Partnership. He is an active participant in the Orthopaedic Research Society and the Society For Biomaterials.

He has been a member of the Society For Biomaterials since 1985. His involvement in the Society For Biomaterials includes review of abstracts for the annual meetings, service on the Program Committee, the Liaison Committee and the Awards, Ceremonies and Nominating Committee. He has also been an active participant in workshops and plenary sessions at several Society meetings. He has served in leadership roles as a member of the Orthopaedic Special Interest Group (vice chair 1999-2000, chair 2000-2001) and the Biomaterials Education

Continued on page 10

Secretary-Treasurer-Elect

The Secretary-Treasurer-Elect shall become familiar with the duties of the Secretary-Treasurer, cooperate and assist in carrying out the duties and prepare for eventual succession to that office. In the temporary absence of the Secretary-Treasurer, the Secretary-Treasurer-Elect will perform the duties and exercise the duties of the office. The term of office shall be for a period of two years without succession. The Secretary-Treasurer-Elect shall be the chairperson of the Finance Committee.

Nominees for Secretary-Treasurer-Elect



Laura J. Suggs, PhD
Assistant Professor
Department of Biomedical Engineering,
University of Texas at Austin

Laura J. Suggs, PhD is an Assistant Professor at the University of Texas at Austin. Her research program is in the area of biologically active materials and their use and behavior in cardiovascular tissue engineering. She works to better understand molecular and cellular mechanisms during processes such as vasculogenesis as well as the structure of both natural and synthetic polymers and their effect on living tissues. With this fundamental knowledge base, biomaterials can be designed to mimic naturally-occurring structures found in the supporting extracellular matrix. Her lab is also working on developing *in vitro* models of vascularization based on blood vessel development during embryogenesis.

Dr. Laura Suggs earned her undergraduate degree from the University of Texas at Austin and her PhD in chemical engineering with a concentration in biomaterials and tissue engineering from Rice University in 1998. Following an industrial position as a Senior Scientist and a Research Associate position at the University of Minnesota, she returned to Texas to join the faculty of The University of Texas at Austin in 2004. In 2002, she won an ADVANCE fellowship from the National Science Foundation, and, in 2009, she received an NSF CAREER award. She has received funding from the American Heart Association, the Welch Foundation, and the Department of Defense. She serves as a journal reviewer for *JBMR*, *JCR*, *Biomaterials*, *Tissue Engineering*, *Stem Cells*, *Annals of Biomedical Engineering*, *Biomacromolecules* and *Acta Biomaterialia*. She has served as a grant review panelist for both NIH and NSF. Her educational portfolio includes engineering biomaterials, tissue engineering, cell engineering, and senior design projects. These efforts have earned her the National Instruments Teaching Excellence Award in 2006 and the ASEE Gulf Southwest Section Young Faculty Award in 2008.

She has been actively involved in the Society for more than 10 years. She has served as Symposium Organizer and/or Chair at the 2005, 2006, 2007 annual and 2008 World Congress Meetings. She has served as president of both the Cell/Organ Therapies and Tissue Engineering SIGs. She has served for two consecutive years on the Membership Committee and as a member on the International Scientific Program Committee for the 2008 World Congress.

Vision Statement: My active participation in the Society at both the programmatic and administrative levels demonstrates my commitment to and enthusiasm regarding the future of our organization. One of the initiatives I have supported within



L.D. Timmie (Tim) Topoleski, PhD
Professor and Graduate
Program Director
Department of Mechanical Engineering
University of Maryland,
Baltimore County

L.D. Timmie (Tim) Topoleski, PhD, is a Professor and Graduate Program Director in the Mechanical Engineering Department at UMBC (the University of Maryland, Baltimore County). He joined the faculty of UMBC in the Fall of 1990 after completing his PhD in Bioengineering at the University of Pennsylvania. He also holds undergraduate and graduate degrees from Cornell University. His research interests are in the mechanics of materials for both manufactured implant materials and biological materials. He has published more than 100 papers in journals, book chapters and proceedings. He received a Coventry Award for Basic Science from the Knee Society, has been awarded both the Outstanding Teaching and Outstanding Research awards from UMBC's College of Engineering and Information Technology, and has been named a UMBC Humanities Teaching Fellow. He has been an active member of the Society For Biomaterials since he was a graduate student and has served the Society as the Society's Member-at-Large in 2007-2008, Chair of the Bylaws Committee and Parliamentarian (2002-2007), Chair of the Orthopaedic Biomaterials Special Interest Group (1999-2000), Orthopaedic Biomaterials Organizer and Session Chair for the 6th World Biomaterials Congress (2000), and as a perennial Session Chair at the Annual Meetings of the Society For Biomaterials. He is a reviewer for numerous scientific journals as well as for the National Science Foundation, the National Institutes of Health and the Arthritis Foundation. He is a consulting scientist to the U.S. Food and Drug Administration. Currently, he serves as the Vice President of the UMBC Faculty Senate and was recently chosen as the UMBC Presidential Teaching Professor for 2008-2011.

Vision Statement: The Society For Biomaterials is a world wide leader in promoting education and research in biomaterials science. The members of the Society want to maintain leadership and increase the activities and visibility of the Society as biomaterials research and applications continue to evolve. I have enjoyed working with the Society members and the Board of Directors and Council as the Chair of the Bylaws Committee and Member-at-Large, and I would like to continue to represent the expectations of the Society membership to the Board and Council. I am especially interested in continuing the growth of the educational mission of the Society For Biomaterials in both formal scientific training and also in

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Member-at-Large

The Member-at-Large shall serve as an unencumbered representative of the membership at meetings of both the Board of Directors and Council. The Member-at-Large shall serve for a period of one year.

Nominees for Member-at-Large



Donald Elbert, PhD
Assistant Professor
Department of Biomedical Engineering,
Washington University in St. Louis

Donald Elbert, PhD, is an Assistant Professor in the Department of Biomedical Engineering at Washington University in St. Louis. He is also the associate director of the Center for Materials Innovation at Washington University. His research program focuses on the interactions of cells with hydrogel materials. His lab produces thin hydrogel coatings for blood contacting devices and modular, macroporous hydrogel scaffolds for tissue engineering. Using molecular biology and proteomics, his lab is developing methods to incorporate the biochemistry of cells into the biomaterials design process.

He received a PhD from the University of Texas at Austin in 1997. His PhD research focused on preventing protein adsorption using the comb copolymer PLL-g-PEG. He did postdoctoral research at the ETH-Zurich from 1997 to 2000. In Zurich, he developed methods to produce PEG hydrogels via Michael-type additions. He is an author on nine publications with 50 or more citations and an inventor on eight patents or patents pending. His current research is supported by an R01 and R21 from the NIH. He serves as a reviewer for a number of journals and reviews grants for the NIH, NSF and American Heart Association. Since 1994, he has been a regular participant in the Society For Biomaterials' annual meeting and the World Biomaterials Congress. He was an officer of the Cell/Organ Therapies Special Interest Group from 2001-2005. In this role, he organized a workshop held at the 2002 annual meeting ("Practical Aspects of Genomics and Proteomics") and a tutorial at the 2005 annual meeting, ("Methods to Characterize Cells in Contact with Materials: Gene Expression and Activation of Cell Signaling Cascades.") He also helped to organize a tutorial on Cellular Signal Transduction at the 2007 annual meeting. He is active in teaching at Washington University, offering courses on biomaterials science and artificial organs.

Vision statement: The member-at-large is your voice on the council. I've listened to many of you over the last 15 years, and I am eager to communicate your ideas for improving our Society and our meeting. I am also aware of the great responsibility the council has for sustaining and growing the Society. The founding members of the Society started with an idea three decades ago, which grew into the Society we have today. It will be my obligation to them and to you to work vigorously to address the current challenges that face the Society.

Many of you are concerned about the proliferation of meetings with ever-increasing costs in an unfavorable funding environment. The annual meeting must continue to be an

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Michele Marcolongo, PhD, PE
Associate Professor
Department of Materials Science
and Engineering, Drexel University

Michele Marcolongo, PhD, PE, is an Associate Professor in the Department of Materials Science and Engineering at Drexel University in Philadelphia, where she also serves as Associate Vice Provost for Research (2006-Present). She joined the faculty at Drexel in 1997 after completing her doctorate in Bioengineering at the University of Pennsylvania (1995) and working for DePuy DuPont Orthopaedics (1995-1997). Her research and teaching interests are in mechanical behavior of synthetic and biological materials with primary application in orthopaedics. She has had a particular interest in understanding the function and degeneration of the intervertebral disc. To this end, she has investigated injectable structural materials, including hydrogels, for nucleus pulposus replacement of the disc to alleviate lower back pain. This work has led to publication and also the co-founding of a start-up company, Gelifex, which was sold to Synthes Spine in 2004.

Michele is a member of the *Journal of Biomedical Materials Research* editorial board (2007-Present) and has been a member of the Society For Biomaterials for more than 15 years. In the Society, she has served in the Orthopaedics Special Interest Group as Program Chair (2002), Secretary/Treasurer (2003-2004) and Chair (2005-2006). In addition, Michele has served on the Bylaws Committee (2006), Awards Committee (2007) and Presidential Advisory Council for the Society (2007). She has organized several biomaterials symposia and workshops, reviewed abstracts and chaired sessions. She also serves on numerous NIH and NSF panels, serves on the Ben Franklin Nanotechnology Institute Board (2006-Present) and the Synthes Spine, Non-Fusion Technologies Board (2004-Present). She was a founding member of the Philadelphia Spine Research Society, where she served as president from 2005-2008. She was awarded the Otto Aufranc Award from the Academy of Orthopaedic Surgeons Hip Society (2006), was invited to participate in the National Academy of Engineering Frontiers in Engineering conference (2007) and awarded the Drexel University College of Engineering Outstanding Teaching Award (2003).

Vision Statement: With a rapidly changing research landscape, the Society For Biomaterials provides an outstanding forum for scientific interaction and analysis. Our Society is critical to the forward progression of materials research for medical applications. To allow the Society to best meet the needs of researchers and educators in this field, I would approach the

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Jeremy L. Gilbert, PhD Professor
nominee for President-Elect

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cements, the mechanics of biomaterials and the development of new micro-and nanoscale mechanical tests for investigation of surface nano-wear and surface mechanical properties of biomaterials. He has been an active member of the Society For Biomaterials since 1988 and has served in a variety of positions within the Society including Orthopedic SIG Chair and a member of the Council of the Society.

Vision Statement: The Society For Biomaterials has long distinguished itself as the leading professional Society for the promotion and advancement of the science and engineering of biomaterials. It has led in many ways, including serving as the primary venue for dissemination of new knowledge of biomaterials used in medical devices, drug delivery and therapeutics. SFB has also led in expanding knowledge of the relationships between living systems and materials, bringing materials science concepts to biology as well as biological concepts to materials science. It has led in facilitating the interaction and collaboration between academia, industry and national laboratories, resulting in real advances in medical devices, real improvements in understanding of the clinical consequences of biomaterial/tissue interactions and fundamental advances in basic science knowledge needed to develop new modes of health treatment. The main mechanisms by which SFB has impacted the field of biomaterials have been in its annual meetings and its world-renowned journal publications.

Presently, the Society For Biomaterials faces unprecedented pressures from several directions simultaneously. New societies related to, or dependent on, biomaterials are becoming established, and other materials science societies are moving into the biomaterials field. New journals related to biomaterials have been launched. We also face tremendous opportunities based on our strengths—a membership with strong abilities in both materials science and biology, a strong collaboration between industrial research and academic research programs and a strong entrepreneurial spirit to develop new technologies and new approaches for translation of the basic science to the applied product.

My vision for this Society is to clearly and unequivocally demonstrate our leadership position in the biomaterials world. We are the primary source for learning about biomaterials advances. We are the primary source for understanding the interactions between the biological milieu and the material. We are the primary Society for advancements in new medical devices and approaches to improve health relying on materials and biology for their success. This vision of excellence requires a strong engagement of all segments of our community, academic, industrial, and national laboratory. We need to work together behind the common purpose of making our Society the leader, supporting our annual meeting efforts, working to bring the best science and engineering to our community. It will require renewed focus and attention on our premier journals and how they operate. It will require building collaborations and associations with other societies where mutual benefits result. And it will require a renewing sense of our fundamental importance to the field of Biomaterials and its daughter fields. Our Society and the knowledge we members generate and disseminate through our meetings and journals, is

of fundamental importance to the future of health care delivery and the future of scientific discoveries related to materials and biology. My vision is to make clear the Society For Biomaterials leads the world in advancing the field of Biomaterials.

Alan S. Litsky, MD, ScD
nominee for President-Elect

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SIG. He has served on Council as chair of the Education and Professional Development Committee (2001-2003), the Membership Committee (2004-2005) and is completing four years of service as Secretary/Treasurer-elect and chair of the Finance Committee (2005-2007) and Secretary-Treasurer (2007-2009). During his tenure as Secretary-Treasurer, he has focused on simplifying and clarifying the Society's financial planning, budgeting, and accounting processes and has implemented the long-term investment strategies developed to insure the Society's fiscal future.

Vision Statement: If given the honor and opportunity to serve the Society For Biomaterials as President, I would like to focus on two important areas. The first is improving the value of SFB membership, which I would like to accomplish through a wide array of Society activities. Many members interface with our Society primarily through the annual meeting, and I hope to continue and expand current efforts emphasizing both the breadth and depth of the biomaterials field in our programs. Our meetings should include current research in basic and applied materials science and implant biology; they should also have a strong education component both for our members and fulfill our position as a resource for knowledge and policy advice in our discipline. Increasing the value of our journals by enhancing their scientific standing (e.g., through the addition of review articles) and by working with our publisher to hold subscription costs in check (electronic subscriptions, etc.) and working to establish year-round SFB activities will also make our Society more useful to our members and better serve the biomaterials community. Expanding and diversifying our membership to re-establish the interactions between members from the academic, industrial, and government communities will make our meetings more valuable to us all.

A second emphasis will be insuring the future of the Society. One approach to this will be the inclusion of student and young members in all Society activities—increasing the number and activities of student chapters, more new member participation in program development and meeting planning and stronger representation of young member perspective in Council-level decisions. Through this type of mentoring we can build the SFB and develop our next generation of leadership. Equally important is our financial security. We have in place a solid fiscal plan, but continued close oversight of our investment policy and long-term reserve accounts, along with a careful monitoring of all of our expenses, will ensure we not only survive the tight budgets of World Congress years but secure our ability to expand programmatic initiative and member services.

I am honored to have been nominated to run for President. If elected to this position, I look forward to continuing to work for the Society For Biomaterials and its members.

Laura J. Suggs, PhD

nominee for Secretary-Treasurer-Elect

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the membership committee is the participation of our Society at meetings with scientific overlap and advertisement within related biomaterials journals. I echo the vision of our new Society president—we must be vigilant in updating our programmatic focus. Just as we all refocus our individual research projects based on new scientific knowledge, we must be similarly flexible as an organization. Advertisements of our Society in stem cell, nanotechnology and lab-on-a-chip journals are a prime example. Similarly, our symposium must reflect cutting-edge topics and should be a welcoming environment for novel ideas and new investigators. If elected to the position of Secretary/ Treasurer elect, I pledge to devote resources in a transparent and fiscally responsible manner. I will work closely with the new Secretary/Treasurer to provide continuity and service to the members of the Society.

L.D. Timmie (Tim) Topoleski, PhD

nominee for Secretary-Treasurer-Elect

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professional development. I appreciate the nomination for the position of Secretary-Treasurer, and I know part of the responsibilities of the office include representing the fiscal concerns of the membership. If I have the privilege to be elected as the next Secretary-Treasurer, I will work to maintain transparency in the Society's financial matters, help to standardize procedures and be a direct representative of the membership's voice to the Board and Council. I will use my experience and understanding of the Society's operations to work with the Society's membership to increase the benefits of membership by the continued responsible use of our resources and seek out potential new and innovative sources of support and revenue.

Donald Elbert, PhD

nominee for Member-at-Large

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especially valuable experience for all members. I believe the value of a meeting can be judged by the answers to these questions: What did I learn at the meeting? Was I able to communicate my ideas to the right people? Did I come away with new ideas to impact my research? If the council can help promote a stimulating annual meeting, membership will continue to grow.

Students and SIGs make our Society special. The annual meeting's focus on students is crucial to ensure we remain the home Society for biomaterials researchers. The SIGs play a key role in engaging members, allowing everyone to directly influence programming at the annual meeting. I will also encourage tutorials, which help keep the members informed of the latest technology and techniques.

I would like to ensure the best and newest ideas from the annual meeting reach the largest audience. As member-at-large, I will propose a Saturday morning plenary at the annual meeting called the "New Horizons" session. Four 15 minute talks will be selected by the awards committee from the submitted abstracts, chosen to represent exciting and promising avenues in research. This may cause research groups to submit fewer, but more substantial, abstracts. It may also encourage members to stay for the whole meeting.

In addition to annual meetings, the Society must seek to improve publications, satellite meetings and communication through the Web site. The Education SIG can grow to become an active forum for those who teach biomaterials courses. The Society must also help identify and encourage the highest quality reviewers for relevant study sections.

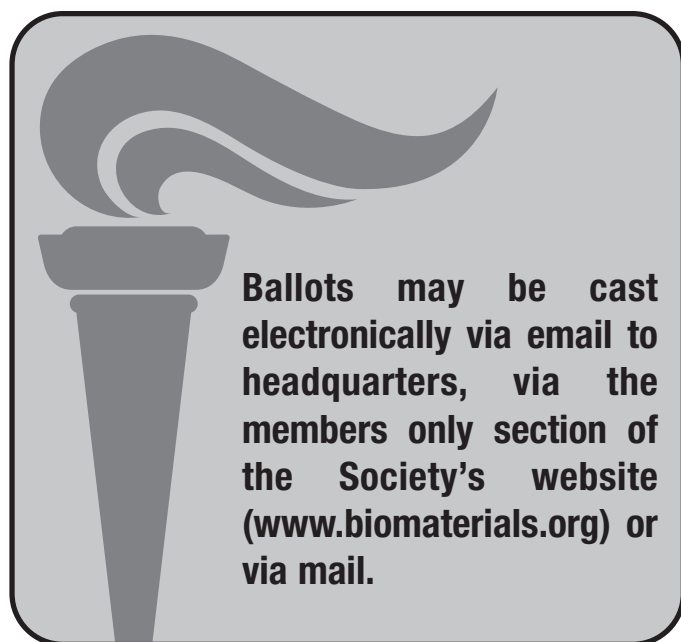
In conclusion, I have listened to you and would be honored to be your voice as member-at-large on the council of the Society For Biomaterials.

Michele Marcolongo, PhD, PE

nominee for Member-at-Large

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Member-at-Large position as a representative of the pulse of the membership community. Because we live and work in an interdisciplinary field, I would further support interactions among complimentary societies with our own. In addition, I would support the translational component of academic biomaterials science and engineering with a goal of getting as many effective treatments as possible to the clinic. The Member-at-Large position offers a unique voice for our industrial, government and academic members to the Society leadership, and I would strive to represent each group's interest in guiding the progress and evolution of our Society.





Giving *LIFE* to a world of *materials*

ABOUT THE SOCIETY

The Society For Biomaterials is a professional society that promotes advances in biomedical materials research and development by encouragement of cooperative educational programs, clinical applications and professional standards in the biomaterials field. Biomaterials scientists and engineers study cells, their components, complex tissues and organs and their interactions with natural and synthetic materials and implanted prosthetic devices, as well as develop and characterize the materials used to measure, restore and improve physiologic function, and enhance survival and quality of life.

PROGRAM OVERVIEW

Giving LIFE to a World of Materials

To fully develop an understanding of the field of biomaterials and its incredible potential, one must develop an appreciation of its current applications and explore technical as well as economic successes and failures. The 2009 Annual Meeting of the Society For Biomaterials will attempt to provide an in-depth exploration of current applications of biomaterials, from calcium phosphate and titanium alloys, to ultra high molecular weight polyethylene and other polymeric compounds, to new materials and composites, including nano-mimetic and smart materials. The program will explore in depth their successes and failures, from perspectives of medical device retrieval and implant pathology to patient satisfaction and quality of life. Furthering the insight gained on current applications, meeting attendees will have the opportunity to look to emerging technologies to evaluate the ones holding the most promise and where the lessons of the past might be applied to prevent the problems of the future. The Meeting's program intentionally highlights traditional materials; however, it also scouts the horizon for new areas of exploration to encompass the entire spectrum of biomaterial science. These new areas of exploration include microenvironmental control of cells, design of smart biomaterials and advanced imaging of biomaterials.

Preliminary Program (Tentative and subject to change)

World Renowned Cardiovascular Expert Julio Palmaz to Deliver Keynote Address

The Society For Biomaterials is pleased to announce world renowned cardiovascular expert Julio C. Palmaz, MD, as keynote speaker for its 2009 Annual Meeting and Exposition.

As the pioneer of the iliac and coronary stents, Dr. Palmaz revolutionized the treatment of coronary and peripheral vascular disease worldwide.

Chairman of the Board of Directors and Chief Scientist at Palmaz Scientific, Dr. Palmaz is an internationally known lecturer, editor and author of more than 180 scientific publications. Dr. Palmaz, who holds the Ashbel Smith Professorship at The University of Texas Health Science Center at San Antonio, is widely recognized for inventing the first commercially successful intravascular stent to open clogged arteries. Stents are tiny tubular metal cages placed in the body to hold open arteries narrowed by coronary or peripheral artery disease. Balloon-expandable stents have been proven to reduce blockages in arteries and hold open blocked or collapsed arteries in the heart and other major organs.

The Palmaz-Schatz stent, which received FDA approval in the 1990s, revolutionized cardiac care. Since its commercial introduction, at least 10 million people in the United States have undergone coronary or peripheral artery stenting to repair obstructed arteries. Today, more than two million stents derived from Dr. Palmaz's invention are placed in patients annually. *IP Worldwide Magazine* ranked the stent as one of "10 Patents that Changed the World." Dr. Palmaz was inducted into the National Inventors Hall of Fame in 2006.

Highlights of the 2009 Meeting

General Sessions

A General Session is a topic familiar to the general membership. Abstracts reflect the most current research in that field.

- Advances in Imaging: Techniques and Probes
- Advances in Stent Materials, Design and Biology
- Advances in Therapeutic Delivery
- Biocompatibility of Orthopedic Implants
- Biomaterials and Neural Regeneration
- Biomaterials Education
- Biomaterials for Interface Engineering and Soft Tissue Repair
- Biomaterials for Musculoskeletal Tissue Regeneration
- Biomaterials for Wound Healing
- Biomimetic Materials
- Biosensors
- Blood/Material Interactions
- Cardiovascular Biomaterials
- Cell/Organ Therapies
- Cellular Responses to Their Microenvironments
- Clinical Performance and Long-term Success of Implants
- Computational Modeling
- Dental/Craniofacial Materials
- Drug Delivery
- Drug Delivery in Tissue Engineering and Regenerative Medicine
- Engineering Bone
- Environmentally Responsive Biomaterials
- Nanomaterials
- Novel Techniques for Processing of Ceramics, Metal and Composite Biomaterials
- Orthopedic Bearing Surfaces
- Peptide Functionalized Materials for Directed Cell Response
- Preventing Implant-Associated Infections
- Protein and Cells at Interfaces
- Scaffolds for Tissue Engineering: Basic Principles, Processing Methods and Novel Developments

- Smart (Bio)Polymer Delivery Systems for Biologics
- Spatially Patterned Biomaterials
- Spinal Cord Reconstruction/Regeneration
- Stem Cells: Engineering the Niche
- Surface Characterization and Modification
- Tissue Engineering
- Urological Tissue Engineering and Biomaterials
- Use of Biomaterials/Cell Constructs for Drug Evaluation

Symposia

A Symposium focuses our attention on a specific topic within the large disciplines that make up the Society's membership. The symposium highlights a well-defined topic not addressed by the regular sessions of the Annual Meeting. The format includes a single lead speaker followed by related abstracts. The lead speaker either presents the current concepts of the topic or presents cutting-edge research within the area.

- Biomaterial Immuno-Engineering
- Clinical Applications in Nanomedicine
- Medical Devices Based on SIBS-type Biomaterials
- PEEK Biomaterials: From Isoelastic Hip Stems to Bone Scaffolds

Rapid Fire Sessions

Rapid Fire Sessions are one-hour sessions with two half-hour blocks, comprising five five-minute presentations and a five minute Q&A for each block.

- Drug Delivery in Tissue Engineering and Regenerative Medicine
- Biomaterials for Interface Engineering and Soft Tissue Repair
- Biomimetic Materials
- Cellular Responses to Their Microenvironments
- Scaffolds for Tissue Engineering: Basic Principles, Processing Methods and Novel Developments
- Advances in Therapeutic Delivery
- Biocompatibility of Orthopedic Implants



Giving *LIFE* to a world of *materials*

Workshops

Workshops provide an in-depth educational experience on topics relating to biomaterials with a significant amount of time dedicated to discussion, questions and answers. Each workshop requires separate registration. The fees for these are detailed on the registration form.

- Regulatory Pathways for Translating Controlled Release and Combination Products
- ASM Workshop: Meeting Functional Requirements of Medical Devices
- Everything you wanted to know about reviewing journal articles but were afraid to ask

Regulatory Pathways for Translating Controlled Release and Biological Combination Products

While orally administered controlled release products are the backbone of the pharmaceutical industry, development and mainstreaming of implantable or injectable controlled release systems has been slow to follow. Both the complexity of the products themselves and the previously uncharted regulatory pathway led to delayed new product introduction. Biological combination products (e.g. cells and biomaterials) have suffered the same fate. Recent corporate successes with combination products indicate a pathway has now been established for regulatory approval. Learn to navigate the complexities of obtaining regulatory approval for both controlled release and biologic combination products at this workshop. Case studies will be presented addressing combination product concerns, difficulties encountered along the way, safety issues and clinical trial design. Both industrial and regulatory experts will present. Maximum audience participation will be encouraged with speaker-by-speaker open microphone sessions.

ASM Workshop: Meeting Functional Requirements of Medical Devices

This workshop will explore the arrays of polymeric, metallic, ceramic, biologic, tissue engineered and nanoenabled biomaterials with respect to their physical and biologic properties required for medical device design. With the emergence of drug delivery coatings and complex combination products, a paradigm shift is occurring that necessitates new biomaterial properties, including biocompatibility, to be designed into the device. A variety of orthopedic, soft-tissue and cardiovascular devices, including drug eluting stents will be used to highlight the

concepts described. This workshop is a half-day version of the ASM International's MPMD course, and it is jointly sponsored by ASM International.

Everything you wanted to know about reviewing journal articles but were afraid to ask

Peer review of journal articles has been described as the linchpin of science/engineering because it is the process by which research becomes knowledge (CSE 25(6):187, 2002). While the usefulness of the peer-review process is evident as a process separating poor studies from rigorous, well-planned studies for publication/dissemination, the actual process and responsibilities of reviewers are rarely detailed; the assumption being it is something professionals 'just do.' The objective of this workshop is to provide an overview of the peer review process, with emphasis on responsibilities, duties and rights of the reviewer, what to do/look for in reviewing a manuscript, and how to prepare useful review. Opportunities for 'practice review' exercises are planned. The goals of the workshop are: a] to provide professional development opportunities for becoming a good reviewer, b] to help future authors in their own work by looking with the same critical eye at their own writing c] to improve the quality of reviews and future articles in the Society's journals.

This workshop is well suited to students and junior faculty, but more seasoned researchers may also benefit. Workshop speakers and panelists will be Editors and Editorial Board members of the Society's Journals.

Panel Discussions

Panel discussions foster open debate on a topic. The invited guests include renowned experts in the area of focus and the chair allows time for open discussion with the audience.

- Ethics and Implant Pathology/How can courts trying biomaterial cases be made to serve justice with valid and relevant science?
- Clinical Applications in Nanomedicine
- Biomaterials to Address Clinical Needs: A Conversation with Surgeons
- Short- and Long-term Failures of Dental Implants
- Major World Initiatives in the Field of Tissue Engineering and Regenerative Medicine: Experiences in North America, Europe and Asia-Pacific

Ethics and Implant Pathology/How can courts trying biomaterial cases be made to serve justice with valid and relevant science?

Justice vs. Science: Biomaterials in the courtroom

Science deals with data, jurisprudence with evidence. The goal of science is to understand the natural world. The goal of jurisprudence is justice. It may appear evidence and data are synonymous, after all evidence is just data relevant to the case being adjudicated. But the devil for science in the courtroom is the determination of relevancy. For a judge, the relevancy of data is the degree to which they are consistent with justice. Evidence a judge determines to be relevant becomes the basis for his/her or a jury's verdict. But most judges are ignorant of how science operates. Nor do they understand the data being presented when it is too cutting-edge for the judge's scientific advisors to have fully grasped. As a result of all these disconnects, verdicts are reached that do not make scientific sense. How can we resolve this problem? In the world of biomaterials, there are four players in a typical courtroom drama that may range from patent litigation to a manslaughter case.

1. The scientist from industry who may be viewed as having a conflict of interest between profit motive and a desire to improve health. Science may not be a priority for him/her, but it may be the most durable basis for the public trust.
2. The watchdog government agency, the FDA, that must be viewed as the fairest and most trustworthy testifier. However, its representative may be viewed as having a conflict of interest between his/her desire to protect the public and a desire to protect the agency that approved the biomaterial in question.
3. The judge who controls the conduct of the trial. His/Her challenge is not a conflict of interest, but a challenge to select relevant evidence. Scientific literacy is crucial to make this decision and the judge may be helped by a selected expert. But is the "expert" up to date and does he/she have a vested interest that leads to bias?
4. The academic biomaterials scientist. He/she is often assumed to be interested only in good science. But he/she is usually a hired witness for the plaintiff and may have a conflict of interest that compromises not

only the evidence he/she presents but violates professional ethics. This conflict of interest may replace a profit motive with a political motive.

Clinical Applications in Nanomedicine

Over the last several years, biomaterial-related delivery systems at the macro to nano-scale have been reaching the marketplace at an accelerated rate. This panel will focus on recent advances in bionanotechnology, predominantly highlighting structured materials for controlled and targeted therapeutic and diagnostic delivery. Therapeutic and diagnostic technologies, whether alone or in combination devices, are leading to new solutions in the treatment of disease. This panel will involve major discussion from leaders in the field and will predominantly focus on clinical advances, enabling technologies, clinical perspectives and future delivery technologies with high potential for clinical success.

Biomaterials to Address Clinical Needs: A Conversation with Surgeons

Biomaterials design requires technical expertise as well as a deep understanding of the clinical environment. Too often the latter is ignored, resulting in well constructed devices with limited to no clinical value. The purpose of this panel discussion is to highlight unmet clinical needs and detail opportunities for biomaterialists. A panel of surgeons with an array of clinical foci will lead the discussion by providing an overview of their unmet clinical needs, followed by an interactive discussion with the designers and users of devices on how best to address the challenges faced in developing clinically successful biomaterials-based products.

Short- and Long-term Failures of Dental Implants

This panel discussion will focus on the physical and biological aspects of longevity associated with dental implant based clinical treatments. Topics will include: (1) overview of science and technology applicable to these type percutaneous devices; (2) bio-and dental-materials of the implant constructs, past and present; (3) periodontal aspects of early and late biological interactions; (4) prosthodontic aspects of intraoral aesthetics, biomechanical function and biostability. The panelists will provide DMD and PhD perspectives.



Giving *LIFE* to a world of *materials*

Major World Initiatives in the Field of Tissue Engineering and Regenerative Medicine: Experiences in North-America, Europe and Asia-Pacific

The panelists will discuss the major large initiatives, including multi-centre and networks, in the fields of tissue engineering and regenerative medicine that exist or are being created in different areas of the globe, namely in are USA, Asia, and Europe. The panelists will discuss the outcomes and perspectives of different approaches and will look forward to additional synergistic effects that can move the field forward.

Tutorials

Tutorials teach attendees about a specific technology or focus area. A tutorial may include up to two presenters and time for questions and answers. The invited speakers are selected for their experience in the field, as well as their ability to teach fundamental topics of increasing importance to a wide range of biomaterials scientists and engineers.

- Advances in Highly Crosslinked Ultra High Molecular Weight Polyethylene for Hip and Knee Replacement
- Developing Best Practices in Tissue Engineering Education
- Rapid Prototyping
- Biomaterials and the Aging Process

Advances in Highly Crosslinked Ultra High Molecular Weight Polyethylene for Hip and Knee Replacement

First generation, highly crosslinked UHMWPE materials were clinically introduced 10 years ago and have since become the standard of care for total hip arthroplasty. Concerns remain about their use in thinner liners and total knee replacements, which have resulted in the development of a second generation of polyethylene-bearing materials. The purpose of this tutorial is to critically review the scientific advancements in UHMWPE biomaterials since the advent of crosslinking technology.

Developing Best Practices in Tissue Engineering Education

This tutorial addresses the content and educational strategy of current tissue engineering courses and curricula, with a focus on the integration of biomaterials and related disciplines. It will bring together educators,

scientists and students to discuss their experiences, current trends and best practices in tissue engineering education at both the undergraduate and graduate level. The topics to be covered include effective teaching strategies, course content, laboratory experience and industry needs as related to tissue engineering courses and curricula. The target audience includes educators, scientists and students interested in the field of tissue engineering.

Rapid Prototyping

This panel will focus on the use of layer-by-layer additive techniques for processing of three-dimensional biomedical materials. Rapid prototyping technologies, including microcontact printing, fused deposition modeling, selective laser sintering, inkjet printing and laser direct writing, have traditionally been used in the microelectronics, defense and automotive industries. More recently, these technologies have been used to process cells and materials for use in medicine and dentistry. The panelists will provide in-depth educational experiences on topics related to the use of rapid prototyping technologies for fabrication of tissue substitutes, biosensors and drug delivery devices.

Biomaterials and the Aging Process

Aging is not only important to an individual's physical and mental health, it is becoming an increasingly important aspect of the nation's health care system and its prosperity. This tutorial will examine the potential contribution that the Society For Biomaterials community can provide to advance the theories on the aging process, develop technology-driven solutions to aging-related health challenges and contribute to public policy discussions relating to the future needs of the nation's aging population. Invited panelists will address issues of defining critical areas of research, educating young scientists to address aging-related research and working collaboratively with health care professionals, policy analysts and federal agencies.

Technology & Training Forums

These Forums are technically-based educational opportunities hosted by SFB corporate supporters.

Society For Biomaterials

2009 ANNUAL MEETING AND EXPOSITION REGISTRATION BROCHURE

Grand Hyatt San Antonio • April 22-25, 2009 • San Antonio, Texas

TENTATIVE PROGRAM SCHEDULE (subject to change)

Wednesday, April 22, 2009

10:00 am – 6:00 pm	Registration Open
12:30 pm – 3:30 pm	Concurrent Workshops <ul style="list-style-type: none"> • Regulatory Pathways for Translating Controlled Release and Combination Products • ASM Workshop: Meeting Functional Requirements of Medical Devices • Everything you wanted to know about reviewing journal articles, but were afraid to ask
4:00 pm – 5:30 pm	Technology and Training Forums
6:00 pm – 7:30 pm	Opening Ceremony
6:45 pm – 7:30 pm	Keynote Address: Twenty Years of the Intravascular Stent: Has it Been Sufficient Progress? Julio C. Palmaz, MD Ashbel Smith Professor The University of Texas Health Science Center at San Antonio
7:45 pm – 8:45 pm	Opening Reception (wine & cheese served)

Thursday, April 23, 2009

7:00 am – 6:45 pm	Registration Open
7:00 am – 8:00 am	Special Interest Groups Meetings
8:00 am – 10:00 am	Concurrent Oral Abstract Presentations - Session 1 <ul style="list-style-type: none"> • Advances in Imaging: Techniques and Probes • Advances in Therapeutic Delivery • Blood/Material Interaction • Engineering Bone • Preventing Implant-Associated Infections • Stem Cells: Engineering the Niche
10:00 am – 1:00 pm	Exhibit Hall Open
10:00 am – 10:30 am	Break

10:30 am – Noon

**Plenary Session I
Clemson Award for Contributions to the Literature**
 TG Park, PhD
Korea Advanced Institute of Science & Technology

Clemson Award for Applied Research
*Kazuhiko Ishihara, PhD
 The University of Tokyo*

Clemson Award for Basic Research
 Linda Griffith, PhD
Massachusetts Institute of Technology

Noon – 1:00 pm

Lunch (on own)

Noon – 1:00 pm

Student Career Fair

1:00 pm – 3:00 pm

Concurrent Oral Abstract Presentations - Session 2

- Biomaterial Immuno-Engineering (Symposia)
- Drug Delivery in Tissue Engineering and Regenerative Medicine
- Orthopedic Bearing Surfaces
- PEEK Biomaterials: From Isoelastic Hip Stems to Bone Scaffolds (Symposia)
- Peptide Functionalized Materials for Directed Cell Response
- Scaffolds for Tissue Engineering: Basic Principles, Processing Methods and Novel developments

3:00 pm - 6:45 pm

Exhibit Hall Open

3:00 pm – 3:15 pm

Break

3:15 pm – 5:15 pm

Panel Discussion: Ethics and Implant Pathology/How can courts trying biomaterial cases be made to serve justice with valid and relevant science?

Tutorial: Advances in Highly Crosslinked UHMWPE for Hip and Knee Replacement



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Thursday, April 23, 2009 (continued)

3:15 pm – 4:15 pm **Concurrent Rapid Fire Sessions 1 & 2**

- Drug Delivery in Tissue Engineering and Regenerative Medicine
- Biomaterials for Interface Engineering and Soft Tissue Repair

4:15 pm – 5:15 pm **Concurrent Rapid Fire Sessions 3 & 4**

- Biomimetic Materials
- Cellular Responses to Their Microenvironments

5:15 pm – 6:45 pm **Poster Session 1 and Exhibit Reception**

6:45 pm – 8:15 pm **All SIG Mixer, honoring the Clemson Award recipients**

Friday, April 24, 2009

7:00 am – 5:00 pm **Registration Open**

7:00 am – 8:00 am **Special Interest Group Meetings**

8:00 am – 9:30 am **Concurrent Oral Abstract Presentations - Session 3**

- Advances in Stent Materials, Design, and Biology
- Biomaterials for Interface Engineering and Soft Tissue Repair
- Biomaterials for Musculoskeletal Tissue Regeneration
- Biosensors
- Cellular Responses to Their Microenvironment
- Urological Tissue Engineering and Biomaterials

9:30 am – 10:00 am **Break**

9:30 am – 5:00 pm **Exhibit Hall Open**

10:00 am – 11:30 am **Annual Business Meeting (coffee provided)**

10:00 am – 11:30 am **National Student Chapter Meeting**

11:30 am – 1:00 pm

Concurrent Oral Abstract Presentations - Session 4

- Cardiovascular Biomaterials 1
- Computational Modeling
- Dental/Craniofacial Materials
- Medical Devices based on SIBS-type Biomaterials (Symposia)
- Novel Techniques for Processing of Ceramic, Metal, and Composite Biomaterials
- Smart (Bio)Polymer Delivery Systems for Biologics

1:00 pm – 2:00 pm

Lunch (on own)

2:00 pm – 3:30 pm

Concurrent Oral Abstract Presentations - Session 5

- Biomaterials and Neural Regeneration
- Biomaterials for Wound Healing
- Cardiovascular Biomaterials 2
- Clinical Applications in Nanomedicine (Symposia)
- Environmentally Responsive Biomaterials
- Surface Characterization and Modification

3:30 pm – 5:00 pm

Poster Session 2

5:00 pm – 6:30 pm

Town Hall Meeting

7:00 pm – 10:00 pm

BASH
Join your colleagues at the 2009 BASH Reception at the Institute of Texan Cultures. Meeting attendees will be met by a bevy of authentic gunslingers, cowpokes, and trick ropers for an extraordinary evening to mix with friends, colleagues, industry leaders, and newcomers.

Saturday, April 25, 2009

7:00 am – 5:00 pm

Registration Open

7:00 am – 8:00 am

All Special Interest Group Officers Meeting

Society For Biomaterials

2009 ANNUAL MEETING AND EXPOSITION REGISTRATION BROCHURE

Grand Hyatt San Antonio • April 22-25, 2009 • San Antonio, Texas

Saturday, April 25, 2009 (continued)

8:00 am – 10:00 am	<p>Panel Discussion: Clinical Applications in Nanomedicine</p> <p>Panel Discussion: Biomaterials to Address Clinical Needs: A Conversation with Surgeons</p> <p>Tutorial: Developing Best Practices in Tissue Engineering Education</p> <p>Concurrent Oral Abstract Presentations - Session 6</p> <ul style="list-style-type: none"> • Clinical Performance and Long-term Success of Implants • Spatially Patterned Biomaterials 	1:00 pm – 3:00 pm	<p>Panel Discussion: Short- and Long-term Failures of Dental Implants</p> <p>Tutorial: Rapid Prototyping</p>
10:00 am – 10:30 am	Break	1:00 pm – 2:00 pm	<p>Concurrent Rapid Fire Sessions 5 & 6</p> <ul style="list-style-type: none"> • Scaffolds for Tissue Engineering: Basic Principles, Processing Methods, and Novel Developments 1 • Advances in Therapeutic Delivery
10:30 am – Noon	<p>Plenary Session II</p> <p>C. William Hall Award Harold Alexander, PhD Orthogen LLC</p> <p>Founders Award John Brash, PhD McMaster University</p> <p>Young Investigator Award Niren Murthy, PhD Georgia Institute of Technology</p>	2:00 pm – 3:00 pm	<p>Concurrent Rapid Fire Sessions 7 & 8</p> <ul style="list-style-type: none"> • Scaffolds for Tissue Engineering: Basic Principles, Processing Methods, and Novel developments 2 • Biocompatibility of Orthopedic Implants
Noon – 1:00 pm	Lunch (on own)	3:15 pm – 5:15 pm	<p>Panel Discussion: Major World Initiatives in the Field of Tissue Engineering and Regenerative Medicine: Experiences in North-America, Europe, and Asia-Pacific</p> <p>Tutorial: Biomaterials and the Aging Process</p> <p>Concurrent Oral Abstract Presentations - Session 7</p> <ul style="list-style-type: none"> • Biomimetic Materials • Nanomaterials



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General Information

All sessions of the meeting, including exhibits, posters and oral presentations will take place at the Grand Hyatt San Antonio. Photographs of slide and poster presentations are strictly prohibited.

Registration

All attendees are expected to register for the meeting. Register early to obtain the pre-registration fees, which are much lower than on-site registration fees. The pre-registration deadline is April 1, 2009.

Registration fees include: Abstract CD-ROM, admittance to all scientific sessions, tutorials, technology and training forums, panel discussions, exhibits, opening reception, poster and exhibition reception, and breaks and the BASH. (Additional fees apply for select Wednesday workshops).

BASH

Join your colleagues at the 2009 BASH Reception at the Institute of Texan Cultures. Meeting attendees will be met by a bevy of authentic gunslingers, cowpokes and trick ropers for an extraordinary evening to mix with friends, colleagues, industry leaders and newcomers.

Member Rates

Member rates apply to members of the Society For Biomaterials, other World Biomaterials Congress societies and TERMIS. Members of TERMIS or World Biomaterials Congress societies must include a photocopy of a current dues receipt or membership card with registration to qualify for member discount. World Biomaterials Congress societies are the Australian Society for Biomaterials, European Society for Biomaterials, Japanese Society for Biomaterials and Korean Society for Biomaterials. Probationary Special Interest Group members do not qualify for member rate.

Full-time student and post-graduate meeting registration includes access to all scientific sessions, Opening Ceremony Reception and a complimentary Abstract CD-ROM. To qualify for discounted registration rates, proof of full-time student or post-graduate status must accompany registration.

Cancellations/Refunds

To cancel your registration and receive a refund, a written request must be received by April 1, 2009. Cancellation requests received by this date will receive a refund less a \$75 processing fee. Requests will be processed after the meeting. All requests received after April 1, 2009, will forfeit 100 percent of monies paid.

Web Registration

Registration for members and non-members may be submitted via the SFB Web site, www.biomaterials.org. NO REGISTRATIONS WILL BE ACCEPTED VIA TELEPHONE.

Final Program, Certificates of Attendance and Visa Certificates of attendance will be available for all registrants at the on-site registration desk. Badges will be required to be worn at all functions of the meeting. Participants are expected to make their own travel arrangements and procure their own visas. The final program will be distributed at the meeting.

The official language of the meeting is English.

Dress Code

Business casual is the recommended dress for the meeting.

Transactions Book

All of the abstracts being presented at the meeting, both oral and poster, will be on CD-ROM, which is included in your meeting registration. A printed Transactions Book will be available for purchase upon registration.

Special Needs

The Society For Biomaterials wishes to take steps to ensure no disabled person is excluded, denied services, segregated or otherwise treated differently than other individuals because of the absence of auxiliary aids and services. If you require any auxiliary aids or services identified in the Americans with Disabilities Act, please indicate so on your registration form.

Sponsors and Exhibits

Each year, the Society For Biomaterials Annual Meeting serves as the central gathering point for the entire biomaterials field. This year's Annual Meeting in San Antonio promises to offer exciting interactions between conference registrants and exhibitors.

To provide exhibitors with steady exposure to conference attendees, all coffee breaks and poster sessions will be held exclusively in the exhibit area. This format encourages frequent contact and dialogue between biomaterials scientists in industry, academia and the exhibiting companies.

For more information on exhibiting and sponsorship opportunities, please visit the Annual Meeting page of the society's Web site (www.biomaterials.org) and download the Exhibitor and Sponsorship Prospectus or contact:

Melanie McClurkin, Exhibits Manager

(856) 439-0500 • mmclurkin@biomaterials.org

Exhibit Hours

Thursday, April 19 9:00 am - 7:30 pm
Friday, April 20 9:00 am - 4:00 pm

REGISTRATION FORM

Please print or type.

First Name _____ Surname/Last Name _____

Title _____ Degree _____

Specialty or Discipline _____

Affiliation _____ Department _____

Address _____

City _____ State/Province _____ ZIP/Postal Code _____ Country _____

Telephone _____ Facsimile _____

(For international numbers, please include country and city codes.)

Email _____ Special Requests (ADA, Dietary, Etc.) _____

Member in which Society? Society For Biomaterials, USA Other WBC Society (list) _____ Member Number _____

SCIENTIFIC REGISTRATION	Member Before April 1	Post-Grad Member Before April 1	Student Member Before April 1	Student Member NO BASH Before April 1	Non-Member Before April 1	Post-Grad Non-Member Before April 1	Student Non-Member Before April 1	Student Non-Member NO BASH Before April 1	Member After April 1	Post-Grad Member After April 1	Student Member After April 1	Student Member NO BASH After April 1	Non-Member After April 1	Post-Grad Non-Member After April 1	Student Non-Member After April 1	Student Non-Member NO BASH After April 1	Government Employee Rate
Meeting & Exhibit Registration	<input type="checkbox"/> \$525	<input type="checkbox"/> \$355	<input type="checkbox"/> \$160	<input type="checkbox"/> \$70	<input type="checkbox"/> \$740	<input type="checkbox"/> \$475	<input type="checkbox"/> \$210	<input type="checkbox"/> \$120	<input type="checkbox"/> \$620	<input type="checkbox"/> \$400	<input type="checkbox"/> \$195	<input type="checkbox"/> \$105	<input type="checkbox"/> \$835	<input type="checkbox"/> \$520	<input type="checkbox"/> \$245	<input type="checkbox"/> \$155	<input type="checkbox"/> \$550
Workshop I: Regulatory Pathways	<input type="checkbox"/> \$150	<input type="checkbox"/> \$95	<input type="checkbox"/> \$40	<input type="checkbox"/> \$40	<input type="checkbox"/> \$200	<input type="checkbox"/> \$140	<input type="checkbox"/> \$75	<input type="checkbox"/> \$75	<input type="checkbox"/> \$150	<input type="checkbox"/> \$95	<input type="checkbox"/> \$40	<input type="checkbox"/> \$40	<input type="checkbox"/> \$200	<input type="checkbox"/> \$140	<input type="checkbox"/> \$75	<input type="checkbox"/> \$75	<input type="checkbox"/> \$150
Workshop II: ASM Workshop	<input type="checkbox"/> \$150	<input type="checkbox"/> \$95	<input type="checkbox"/> \$40	<input type="checkbox"/> \$40	<input type="checkbox"/> \$200	<input type="checkbox"/> \$140	<input type="checkbox"/> \$75	<input type="checkbox"/> \$75	<input type="checkbox"/> \$150	<input type="checkbox"/> \$95	<input type="checkbox"/> \$40	<input type="checkbox"/> \$40	<input type="checkbox"/> \$200	<input type="checkbox"/> \$140	<input type="checkbox"/> \$75	<input type="checkbox"/> \$75	<input type="checkbox"/> \$150
Workshop III: Review Journal Articles	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0	<input type="checkbox"/> \$0

SCIENTIFIC REGISTRATION SUBTOTAL \$

OPTIONAL TRANSACTIONS *(one CD-ROM included with each Meeting Registration)*

- Transactions Book \$110
- Additional CD-ROM \$30

SOCIAL REGISTRATION

Opening Ceremony & Reception Extra tickets for Accompanying Guests (#) _____ x \$100 each

Includes Exhibition Reception (name of guest _____)

(one ticket included in Member & Non-Member Meeting Registration)

*** Student and Post-Graduate status verification required.**

I attest the named individual is a full-time, degree-seeking student.

I attest the named individual is a post-graduate, degreed individual in training at an academic institution, e.g, a resident or post-doc.

X _____
Signature of advisor or department chair

Advisor's Printed Name _____

Advisor's Telephone _____

Advisor's Email _____

TRANSACTION AND SOCIAL REGISTRATION SUBTOTAL \$

TOTAL AMOUNT DUE \$

METHOD OF PAYMENT:

Check Enclosed *(Checks must be in U.S. dollars drawn on a U.S. Bank and made payable to the Society For Biomaterials)*

- MasterCard VISA American Express

Name (as it appears on card)

Card #

Expiration Date

Cardholder Signature

THREE OPTIONS FOR REGISTRATION:	<ol style="list-style-type: none"> 1. WWW.BIOMATERIALS.ORG 2. Fax this registration form to 856-439-0525 3. Mail this registration form to: SFB Registration 15000 Commerce Parkway Suite C Mt. Laurel, NJ 08054
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Hotel Information/Reservations

For your convenience, a block of sleeping rooms has been retained at the **Grand Hyatt San Antonio**. The hotel can be contacted directly for individual reservations which will be made on a first-come, first-served basis. Please be sure to reference the Society For Biomaterials or SFB Annual Meeting when making reservations.

Sleeping room rates have been obtained for attendees at a conference rate of \$199 single/double occupancy. The special room rate will be available until March 30, 2009, or until the group block is soldout, whichever comes first; after this date the prevailing rates for the hotel will apply.

To reserve a room at the group rate, contact the hotel directly by calling their reservation desk at (800) 233-1234. Please be sure to reference the Society For Biomaterials.

The online reservation link may be found at www.biomaterials.org.

Grand Hyatt San Antonio
600 E. Market Street
San Antonio, TX 78205
Phone: (210) 224-1234

\$199 Single/double occupancy

HYATT CENTRAL RESERVATIONS: (800) 233-1234

The Grand Hyatt San Antonio is the newest addition of dynamic luxury hotels located on the famous San Antonio Riverwalk. The Grand Hyatt is a mix of modernism and Latin culture, and brings a new level of excellence to their guests. The guest rooms include Wi-Fi high speed internet access and 32-inch flat panel screen televisions. You may also work out on your own schedule in the state-of-the-art 24-hour Stay Fit Center, swim year-round in the outdoor heated pool, or exercise in the privacy of your spacious guestroom with the exclusive YogaAway™ program.

The 2009 Annual Meeting and Exposition of the Society For Biomaterials will be held during Fiesta, one of America's truly great festivals. Fiesta began as a way to honor the memory of the heroes of the Alamo and the Battle of San Jacinto, but over the past century, has grown into a celebration of San Antonio's rich and diverse cultures. This year marks Fiesta's 118th anniversary and the Grand Hyatt is conveniently located to enjoy all of the festivities!

SFB 2009 Program Committee Chair Karen Burg • Clemson University • kburg@clemson.edu

Congratulations to:

Kristi Anseth, Tisone and Distinguished Professor of Chemical and Biological Engineering at the University of Colorado, who has been named one of the “Brilliant 10” of *Popular Science* magazine. The “Brilliant 10” award recognizes pioneering work in science and engineering by younger researchers. Dr. Anseth’s work focuses on the development of photopolymerizable gels for tissue repair.

Bikramjit Basu, Associate Professor, Department of Materials and Metallurgical Engineering, India Institute of Technology at Kanpur, and **Thomas Webster**, Associate Professor, Division of Engineering and Department of Orthopedics, Brown University, who were appointed co-directors of the Indo-U.S. Center for Biomaterials for Healthcare. The Center focuses on the development of better biomaterials for health care and involves researchers from at least eight universities and industries from the U.S. and India. Other Society For Biomaterials members included in the Center are **Dhirendra S. Katti** (IIT Kanpur) and **C. Mauli Agrawal** (University of Texas at San Antonio). Center focus areas include: (a) metals and ceramic-based orthopedic implant materials, with particular emphasis on nanobiomaterials; (b) fundamental investigations of cell-material interactions; (c) polymer-based soft tissue/scaffold materials for tissue engineering applications; (d) biomechanical characterization of implants; and (e) feasibility of industrial scale production of metallic, ceramic and polymeric-based implants/scaffolds.

Robert A. Latour, Professor of Bioengineering at Clemson University, who was named the McQueen-Quattlebaum Professor of Engineering. Dr. Latour serves as co-editor of the *Biointerphases Journal*; his research focus areas include computational-chemistry based biomolecular modeling as well as thermodynamics of protein-surface and protein-cell interactions.

Robert M. Nerem, Parker H. Petit Professor and Director of the Institute for Bioengineering and Bioscience at the Georgia Institute of Technology, who is the recipient of the 2008 National Academy of Engineering Founders Award. He was honored for seminal contributions to the fluid mechanics of biological systems, pioneering research in tissue engineering, and leadership in bioengineering nationally and internationally, including founding the American Institute for Medical and Biological Engineering.

Nicholas A. Peppas, Professor of Biomedical Engineering, Chemical Engineering and Pharmaceutics at the University of Texas at Austin, who was elected to the Institute of Medicine (IOM) of the National Academy of Sciences. Dr. Peppas was one of 65 IOM members elected and was cited for “seminal contributions and visionary leadership in pharmaceutical sciences, drug and protein delivery, biomaterials science, and for pioneering fundamental work on drug delivery that has led to numerous pharmaceutical products or devices.”

Established in 1970 by the National Academy of Sciences, the Institute has become recognized as a national resource for independent, scientifically informed analysis and recommendations on human health issues.



NCI and NIST Propose Online Community to Speed Up Development of Nanotech Standards

Government News

Joy Dunkers, Government News

Contributing Editor

Federal government and U.S. industry scientists are forging ahead with plans to establish an international online forum for collaboration that aims to accelerate development of products with ultra-small dimensions while minimizing potential environmental, health and safety risks. The collaboration will focus on the creation of critically needed nanotechnology standards for biomedical and health applications, including Standard Reference Materials and test methods.

Combining efforts of materials scientists and measurement laboratories with those of biological and medical researchers, the new Internet-linked “community of interest” will exploit Web 2.0-style social networking technologies for creating and sharing information, as well as deliberating over technical details. The initial focus will be on preliminary-stage development of standards for characterizing the structure and properties of engineered nanoscale materials—those with at least one feature measuring between 1 nanometer (nm) and 100 nm.

The concept for the Web-based collaboration was strongly endorsed during a recent international two-day workshop on *Enabling Standards for Nanomaterial Characterization*, hosted and co-sponsored by the National Institute of Standards and Technology (NIST). Other co-sponsors were the U.S. Food and Drug Administration, National Institute of Environmental Health Sciences, National Institute for Occupational Safety and Health, Oregon Nanoscience and Microtechnologies Institute, National Cancer Institute (NCI) and its Nanotechnology Characterization Laboratory, with contributions from ASTM International. A prototype wiki—or collaborative Web site—was demonstrated by representatives of NCI’s Advanced Biomedical Computing Center. At the workshop, participants had reported mixed results in recent interlaboratory comparisons of physical and biological measurements on reference nanomaterials and other pretested samples. Pointing to the inconsistent results in these pilot “round robins,” many participants called for a sustained collaboration to develop high-quality, validated and uniformly applied standards that ensure reliable measurement and test results.

Estimated to be \$147 billion in 2007, the global market for nanotechnology-enabled products could top \$3 trillion by 2015, according to the market research firm Lux Research. The large projected market, an increasingly diverse range of anticipated nanotechnology applications, and the wide variety of science and engineering fields working toward these



applications have led to a growing need for different types of nanotechnology standards. In the United States and across the world, standards developing organizations (SDOs) are responding, but according to industry, government and university scientists at the workshop, the overall response is not as effective or as coherent as the challenge requires.

The new online community of interest will concentrate on facilitating and streamlining the many back-and-forth technical deliberations that take place during the drafting of a standard—before it is submitted for formal approval by an SDO. Now undergoing further development at NCI, the nanotechnology standards wiki will enable instantaneous dissemination (as well as archiving) of drafts, discussions, votes and supporting materials. Wiki-related tools will help in organizing discussions, and SDOs will be able to tap this resource to expedite drafting and validating protocols before they enter the formal standards approval process.

Increased transparency in the standards development process also will facilitate cooperation in inter-laboratory testing to determine the reproducibility and repeatability of methods. For NIST, input from the online community of interest will help to set priorities for developing reference materials used to calibrate instruments that make nanoscale measurements and validate testing protocols.

NCI and its partners expect a fully operational and vetted version of the site to be publicly available by early 2009. For more information on the NIST workshop, go to www.ceramics.nist.gov/nanomaterial_workshop.htm, or contact Vince Hackley (vince.hackley@nist.gov) or Marty Fritts (frittsmj@mail.nih.gov).

Ceramic Materials – Science and Engineering

Book Review

By Liisa Kuhn

C. Barry Carter and M. Grant Norton

Copyright 2007, Springer, 716 pages, new and used from \$75.

ISBN-10: 0-387-46270-8

www.amazon.com/Ceramic-Materials-Barry-Carter-Norton/dp/0387462708

Description

This is a fascinating, hefty textbook, singularly focused on ceramics (no metals or polymers). It is extremely rigorous and complete and thus makes a great addition to a personal or institutional library. It has been written to be used as a textbook for introducing ceramics to materials science students. Rather than a series of loosely strung together, disjointed articles by many authors, this book flows smoothly from chapter to chapter with carefully crafted writing and superb illustrations. This book compliments biomaterials textbooks with a sole focus on bioceramics because it covers the history, structure, properties and processing of ceramics in greater depth and detail.

The book is divided into seven parts. Part one, “History and Introduction,” defines ceramics and reviews ceramic use through time. Part two, “Materials,” covers atoms, compounds and complex crystal structures. Part three, “Tools,” describes furnaces (an essential part for making ceramics or glasses) and instruments used to characterize structure and defects and chemistry of ceramics. Part four, “Defects,” covers point defects, dislocations, interfaces in polycrystals, particles and pores. Part five, “Mechanical Strength and Weakness,” includes chapters on mechanical testing, plasticity and brittleness. Part six, “Processing,” is reminiscent of the 1960s classic by David Kingery covering raw materials and the various processing methods used to produce glass, glass ceramics, sol gels, ceramics, and thick and thin film methodologies in addition to single crystals. One can learn not only how to make diamonds, but also what Pyrex is. Part seven, “Properties and Applications,” has long chapters on ceramics as electrical conductors, semiconductors, lasers, bioceramics, minerals and gems. The depth the authors go into for each subject area is impressive. It is not a book written to merely survey ceramics, it is a true teaching text, and it achieves its goals. Enjoyably, each chapter concludes with a section on People in History—ceramics history, that is. This section often has short stories about serendipitous discoveries and Nobel Prize-winning researchers. The book is filled with interesting images and illustrations. As a fan of Dave Chihuly, the glass artist, I was thrilled to see a picture of one of his amazing creations in the book. This book is highly recommended.



Colloidal Nanoparticles in Biotechnology (Wiley Series on Surface and Interfacial Chemistry)

Book Review

By Liisa Kuhn

by Abdelhamid Elaissari (Editor)

Hardcover: 358 pages

Publisher: Wiley-Interscience (April 4, 2008)

ISBN-10: 0470230525. This website provides a way to browse parts of the book and the table of contents:

www.amazon.com/Colloidal-Nanoparticles-Biotechnology-Interfacial-Chemistry/dp/0470230525/ref=sr_1_1?ie=UTF8&s=books&qid=1232241434&sr=1-1

Description (taken from the back cover)

Discover new and emerging applications of colloidal nanoparticles. Dr. Abdelhamid Elaissari, internationally respected author and researcher, reports on and analyzes a broad range of important findings from new studies on the use of colloidal nanoparticles in biomedical, food and environmental diagnostics and analyses. Throughout the presentation, the book uses a blend of classical tools, including optical microscopy, atomic force microscopy, microsystems and microfluidics to help you take full advantage of colloidal nanoparticles for your own research and applications.

Among the key topics covered are:

- The evolution in malaria disease detection from parasite visualization to colloidal-based rapid diagnostics
- Biospecific reactions by affinity latexes from diagnostics to multiplex assays
- Fluorescent colloidal particles as detection tools in biotechnology systems
- Gas sensors based on ultrathin films of conducting polymers and nanocomposites
- Force measurements between emulsion droplets as a new tool for medical diagnostics
- Electrical detection of antibodies from human serum based on the insertion of gold-labeled secondary antibodies into microgaps and nanogaps

Special attention is given to the use of particles and reactive particles for *in vitro* biomedical diagnostics. In addition, the book explores many unusual nanoparticles with interesting and helpful applications. Biotechnological systems are presented

and illustrated using examples of actual applications, helping you progress from theory to application.

The first book to present and analyze the great potential of colloidal nanoparticles across a broad range of biotechnology applications, this guide will give you the information you need to develop your own important applications and help you to harness these particles' full potential.

Review

Gold particles, silica nanotubes, and quantum dots are just a few of the nanoparticle colloids covered in this book. Importantly, the reader can find information in this book about how to functionalize nanoparticles made of nearly any material and thus optimize their performance for a given application. Rather than needing to read a large number of journal articles to discover the way to modify your nanoparticle, the author/editor has selected several qualified teams to prepare reports on various types of nanocolloids, their applications and the chemical synthesis details to prepare such particles. The 13 chapters of the book are densely packed with reviews of the chemistries most effective at getting the desired results. The book would be a useful addition to the laboratory of academic and industrial researchers developing colloidal nanoparticles for biotechnological applications. Recommended for the depth of coverage of the chemistries needed to create functional nanoparticle colloids.

About the Author

Abdelhamid Elaissari, PhD, DEA, is Director of Research at the National Center for Scientific Research (CNRS) in Lyon, France.

Abbott (Abbott Park, IL) and **Advanced Medical Optics (AMO)** (Santa Ana, CA) announced a definitive agreement for Abbott to acquire AMO for \$22 per share in cash, for a total transaction value of approximately \$2.8 billion, inclusive of estimated net debt at the time of closing. AMO is a global leader in ophthalmic care, comprising three segments: cataract surgery, laser vision correction (LASIK) and eye care products. Globally, AMO holds the No.1 position in LASIK surgical devices, the No. 2 position in the cataract surgical device market and the No. 3 position in contact lens care products.

Medtronic Inc. (Minneapolis, MN) and privately held **Ablation Frontiers Inc.**, (Carlsbad, Calif.) announced the two companies have entered into an agreement whereby Medtronic will acquire Ablation Frontiers for an initial payment of \$225 million plus potential additional payments, contingent upon achievement of certain clinical milestones. The acquisition has been approved by Ablation Frontiers shareholders, and it is subject to regulatory clearance. The transaction is expected to close in Medtronic's fourth fiscal quarter, ending April 24, 2009. The acquisition is part of the strategy to strengthen Medtronic's newly formed AF Solutions franchise. Atrial fibrillation (AF or A Fib) is an irregular quivering or rapid heart rhythm in the upper chambers (atria) of the heart.

Micell Technologies (Raleigh, NC) announced the company entered into a strategic agreement with Maxcor Inc., the newly incorporated subsidiary of **Opto Circuits Ltd.** (Bangalore, India), through whom Micell Technologies has obtained the rights to Maxcor's Genius MAGIC Cobalt Chromium Coronary Stent System for the purpose of developing and marketing drug-eluting stents based on Micell's coating technology. The state-of-the-art stent and delivery system was developed and is marketed in Europe by EuroCor GmbH, a subsidiary of Opto Circuits. The companies also entered into an agreement to develop drug-eluting balloon products for cardiovascular applications.

Osteotech Inc. (Eatontown, NJ), a leader in the emerging field of biologic products for regenerative healing, announced that it has initiated a pivotal clinical trial for its DuraTech™ BioRegeneration Matrix. During the study's initial cranial surgical procedures, the patients' dura mater (the tough, outermost membrane surrounding the brain and spinal cord) was successfully repaired by surgeons using the DuraTech™ BioRegeneration Matrix. This pivotal clinical trial will evaluate 60 surgical patients at 30 and 90 days post-operatively to assess the safety and efficacy of the DuraTech™ BioRegeneration Matrix compared to historical surgical procedure outcomes. Once this trial is completed, Osteotech plans to file a medical device premarket submission, or 510(k), with the United States Food and Drug Administration (FDA).

Vital Therapies Inc. (San Diego, CA), a development stage company targeting liver disease, announced patient enrollment

has begun for a randomized, controlled, multi-center, Phase 2 clinical trial studying the Extracorporeal Liver Assist Device (ELAD) as a treatment for patients with Acute Liver Failure (ALF) under three protocols. ALF afflicts more than 30,000 U.S. patients each year, including people with chronic liver disease like hepatitis or without chronic disease, such as individuals whose livers were harmed by taking too much acetaminophen pain medicine. For ALF patients, liver transplantation is the only therapy proven to impact survival. However, it has a cost exceeding \$350,000, and there is a worldwide shortage of livers for transplant. ELAD was designed to address both problems since it may support regeneration of a patient's native liver or maintain sufficient liver function until a transplant organ is available.

Other News:

Two new white papers detailing sterility testing essentials are now available for free download from Microtest (AGAWAM, MA). One of the white papers is customized for medical device manufacturers, and one is specialized for pharmaceutical manufacturers. Both present the general concepts and problems associated with sterility testing and review different testing methodologies. For medical device manufacturers, sterility testing of medical devices is required during the sterilization process as well as for routine quality control. Medical device manufacturers can download the white paper at: www.microtestlabs.com/sterilitypaper/sterility-paper.htm. For pharmaceutical manufacturers, sterility testing of pharmaceutical articles is an essential element of the sterilization validation process as well as for routine release testing. USP requirements employ sterility testing as an official test to determine suitability of a lot. Pharmaceutical manufacturers can download the white paper at: www.microtestlabs.com/sterilitypaper/pharma-paper.htm.

The FDA, the European Medicines Agency and Australia's Therapeutic Goods Agency have begun an 18-month pilot project to collaborate on good manufacturing practice inspections. The three agencies kicked off the project with a teleconference to discuss specific actions they will take, including coordinating inspections of manufacturing sites, which have come to the attention of more than one of the agencies.

President Barack Obama is widely expected to issue an executive order reversing President George W. Bush's restrictions on federal funds for human embryonic stem cell research. Such a step would not only channel more money to stem cell work but also lead to increased availability of human embryonic stem cell lines for study—and eliminate a complex bureaucracy created to enforce the Bush provision. What's more, it could cement California's standing as an epicenter for stem cell research, which was made possible by the \$3 billion in state funds allocated to this burgeoning field by Proposition 71. Perhaps most important, it would signal the new administration's commitment to advancing medical research.

Community Calendar

35th Annual Northeast Bioengineering Conference

Boston, MA
April 3-5, 2009
www.nebec.org

2009 Materials Research Society Spring Meeting

San Francisco, CA
April 13-17, 2009
www.mrs.org

Society For Biomaterials 2009 Annual Meeting and Exposition

San Antonio, TX
April 22-25, 2009
www.biomaterials.org

55th Annual Conference of the American Society for Artificial Internal Organs

Dallas, TX
May 28-30, 2009
www.asaio.com

International Conference on Materials for Advanced Technologies

Singapore
June 26-July 3, 2009
www.mrs.org.sg

TERMIS 2nd World Congress

Seoul, South Korea
August 31-September 3, 2009
www.termis.org/wc2009/

35th Annual NSH Symposium/Convention

Birmingham, AL
October 2-7, 2009
www.nsh.org

International Bone-Tissue-Engineering Congress

Hannover, Germany
October 8 – 11, 2009
www.bone-tec.com



Department of Chemistry & National Institute for Aviation Research

Wichita State University

Eminent Scholar in Materials Science

Wichita State University (WSU) invites applications for a joint appointment as a Kansas Biosciences Authority Eminent Scholar in Chemistry and a senior Research Scientist in the National Institute for Aviation Research (NIAR). Applicants must be nationally recognized as a leader in the field of materials science, with a chemistry based research program of relevance to the biomaterials industry.

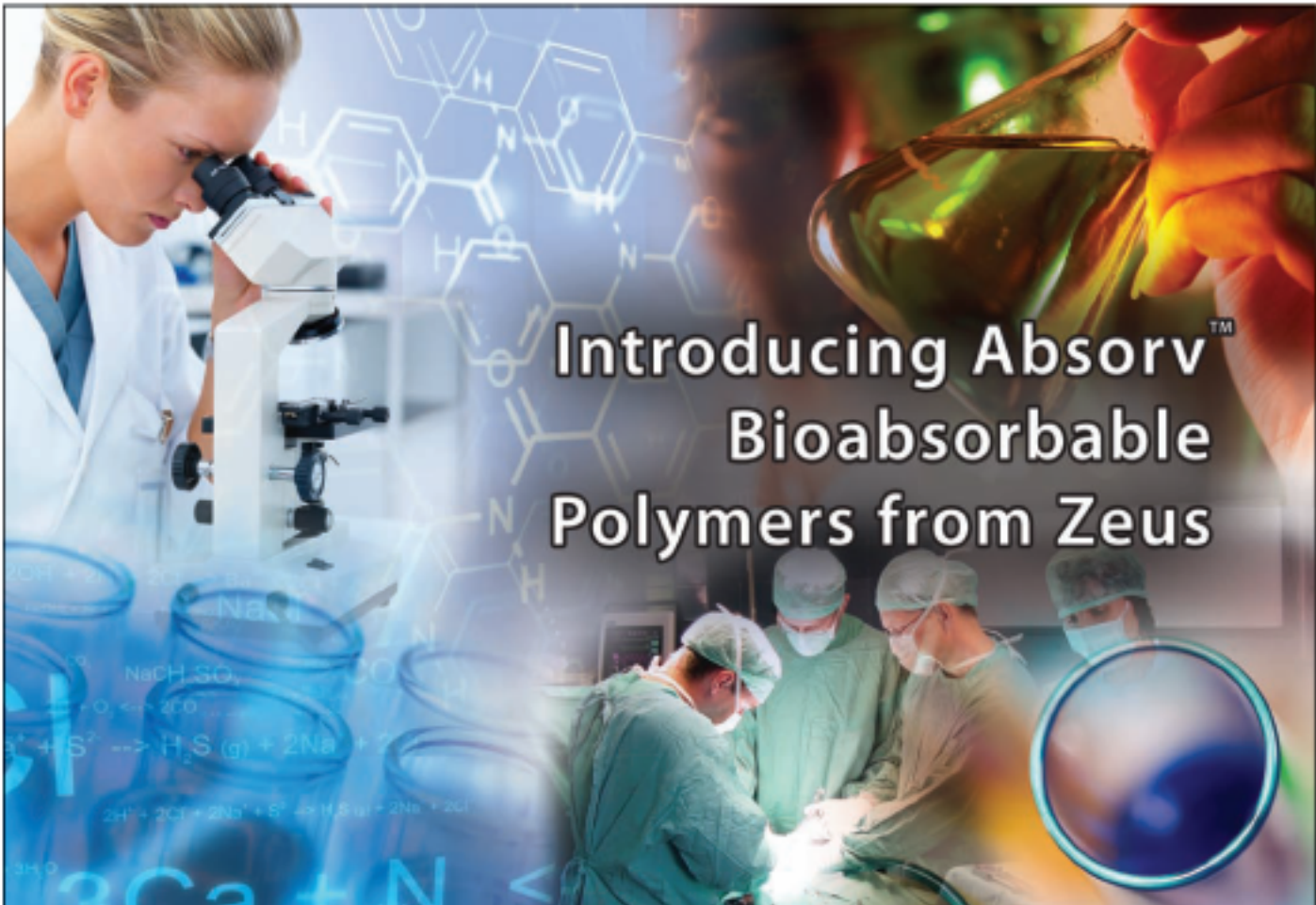
The successful candidate will be appointed 50% in NIAR and 50% as a tenured full Professor in the Chemistry department, will teach at the undergraduate and graduate (M.S. & Ph.D.) levels, continue a vigorous externally funded research program, and engage in departmental service. Promising candidates at an earlier career stage will be considered also, with salary and appointment level commensurate with prior accomplishment.

Applicants must hold a doctorate in chemistry, polymer chemistry, or chemical engineering. An undergraduate degree in chemistry, polymer chemistry, or chemical engineering is preferred. Research experience, a strong publication record, a demonstrated commitment to diversity, and effective oral and written communication skills are also required. Evidence of a nationally recognized research program in materials chemistry related to biomaterials is required.

Preference will be given to US citizens or permanent residents. Applicants must clearly state their status as a US citizen, permanent resident or qualified foreign national (including current visa status).

Applicants should submit a CV with publication record to Professor Bill Stevenson, Department of Chemistry, Wichita State University, Wichita, KS 67260-0051 (Bill.Stevenson@wichita.edu) and copy to laurie.reese@wichita.edu. In addition, applicants should have three individuals who are familiar with their accomplishments submit letters of reference.

The closing date for this position is February 15, 2009, or the 1st of each successive month until the position is filled. WSU is an EO/AA employer. More details on the Chemistry Department and NIAR can be found at <http://www.wichita.edu/chemistry> and at <http://www.niar.wichita.edu/>.



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