

## ACS Division of Colloid and Surface chemistry (COLL)

### Call for Papers

### 261<sup>st</sup> ACS National Meeting (April 5-16, 2021)

Program Chair: Steven Tait ([tait@indiana.edu](mailto:tait@indiana.edu))

Support: Ramanathan Nagarajan ([ramanathan.nagarajan.civ@mail.mil](mailto:ramanathan.nagarajan.civ@mail.mil))

Meeting/Abstracts Submission Site:

<https://www.acs.org/content/acs/en/meetings/acs-meetings/abstract-submission.html>

Timeline:

- Wednesday, December 16 MAPS opens for author submissions
- Tuesday, January 19 MAPS closes to author submissions
- Wednesday, March 10 Acceptance notice sent to presenters
- Wednesday, March 19 First scheduling notice sent

Meeting Dates and Sessions

- Monday, April 5 to Friday, April 16, excluding the weekend.
- 3-hour session blocks, three times a day
- Pacific Time 9:00 AM - 12:00 PM (preferred for Europe, North America); 1:00 PM - 4:00 PM (preferred for North America); 5:00 PM - 8:00 PM (preferred for Asia, Australia)
- Zoom sessions, interactive with Q&A

Registration and Fees

- Registration will open mid-January and remain open until end of the meeting.
- All attendees and presenters will be required to register.
- \$99 for ACS members.
- \$149 for non-member.
- \$29 for students.
- \$0 for members who are unemployed or have 50 year Emeritus status.

## **COLL Technical Symposia Scheduled for the 261st ACS National Meeting**

Self-assembly in polymer systems

Biomembrane Synthesis, Structure, Mechanics, and Dynamics

Colloidal Nanoparticle Synthesis and Assembly

Colloidal hybrid materials intended for biological applications

Macromolecular Design of (bio) Energy Materials and Safety Evaluation

Semiconductor Surfaces: from Chemistry and Function to Applications

Industry-Academia Dialogue

Nanomaterials

Surface Chemistry

Biomaterials and Biointerfaces

Basic Research in Colloids, Surfactants and Interfaces

ACS Award Lectures 2020

ACS Award Lectures 2021

ACS Award in Surface Chemistry 2020 - Symposium in honor of Teri Odom

ACS Award for Research at an Undergraduate Institution 2020 - Symposium in honor of Kerry Karukstis

ACS Award in Colloid Chemistry 2021 - Symposium in honor of Emily Weiss

ACS Award in Surface Chemistry 2021 - Symposium in honor of Vicki Grassian

Fundamental Research in Colloids, Surfaces and Nanomaterials

## Symposia Descriptions

### Self-assembly in polymer systems

(Celebrating Macromolecular Chemistry: The Second Century)

Organizers:

Matthew Tirrell ([mtirrell@uchicago.edu](mailto:mtirrell@uchicago.edu))

Stephan Förster ([s.foerster@fz-juelich.de](mailto:s.foerster@fz-juelich.de))

Ramanathan Nagarajan ([Ramanathan.Nagarajan.Civ@mail.mil](mailto:Ramanathan.Nagarajan.Civ@mail.mil))

This symposium is organized to celebrate the ACS National meeting's theme "Macromolecular Chemistry: The Second Century". The symposium will include oral and poster presentations focusing on self-assembly involving a variety of polymer systems. Examples include amphiphilic block and graft copolymers, block polyelectrolytes, and polymer conjugates with other molecules such as lipids, DNA, or proteins. Self-assembly in solutions as well as at interfaces will be of interest. Experimental, computational and theoretical studies emphasizing fundamentals of self-assembly, characterization of self-assembled systems as well as applications will be considered

### Biomembrane Synthesis, Structure, Mechanics, and Dynamics

Organizers:

Subra Muralidharan ([subra.murali@ucdavis.edu](mailto:subra.murali@ucdavis.edu))

Marjorie Longo ([mllongo@ucdavis.edu](mailto:mllongo@ucdavis.edu))

Atul Parikh ([anparikh@ucdavis.edu](mailto:anparikh@ucdavis.edu))

Mu-Ping Nieh ([mu-ping.nieh@uconn.edu](mailto:mu-ping.nieh@uconn.edu))

John Katsaras ([katsarasi@ornl.gov](mailto:katsarasi@ornl.gov))

The dynamic structural and mechanical properties of cell membranes strongly regulate functions of proteins, lipids, and genes, signaling pathways, and disease onset and progression. The symposium will focus on the current state of the art in biomembrane synthesis and self-assembly, structure, mechanics, and dynamics of cells and model membrane systems. Experimental and theoretical approaches including single molecule force and optical microscopy and spectroscopy methods, neutron and x-ray structural studies, nanoscale probes, and molecular dynamics simulations exemplify topics that have been presented at this symposium over the last 12 years. The journal *BioInterphases* will be sponsoring prizes for the top three U.S. and one international student oral presentations at this symposium. The first of these prizes were awarded at the 255th ACS National Meeting in New Orleans. *BioInterphases* will continue to support student presentations and award prizes.

### Colloidal Nanoparticle Synthesis and Assembly

Organizers:

Dale Huber ([dlhuber@sandia.gov](mailto:dlhuber@sandia.gov))

Tao Li ([tti4@niu.edu](mailto:tti4@niu.edu))

Yugang Sun ([tug30820@temple.edu](mailto:tug30820@temple.edu))

Hongyou Fan ([hfan@sandia.gov](mailto:hfan@sandia.gov))

Colloidal nanoparticles represent an important class of structural and functional building block for many technologically significant materials and devices. However, technologies that leverage the structural advantages of individual nanoparticles have not been fully realized and have been limited by synthesis method. Fundamental issues related to chemical precursors, size, shape, and core/shell structure, surface chemistry, etc. critically determine the property and applications of nanoparticles and their assemblies. To address these issues, this symposium will cover the general topics of colloidal nanoparticle synthesis and assembly. Specifically, this symposium will focus on (1) nucleation and growth for crystal growth and to manipulate nanoparticle size, shape, and core/shell structure; (2) structural and property characterizations of nanoparticles; (3) Integration of nanoparticles in nanoelectronics and nanophotonics; and (4) Advanced spectroscopy and transport studies on optical, electronic, and magnetic structure, carrier dynamics, of nanoparticles/nanowires. The topics covered include:

- Nanoparticle surface chemistry/functionalization to manipulate particle interactions, packing symmetry, external framework, and property;
- Large area of self-assembled nanoparticle arrays and patterning with long range order;
- In-situ characterizations of nanoparticle nucleation, growth, and self-assembly;
- Characterization of structure and property of self-assembled nanoparticle arrays

### **Colloidal hybrid materials intended for biological applications**

Organizers:

Wolfgang Parak ([wolfgang.parak@uni-hamburg.de](mailto:wolfgang.parak@uni-hamburg.de))

Neus Feliu ([nfeliu@physnet.uni-hamburg.de](mailto:nfeliu@physnet.uni-hamburg.de))

There are many reports of (potential) applications of colloids in biology/medicine. Classically emphasis is given on one property, originating from homogeneous particles. However, colloids in the context of biology are hybrid materials, for example by modification of the particle by adsorbed proteins, which forms together a new hybrid particle. Colloids also can be intentionally made by different compounds, allowing for multi-functionality. Such assemblies however do not need to be stable, as (intracellular) degradation processes may change the composition of the hybrid particle over time. In this symposium emphasis will be given on the hybrid nature of colloids. Appropriate topics include, but are not limited to:

- Synthesis of hybrid particles
- Self-assembly of particle-particle complexes
- Analysis methods to characterize hybrid particles
- Protein corona formation
- Particle degradation
- Multi-functionality of particles for imaging, treatment, diagnosis, etc.

### **Macromolecular Design of (bio) Energy Materials and Safety Evaluation**

Organizers:

Sajid Bashir ([br9@tamuk.edu](mailto:br9@tamuk.edu))

Silvana Andresscu ([eandrees@clarkson.edu](mailto:eandrees@clarkson.edu))

Shawn P. Mulvaney ([shawn.mulvaney@nrl.navy.mil](mailto:shawn.mulvaney@nrl.navy.mil))

Jingbo Louise Liu ([jingbo.liu@tamuk.edu](mailto:jingbo.liu@tamuk.edu))

Join us as we explore the macromolecular design of (bio) energy materials and their safety evaluation including the application of protonic membrane in cellular communication. The materials design from the macromolecular level aims to advance the next generation of energy technology/bioenergy/ biocommunication/proton transport to further improve the environmental and ecological biota-abiota interface. This MPPG symposium encourages submissions representing different colloidal methods to prepare and characterize macrostructural materials used in the sustainable and conventional energy fields. A broad spectrum of energy/ bio/ cellular applications of these produced materials can range from (microbial) fuel cells, solar energy, and batteries to hydrogen, shale, biofuels, and natural gas. The proposed symposium features fundamental research & industrial development, on energy materials designed using various approaches, and their structural characterization and performance evaluation using different instrumentations. Topics include, but are not limited to:

- Novel concepts and applications in the macromolecular design;
- Top-down and bottom-up engineering of energy and biomaterials;
- Solvothermal Synthesis and characterization of macromolecular host-guest structure for energy and bio application;
- Tuning structure & properties of energy materials for efficient processability;
- Polymeric membranes and their energy-related applications or protonic membranes for MFCs applications or proton signaling in cellular systems;
- Amphiphilic functionalization of electrocatalysts to improve energy conversion, or improve proton membrane wettability or enhanced tolerance to methanol;
- Macromolecular design of interactive materials for remediation of energy waste;
- Challenges and safety evaluation of energy or biomaterials.

## **Semiconductor Surfaces: from Chemistry and Function to Applications**

Organizers:

Andrew V. Teplyakov ([andrewt@udel.edu](mailto:andrewt@udel.edu))

Steven Schofield ([s.schofield@ucl.ac.uk](mailto:s.schofield@ucl.ac.uk))

Semiconductor materials have been at the forefront of technology developments for many decades, and with modern developments including the rise of 2D semiconductors these materials are now more tuneable and configurable than ever before. Recent advances in surface functionalization, doping, and etching techniques, including modification at the atomic-scale, have gathered substantial attention from scientific and engineering communities and led to a number of practical applications. This symposium will focus on the connections between fundamental surface chemistry of semiconductor surfaces, function of the surfaces as a design element of the devices, and overall applications of the semiconductor surface chemical modifications. Particular attention will be given to the challenges related to atomic level precision in placing molecular groups, doping, etching, and molecular-level understanding of semiconducting materials, as well as how these advances in traditional semiconductor materials functionalization are being applied in the emerging area of the chemistry of 2D semiconductors. Possible topics will include (but not limited to):

- Chemistry of functionalization and doping of silicon
- Applications of semiconductor surface chemistry
- Surfaces of II-VI and III-V semiconductors
- Chemistry of 2D semiconductor materials
- Semiconductors as supports

## Industry-Academia Dialogue

Organizers:

Matthew Lynch ([lynch.ml@pg.com](mailto:lynch.ml@pg.com))

Kathleen Stebe ([kstebe@seas.upenn.edu](mailto:kstebe@seas.upenn.edu))

In this session, we present a dialogue between industry and academe, with the goal of communicating industry views and needs to academic researchers and doctoral students interested in careers in industrial R&D. This event will focus on three topics: 1) Myths and Facts in Industrial R&D; 2) What is industry interested in?; 3) What drives a successful industrial career? This will take the form of a panel discussion which will include Gerard Bailey, VP Corporate Functions, the Procter & Gamble Company, and representatives from national funding agencies, and professors who have experience in interacting with industrial R&D. This panel will be moderated by Kate Stebe - Past Chair, Colloid Division, Goodwin Professor, University of Pennsylvania and Matthew Lynch - Chair Colloid Division, the Procter & Gamble Company. We hope to engage students, faculty, industrial scientists and engineers.

## Nanomaterials

Organizers:

Jennifer A. Hollingsworth ([jenn@lanl.gov](mailto:jenn@lanl.gov))

James R. McBride ([james.r.mcbride@Vanderbilt.Edu](mailto:james.r.mcbride@Vanderbilt.Edu))

Ramanathan Nagarajan ([Ramanathan.Nagarajan.Civ@mail.mil](mailto:Ramanathan.Nagarajan.Civ@mail.mil))

Nanoscale confinement of dimensionality in three, two and even only one dimension affords new and emergent properties that impact the fundamental chemistry and physics of nanomaterials. Basic research in nanomaterials synthesis, interactions and properties, especially those related to the colloidal nature of the nanomaterial or to effects governed by chemistry at nanoscale surfaces and interfaces will be appropriate for this symposium. Topics of interest include but are not limited to:

- Fundamentals of nanomaterials synthesis
- Surface modification
- Self-assembly: influences of surface chemistry, shape, solution additives
- Directed assembly: influences of functionalization, shape and structure-directing/ templating agents, and substrate effects
- Advanced characterization techniques to probe nanomaterials synthesis and assembly
- Basic research into functional properties of nanomaterials
- Multi-component nanomaterials, e.g., heterostructured (comprising semiconducting, metallic and/or dielectric segments) and doped nanocrystals
- 0-dimensional materials (e.g., quantum dots, metal nanoparticles), 1-dimensional materials (e.g., nanowires, nanotubes), and 2-dimensional materials (e.g., graphene, transition metal dichalcogenides, nanoplatelets, nanosheets, colloidal quantum wells)

Topics covered by other nanomaterials related thematic symposia within the COLL Division will not be emphasized in this symposium.

## Surface Chemistry

Organizers:

Steven Tait ([tait@indiana.edu](mailto:tait@indiana.edu))

This symposium will consist of oral presentations on new advances in surface chemistry, including reactions at surfaces, chemisorption, adsorption/desorption, deposition and growth, kinetics of surface processes, surface structure, nanomaterials at surfaces, advances in surface analysis, manipulation of surface structure and chemistry, self-assembly at surfaces, and other topics related to surface chemistry. These sessions will include interdisciplinary topics relevant to fundamental surface chemistry, as well as to a range of chemical and materials applications.

## Biomaterials and Biointerfaces

Organizers:

Ramanathan Nagarajan ([Ramanathan.Nagarajan.Civ@mail.mil](mailto:Ramanathan.Nagarajan.Civ@mail.mil))

This symposium will cover all topics of interest to biologically relevant research in colloid and surface science focusing on biological interfaces and the interaction of abiotic material surfaces with biological systems. Areas of interest include the theory, principles, design, and synthesis of biomaterials; the use of biomaterials in tissue engineering; characterization of new or existing biomaterials; and the interactions of biomaterials with proteins, membranes, cells, and tissues.

## Basic Research in Colloids, Surfactants and Interfaces

Organizers:

Ramanathan Nagarajan ([Ramanathan.Nagarajan.Civ@mail.mil](mailto:Ramanathan.Nagarajan.Civ@mail.mil))

This symposium will accept papers in all areas of colloids, surfactants and interfaces. Topics include surfactant, block copolymer, lipid and other amphiphilic materials and their self-assembly, emulsions, foams, dispersions, interfacial phenomena including wetting, adhesion, colloidal glasses and gels, and colloidal and interfacial phenomena of interest to biological, environmental, material and medical technologies not covered by any of the thematic symposia. Experimental, theoretical and computational studies in all areas are encouraged for submission. Papers addressing industrial applications are also strongly encouraged.

## ACS Award Lectures 2020

Organizers:

Ramanathan Nagarajan ([Ramanathan.Nagarajan.Civ@mail.mil](mailto:Ramanathan.Nagarajan.Civ@mail.mil))

This is a plenary session where ACS National Award lectures will be presented. Every year this includes the ACS Award in Colloid Chemistry sponsored by the Colgate Palmolive Company and the ACS Award in Surface Chemistry sponsored by the Procter & Gamble Company. At various meetings, winners of other national Awards have opted to present their award lectures in the COLL Division and these will be included if such a selection is made. This session honors winners of 2020 ACS National awards.

## **ACS Award Lectures 2021**

Organizers:

Ramanathan Nagarajan ([Ramanathan.Nagarajan.Civ@mail.mil](mailto:Ramanathan.Nagarajan.Civ@mail.mil))

This is a plenary session where ACS National Award lectures will be presented. Every year this includes the ACS Award in Colloid Chemistry sponsored by the Colgate Palmolive Company and the ACS Award in Surface Chemistry sponsored by the Procter & Gamble Company. At various meetings, winners of other national Awards have opted to present their award lectures in the COLL Division and these will be included if such a selection is made. This session honors winners of 2021 ACS National awards.

## **ACS Award in Surface Chemistry 2020 - Symposium in honor of Teri Odom**

Organizers:

Chad Mirkin ([chadnano@northwestern.edu](mailto:chadnano@northwestern.edu))

Teri Odom ([todom@northwestern.edu](mailto:todom@northwestern.edu))

This is a symposium organized in honor of Teri Odom, winner of 2020 ACS Award in Surface Chemistry.

## **ACS Award for Research at an Undergraduate Institution 2020 - Symposium in honor of Kerry Karukstis**

Organizers:

Ramanathan Nagarajan ([Ramanathan.Nagarajan.Civ@mail.mil](mailto:Ramanathan.Nagarajan.Civ@mail.mil))

Kerry Karukstis ([karukstis@g.hmc.edu](mailto:karukstis@g.hmc.edu))

This is a symposium organized in honor of Kerri Karukstis, winner of 2020 ACS Award for Research at an Undergraduate Institution.

## **ACS Award in Colloid Chemistry 2021 - Symposium in honor of Emily Weiss**

Organizers:

Ramanathan Nagarajan ([Ramanathan.Nagarajan.Civ@mail.mil](mailto:Ramanathan.Nagarajan.Civ@mail.mil))

Emily Weiss ([e-weiss@northwestern.edu](mailto:e-weiss@northwestern.edu))

This is a symposium organized in honor of Emily Weiss, winner of 2021 ACS Award in Colloid Chemistry.

## **ACS Award in Surface Chemistry 2021 - Symposium in honor of Vicki Grassian**

Organizers:

Gilbert Nathan [nathanson@chem.wisc.edu](mailto:nathanson@chem.wisc.edu)

Vicki Grassian ([vhgrassian@ucsd.edu](mailto:vhgrassian@ucsd.edu))



This is a symposium organized in honor of Vicki Grassian, winner of 2021 ACS Award in Surface Chemistry.

### **Fundamental Research in Colloids, Surfaces and Nanomaterials (Posters)**

Organizers:

Ramanathan Nagarajan (Ramanathan.Nagarajan.Civ@mail.mil)

Posters addressing any aspect of colloids, surfaces and nanomaterials will be appropriate for submission to this symposium. All posters presented by graduate and undergraduate students will be judged by a panel of scientists. The judges will select the best 4 or 5 poster presentations for the COLL Division awards. Awards will be given for graduate students and for undergraduate students.