AAAS Section M (Engineering) Business Meeting

April 4, 2023

4pm ET to 5.30pm ET

AGENDA

1. Introductions and Section Chair Remarks (Abbott)

2. Steering group membership changes for our section (Abbott)

3. Ideas for our section's programming for 2024 Annual Meeting (Abbott)

- The 2024 Annual Meeting will be held in Denver, CO, Feb15-17. 2024.
- Meeting Theme: Towards Science without Walls
- Proposal Submission Deadline: May 4, 2023
- URL: https://meetings.aaas.org

4. Review of Fellow nomination process (Simaan)

5. Other business

AAAS Section on Engineering (M) Steering Group

(Terms end December 31, 2023)

Chair
Nicholas L. Abbott (2023)
Cornell University

Secretary
Marwan A. Simaan (2023)
University of Central Florida

Nominations/Leadership Development Chair
Pramod P. Khargonekar (2023)
University of California, Irvine

Membership Engagement Chair
Anne Skaja Robinson (2023)
Carnegie Mellon University

Early Career Representative
Carlos Rinaldi-Ramos (2023)
University of Florida

Non-academic Representative
Sankar Basu (2023)
National Science Foundation (serving in personal capacity)

Council Member
Jaqueline Chen (2023)
Sandia National Laboratories

Members-at-Large
Norma Alcantar (2023)
University of South Florida

Jennifer Sinclair Curtis (2023)
University of California, Davis

www.ece.ucf.edu/aaas-m/

2022 AAAS Fellows – Engineering

Linda M. Abriola, *Brown University*: For outstanding contributions to our understanding of the transport and persistence of contaminants in the subsurface and the design of remedial strategies.

Burcu H. Akinci, *Carnegie Mellon University*: For distinguished contributions to data and model-driven construction and infrastructure management, through the generation and utilization of digital twins for proactive and predictive decision-making.

Stelios T. Andreadis, *State University of New York at Buffalo*: For distinguished contributions to the field of cell, gene, and tissue engineering and regenerative medicine through research, student mentoring, and administrative leadership.

John H. Booske, *University of Wisconsin-Madison*: For distinguished contributions to the fields of plasma science, vacuum electronics, and microwave-materials interactions, and for championing best educational practices for generations of students, both institutionally and nationally.

Jonathan Cagan, *Carnegie Mellon University*: For distinguished contributions to the field of design theory and methodology, particularly as it applies to transformational product design, innovation, and automation.

Peter J. Delfyett, Jr., *University of Central Florida*: For distinguished contributions to the development of ultrafast mode-locked semiconductor diode lasers and their application in ultra-wide bandwidth optical communications and signal processing.

Ronald F. DeMara, *University of Central Florida*: For outstanding contributions in computer systems design and architecture with emphasis on emerging computing devices for machine learning, adaptive and reconfigurable hardware, and digitization of STEM education.

Lily (Ageliki) Elefteriadou, *University of Florida*: For contributions to traffic modeling, simulation, optimization, and traffic management leveraging autonomous, connected, and conventional vehicle technologies.

Gregory L. Fenves, *Emory University*: For academic leadership and contributions to computational modeling and the creation of open-source software for earthquake engineering analysis.

Shubhra Gangopadhyay, *University of Missouri-Columbia*: For distinguished contributions in bioengineering for the development of plasmonic gratings and nanoelectronic device-based biosensor systems for ultrasensitive detection of biomarkers.

Tryphon T. Georgiou, *University of California, Irvine*: For distinguished contributions to mathematical control systems theory.

Keisuke Goda, *The University of Tokyo (Japan)*: For distinguished contributions to the field of biophotonics, particularly for the development of ultrafast optical imaging and spectroscopy for solving diverse biomedical problems.

Vivek K. Goyal, *Boston University*: For distinguished contributions to the field of computational imaging and sensing, particularly for advancing the understanding of the information content of weak, mixed, and indirect optical measurements.

Samuel Graham, Jr., *University of Maryland, College Park*: For developing optical/electrical methods and models to characterize thermal response/properties of wide bandgap electronics including RF and power electronics and for developing chip-embedded cooling for high heat flux operation.

Carol A. Handwerker, *Purdue University*: For distinguished contributions to science-driven technological advances that reduce environmental impacts, including the global adoption of lead-free solder in electronics manufacturing.

2022 AAAS Fellows – Engineering

Yih-Fang Huang, *University of Notre Dame*: For distinguished contributions to the field of adaptive filtering and its applications to wireless communications and distributed sensor networks.

Bahram Javidi, *University of Connecticut*: For lifelong pioneering multidisciplinary contributions to optical imaging with diverse applications in life sciences, 3D imaging, and cyber-physical security, and for promoting international collaborations in this field.

Shaoyi Jiang, *Cornell University*: For distinguished contributions to molecular engineering of materials, particularly for designing biocompatible and environmentally benign zwitterionic materials for control of biofouling.

Ahsan Kareem, *University of Notre Dame*: For his distinguished engineering achievements and impactful contributions toward advancing the safety and resilience of civil infrastructure exposed to natural hazards.

Joerg Lahann, *University of Michigan*: For distinguished contributions to the field of polymeric materials engineering, particularly biointerfaces prepared using chemical vapor polymerization.

Ajay P. Malshe, *Purdue University*: For distinguished contributions to science, engineering, and entrepreneurship in bio-inspired designs, advanced materials, and nanomanufacturing with impact in multiple industry sectors and society.

Diana Marculescu, *The University of Texas at Austin*: For distinguished contributions to the design and optimization of energy-aware computing systems.

Prabhat Mishra, *University of Florida*: For distinguished contributions to the field of reliable and trustworthy systems design, particularly developing scalable and automated techniques for energy-aware computing, system-on-chip verification, and hardware security validation.

Massoud Pedram, *University of Southern California*: For leadership in low-power design of VLSI circuits and contributions to energy-efficient computing resulting in sustainable computing infrastructure.

John H. Perepezko, *University of Wisconsin-Madison*: For outstanding innovations to the fundamental understanding and application of structural synthesis, kinetics, and alloy phase stability during materials processing to obtain useful microstructures, nanostructures, and amorphous materials.

Kristin Aslaug Persson, *University of California, Berkeley*: For the conception and development of the Materials Project.

Pengyu Ren, *The University of Texas at Austin*: For groundbreaking advancements in computational biomolecular engineering, particularly molecular modeling methodologies and software, and understanding of physical driving forces in molecular recognition and assembly.

Fabio H. Ribeiro, *Purdue University*: For distinguished contributions to the field of surface catalysis, particularly for unraveling concepts and mechanisms that determine chemical reactivity.

Carlos M. Rinaldi-Ramos, *University of Florida*: For distinguished contributions to biomedical applications of magnetic nanoparticles and transport of nanoparticles in complex and biological fluids.

M. Taher A. Saif, *University of Illinois Urbana-Champaign*: For distinguished contributions to the field of nano-bio mechanics, particularly for revealing novel deformation mechanisms in nanomaterials, and the effect of cellular forces on neuronal function and cancer progression.

2022 AAAS Fellows – Engineering

Julie M. Schoenung, *University of California, Irvine*: For distinguished contributions to the synthesis and characterization of advanced structural materials, particularly nanostructured materials, coatings, additive manufacturing, and green engineering.

Charles M. Schroeder, *University of Illinois Urbana-Champaign*: For pioneering advances in manipulating single molecules to reveal the links between micro- and macroscale behavior in rheology that lead to molecular electronics and lipid vesicles as drug delivery vehicles.

Warren D. Seider, *University of Pennsylvania*: For distinguished and foundational research, simulation software, teaching, and service contributions to the field of computer-aided process design and control.

Sindee L. Simon, *North Carolina State University*: For transformational contributions to materials physics and chemistry, particularly for novel experiments and modeling of non-equilibrium behavior of glasses and the impact of nanoconfinement on phase transitions and polymerization kinetics.

Abraham D. Stroock, *Cornell University*: For distinguished contributions to our understanding of the dynamics of physical and chemical processes on micrometer scales, particularly involving water management in plants and its impact on agriculture.

Jeanne M. VanBriesen, *Carnegie Mellon University*: For outstanding contributions to the field of environmental engineering, particularly in modeling biodegradation of chemical mixtures and assessing the role of energy systems on drinking water.

Tza-Huei (Jeff) Wang, *Johns Hopkins University*: For distinguished contributions to the development of bioanalytical methods for molecular analysis and biomedical research, including circulating tumor DNA detection and point-of-care diagnostics.

Jennifer L. West, *University of Virginia*: For distinguished contributions to the field of biomedical engineering, particularly for the development of bioactive hydrogels and nanoparticles for photothermal cancer therapy.

Karen I. Winey, *University of Pennsylvania*: For distinguished contributions to the field of polymer science, particularly in the understanding of and manipulation of unique polymer nanocomposites and ion-containing polymers.

Fengqi You, *Cornell University*: For major fundamental contributions to advanced computational models, optimization algorithms, and multi-scale systems analytics tools for chemical processes, energy systems, and sustainability.

How to get involved

Multidisciplinary Working Groups

In the final phases of modernizing its 70-year-old governance structure, AAAS sought to capitalize on its unique multidisciplinary strength to build on its strategic goals and find a new opportunity for impactful dialogue and solution. The Multidisciplinary Working Groups (MWGs) were created, under the purview of the AAAS Council, to address high-priority issues in science, technology, engineering, mathematics and medicine (STEMM). The MWGs draw upon our key strengths – our unique position at the intersection of science, policy, and publishing; the multidisciplinary composition of our members; our longstanding connection with other scientific and professional societies; and our deeply engaged volunteers with extensive expertise.

In addition to providing AAAS and the STEMM enterprise with actionable, feasible and practical advice in response to key issues, the MWGs will also advance our strategic vision as a boldly inclusive, mobilized and global scientific community that ignites, enables and celebrates scientific excellence and science-informed decision-making.

THE MULTIDISCIPLINARY WORKING GROUP (MWG) PROCESS

Proposals for new MWGs will be accepted on a rolling basis. The AAAS Council will periodically review topics for which to convene MWGs.

Once a MWG topic is approved by the AAAS Council, a nomination period for Working Group membership will open. Individuals interested in participating in a MWG may either self-nominate or be nominated by another individual, and they do not need to be current or former AAAS members.

In support of the AAAS goal of fostering a diverse, equitable, open and inclusive scientific enterprise, each MWG will include diverse perspectives across an array of STEMM disciplines, including academic and non-academic sectors, as well as early-career (including students), mid-level and advanced-career individuals.

The size of the MWGs may vary but generally will fall between 10-20 core group members. The AAAS Council will appoint the members of each MWG.

As the MWG meets, their updates will be shared with the AAAS Council and the public for input. The MWG's ultimate plans for implementation will be presented at the AAAS Annual Meeting.

GETTING INVOLVED

The first MWG is the Empowering Career Pathways in STEMM Multidisciplinary Working Group. See https://www.aaas.org/governance

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NEW GOVERANCE STRUCTURE: SECTION STEERING GROUP

The section steering committee comprises
Chair
Secretary,
Nominations/leadership development chair,
Membership engagement chair,
Early career representative,
Non-academic representative,
Council member and
Two members-at-large.

The steering committee's responsibilities include nomination and review of Fellow nominations, and proposal of symposia for the AAAS Annual Meeting.

Section Steering Committee Position Responsibilities

Section Chair

1. Oversee the Annual Meeting Symposia process for the Section
2. Organize and set the agenda for the Section's business meeting/s
3. Serve as a liaison when subject matter expertise from within a Section is required for AAAS efforts
4. Help lead or find someone to lead collaboration with other Sections
5. Elected by Section members to a three-year term, replacing the current three individuals serving in the roles of Chair-elect/Chair/Retiring Chair
6. As the Chair finishes their term, they can serve as an informal advisor to the next Chair without formally committing to the Section for an additional year
7. Attendance to the AAAS Annual Meeting

Section Secretary

1. Primary liaison between the Steering Committee and the AAAS Executive Office staff
2. Leads the Fellows nominations and review process for the Section
3. Oversight of Section budget and approval of expenditures
4. Appointed by the respective Steering Committee to a three-year term, renewable once, with the responsibility to pass along institutional memory
5. Attendance to the AAAS Fellows Forum

***Note*:** The Secretary and Chair roles will be offset such that neither will begin their new terms at the same time. This way, they can provide mutual mentorship and support for one another.

Council Member

1. Serve as a means of connection and communication between the Council/CEC and the Section
2. Is an ex-officio (voting) member of their Section Steering Committee
3. Elected by Section members to a three-year term

Nominations/ Leadership Development Chair

1. Proactively seek disciplinary talent (with an eye toward all aspects of inclusion) throughout the year, building the talent pool for future Section leadership as well as a strong list of subject matter experts for any disciplinary needs
2. Lead the Section Steering Committee in compiling a slate of nominations for Section roles
3. Share information with the Executive Office regarding potential leadership in the Section who should be part of the larger AAAS leadership pool
4. Elected by Section members to a three-year term

Membership Engagement Chair

1. Engage in reciprocal dialogue with Section members, to keep members apprised of AAAS and section activities throughout the year and listen to members' concerns, questions, and thoughts, relaying these back to the Section Steering Committee
2. Work with the Leadership Development/Nominations Chair to spearhead outreach to promising prospective members to get them to join AAAS
3. Working in partnership with the Nominations/Leadership Development Chair, incorporate the diversity priorities of AAAS to identify those who would be excellent Fellow nominees or governance leaders
4. Appointed by the respective Steering Committee to a two-year term, renewable once

Early Career Representative

1. Provide an early career voice to the Section Steering Committee on matters of Fellow nominations, Annual Meeting symposia, and other initiatives
2. Uncontested election to a two-year term, non-renewable

Non-academic Representative

1. Add a non-academic perspective to the Section Steering Committee on matters of Fellow nominations, Annual Meeting symposia, and other initiatives
2. Uncontested election to two-year term, non-renewable

At-Large Representatives (two)

1. These two additional seats on the Section Steering Committee will be reserved for additional leadership. The selection of these leaders can incorporate similar leadership competency criteria, as applicable, as used for the Board selection process
2. These at-large seats can also integrate additional definitions of diversity including, but not limited to, geography, sub-field, etc.
3. Provide further insights from the Section in key work of the Section Steering Committee
4. Appointed by the respective Steering Committee to a two-year term, renewable once

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2024 Meeting theme: **Toward Science Without Walls**

In an ideal world, powerful scientific discoveries would emerge from collaborations built on expertise that crosses disciplines, provoke audacious concepts, and drive impactful applications. Bold ideas would be sought, funded, and celebrated. Students and trainees of all backgrounds and life experiences would receive education that conveys the wonder of science and the power of evidence-based reasoning. Incentives and rewards during graduate and postdoctoral training, and throughout professional academic careers, would motivate and promote creative thinking and risk-taking. Our scientific culture would embrace diversity and those from underrepresented backgrounds, prioritizing the inclusion of a rich blend of perspectives that would drive innovation, and accelerate discovery and application.

Instead of this ideal, however, today's scientific enterprise is fragmented by blockades large and small, intentional and inadvertent. Our science enterprise persists at a moment when the global community is confronted by existential challenges in health, energy, environment, food, and security. Those challenges will be met only by breakthrough scientific discoveries and coordinated, directed delivery of transformative technologies, unconstrained by conceptual, social, economic, or bureaucratic boundaries. Indeed, it is encouraging that despite the barriers, some revolutionary strategies and technologies that promise impacts in those challenge areas are on the horizon; we shall be stimulated in learning of some of those at this meeting. To advance Toward Science Without Walls, the theme of the 2024 AAAS Annual Meeting, we shall explore a wide range of problem areas, and aspirations, and proposals for addressing them.

Some potential, by no means inclusive, examples:

• incentive and reward metrics in academia and funding agencies that encourage risk-taking, and focus on collaborative teams over individuals;
• disciplines freed from the constraints of academic bureaucratic structures and isolated federal funding agencies;
• K-16 science education that conveys the mechanisms, impact and excitement of discovery, and provokes and promotes creative thinking;
• scientists trained in the public context of science, and empowered to communicate the societal and cultural significance of science to policymakers and to the public;
• elimination of bias and inequities that separate underrepresented groups and lock out under-resourced individuals, institutions and countries;
• training and early career model that promotes individuals with families, especially women;
• policies and business plans of publishers that provide open access to data, utilize validated quality metrics, and eliminate inequities of access and recognition;
• rational solutions to national and economic security concerns that encourage data sharing, collaborative programs, and participation by, and funding to, non-US investigators and trainees
• immigration policies that encourage training and retention of non-US scientists
• federal policies that provide funds for applications derived from discovered knowledge, as well as for basic research-driven knowledge discovery and training future researchers;
• effective coordination and incentivization of collaboration across the federal government and the two dozen federal agencies that support science and technology;
• robust mechanisms across the federal government to establish and support publicprivate collaboratives focused on addressing societal challenges.

Call for Proposals: AAAS 2024 Annual Meeting

This call is for both **Scientific Sessions, Lightning Talks, and Workshops** for the 2024 AAAS Annual Meeting. Please click on the appropriate link for submission instructions.

Scientific Sessions - **Deadline: Thursday, May 4, 2023 11:59 p.m. PT**

Science and technology experts assemble in small multi-disciplinary panels to discuss research that advances knowledge and/or responds to the needs of society. During these 60-minute sessions, a panel of three speakers give 10-minute presentations followed by audience questions and comments.

Lightning Talks - **Deadline: Thursday, May 4, 2023 11:59 p.m. PT**

Lightning talks offer early career researchers the opportunity to have the stage to themselves for ten minutes (one speaker only per submission).

Workshops - **Deadline: Thursday, May 4, 2023 11:59 p.m. PT**

Workshops should be aimed at individuals seeking careers in science and engineering and professionals looking to sharpen or supplement their skills. These workshops are instructional and interactive in nature and are markedly different from a scientific session. Workshops may have up to 3 presenters and will be 60 minutes in length.

Considerations: Newsworthy

New (not previously disclosed) advances with implications for technology, medicine, health, society of policy

Historically, the press is interested in stories that address:

- My Family & Me (health & medicine)
- Gee-Whiz! (robots, dinosaurs, asteroids, new technology)
- My World (climate change, natural disasters, environment)

Considerations:

Please note: Proposals on a specific projects or programs are discouraged, unless they significantly emphasize broader applicability.

Submission Deadline: May 4th

Considerations:

Empirical data focus: newly collected and new interpretations

Provide unique interdisciplinary perspectives for AAAS attendees that would not be available in other events

Presenting topics from which dynamic discussions can develop

Considerations: Speakers

Confirmed over invited panelists.

Realistic Panelist line-ups

Looking for diversity in gender, race/ethnicity, scientific discipline, institution, geographical area, career stage

Submission Deadline: May 4th

Timeline:

May 4: Deadline for submitting 2024 scientific session proposals and workshops.

Proposals and workshops will not be accepted after the deadline.

May 15: Scientific and lightening talk proposal review opens.

May 31: Scientific and lightening talk proposal review closes

June/July: Program committee reviews and selects sessions

July 30: Session organizers receive accept/decline notifications.

Submission Deadline: May 4th

Timeline:

Early September 6:

Travel Support Request site opens. An email notification is sent only to the session organizer and co-organizer(s) informing them to send the travel request instructions to just the participants in need of travel support to participate in the Annual Meeting on their session.

Section Interest site opens. Section officers are asked to identify sessions they feel will be of interest to section members for reporting on the website and Annual Meeting online program.

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2023 AAAS Fellow Nomination Process

To be nominated an AAAS member must meet the 4-years continuous membership criterion (Since December 31, 2019, or earlier).

Three ways to be nominated:

1) By a Member of the Steering Group:

Quota on number of nominations: 19

One nomination is allowed that does not meet the 4-year criterion

2) By 3-AAAS Fellows Sponsors (Submit on AAAS online submission portal)

No Quota on number of nominations

Quota on number of nominations to be advanced to AAAS Council: 19

Nomination deadline is April 25, 2023

Requirements:

No Fellow may serve as a sponsor on more than **two** 3-Fellow nominations in any given year

Only **one** of the three sponsors may be currently affiliated with the same institution as that of the nominee.

3) By the AAAS Chief Executive Officer

No Quota on number of nominations

Questions

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