



# MESD Division Newsletter

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## Notes from the Chair

Dear MESD Members and Friends,

Thank you for supporting our division in so many different ways, with your volunteering, participation and continued membership! I would like to start this note by congratulating Prof. Sam Jenekhe, University of Washington, for receiving the Charles M. A. Stine award for outstanding and pioneering contributions to the development of semiconducting polymers for applications in organic electronics and optoelectronics, and Prof. Chris Ellison, University of Texas at Austin, the recipient of the Owens Corning Early Career award for significant early contributions to the synthesis, characterization, morphology, and processing of nanostructured block copolymer films.

We have had an eventful and highly productive year, and I am really pleased to report that we have an exciting program for the 2014 Annual meeting in Atlanta, GA. I would like to thank Prof. Bryan Vogt, our 1<sup>st</sup> Vice Chair in charge of our program this year, and the MESD Area Chairs and Co-Chairs, Session Chairs and Co-Chairs for all their efforts. To ensure high quality programming for MESD this year we cut the total number of MESD sponsored sessions by 11% from last year, based on the submission demands, and decreased the acceptance rate of our abstracts. The number of MESD sessions will continue to decrease in the near future to ensure that we provide interesting, well attended sessions, with cutting edge research papers. In addition to the extensive cosponsoring of sessions (including those of topical conferences), our poster session on Monday evening, and the successful MESD plenary session on Wednesday morning (11/19/2014, 8:30-11am), organized in part to recognize the recipients of the Charles M. A. Stine award and Owens Corning Early Career award, this year we have 6 new sessions that involve either plenary speakers or graduate student awards: "Electronics and Photonics Graduate Student Award Finalists", "Area 8E Plenary: Recent Advances in Electronic and Photonic Materials", "Excellence in Graduate Polymer Research",

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"Pioneers in Biomaterials" and "Inorganic Materials Plenary: Honorary Session I & II for Prof. Michael Tsapatsis". Based on prior performance in other areas of MESD, we expect these new sessions to be well attended and bring significant visibility to MESD. Finally, we have changed the name of Area 8D from "Ceramics" to "Inorganic Materials" to make it more competitive.

This year AICHE introduced a new platform for all the Division webpages and I want to thank Prof. Doug Kalika, our Secretary-Treasurer and Webmaster, for helping with the smooth migration of our MESD site <http://www.aiche.org/community/sites/divisions/mesd>.

This new platform will give the opportunity for discussions and news postings from our membership. Also thanks to Prof. Peter Ludovice, one of our Directors, for helping with the maintenance of our website. Finally, I want to thank our past Chair, Prof. Cliff Henderson, and all the MESD members who have volunteered their time and effort to serve our community in so many different ways, and those that will continue to do so in the future. On the next pages you will find the bios and statements of the candidates for the positions of 2<sup>nd</sup> Vice Chair, Directors and Secretary/Treasurer. Please cast your vote. The election will be taking place from October 1<sup>st</sup> to 15<sup>th</sup> and you will receive an email with the web link.

In closing, thank you for giving me the opportunity to serve our MESD community over the years as a 2<sup>nd</sup> and 1<sup>st</sup> Vice Chair and this year as the Chair. It has been a pleasure! I look forward to seeing everyone in Atlanta.

Efi Kokkoli  
 Professor, Shell Land Grant Chair  
 Department of Chemical Engineering & Materials Science  
 University of Minnesota

## Candidates for 2<sup>nd</sup> Vice Chair (Vote for 1)

### Julie C. Liu, Purdue University



**Julie C. Liu** is an Associate Professor in the School of Chemical Engineering at Purdue University. She received her B.S.E. degree in Chemical Engineering from Princeton University. Julie earned her Ph.D. in Chemical Engineering from the California Institute of Technology where she worked with David Tirrell on elastin-based biomaterials for small-diameter vascular graft applications. She was an NIH post-doctoral fellow in Cell Biology at the University of Massachusetts Medical School.

Julie's research group focuses on designing protein-based biomaterials for tissue engineering and biomedical applications. Her group has investigated material-based microenvironments to direct adult stem cell differentiation for cartilage, bone, and vascular tissue engineering. In addition, her group is developing new soft-tissue surgical adhesives. Her work has been funded by a 3M Nontenured Faculty Award, an American Heart Association Scientist Development Grant, the National Science Foundation, the National Institutes of Health, and the Department of Defense Congressionally Directed Medical Research Program.

Julie has been a member of AIChE since 2001 and has chaired and co-chaired materials-related sessions in Areas 8b (Biomaterials) and 15d/e (Engineering Fundamentals in Life Science). She was elected as the Area 15d/e programming chair and also served as the chair of the AIChE Women's Initiatives Committee (WIC). In her role with WIC, she was instrumental in increasing WIC's impact through the development and implementation of new professional development workshops. Julie served the materials community by organizing a symposium at the 2011 Materials Research Society Spring meeting and hosting a regional Biomaterials Day meeting at Purdue. She has also organized sessions and served in leadership positions in the Society for Biomaterials (SFB). In particular, she is the chair of the Biomaterials Education special interest group and has served on the SFB Membership Committee, Finance Committee, and Education & Professional Development Committee.

As 2<sup>nd</sup> Vice Chair of MESD, Julie's goals are to create professional development opportunities, promote participation of early career chemical engineers, increase visibility of the materials research community, and facilitate communication. First, Julie plans to leverage her experience in developing AIChE workshops to increase the professional development opportunities at the annual meetings and through webinars. Her goal is to provide mentorship opportunities and promote MESD participation of graduate students, post-doctoral researchers, assistant professors, and early-career engineers who work in industry and governmental labs. Another priority is increasing the visibility of the materials community's research through new programming initiatives; one example is to expand the Faculty Candidate sessions in Area 8B (Biomaterials) to other Areas so that they may highlight engineers seeking jobs and also provide one convenient session for those who are hiring. Last, Julie plans to update the website with new developments within the MESD Division and community and to regularly update members about new initiatives.

### Sankar Nair, Georgia Institute of Technology



**Sankar Nair** is Professor and James F. Simmons Faculty Fellow in the School of Chemical & Biomolecular Engineering at Georgia Tech. His research interests are in the chemistry and engineering of nanoporous materials and membranes for separations and catalysis. He received his B.Tech. and Ph.D. degrees in chemical engineering from IIT Delhi and UMass Amherst, respectively.

Sankar is an AIChE member since 1999, and an active organizer of MESD (Section 8D) and NSEF sessions on inorganic materials and thin films at Annual Meetings since 2004. He also serves the Materials community in other roles. He is a staff member of the Institute for Materials (IMat) at Georgia Tech, and has contributed substantially to IMat's organization of the Southeast Regional Materials Genome workshop (May 2014) and the National Materials Accelerator workshop (June 2014). Through these avenues, he has been active in promoting the strong role that chemical engineers can play in the Materials Genome Initiative (MGI), which seeks to dramatically accelerate new materials discovery and development. Sankar has also been an Executive

Editor of *Chemical Engineering Science* since 2013, and is mainly focused on the Materials Engineering content of the journal. He is the managing editor of a Special Issue on Metal-Organic Framework (MOF) Materials for Emerging Chemical Technologies, which will appear in the journal during late 2014 or early 2015.

As 2<sup>nd</sup> Vice Chair of MESD, Sankar's immediate interest will be to maintain an impactful programming effort in the traditionally strong areas as well as address emerging new issues. For example, in view of the noteworthy impact of the MGI on Materials R&D, Sankar would like to initiate a programming effort that highlights MGI-enabled advances in the energy, chemicals, environmental, and other technological sectors in which MESD members are active. Sankar is also highly interested in the longer-term goals of sustainably increasing the participation of industrial researchers, young faculty, and postdocs/students in MESD programming; and in finding ways to improve the scientific and professional value that they gain from being involved in MESD.

As a Materials researcher, Sankar has authored more than 90 journal publications and holds 9 US patents. He has advised/co-advised more than 35 Ph.D./M.S. students and postdoctoral fellows at Georgia Tech. Recognitions of his research work include the CAREER award (NSF, 2008), the Sigma Xi Outstanding Young Faculty Award (Georgia Tech, 2008), and the FRI/John Kunesh Award (AIChE Separations Division, 2012). His work on scalable MOF membranes and single-walled metal oxide nanotubes has been extensively highlighted by the news media.

### Candidates for MESD Director (Vote for 2)

#### Julie Champion, Georgia Institute of Technology



**Julie Champion** is currently an assistant professor of Chemical & Biomolecular Engineering at Georgia Institute of Technology. She earned her B.S. in Chemical Engineering from University of Michigan, and her Ph.D. in Chemical Engineering from University of California Santa Barbara with Samir Mitragotri. Julie did postdoctoral research at California Institute of Technology with Dave Tirrell. Her current research

focuses on building materials from therapeutic or bioactive proteins utilizing both self-assembly and bioconjugation. A variety of protein materials are created in the Champion Lab, including nano and microparticles, surface coatings, and protein-inorganic hybrid structures. These materials are tested as potential therapeutics for autoimmune disease, vaccination, and cancer.

Julie has been a member of AIChE since 2005. From 2009 to 2011 she served as chair or co-chair of 8b oral sessions and invited speakers to increase the visibility and attendance of the sessions. She has also served as a poster judge for both the undergraduate and MESD poster sessions. In 2010 she was co-chair, and from 2011-2014 filled the role of chair of 22b Bionanotechnology section of the Nanoscale Science and Engineering Forum. In this role, Julie and her co-chairs have created well attended plenary sessions and grown the graduate student award session. Julie looks forward to using her experience and ideas from chairing 22b to serve MESD as a director. Her goals will be to increase the experience-level diversity (faculty, postdoc, graduate student) of non-plenary MESD oral sessions, increase informal interactions amongst materials researchers from across these experience levels at the annual meeting, and take advantage of co-sponsored sessions, beyond just in name, to reduce overlap and scheduling conflicts between divisions/forums.

#### Sunho Choi, Northeastern University



**Sunho Choi** is an Assistant Professor in the Chemical Engineering Department at Northeastern University. After he earned a B.S. in Materials Science from Hanyang University, Korea, in 2000, he received his Ph.D. in Materials Science and Engineering from University of Minnesota in 2008 with Michael Tsapatsis. During his Ph.D. he studied nanosheet functionalization and membrane separation using nanocomposites. After he received his Ph.D., he conducted his postdoctoral research as a Dreyfus foundation postdoctoral fellow in the department of Chemical & Biomedical Engineering at Georgia Institute of Technology. During his postdoctoral research in 2008-2011, he worked with Christopher Jones on the adsorptive separation and inorganic-organic hybrid adsorbent synthesis. Current research of his group at Northeastern is centered on nanomaterials interfacial engineering, including

molecular design and synthesis of MOF-based CO<sub>2</sub> adsorbents, functional nanosheets composites for separation, and structure modification of porous materials for membrane preparation.

Since 2004, Sunho has been a member of AIChE and carried out active roles of the co-chairs and chairs in a number of oral sessions in Area 8D (Inorganic Materials) and others. Since he became a faculty at Northeastern in 2011, he elevated the level of his service and served as a Vice-Chair and Chair of Area 8D. Sunho's goal as Director of MESD is aiming at finding new opportunities to improve engagement, interaction, and experiences of MESD members. To enhance members' engagement, he would like to promote opportunities for graduate students and young faculty to participate in MESD activities more actively. More than often, these early career chemical engineers cannot contribute to MESD only because they don't know how and where to start. His current position and experience as a young faculty member will be helpful to associate these young chemical engineers to our community. He is also interested in promoting interactions between members as well as between programs. To increase the interactions between members, for example, he would like to promote communications between members by increasing the number of issues of the MESD newsletters, which is currently issues annually. To increase the interactions between areas of MESD, he is interested in engineering interfaces between various areas of MESD. For example, he would increase the chances for co-sponsored sessions across other areas within MESD, which may promote exchange of ideas and scientific results for multidisciplinary connection in division. The net results of these efforts will improve the programming experiences of MESD members as well.

#### **Enrique D. Gomez, Pennsylvania State University**



**Enrique D. Gomez** received his B.S. in Chemical Engineering from the University of Florida and his Ph.D. in Chemical Engineering from the University of California, Berkeley, where he studied under Nitash Balsara. After a position as a postdoctoral research associate with Lynn Loo at Princeton University, he started as a faculty member of the Chemical Engineering Department and the Materials Research Institute of the Pennsylvania State University in August of 2009. Enrique's research focus is on

understanding how structure at various length scales affects macroscopic properties of soft condensed matter. Specifically, the Gomez Group is currently focused on examining the relationship between microstructure and optoelectronic properties of conjugated organic molecules.

Enrique has been a member of AIChE since 2008. He has filled various roles within Area 08A (Polymers), including session chair, Area vice-chair, and Area chair. His activities within AIChE have focused on enhancing the visibility of the program, enhancing the student experience, and raising funds to support activities. Enrique is also an active member of the American Physical Society, where he has organized multiple focus and invited sessions. He currently serves on the programming committee for the Division of Polymer Physics (DPOLY), where he will serve as Programming Chair for DPOLY in 2017.

Enrique hopes he will have the opportunity to serve as a Director in MESD. He aims to support efforts to enhance the student experience, enhance the visibility of MESD within AIChE and the scientific community, promote cooperation between different areas, and enrich programming and membership through relationships with industry. Enrique believes that many of these goals can be achieved by continuing to develop the MESD poster session and promoting cooperation between different Areas.

#### **Candidate for Treasurer/Secretary (Vote for 1)**

#### **Douglass Kalika – University of Kentucky**



**Douglass Kalika** is currently Professor and Chair of the Department of Chemical and Materials Engineering at the University of Kentucky in Lexington. Doug holds degrees from M.I.T. and the University of California at Berkeley, and joined the chemical engineering faculty at Kentucky in 1990. His research has been focused on polymer processing and rheology, and the investigation of structure and dynamics in crystallizable polymers and blends, composites and polymer membranes. Doug has served as Department Chair at UK since 2009.

Doug has been active in MESD and AIChE programming for over 20 years, having served as Chair of the Materials Poster Session (1993-1996), Vice-Chair and Chair of the Polymers Area (1997-2001), MESD Webmaster (1997-2001), and MESD Director (1999-2001). He served as Vice-Chair and Chair of the Division from 2001 to 2004, and was elected Fellow of the AIChE in 2012. In addition, Doug currently serves as a program evaluator for ABET. Doug was first elected Secretary/Treasurer of the MESD in 2007, and looks forward to continuing service in that capacity.

### **2013-2014 MESD Officers**

#### **Chair & Newsletter Editor**

Efie Kokkoli  
University of Minnesota  
(612) 626-1185  
kokkoli@umn.edu

#### **1<sup>st</sup> Vice Chair & Program Committee Chair**

Bryan Vogt  
University of Akron  
(330) 972-8608  
vogt@uakron.edu

#### **2<sup>nd</sup> Vice Chair**

Mike Kilbey  
University of Tennessee-Knoxville  
(865) 974-3403  
mkilbey@utk.edu

#### **Past Chair**

Cliff Henderson  
Georgia Institute of Technology  
(404) 385-0525  
cliff.henderson@chbe.gatech.edu

#### **Secretary/Treasurer & Webmaster**

Douglass Kalika  
University of Kentucky  
(859) 257-5507  
kalika@engr.uky.edu

#### **Directors (term ends 2014)**

Edmund Seebauer  
University of Illinois at Urbana-Champaign  
(217) 333-6677  
eseebaue@illinois.edu

Sue Ann Bidstrup Allen  
Georgia Institute of Technology  
(404) 894-2872  
sue.bidstrup@chbe.gatech.edu

#### **Directors (term ends 2015)**

Elizabeth Lipke  
Auburn University  
(334) 844-2003  
elipke@auburn.edu

Peter Ludovice  
Georgia Institute of Technology  
(404) 894-1835  
pete.ludovice@chbe.gatech.edu

#### **MESD Sponsors**



**Charles M. A. Stine Award:** DuPont

**Owen Corning Early Career Award:** Owen Corning

**MESD Plenary Session:** DuPont