



Notes from the Chair

Dear MESD Members and Friends,

I'd like to start my Chair's notes with an enthusiastic "thank you" to all of you who have supported the Division with your time, efforts and dues in 2012. The Division focuses on developing a high quality program in materials at the Annual Meetings. However, we are always looking for ways to support members who do not regularly attend the annual meetings. AIChE has taken a major step in this direction by revamping their website to add more technical content, including slides from selected presentations from the annual meeting. The website has also been redesigned to facilitate professional networking and job searches. The MESD is looking at how we can make the most effective use of this new resource for our members. Please contact any division officer with your experiences using the new site and your ideas for how the website could be further improved to support your professional activities.

This year, Prof. Nicholas Kotov of the University of Michigan will be awarded the C.M.A. Stine Award, sponsored by DuPont, in recognition of his work on the advancement of chemical engineering fundamentals and practical applications of biomimetic nanostructured materials. Prof. Lynn Loo of Princeton was named the winner of the Owens Corning Early Career Award for her fundamental research in organic and polymeric electronic materials, and its direct translation into the engineering of functional organic devices. They will give their award addresses at the MESD Plenary Session on October 31, 2012 at the Annual Meeting in Pittsburgh, PA. There were multiple worthy candidates for both awards, and we encourage both resubmissions and new submissions for next year (deadline 2/13/13). Special thanks goes to John Ekerdt for organizing the Stine Award and the plenary session, and to Don Baird for leading the Owens Corning Award activities.

At the Annual Meeting in Pittsburgh, Thomas Epps III and Enrique Gomez have organized a series of ten invited presentations on "Emerging Areas in Polymer Science," with a grant from the National Science Foundation - Polymers Program, further support from their universities, the University of Delaware and the Pennsylvania State University, and four of the leading

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journals in polymer science. These sessions kick off the programming in Area 8a Polymers, which includes 22 sessions altogether. There are also 22 sessions in Area 8b Biomaterials (including the special session "Pioneers in Biomaterials"), 6 sessions in Area 8d Ceramics, 19 sessions in Area 8e Electronics and Photonics - with a special emphasis on energy applications in Topical 5: Nanomaterials for Energy Applications - and 7 sessions in Area 8f Composites. There will be 74 posters in the MESD poster session Monday, October 29 from 6 - 8 PM. The MESD Executive Council meeting will be 4 – 6 PM on Tuesday, October 30, with the Area programming meetings following from 6 – 8 PM. All MESD members are invited to attend these meetings, whose locations will be available at the meeting registration area.

The elections for MESD officers will be held from September 4 -18, 2012. We have an outstanding slate of candidates, all of whom have eminent records of accomplishment in materials research and histories of service to the MESD. Their candidate statements follow, with voting instructions given at the end. I am most grateful for their willingness to stand for elections and I encourage all members to take a few minutes to read their statements and vote. If you are interested in service in the MESD through any of the positions listed on Page 6, or as an Area Chairs or Vice-Chairs, please let me know. Contributions from members to the Newsletter and MESD website are also most welcome. We are also looking for corporate sponsors of the annual MESD Poster Session.

In closing, I would like to thank our past chair Lynn Loo for her support and advice over the past year, and to my successor as Chair, Cliff Henderson, for organizing an excellent program at the Pittsburgh meeting with help from the Area Chairs, Vice Chairs, session chairs and authors. I always valued Doug Kalika's timely support with data and meeting minutes as well as the essential input from the Directors. I look forward to seeing everyone in Pittsburgh!

Stevin H. Gehrke

Professor of Chemical & Petroleum Engineering
University of Kansas shgehrke@ku.edu

THE ELECTION SLATE: FALL 2012**Candidates for Position of Second Vice-Chair (vote for one):**

(i) Gao

(ii) Vogt

Di Gao is Associate Professor and W. K. Whiteford Faculty Fellow of Department of Chemical and Petroleum Engineering at University of Pittsburgh (Pitt). He received



his dual BS degrees in Chemical Engineering and Computer Science both from Tsinghua University, Beijing, China in 1999, and his PhD in Chemical Engineering from the University of California at Berkeley in 2004. He received the NSF CAREER Award in 2008, the Pitt Innovator Award in 2009, the Carnegie Science Center Advanced Materials Award in

2010, and the AIChE Owens-Corning Early Career Award in 2011. He was the leader of the Pitt team that received the U.S. Environmental Protection Agency P3: People, Prosperity and the Planet for Sustainability Design Competition Award in 2008 and the AIChE Youth Council on Sustainable Science and Technology Award in 2009.

Di's research interest focuses on the synthesis, assembly, and characterization of nanostructured materials, as well as the integration of these materials into devices and systems for engineering applications, such as functional coatings, biosensors, and solar cells. His research has been highlighted by media and press including *Chemical & Engineering News*, *Chemical Engineering Progress*, *Nature Nanotechnology*, *U.S. News & World Report*, U.S. Department of State website, *China Daily*, *Science Daily*, *International Business Times*, *Pittsburgh Post-Gazette*, *Pittsburgh Tribune-Review*, New England Cable News Network, KDKA TV and Radio News, and Fox News.

Di has chaired and co-chaired several MESD sessions at past AIChE annual meetings, including "Materials for Alternative Energy", "Biosensors", and "Biomaterials". As the Second Vice Chair, Di's goals are to promote the publicity of MESD and expand corporate sponsorships for establishing new professional awards for MESD members.

Upcoming Meetings and Deadlines:

AIChE Annual Meeting: Oct 29-Nov 2, Pittsburgh, PA

Stine Award nominations: due Feb. 15, 2013

Owens Corning Award nominations: due Feb. 15, 2013

Bryan Vogt is Associate Professor in the Department of Polymer Engineering at the University of Akron. He received his BS in Chemical Engineering from Michigan



Tech and PhD in Chemical Engineering from the University of Massachusetts-Amherst.

Prior to beginning his academic career, he spent four years in the Polymers Division at the National Institute of Standards and Technology. Bryan joined the faculty in Chemical Engineering at Arizona

State in 2006 and moved to the University of Akron in 2011. His research interests are focused on nanoscale phenomena and self-assembly at the interface of soft and hard materials with applications targeted in separations, energy storage, and sensing. These interests include magnetically separated porous adsorbents, organic photovoltaics, nanoporous composite supercapacitors, and functionalized porous carbons in electrochemical sensors. He has published over 80 journal articles and two patents. He has received the NSF CAREER Award (2008) and ACS PRF New Doctoral Investigator (2008).

Bryan has been active with AIChE since 2006 and has chaired numerous sessions in Areas 8a and 2d. He was the Area Chair of Polymers (8A) from 2011-2012. He has also been active as a member in ACS, MRS, Adhesion Society, and APS. As Second Vice-Chair, he would seek to improve the value involved in MESD membership. In particular, a majority of the efforts associated with the division are directed towards the annual AIChE meeting, but not all MESD members attend, especially the industrial members that comprise over 40% of MESD. One effort to provide value to all MESD members would be to improve the website such that professional development opportunities in chemical engineering related to materials would be readily accessible. Further, just over 10% of the MESD membership are students and these are the future of the division. Bryan will seek to strengthen and improve the opportunities for professional development and recognition of students through MESD. Finally, but not least in importance, is to inspire and recruit new students and young faculty to join MESD.

Candidates for Position of Director (vote for two):

- (i) Bidstrup Allen (ii) Mallapragada (iii) Seebauer (iv) Swihart

Sue Ann Bidstrup Allen is a Professor in the School of Chemical and Biomolecular Engineering at Georgia Tech. She received her S.B. in Chemical Engineering from the



Massachusetts Institute of Technology in 1981 and her Ph.D. in 1986. After a postdoctoral appointment in the Electrical Engineering Department at MIT, Dr. Allen joined Georgia Tech as an Assistant Professor in 1988, was appointed to the position of Associate Professor in 1994 and to the position of Professor in 2000. She served as the Associate Chair of the School of Chemical Engineering from 2004 to 2005.

In 2005, she was named Faculty Executive Assistant to the President by Georgia Tech President Wayne Clough and continued to serve in this position under Interim President Gary B. Schuster and President Bud Peterson. In 2011, she was appointed to the position of Associate Dean in the College of Engineering at Georgia Tech.

Sue Ann's main research focus is in the area of new materials and processes for microelectromechanical systems (MEMS) and for advanced interconnects for integrated circuits. She has advised 22 Ph.D. and 14 M.S. students. During her career, she has published over 90 refereed articles and has been issued eleven patents. Sue Ann has been the recipient of numerous research, teaching and mentoring awards, including the National Science Foundation Presidential Young Investigator Award, the DuPont Young Faculty Award, the 2008 American Society for Engineering Education (ASEE) Sharon Keillor Award, and the 2008 Council of Chemical Research (CCR) Diversity Award.

Sue Ann has been a very active member of AIChE. She has served as programming chair for Area 8A and was chair of the MESD Board from 1998-2000. She is an AIChE ABET evaluator for Chemical Engineering Programs and serves as a member of the AIChE Education and Accreditation Committee. She was recently elected as an AIChE alternate commissioner for ABET. Sue Ann is a Fellow of the Society of Plastics Engineers and is also a member of the American Chemical Society, the Society of Women Engineers and the American Society for Engineering Education.

During her term as director, Sue Ann will focus on refinement of MESD's programming and communications to engage a broader range of constituencies. It is essential to continue the division's efforts to encourage young faculty, graduate students, and industrial representatives to have greater participation in MESD. In particular, she would like to explore creative and strategic ways to utilize division resources to increase the visibility of MESD and materials research in the chemical engineering community and as well as to support the involvement of young faculty and students.

Surya Mallapragada is the Department Chair of Chemical and Biological Engineering and Stanley Endowed Chair of Interdisciplinary Engineering at Iowa State University. She



received her chemical engineering education from IIT Bombay (B.Tech, 1993) and Purdue University (Ph.D., 1996). She has courtesy appointments in the Materials Science and Engineering and Neuroscience departments at ISU. She is also a Senior Scientist and has served as Program Director of Materials Chemistry and

Biomolecular Materials at Ames Laboratory, a US Department of Energy Laboratory. Her research interests are in the area of polymeric biomaterials, specifically in drug/gene delivery and tissue engineering, and in the area of bioinspired materials. She is the author of over 100 publications and holds six patents. She has given over 60 invited talks at national and international venues.

Her work has been recognized by several awards including a National Science Foundation Career award, a 3M Non-tenured faculty award, ISU Foundation Early as well as Mid-Career Excellence in Research awards, a Big 12 Rising Star Award, and a IIT Bombay Young Alumni Achievement Award. She was named one of the top 100 young innovators by MIT's Technology Review magazine and is an elected Fellow of the American Institute for Medical and Biological Engineering and the American Association for the Advancement of Science.

In addition to her leadership experiences in the Chemical and Biological Engineering department at Iowa State University and as a Program Director at Ames Laboratory, she has been very active in leadership positions at AIChE.

She has served AIChE Division 15 (Food, Pharmaceutical and Bioengineering) in various roles including Treasurer, 15B Area Chair and Chair of the Division. She received the Division 15 Distinguished Service Award for her contributions and leadership. She is currently a member of the Executive Board of the National Programming Committee of AIChE (EBPC). In this role, she is heading a sub-task to look at ways to improve the meeting program quality across Divisions. Surya brings her experiences from Division 15 as well as the EBPC to bring new ideas into Division 8, if elected. She is interested in promoting collaboration between Divisions, working to improve meeting program quality, and increasing the visibility of Division 8 within the AIChE National meeting, as well as beyond.

Edmund G. Seebauer is James W. Westwater Professor and Provost Fellow for International Academic Programs at the University of Illinois at Urbana-Champaign. He



received his B.S. at Illinois in 1983 and Ph.D. at Minnesota in 1986. He spent a year of postdoctoral work at Sandia National Laboratories before returning to Illinois in 1988 as a faculty member. He served as department head 2005-11. His awards include an NSF Presidential Young Investigator Award, an A. P. Sloan Research Fellowship (Chemistry), a

DuPont Young Faculty Award, and an Inventor Recognition Award from Semiconductor Research Corporation. He is a Fellow of AIChE, AAAS, APS and AVS and has served as an IEEE Electron Device Society Distinguished Lecturer. He has several awards for teaching and student advising. Ed has held leadership roles in several professional societies. Within AIChE's MESD, he succeeded from 2nd Vice-Chair through 1st Vice-Chair through Chair to Past Chair during 2007-11. Prior to that, he was program chair for the Electronic and Photonic Materials Area (8E) from 2001-03, and during that time regularized and greatly diversified that Area's programming. He served as program chair for the Manufacturing Science & Technology Group at AVS in 2002 and overall Co-Chair (2002-11), and currently holds the position of Treasurer (since 2000) of that unit.

Ed's research focuses primarily on semiconductor defect engineering. He has discovered a suite of physical mechanisms for controlling the behavior of point defects in semiconductors with surfaces, light, and ions. These methods are finding direct use to solve practical problems

in transistor manufacture for integrated circuits and the development of catalyst supports with novel properties. He has nearly 180 research publications including several book chapters. He has also co-authored a textbook on engineering ethics and a book on defects in semiconductors.

Materials lie at the heart of the chemical engineering discipline. A substantial challenge for MESD in the coming years will be to maintain its core identity while adjusting its focus to incorporate major new societal issues such as affordable and sustainable energy use. The steadily proliferating number of forums within AIChE can be a useful means to move in new research directions, but only if the primary specialties maintain their strength and sharp focus. I have seen such issues play out in most of the programming positions I have held over the years, and have learned that within a disciplinary society such as AIChE, strong connections to industry and provision for a few focused sessions in student education can greatly strengthen and sustain first-class technical programming. As Director, I will work to improve such connections – drawing on my long and extensive experience with MESD programming.

Mark T. Swihart is Professor and Director of Graduate Studies in the Department of Chemical and Biological Engineering at the University at Buffalo (SUNY), where he



also leads a university-wide strategic initiative in Integrated Nanostructured Systems. He earned his B.S. from Rice University in 1992, and his Ph.D. from the University of Minnesota in 1997, both in Chemical Engineering. His dissertation research focused on gas phase chemical kinetics and the modeling of chemical vapor

deposition of silicon from chlorosilanes. He joined the University at Buffalo in fall 1998, after a short post-doc in mechanical engineering at Minnesota, which focused on particle formation during silicon CVD from silane.

In Buffalo, Mark's research has focused on the synthesis and applications of nanoparticulate materials. Much of this interdisciplinary research activity involves applying principles and methods of chemical engineering science to the development of practical processes for producing nanomaterials. This ranges from modeling of reacting flows in nanoparticle synthesis to applications of nanoparticles in biological research and energy-related technologies. He has co-authored more than 100 refereed publications, which

have been cited about 3000 times. His research has been recognized with the J.B. Wagner award of the Electrochemical Society, the Kenneth Whitby award of the American Association for Aerosol Research (AAAR), and several university awards. He has also been voted “Professor of the Year” by the SUNY-Buffalo CBE undergraduates four times, and has been honored by the McNair Scholars Program and the Louis Stokes Alliance for Minority Participation for his efforts in mentoring undergraduate researchers.

Mark has been a member of AIChE and an active participant in the annual meeting for 20 years. He has co-chaired many sessions in area 8(e), electronic materials, including sessions co-sponsored by the particle technology forum. He is also active in The Electrochemical Society (ECS), AAAR, MRS, and ACS, and has led the organization of major symposia on chemical vapor deposition and vapor-phase materials processing at ECS meetings. In August, 2012, he joined the Board of Consulting Editors for AIChE Journal. He has previously served on the editorial advisory boards of the International Journal of Chemical Kinetics and Aerosol Science and Technology. He presently serves as an editor for Aerosol Science and Technology, primarily handling papers related to aerosol synthesis of materials.

As Director, Mark will endeavor to raise the visibility of MESD, both within AIChE and in the broader materials community. Within AIChE, this includes improving connections with area 3 (the Particle Technology Forum), which has a healthy and growing material synthesis and processing component. In the broader materials community, this could involve more thematic programming and symposia with invited speakers who do not ordinarily attend the annual meeting.

Many promising technologies based upon new materials and nanomaterials (e.g. quantum dots) are limited by the lack of economical means of producing, purifying, and processing these materials at large scale with performance that matches that achieved in the laboratory. The AIChE MESD community not only does world-class fundamental research, but can also address these issues of scale-up and economics. Our sessions at the AIChE annual meeting should be a premier venue for presenting such work.

**Candidate for Position of
Secretary/Treasurer (vote for one):
(i) Kalika**

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 membranes. Doug has held a number of administrative positions at UK, including Senior

Associate Dean and Acting Dean of the Graduate School (1998-2003), and was appointed Department Chair in 2009.

Doug has been active in MESD and AIChE programming for nearly 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). In addition, he served as Vice-Chair and Chair of the Division from 2001 to 2004. Doug was first elected Secretary/Treasurer in 2007, and looks forward to continuing service in that role.

The polls for MESD elections will be open from:
September 4 – 18, 2012

To vote for candidates use the following web site with the division pass code for login “MES”:

www.aiche-xtranet.org/divisions/

You will need your AIChE membership ID and BS graduation year to submit your ballot.

Note: If the balloting system does not recognize your email address or BS graduation year, you may not be entering the same information that is in AIChE's records. Please contact AIChE customer service at 800-242-4363 to confirm or change your information.

MESD Officers

Chair

Stevin Gehrke
University of Kansas
785.864.4956
shgehrke@ku.edu

Second Vice Chair

Efie Kokkoli
University of Minnesota
612.626.1185
kokkoli@umn.edu

Directors (term ends 2012)

Jennie Leach
University of Maryland-Baltimore County
410.455.8152
jleach@umbc.edu

Dimitrios Maroudas
University of Massachusetts
413.545.2507
maroudas@ecs.umass.edu

First Vice Chair and Program Committee Chair

Cliff Henderson
Georgia Institute of Technology
404.385.0525
cliff.henderson@chbe.gatech.edu

Secretary-Treasurer

Douglass Kalika
University of Kentucky
859.257.5507
kalika@engr.uky.edu

Directors (term ends 2013)

Stacey Bent
Stanford University
650.723.0385
sbent@stanford.edu

Sanat Kumar
Columbia University
212.854.2193
sk2794@columbia.edu

Past Chair

Lynn Loo
Princeton University
609.258.9091
lloo@princeton.edu

Webmaster

Pete Ludovice
Georgia Institute of Technology
404.894.1835
pete.ludovice@che.gatech.edu

Newsletter Editor

Lynn Loo
Princeton University
609.258.9091
lloo@princeton.edu

MESD Sponsors



Charles M. A. Stine Award: DuPont



Owens Corning Early Career Award: Owens Corning



MESD Plenary Session: DuPont

Emerging Trends in Polymer Science & Engineering Plenary Sessions:

The National Science Foundation: Division of Materials Research, Polymers Program: Grant DMR-1242289

The Journal of Polymer Science Part B: Polymer Physics (Wiley)

ACS Macro Letters (American Chemical Society)

Macromolecules (American Chemical Society)

Soft Matter (Royal Society of Chemistry)

The Pennsylvania State University: the Department of Chemical Engineering, the College of Engineering and the Materials Research Institute

The University of Delaware: the Department of Chemical & Biomolecular Engineering, the College of Engineering and the Center for Molecular and Engineering Thermodynamics (CMET)