

**259<sup>th</sup> ACS National Meeting & Exposition, March 22-26, 2020, Philadelphia, PA**  
ACS Meeting Theme: Macromolecular Chemistry: The Second Century

**Call for Papers**

Division of Colloid and Surface Chemistry (COLL)

Program Chair:

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

Website for abstracts submission opens 12 August 2019

Deadline for online submission of abstracts 21 October 2019

Go to <http://maps.acs.org>, click on this meeting, and sign-in using your ACS ID and password.

Then follow instructions to submit your abstract to the selected symposium within COLL.

**All symposia will accept abstracts for both Oral and Poster presentations.**

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**Sci-Mix**

Authors submitting abstracts online, whether for oral or poster presentation, will be asked to indicate during abstract submission, their interest in participating in Sci-Mix. Sci-Mix is a poster session involving all Divisions of ACS, with the Divisions selecting what presentations to include in the Sci-Mix. If you are making an oral presentation in the Division but have been selected to the Sci-Mix. You will also have to prepare the work for the poster presentation at Sci-Mix.

Sci-Mix is traditionally held on Monday evening at 8:00 PM. The number of posters at Sci-Mix to be selected by a Division is limited to 10% of the total number of papers presented in that Division. Therefore, selection to present Sci-Mix posters is a special recognition conferred by the Division to the authors. Sci-Mix poster presentations are duplicates of the presentations made at the oral or poster sessions of the Division. Please note that this is the only kind of duplicate presentation allowed by ACS.

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**Technical Symposia Scheduled**

| Symposium Organizer   | Symposium Title                  |
|---|----------------------------------|
| Matthew Tirrell, Institute for Molecular Engineering, University of Chicago, 5640 South Ellis Avenue, Chicago, IL 60637; 773-834-2001; <a href="mailto:mtirrell@uchicago.edu">mtirrell@uchicago.edu</a><br>Stephan Förster, Jülich Centre for Neutron Science, Institute of Complex Systems (ICS-1), 52425 Jülich, Germany: +49 2461 61-85161; <a href="mailto:s.foerster@fz-juelich.de">s.foerster@fz-juelich.de</a><br>Ramanathan Nagarajan, U.S. Army Futures Command, CCDC Soldier Center, General Greene Avenue, Natick MA 01760; 508-233-6445; <a href="mailto:Ramanathan.Nagarajan.Civ@mail.mil">Ramanathan.Nagarajan.Civ@mail.mil</a> | Self-assembly in polymer systems |

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| <p>Subra Muralidharan, Office of Chancellor and Provost, University of California, Davis, CA 95616; <a href="mailto:subra.murali@ucdavis.edu">subra.murali@ucdavis.edu</a>;</p> <p>Marjorie Longo, Department of Chemical Engineering, University of California, Davis, CA 95616; <a href="mailto:mllongo@ucdavis.edu">mllongo@ucdavis.edu</a>;</p> <p>Atul Parikh, Department of Biomedical Engineering, University of California, Davis, CA 95616; <a href="mailto:anparikh@ucdavis.edu">anparikh@ucdavis.edu</a>;</p> <p>Mu-Ping Nieh, Department of Chemical &amp; Biomolecular Engineering, University of Connecticut, Storrs, CT 06269; <a href="mailto:mu-ping.nieh@uconn.edu">mu-ping.nieh@uconn.edu</a>;</p> <p>John Katsaras, Neutron Sciences Directorate, ORNL, Oak Ridge, TN; <a href="mailto:katsarasj@ornl.gov">katsarasj@ornl.gov</a></p> | <p>Biomembrane Synthesis, Structure, Mechanics, and Dynamics</p>  |
| <p>Gregory W. Peterson, Chemical Biological Radiological Filtration Branch, US Army Edgewood Chemical Biological Center, Aberdeen Proving Ground, MD 21010; 410-436-9794; <a href="mailto:gregory.w.peterson.civ@mail.mil">gregory.w.peterson.civ@mail.mil</a></p> <p>Brian T. Rasley, Department of Chemistry and Biochemistry, University of Alaska Fairbanks, Fairbanks, AK, 99775; 907-474-5029; <a href="mailto:btrasley@alaska.edu">btrasley@alaska.edu</a></p> <p>James H. Wynne, Chemistry Division, US Naval Research Laboratory, Washington, DC 20375; 202-404-4010; <a href="mailto:james.wynne@nrl.navy.mil">james.wynne@nrl.navy.mil</a></p>   | <p>Metal Oxides, Metal Organic Frameworks (MOFs) and Polyoxometalates: Heterogeneous Reactivity and Catalysis under Environmentally Relevant Conditions</p> |
| <p>Andrew Goodwin. Department of Chemical and Biological Engineering. University of Colorado Boulder. Boulder, CO 80303; <a href="mailto:Andrew.goodwin@colorado.edu">Andrew.goodwin@colorado.edu</a>;</p> <p>Jesse V. Jokerst. Department of Nano Engineering. University of California, San Diego. La Jolla, CA 92093; <a href="mailto:jjokerst@ucsd.edu">jjokerst@ucsd.edu</a>;</p> <p>Eugenia Kharlampieva, Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL 35294; <a href="mailto:ekharlam@uab.edu">ekharlam@uab.edu</a></p>  | <p>Acoustically-Active Colloids for Imaging and Therapy</p>   |
| <p>Andrew V. Teplyakov, Department of Chemistry and Biochemistry, University of Delaware, Newark, DE 19716;. <a href="mailto:andrewt@udel.edu">andrewt@udel.edu</a></p> <p>Steven Schofield, London Centre for Nanotechnology and Department of Physics and Astronomy, University College London (UCL), London WC1H 0AH, UK; <a href="mailto:s.schofield@ucl.ac.uk">s.schofield@ucl.ac.uk</a></p>   | <p>Semiconductor Surfaces: from Chemistry and Function to Applications</p>  |
| <p>Wolfgang Parak, Department of Physics, University of Hamburg, Hamburg, Germany, and CIC biomaGUNE, Donostia – San Sebastián, Spain. <a href="mailto:wolfgang.parak@uni-hamburg.de">wolfgang.parak@uni-hamburg.de</a></p> <p>Luis M. Liz-Marzán, CIC biomaGUNE, Donostia – San Sebastián, Spain. <a href="mailto:lizmarzan@cicbiomagune.es">lizmarzan@cicbiomagune.es</a></p> <p>Neus Feliu, Department of Physics, University of Hamburg, Hamburg, Germany. <a href="mailto:nfeliu@physnet.uni-hamburg.de">nfeliu@physnet.uni-hamburg.de</a></p>   | <p>Bioconjugation of colloids</p>   |
| <p>Denis Bendejacq, UM I 3254 Solvay / CNRS / UPenn Lab Director; 609-235-5842; <a href="mailto:Denis.Bendejacq@solvay.com">Denis.Bendejacq@solvay.com</a></p> <p>Daeyeon Lee, Department of Chemical &amp; Biomolecular Engineering, University of Pennsylvania, Philadelphia PA, 19104; 215-573-4521; <a href="mailto:daeyeon@seas.upenn.edu">daeyeon@seas.upenn.edu</a></p> <p>Maria Santore, Department of Polymer Science and Engineering, University of Massachusetts,</p>  | <p>Bacterial Interactions with Soft Materials</p>   |

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| Amherst, MA 01003; 413-577-1417;<br><a href="mailto:santore@mail.pse.umass.edu">santore@mail.pse.umass.edu</a>  |   |
| Hongyou Fan, University of New Mexico and Sandia National Laboratories, Albuquerque, NM 87106; <a href="mailto:hfan@sandia.gov">hfan@sandia.gov</a><br>Tao Li, Dept. of Chemistry and Biochemistry, Northern Illinois University, DeKalb IL 60115; <a href="mailto:tli4@niu.edu">tli4@niu.edu</a><br>Guifu Zou, School of Energy, Soochow University, 1 Shizi Street, Suzhou 215006, China. <a href="mailto:zouquifu@suda.edu.cn">zouquifu@suda.edu.cn</a><br>Yugang Sun, Temple University, Department of Chemistry <a href="mailto:tug30820@temple.edu">tug30820@temple.edu</a><br>Feng Bai, Henan University, China; +86-371-2388-5808, <a href="mailto:baifengsun@gmail.com">baifengsun@gmail.com</a> | Colloidal Nanoparticle Synthesis and Assembly   |
| Eric Borguet, Department of Chemistry, Temple University, Philadelphia, PA 19122; <a href="mailto:eborguet@temple.edu">eborguet@temple.edu</a><br>Hai-Lung Dai, Department of Chemistry, Temple University, Philadelphia, PA 19122; <a href="mailto:hldai@temple.edu">hldai@temple.edu</a><br>J. Ilja Siepmann, University of Minnesota, Department of Chemistry, Minneapolis, MN 55455; <a href="mailto:siepmann@umn.edu">siepmann@umn.edu</a>   | Computer simulations of soft matter and interfaces: Symposium in honor of Michael Klein at 80 |
| Marina Tsianou and Paschalis Alexandridis, Department of Chemical and Biological Engineering, University at Buffalo, The State University of New York (SUNY), Buffalo, NY 14260; 716-645-1911; <a href="mailto:mtsianou@buffalo.edu">mtsianou@buffalo.edu</a> ; <a href="mailto:palexand@buffalo.edu">palexand@buffalo.edu</a>  | Amphiphilic Per- and Poly- fluoroalkyl Substances: Solution and Interfacial Phenomena         |
| Jennifer A. Hollingsworth, Materials Physics & Applications Division - Center for Integrated Nanotechnologies, Los Alamos National Laboratory; <a href="mailto:jenn@lanl.gov">jenn@lanl.gov</a><br>James R. McBride, Department of Chemistry, Vanderbilt University, Nashville, TN; <a href="mailto:james.r.mcbride@Vanderbilt.Edu">james.r.mcbride@Vanderbilt.Edu</a><br>Ramanathan Nagarajan, U.S. Army Futures Command, CCDC Soldier Center, General Greene Avenue, Natick MA 01760; 508-233-6445; <a href="mailto:Ramanathan.Nagarajan.Civ@mail.mil">Ramanathan.Nagarajan.Civ@mail.mil</a>  | Nanomaterials   |
| Steven Tait, Dept. of Chemistry, Indiana University; <a href="mailto:tait@indiana.edu">tait@indiana.edu</a>   | Surface Chemistry   |
| Joel Kaar, Department of Chemical & Biological Engineering, University of Colorado, Boulder, CO 80309; 303-492-6031; <a href="mailto:joel.kaar@colorado.edu">joel.kaar@colorado.edu</a><br>Jessica D Schiffman, Department of Chemical Engineering, University of Massachusetts-Amherst, Amherst, MA 01003; (413) 545-6143; <a href="mailto:schiffman@ecs.umass.edu">schiffman@ecs.umass.edu</a>  | Biomaterials and Biointerfaces  |
| Ramanathan Nagarajan, U.S. Army Futures Command, CCDC Soldier Center, General Greene Avenue, Natick MA 01760; 508-233-6445; <a href="mailto:Ramanathan.Nagarajan.Civ@mail.mil">Ramanathan.Nagarajan.Civ@mail.mil</a>  | Basic Research in Colloids, Surfactants and Interfaces  |
| Nancy Falk, Clorox Services Company, Oakland, CA; <a href="mailto:Nancy.Falk@clorox.com">Nancy.Falk@clorox.com</a><br>Rob MacCuspie, Natural Immunogenics Corp., Sarasota, FL; <a href="mailto:rob@n-icorp.com">rob@n-icorp.com</a>   | Colloid and surface chemistry in industry: Applications and career opportunities              |
| Ramanathan Nagarajan, U.S. Army Futures Command, CCDC Soldier Center, General Greene Avenue, Natick MA 01760; 508-233-6445; <a href="mailto:Ramanathan.Nagarajan.Civ@mail.mil">Ramanathan.Nagarajan.Civ@mail.mil</a>  | ACS Award Lectures (Invited Only)   |

Ramanathan Nagarajan, U.S. Army Futures Command, CCDC  
Soldier Center, General Greene Avenue, Natick MA 01760;  
508-233-6445; [Ramanathan.Nagarajan.Civ@mail.mil](mailto:Ramanathan.Nagarajan.Civ@mail.mil)

Fundamental Research in Colloids,  
Surfaces and Nanomaterials  
(POSTER SESSION)

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## Self-assembly in polymer systems

### Organizer:

Matthew Tirrell, Institute for Molecular Engineering, University of Chicago, 5640 South Ellis Avenue,  
Chicago, IL 60637; 773-834-2001; [mtirrell@uchicago.edu](mailto:mtirrell@uchicago.edu)

Stephan Förster, Jülich Centre for Neutron Science, Institute of Complex Systems (ICS-1), 52425 Jülich,  
Germany: +49 2461 61-85161; [s.foerster@fz-juelich.de](mailto:s.foerster@fz-juelich.de)

Ramanathan Nagarajan, U.S. Army Futures Command, CCDC Soldier Center, General Greene Avenue,  
Natick MA 01760; 508-233-6445; [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.

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## Biomembrane Synthesis, Structure, Mechanics, and Dynamics

### Organizers

Subra Muralidharan, Office of Chancellor and Provost, University of California, Davis, CA 95616;  
[subra.murali@ucdavis.edu](mailto:subra.murali@ucdavis.edu);

Marjorie Longo, Department of Chemical Engineering, University of California, Davis, CA 95616;  
[mllongo@ucdavis.edu](mailto:mllongo@ucdavis.edu);

Atul Parikh, Department of Biomedical Engineering, University of California, Davis, CA 95616;  
[anparikh@ucdavis.edu](mailto:anparikh@ucdavis.edu);

Mu-Ping Nieh, Department of Chemical & Biomolecular Engineering, University of Connecticut, Storrs, CT  
06269; [mu-ping.nieh@uconn.edu](mailto:mu-ping.nieh@uconn.edu);

John Katsaras, Neutron Sciences Directorate, ORNL, Oak Ridge, TN; [katsarasj@ornl.gov](mailto:katsarasj@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 *BiolInterphases* 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 255<sup>th</sup> ACS National Meeting in New Orleans. *BiolInterphases* will continue to support student presentations and award prizes.

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## Metal Oxides, Metal Organic Frameworks (MOFs) and Polyoxometalates: Heterogeneous Reactivity and Catalysis under Environmentally Relevant Conditions

Organizers:

Gregory W. Peterson, Chemical Biological Radiological Filtration Branch, US Army CCDC Chemical Biological Center, Aberdeen Proving Ground, MD 21010; 410-436-9794; [gregory.w.peterson.civ@mail.mil](mailto:gregory.w.peterson.civ@mail.mil)

Brian T. Rasley, Department of Chemistry and Biochemistry, University of Alaska Fairbanks, Fairbanks, AK, 99775; 907-474-5029; [btrasley@alaska.edu](mailto:btrasley@alaska.edu)

James H. Wynne, Chemistry Division, US Naval Research Laboratory, Washington, DC 20375; 202-404-4010; [james.wynne@nrl.navy.mil](mailto:james.wynne@nrl.navy.mil)

The recent push for environmentally relevant operando characterization of surface active reactions and catalysis in chemical transformation applications has resulted in the reemergence of metal oxides, metal organic frameworks (MOFs) and polyoxometalate as useful materials for catalytic and surface active systems. The structure-function relationship between surface active species and their operando reactivity in heterogeneous reactions and catalysis schemes has attracted much interest from several fields over the past few decades. Recent advances have arisen from joint efforts between theoreticians and experimentalists in efforts to understand environmentally relevant factors for surface activity. From these combined efforts, promising insight into the surface active structures and their function have been developed jointly. This symposium will highlight significant advances in the understanding of reactive surface chemistries and how selective control of reactions emerges from a fundamental, description of these reactions under environmentally relevant conditions. We wish to highlight the synergy between theory and experimental reality, while providing a forum for both experimentalists and theoreticians to discuss the advances within their respective fields. Areas of interest include the theory, principles, design, and synthesis of metal oxides, metal organic frameworks and polyoxometalates as well as their heterogeneous surface interactions of with toxic chemical and other relevant chemical reactions. Below is a list of tentative topics for the session:

- Recent advances in theory and simulation of heterogeneous reactions and catalysis
- Advances in experimental control of surface chemistry
- The role of nanostructures in heterogeneous reactions and catalysis
- Structures and mechanisms in heterogeneous catalysis and reactions
- Fundamental studies of dynamics and atomic level phenomena in heterogeneous reactions and catalysis

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## Acoustically-Active Colloids for Imaging and Therapy

Organizers:

Andrew Goodwin, Department of Chemical and Biological Engineering, University of Colorado Boulder, Boulder, CO 80303; [Andrew.goodwin@colorado.edu](mailto:Andrew.goodwin@colorado.edu)

Jesse V. Jokerst, Department of NanoEngineering, University of California, San Diego, La Jolla, CA 92093; [jjokerst@ucsd.edu](mailto:jjokerst@ucsd.edu);

Eugenia Kharlampieva, Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL 35294; [ekharlam@uab.edu](mailto:ekharlam@uab.edu)

Known for its excellent penetration depth and safe procedures, ultrasound imaging is a mainstay in the medical imaging world. Yet, only recently have colloidal structures been developed that can reliably interact with acoustic energies produce a defined sound output. In addition, acoustic energy has been utilized for facilitating site-specific delivery of agents, including drugs, proteins, and nucleic acids. This symposium seeks to bring together new ideas and directions in the field of colloidal science and acoustic interactions.

Appropriate topics include, but are not limited to:

- Interfacial stabilization of microbubbles and nanodroplets
- Photoacoustic contrast agents
- Acoustically active polymeric micro- and nanoparticles and liposomes
- Acousto-optic agents for super-resolution microscopy
- Interfacial chemistries for cavitation
- Nanostructured agents for sensitizing high intensity focused ultrasound
- Acoustically-mediated drug and gene delivery agents
- Multimodal nanoscale imaging agents

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## Semiconductor Surfaces: from Chemistry and Function to Applications

Organizers:

Andrew V. Teplyakov, Department of Chemistry and Biochemistry, University of Delaware, Newark, DE 19716, USA. 302-831-1969; [andrewt@udel.edu](mailto:andrewt@udel.edu)

Steven Schofield, London Centre for Nanotechnology and Department of Physics and Astronomy, University College London (UCL), London WC1H 0AH, UK. +44 (0)20 7679 9965; [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
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## Bioconjugation of colloids

### Organizers:

Wolfgang Parak, Department of Physics, University of Hamburg, Hamburg, Germany, and CIC biomaGUNE, Donostia – San Sebastián, Spain. [wolfgang.parak@uni-hamburg.de](mailto:wolfgang.parak@uni-hamburg.de)

Luis M. Liz-Marzán, CIC biomaGUNE, Donostia – San Sebastián, Spain. [lizmarzan@cicbiomagune.es](mailto:lizmarzan@cicbiomagune.es)

Neus Feliu, Department of Physics, University of Hamburg, Hamburg, Germany. [nfeliu@physnet.uni-hamburg.de](mailto:nfeliu@physnet.uni-hamburg.de)

Nanoparticles are widely used as vehicles for delivery and sensing. In many cases the particle surface is conjugated with biological molecules. Two purposes are obtained in this direction. First, in this way specific particle binding can be achieved. This can be for example towards biomarkers on the surface of cells. Second, the attached biological molecules can introduce function to the particle, such as for example enzymatic activity in case enzymes are linked. In this symposium different strategies and their applications will be discussed. This does not only involve the particle side, but also related detection techniques. Appropriate topics include, but are not limited to:

- Particle synthesis and characterization
- Bioconjugation techniques
- Linkage of proteins (e.g. antibodies or enzymes), DNA/RNA, sugars, etc.
- Colloidal stability in biofluids
- Protein corona
- Particle degeneration
- Particle induced toxicity
- Particle uptake by cells
- Endocytosis/exocytosis
- Detection techniques (e.g. fluorescence, SERS, etc.)
- Applicable assays, for example for biomarkers

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## Bacterial Interactions with Soft Materials

### Organizers:

Denis Bendejacq, UM I 3254 Solvay / CNRS / UPenn Lab Director; 609-235-5842;  
[Denis.Bendejacq@solvay.com](mailto:Denis.Bendejacq@solvay.com)

Daeyeon Lee, Department of Chemical & Biomolecular Engineering, University of Pennsylvania, Philadelphia PA, 19104; 215-573-4521; [daeyeon@seas.upenn.edu](mailto:daeyeon@seas.upenn.edu)

Maria Santore, Department of Polymer Science and Engineering, University of Massachusetts, Amherst, MA 01003; 413-577-1417; [santore@mail.pse.umass.edu](mailto:santore@mail.pse.umass.edu)

Bacteria interact with a wide range of soft materials in natural and artificial settings. Bacteria interactions with soft materials can lead to development of biofilms that result in microbial contamination and chronic infections. Recent investigations point to the importance of understanding the effects of structure and properties of soft materials on the adhesion and proliferation of bacteria on/in such materials. Advanced techniques to understand the interactions of bacteria with soft materials could potentially lead to breakthroughs in development of antibacterial surfaces and materials. This symposium aims to bring together the leading experts in bacteria-soft materials interactions research and provide a forum to share the latest understandings and findings. Topics of special interest to this symposium include bacteria-surface

interactions, biofilms/microbiome as soft materials, bacteria interactions with fluid interfaces and bacteria in anisotropic and porous media. More specific topics are listed but not limited to below:

- Bacteria adhesion on soft materials
- Advanced/high throughput methods to characterize bacteria-surface interactions
- Motility of bacteria in/on soft materials
- Modeling and computational investigation of bacteria-soft material interactions
- Biofilms as soft materials
- Bacteria in extreme environments
- Microbiome and soft materials
- Bacteria interactions with fluid interfaces
- Bacteria in porous media
- Bacteria in anisotropic media
- Mechanobiology of bacteria

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## Colloidal Nanoparticle Synthesis and Assembly

Organizers:

Hongyou Fan, University of New Mexico and Sandia National Laboratories, Albuquerque, NM 87106;  
[hfan@sandia.gov](mailto:hfan@sandia.gov)

Tao Li, Dept. of Chemistry and Biochemistry, Northern Illinois University, DeKalb IL 60115; [tli4@niu.edu](mailto:tli4@niu.edu)

Guifu Zou, School of Energy, Soochow University, 1 Shizi Street, Suzhou 215006, China.  
[zouguifu@suda.edu.cn](mailto:zouguifu@suda.edu.cn)

Yugang Sun, Temple University, Department of Chemistry, [tug30820@temple.edu](mailto:tug30820@temple.edu)

Feng Bai, Henan University, China; +86-371-2388-5808, [baifengsun@gmail.com](mailto:baifengsun@gmail.com)

Topics to be covered in this symposium include:

- Design of chemical precursors for synthesis of nanoparticles with control size and surface chemistry.
- Nanoparticle surface chemistry/functionalization to manipulate particle interactions, packing symmetry, external framework, and property
- Crystal growth and characterizations
- New synthetic processes and integration methods of nanoparticles
- Large area of nanoparticle assembly and patterning with long range order
- In-situ characterizations of nanoparticle nucleation, growth, and self-assembly
- Integration of nanoparticles in nanoelectronics and nanophotonics.

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## Computer simulations of soft matter and interfaces: Symposium in honor of Michael Klein at 80

Organizers:

Eric Borguet, Department of Chemistry, Temple University, Philadelphia, PA 19122;  
[eborguet@temple.edu](mailto:eborguet@temple.edu)

Hai-Lung Dai, Department of Chemistry, Temple University, Philadelphia, PA 19122; [hldai@temple.edu](mailto:hldai@temple.edu)

J. Ilja Siepmann, University of Minnesota, Department of Chemistry, Minneapolis, MN 55455;  
[siepmann@umn.edu](mailto:siepmann@umn.edu)

This symposium celebrates the achievements of Michael L. Klein, FRS, Dean of the College of Science and Technology and Laura H. Carnell Professor of Science of Temple University, Director of the Institute for Computational Molecular Science (ICMS) and the Temple Materials Institute. Mike Klein has been a leader in the computer simulation of condensed molecular systems, with a focus on membranes, surfactants and interfaces. The symposium will feature contributions from these fields.

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## Amphiphilic Per- and Poly- fluoroalkyl Substances: Solution and Interfacial Phenomena

### Organizers:

Marina Tsianou and Paschalis Alexandridis

Department of Chemical and Biological Engineering, University at Buffalo, The State University of New York (SUNY), Buffalo, NY 14260, USA; 716-645-1911; [mtsianou@buffalo.edu](mailto:mtsianou@buffalo.edu), [palexand@buffalo.edu](mailto:palexand@buffalo.edu)

Per- and poly- fluoroalkyl substances (PFAS) generate increasing concern due to their persistence, toxicity and bioaccumulation in aqueous media. Several well-known PFAS exhibit strong amphiphilic character, for example, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) which are no longer used in the US but are still found in the drinking water in several locations throughout the US, and are even detected in the blood and tissues of various animals and humans around the world. Fluorinated surfactants exhibit a number of useful features, such as immiscibility with both water and hydrocarbons, high surface activity, and ability to render surfaces Teflon-like. Accordingly, amphiphilic PFAS find applications in fluoropolymer synthesis, food packaging paper, stain repellent and waterproof clothing, paints and coatings, and firefighting foams. However, the very high chemical and thermal stability of molecules such as PFOA and PFOS means that, once they are released into the environment, they tend to circulate for very long time, thus are called the "forever chemicals".

The initial response to this problem has been to replace in formulations the "legacy" PFOA and PFOS with new ("emerging") fluorinated surfactants that have been designed to be less chemically stable. This has led to the introduction of amphiphilic PFAS for which little is known about their surface properties. A current emphasis is on the removal of amphiphilic PFAS from water and their degradation.

Intermolecular interactions, interfacial phenomena, and surface chemistry are very important in all aspects of amphiphilic PFAS: (i) performance in various applications, (ii) sequestration from aqueous media via adsorption on surfaces/interfaces, (iii) chemical degradation through electrochemical, photochemical, and/or catalytic processes, and (iv) interactions with biomolecules and biosurfaces.

The symposium will bring together researchers with diverse backgrounds but common aims to promote the fundamental understanding of colloid and surface phenomena involving fluorinated surfactants, and to utilize such fundamentals toward the ultimate elimination of fluorinated surfactants from the environment.

Topics that will be covered include:

- Self-assembly in aqueous media and interactions with surfactants and polymers
- Foams and emulsions stabilized by PFAS amphiphiles
- Interfacial phenomena involving PSAS
- Re-formulation to reduce or eliminate PFAS amphiphiles
- Surface adsorption of PFAS and materials designed to adsorb PFAS

- Surface chemistry of PFAS degradation
  - Experimental and theoretical/computational characterization
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## Nanomaterials

### Organizers:

Jennifer A. Hollingsworth, Materials Physics & Applications Division - Center for Integrated Nanotechnologies, MS-K771, Los Alamos National Laboratory; (505) 665-0399; [jenn@lanl.gov](mailto:jenn@lanl.gov)

James R. McBride, Department of Chemistry, Vanderbilt University, Nashville, TN;  
[james.r.mcbride@Vanderbilt.Edu](mailto:james.r.mcbride@Vanderbilt.Edu)

Ramanathan Nagarajan, U.S. Army Futures Command, CCDC Soldier Center, General Greene Avenue, Natick MA 01760; 508-233-6445; [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.

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## Surface Chemistry

### Organizer:

Steven Tait, Dept. of Chemistry, Indiana University, Bloomington, IN 47405; (812) 855-1302;  
[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.

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## Biomaterials and Biointerfaces

### Organizers:

Joel Kaar, Department of Chemical & Biological Engineering, University of Colorado, Boulder, CO 80309; 303-492-6031; [joel.kaar@colorado.edu](mailto:joel.kaar@colorado.edu)

Jessica D Schiffman, Department of Chemical Engineering, University of Massachusetts-Amherst, Amherst, MA 01003; (413) 545-6143; [schiffman@ecs.umass.edu](mailto:schiffman@ecs.umass.edu)

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.

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## Basic Research in Colloids, Surfactants and Interfaces

### Organizer:

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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.

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## Colloid and surface chemistry in industry: Applications and career opportunities

### Organizers:

Nancy Falk, Clorox Services Company, Oakland, CA; [Nancy.Falk@clorox.com](mailto:Nancy.Falk@clorox.com)

Rob MacCuspie, Natural Immunogenics Corp., Sarasota, FL; [rob@n-icorp.com](mailto:rob@n-icorp.com)

The symposium is aimed at bringing together industrial scientists and practitioners and academic researchers to address industrial problems and to allow networking between students and industry. This recurring symposium (one every year at the Spring National Meeting) is designed to promote more responsive interactions between the industry and the academia. This symposium will include three sessions organized as follows.

Session #1: Patented Innovations in Colloid and Surface Chemistry

Industrial innovators seek to protect the intellectual property of their research via filing of patents. Patents protect innovations from rapid copying by competitors and represent valuable company assets that are considered measures of corporate innovation by the investment community and by potential technical talent, as well as opportunities to gain revenue by licensing or sale. In this session, inventors with recent patent grants (within last 3 years) in Colloid and Surface Chemistry are invited to submit abstracts that describe their inventions, their novelty, and the challenges involved in getting their patents granted. In addition, a patent attorney or patent examiner will be invited to give a presentation on the patenting process for those who are new to the topic, and an invited speaker will give a presentation on how publishing research in a paper is different from shaping research findings into an invention. Academic, industrial, and government-based inventors are welcome to submit abstract and to attend the session. Students seeking future employment in industry or government labs are especially welcome to learn about the patenting process.

### Session #2: The Science Behind The Things You Use Every Day

The products we use every day and take for granted aren't ordinary—they are carefully designed for the jobs they do. Colloid and surface chemistry play a key role in the success of many of those products. In this session, scientists will explain the colloid and interface science behind the success of everyday products. If your organization plays a part in the development of these products, you're invited to submit an abstract to show how colloid and interface science plays a role and why it is so important to the success of the product. Students who seek a career in industry after their academic studies are invited to attend to learn more about the application of science to these products, as well as to have an opportunity to network with scientists in industry.

### Session #3: Solving Industrial Innovation Problems in Colloid and Interface Science

Every company faces technical challenges where a fresh approach could help find a breakthrough solution. In this session, companies are invited to submit an abstract with a challenge they face in the area of colloid and interface science, including the context of the problem, the impact of the problem, and the impact and benefit of solving the problem. Academic researchers, students, and startup companies are invited to hear about the problems and network with the company representative about connecting to provide solutions. Future sessions in this series will feature the initial problem statements and presentations with solutions to the problem.

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## ACS Award Lectures (Invited Only)

### Organizer:

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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.

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## Fundamental Research in Colloids, Surfaces and Nanomaterials (Poster Session)

Organizer:

Ramanathan Nagarajan, U.S. Army Futures Command, CCDC Soldier Center, General Greene Avenue,  
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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. Student poster presenters should be prepared to give a 3 minute pitch to the judges who may come to review the posters. Based on the technical content of the poster and the effectiveness of the pitch, 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. The poster session is always scheduled for Sunday evening 5:30-7:30.

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