



93rd ACS

**COLLOID & SURFACE SCIENCE
SYMPOSIUM**



June 16 - June 19, 2019
Georgia Institute of Technology

A Welcome Message from the 2019 Symposium Co-Chairs



Valeria Milam



Sven Behrens



Seth Marder

We are delighted to welcome you to Georgia Tech for the 93rd ACS Colloid & Surface Science Symposium and look forward to an exciting program!

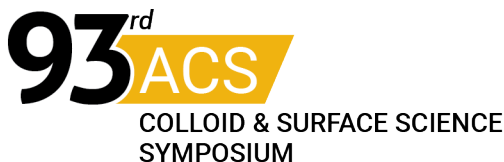
Our flagship plenary lectures will be given by two of the most influential experimental and computational researchers in our field, and our traditional Unilever and Victor K. LaMer Awards and Lectures will recognize two accomplished early career researchers. In addition, 15 technical session tracks will highlight another 38 invited oral presentations, featuring renowned thought leaders in Colloid & Surface Science as well as emerging pioneers. We are also bringing back the *Langmuir* Student Award Sessions with 8 outstanding graduate student presenters preselected by our review committee to compete for further recognition and cash prizes.

In addition to emphasizing academic excellence this Symposium also focusses on issues of practical and industrial relevance. We are therefore particularly pleased that numerous industrial contributors are participating, not only as presenters, attendees, sponsors, and exhibitors, but also as session organizers and presiders. Presentations addressing the practical implementation of Colloid & Surface Science can be found throughout the program, including in our new track on *Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond*.

Finally, we would like to extend an especially warm welcome to our attendees traveling from abroad! Of the accepted abstracts, a remarkable 115 were submitted by researchers whose residence is outside of the United States, representing a total of 24 countries from across the globe and demonstrating the truly international character of this meeting.

Above all, we hope this Symposium will be a wonderful opportunity to make new connections, at both the scientific and personal levels. The Sunday welcome reception, the Monday poster session, (free) breakfasts and lunches, long midday recesses, many coffee breaks, and our Symposium Banquet among the sea creatures at the Georgia Aquarium, all provide excellent occasions for engaging with members of our vibrant community. We hope that you come away from this Symposium refreshed and inspired, with many fond memories.

Have a great conference!



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2019 SYMPOSIUM ORGANIZING COMMITTEE

SYMPOSIUM CO-CHAIRS

Sven Behrens, Associate Professor
School of Chemical & Biomolecular Engineering
Georgia Institute of Technology

Seth Marder, Regents' Professor
School of Chemistry & Biochemistry
Georgia Institute of Technology

Valeria Milam, Associate Professor
School of Materials Science and Engineering
Georgia Institute of Technology

SESSION ORGANIZERS

Track A: Active & Responsive Matter
Daniel Goldman, *Georgia Institute of Technology*
Sergiy Minko, *University of Georgia*

Track B: Bio-Inspired Systems
Julie Champion, *Georgia Institute of Technology*
Lorraine Leon, *University of Central Florida*

Track C: Colloidal & Surface Science
Qian Chen, *University of Illinois at Urbana-Champaign*
Todd Sulchek, *Georgia Institute of Technology*

Track D: Colloids & Macromolecules in Life Sciences
Jennifer Curtis, *Georgia Institute of Technology*
Johnna Temenoff, *Georgia Institute of Technology*

Track E: Directed & Self-Assembly
John Crocker, *University of Pennsylvania*
James Kindt, *Emory University*

Track F: Electrokinetics, Micropores & Microfluidics

Kyle Bishop, *Columbia University*

Carlos Martinez, *Purdue University*

Track G: Emulsions, Bubbles & Foams

Clint Aichele, *Oklahoma State University*

Lisa Biswal, *Rice University*

Track H: Energy, Catalysis & Separations

Nian Liu, *Georgia Institute of Technology*

Ryan Lively, *Georgia Institute of Technology*

Track i: Environmental Systems & Sustainability

Sara Hashmi, *Yale University*

Sotira Yiacoumi, *Georgia Institute of Technology*

Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond

Blair Brettmann, *Georgia Institute of Technology*

Amanda Engler, *3M*

Track K: General

Bhuvnesh Bharti, *Louisiana State University*

Seung Soon Jang, *Georgia Institute of Technology*

Track L: Jamming, Gelling & Rheology

Connie Roth, *Emory University*

Eric Weeks, *Emory University*

Track M: Particles & Molecules at Fluid Interfaces

Joelle Frechette, *Johns Hopkins University*

Carson Meredith, *Georgia Institute of Technology*

Track N: Wetting & Adhesion

Günter Auernhammer, *Leibniz Institute of Polymer Research, Dresden, Germany*

David Hu, *Georgia Institute of Technology*

Track O: Langmuir Student Award Sessions

Raymond Tu, *The City College of New York*

Poster Session

Alexander Alexeev, *Georgia Institute of Technology*

Daniel Miller, *Dow Chemical Co.*

COLLOID & SURFACE SCIENCE SYMPOSIUM COMMITTEE

Lisa Biswal, *Rice University*
Jacinta Conrad, *University of Houston*
Reghan Hill, *McGill University*
Lillian Hsiao, *North Carolina State University*
Seong Kim, *Pennsylvania State University*
Carolyn Koh, *Colorado School of Mines*
Christy Landes, *Rice University*
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Orlin Velev, *North Carolina State University*
David Wu, *Colorado School of Mines*
Ning Wu, *Colorado School of Mines*

LAMER AWARD COMMITTEE

Amanda Haes, *University of Iowa*
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Charles Maldarelli, *The City College of New York*
Ning Wu, *Colorado School of Mines*

UNILEVER AWARD COMMITTEE

Nicholas Abbott, *Cornell University*
K.P. Ananthapadmanabhan, *University of Cincinnati*
Patricia Aikens, *Melaleuca*
Joseph Carnali, *Unilever*
Raymond Farinato, *Solvay*
Ramanathan Nagarajan, *US Army Natick Soldier RD&E Center*
Ponisseril Somasundaran, Chair, *Columbia University*

LANGMUIR STUDENT AWARD COMMITTEE & JUDGES

Bryan Baker, *3M*
Lisa Biswal, *Rice University*
Jennifer Lewis, *Harvard University*
Raymond Tu, Chair, *The City College of New York*
Francoise Winnik, *Langmuir Editor-in-Chief*,
University of Helsinki

2019 PROGRAM AT A GLANCE

Schedule Overview

Time	Sunday, June 16	Monday, June 17	Tuesday, June 18	Wednesday June 19
7:00 am -		On-site registration & free Continental Breakfast available on 2nd floor of the GT Hotel & Conference Center		
8:00 - 9:00 am		Plenary 1 (Grand Ballroom)	Plenary Lecture 2 (Grand Ballroom)	LaMer Award Lecture (Grand Ballroom)
9:00 - 9:20 am		Coffee Break	Coffee Break	Coffee Break
9:20 - 11:20 am		Monday Morning Sessions	Tuesday Morning Sessions	Wednesday Morning Sessions
11:20 - 1:30 pm		Midday Break with Free Lunch	Buffet in 1st Floor Hotel Dining Room (Mon-Wed)	
1:30 - 2:50 pm		Monday First PM Sessions	Tuesday First PM Sessions	Wednesday Second PM Sessions
2:50 - 3:10 pm		Coffee Break	Coffee Break	Coffee Break
3:10 - 4:30 pm		Monday Second PM Sessions	Tuesday Second PM Sessions	Wednesday Second PM Sessions
4:45 - 5:45 pm		Poster Session (Grand Ballroom)	Unilever Award Lecture (Grand Ballroom)	
5:45 - 6:15 pm			Transportation to Banquet	
6:15 - 6:30 pm			Symposium Banquet (6:15-9pm) at the Georgia Aquarium	
6:30 - 6:45 pm	Symposium Check-In & Welcome in the Molecular Sciences & Engineering Bldg. and Biotech Quad/Courtyard behind Whitaker Bldg. (see campus map in the back)			
6:30 - 7:00 pm				
7:00 - 8:30 pm				
8:30 - 9:00 pm				
9:00 - 9:15 pm			Transportation back	

Updated presenter: S. Chakraborty

Monday, June 17, 2019

Plenary: Jennifer Lewis

8 am – 9 am	Plenary: Jennifer Lewis													
	Track A: Active & Responsive Matter	Track B: Bio-Inspired Systems	Track C: Colloidal & Surface Forces	Track D: Colloidal & Macromolecules in Life Sciences	Track E: Directed & Self-Assembly	Track F: Electrokinetics, Micropores & Microfluidics	Track G: Emulsions, Bubbles & Foams	Track H: Energy, Catalysis & Separations	Track I: Environmental Systems & Sustainability	Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond	Track K: General	Track L: Jamming, Gelling & Rheology	Track M: Particles & Molecules at Fluid Interfaces	Track N: Wetting & Adhesion
	Morning Sessions													
9:20-9:40	Paul		Homede	Wu	Bretz	William	Tajuelo		Leanne	Brettmann	Kinard	Dinic		Romero-Vargas Castrillón
9:40-10:00	Chaikin		Travitz	Beckwith	Xi	Ristenpart	Lee		Gilbertson	Zhao	Sanson	Gagnon		Avbenake
10:00-10:20	Driscoll		Jim	Paul	Li	Park	Lee		Paul	Breedveld	Karman	Francis		Francoise Brochard-Wyart
10:20-10:40	Liu		DeYoreo	Janmey	Solomon	Yee	Uyama		Snyder	Gizatov	Alexander	Starr		
10:40-11:00	Jalivand		Stevenson	Curtis	Davis	Hashemi Amrei	Katharina		Cheng	Wang	John	Chang		Meredith
11:00-11:20	Alvarez Frances		Chen	Zhang	Pospisil	Rashed	Landfester		Morfes	SenGupta	Crocker	Wu		

Monday Afternoon

	Track A	Track B	Track C	Track D	Track E	Track F	Track G	Track H	Track I	Track J	Track K	Track L	Track M	Track N
	First Afternoon Session:													
1:30-1:50	Jain		Gonella	Roya	Lee	Davidson	Farinmade		Ewaldz	Kenneth	Zhang			Salamatin
1:50-2:10	Pich		Sen-Britain	Zandi	Yang	Antoniv	Zhou		Mohabir	Schweizer	Conrad			Girard
2:10-2:30	Sanson		Sharma	Li	Tang	Aichele	Taboada-Serrano		Velegol	Richards	Elgailani			Larson
2:30-2:50	Bazrafshan		Philips	Mahynski	Abdel-Fattah		Kasturi		Hinton	Jang	Khirallah			Baumli
	Second Afternoon Session:													
3:10-3:30	Dewangan		Anna	Marciel	Schneider	Walsh	Yu		Devlin	Veeren	Hinton			Noel
3:30-3:50	Blanchard		Balazs	Tu	Agiral	de Gracia Lux	Valiei		Perry	Lannigan	Gilchrist			Zhang
3:50-4:10	Chisholm		Datta	Bharati	Damak	Nelson			Jiang	Kwon	Varghese			Tyowua
4:10-4:30	Deng		Smith	Harrison	Shahbaznezhad	Staton			Atmuri					Garoff
4:45-6:45	Poster Session													

Tuesday, June 18, 2019

Plenary: Juan de Pablo																
8am-9am	Track A: Active & Responsive Matter	Track B: Bio-Inspired Systems	Track C: Colloidal & Surface Forces	Track D: Colloids & Macromolecules in Life Sciences	Track E: Directed Assembly	Track F: Electrokinetics, Micropores & Microfluidics	Track G: Emulsions, Bubbles & Foams	Track H: Energy, Catalysis & Separations	Track I: Environmental Systems & Sustainability	Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond	Track K: General	Track L: Jamming, Gelling & Rheology	Track M: Particles & Molecules at Fluid Interfaces	Track N: Wetting & Adhesion	Track O: <i>Langmuir</i> Student Award Sessions	
Morning Sessions																
9:20-9:40	Olga Kuksenok	Phillip Messersmith	Tabor	Cohen	McBride	Prakash	Gerald	Paul								David
9:40-10:00			Damak	Nayani	Cheng	Wang	Fuller	Braun								Quéré
10:00-10:20	Santer	Pellegrino	Tonya	Khalid	Zhang	He	Xu	Liu								Duits
10:20-10:40	Zauscher	Zasadzinski	Kuhl	Salaita	Yao	Wu	Russo	Newblom								Kulkarni
10:40-11:00	Luzinov	Milam	Min	Horner	Tansi	Sibani Lisa		Khan								Chatterjee
11:00-11:20	Popescu	Kim	Ducker	Zia	Altemose	Biswal	Rapoport	McDevitt								Kannan

* Updated presenter: Van der Vegt

Tuesday Afternoon

	Track A	Track B	Track C	Track D	Track E	Track F	Track G	Track H	Track I	Track J	Track K	Track L	Track M	Track N	Track O
First Afternoon Sessions:															
1:30-1:50	Kornev	Brettman	Cejas	Pustulka	Lorenzo Di Michele	Perry	Da			Amy Peterson	Thapa	Shukla	Orlando	Sauleda	Wang
1:50-2:10	Zarzar	Blake	Wu	Ding	Zhang	Zhang	Watanabe				Williams	Zakhari	Rojas	Straub	Unni
2:10-2:30	Okello	van der Vegt	Smith	Heble	Kim	Saha	Chandran Suja			Lin	Lin	Weeks	Samaniuk	Stammitti-Scarpone	Thakare
2:30-2:50			Bolton	Mora-dipour	Ohno	Singh	Ma				Kulkarni		Hong	Bui	Sengupta
Second Afternoon Sessions:															
3:10-3:30		Song	Gao	Lux		Yang	Ghayour				Parkinson	Thursch	Zhang	Zheng	Cheng
3:30-3:50		Mkam Tsengam	Li	Thorson		Raj	Ochoa				Li	Banerjee	Mohraz	Saneie	Lee
3:50-4:10		Adams	Ron	Kasting		Narsimhan	Lin				Long	Schultz	Ojo	Jin	Girard
4:10-4:30		Perry	Rashidi	Dhankher		Woehl	Rama-chandran					Datta		Zhu	Degen
4:45-5:45	Unilever Lecture: Lauren Zarzar														

Wednesday, June 19, 2019

LaMer Lecture: Rong (Rocky) Ye														
8am-9am	Track A: Active & Responsive Matter	Track B: Bio-Inspired Systems	Track C: Colloidal & Surface Forces	Track D: Colloids & Macromolecules in Life Sciences	Track E: Directed & Self-Assembly	Track F: Electrokinetics, Micropores & Microfluidics	Track G: Emulsions, Bubbles & Foams	Track H: Energy, Catalysis & Separations	Track I: Environmental Systems & Sustainability	Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond	Track K: General	Track L: Jamming, Gelling & Rheology	Track M: Particles & Molecules at Fluid Interfaces	Track N: Wetting & Adhesion
Morning Sessions														
9:20-9:40	Lavrik	Maria	Ridwan	Tang	Vinothan Manoharan	Sun	Sun	Delia Milliron	Young-Shin Jun	Victoria Plunova	Martinez	Rogers	Smits	Joelle Frechette
9:40-10:00	Palkar	Santore	Briscoe	Szilagy		Hefel			Jun		Lee	Macias Rodriguez	Ma	
10:00-10:20	Yossifon	Narsimhan	Georg Papastavrou	Chiu Lam	Shillingford	Cari		Kumar	Su	Duits	Wolf	Cao	Sanatkaran	Antonio
10:20-10:40	Kauffman	Zasadzinski		Flynn	Liu	Dutcher		Chen	Stephanie Velegol	Conner	Wiechert	Okesanjo	Fang	Khan
10:40-11:00	Kyle	Valtierrez-Gaytan	Gilbile	Rivera-Rodriguez	van der Wee	Sundar		Street	Seyedi		Dekker	Günter	Raymond	Luzinov
11:00-11:20	Bishop	Daviran	Pillai	Zasadzinski	Torres Diaz				King		Kim	Auernhammer	Tu	Daniel

Wednesday Afternoon

	Track A	Track B	Track C	Track D	Track E	Track F	Track G	Track H	Track I	Track J	Track K:	Track L	Track M	Track N
First Afternoon Sessions:														
1:30-1:50	Sanson	Dong	Thio	Schneider	Chung		Khan	Newbloom	Wiechert		Shah	Choi	Zasadzinski	Abo Jabal
1:50-2:10	Koman	Park	Lele	Li	Zhang		Schwenger	McGuinness	Ladshaw		Sun	Ciutara	Wu	Connie
2:10-2:30	Gresham	Lattuada	Shi	de Gracia Lux	Ma		Anjum	Behrens	Kim		Liu	Caicedo-Casso	Mysona	Roth
2:30-2:50	Tabor	Nave	Wirth	Zasadzinski	Kuperkar		Jiang	Ladshaw			Ahn	Koos	Somasundaran	Thees
Second Afternoon Sessions:														
3:10-3:30	Dimitriyev	Weirich	Hughes		Al Harraq		Abedi	Shi	Hasan		Lin		Molaei	Wooh
3:30-3:50	Honnigfort	Song	Zhang		Maloney		Johnston	Kitchens	Khan		Lyu		Schubert	Shin
3:50-4:10	Hooshmand		Shafiq		Bharti		Chandran Suja	Koos	Balding		Ahn		Barman	Oliviero Rossi
4:10-4:30			Nguyen				Hu							Seo

2019 SPEAKERS AT A GLANCE

PLENARY SPEAKERS

Jennifer Lewis
Harvard University

Juan de Pablo
University of Chicago

UNILEVER AWARD LECTURER

Lauren Zarzar
Pennsylvania State University

LAMER AWARD LECTURER

Rong (Rocky) Ye
Cornell University

KEYNOTE LECTURERS & INVITED SPEAKERS

Track A: Active & Responsive Matter

Paul Chaikin, *New York University*

Kyle Bishop, *Columbia University*

Olga Kuksenok, *Clemson University*

Track B: Bio-Inspired Systems

Philipp Messersmith, *University of California Berkeley*

Maria Santore, *University of Massachusetts Amherst*

Track C: Colloidal & Surface Science

James De Yoreo, *Pacific Northwest National Laboratory*

Tonya Kuhl, *University of California Riverside*

Georg Papastavrou, *University of Bayreuth, Germany*

Track D: Colloids & Macromolecules in Life Sciences

Anna Balazs, *University of Pittsburgh*

Paul Janmey, *University of Pennsylvania*

Khalid Salaita, *Emory University*

Track E: Directed & Self-Assembly

Lorenzo Di Michele, *University of Cambridge, UK*

Vinothan Manoharan, *Harvard University*

Roya Zandi, *University of California Riverside*

Track F: Electrokinetics, Micropores & Microfluidics

Lisa Biswal, *Rice University*

William Ristenpart, *University of California Riverside*

Track G: Emulsions, Bubbles & Foams

Gerald Fuller, *Stanford University*

Katharina Landfester, *Max Planck Institute of Polymers, Mainz, Germany*

Cari Dutcher, *University of Minnesota*

Track H: Energy, Catalysis & Separations

Paul Braun, *University of Illinois at Urbana-Champaign*

Delia Milliron, *University of Texas at Austin*

Track i: Environmental Systems & Sustainability

Leanne Gilbertson, *University of Pittsburgh*

Young-Shin Jun, *Washington University in St. Louis*

Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond

Amy Peterson, *University of Massachusetts Lowell*

WITHDRAWN: Victoria Piunova, *IBM*

Track K: General

Nicholas Abbott, *Cornell University*

John Crocker, *University of Pennsylvania*

Kenneth Schweizer, *University of Illinois at Urbana-Champaign*

Track L: Jamming, Gelling & Rheology

Rana Ashkar, *Virginia Tech*

Günter Auernhammer, *Leibniz Institute of Polymer Research, Dresden, Germany*

Francis Starr, *Wesleyan University*

Track M: Particles & Molecules at Fluid Interfaces

Lucio Isa, *ETH Zürich, Switzerland*

Orlando Rojas, *Aalto University, Finland*

Raymond Tu, *The City College of New York*

Track N: Wetting & Adhesion

Françoise Brochard-Wyart, *Institut Curie, Paris, France*

Joelle Frechette, *Johns Hopkins University*

David Quéré, *ESPCI, Paris, France*

Connie Roth, *Emory University*

2019 PLENARY AND AWARD LECTURES



PLENARY SPEAKER

Jennifer Lewis
Harvard University

Jennifer A. Lewis is the Jianming Yu Professor of Arts and Sciences, the Wyss Professor for Biologically Inspired Engineering in the Paulson School of Engineering and Applied Sciences and a core faculty member of the Wyss Institute at Harvard University, where she co-leads the 3D Organ Engineering Initiative. Her research focuses on the directed assembly of functional, structural, and biological materials. She is a member of the National Academy of Sciences, National Academy of Engineering, National Academy of Inventors, and the American Academy of Arts and Sciences. She has received numerous awards, including the National Science Foundation Presidential Faculty Fellow Award, the American Chemical Society Langmuir Lecture Award, the Materials Research Society Medal Award, the American Ceramic Society Sosman Award, and, most recently, the Lush Science Prize. Her work on microscale 3D printing was highlighted as one of the “10 Breakthrough Technologies” by the *MIT Technology Review*, while her bioprinting research was named “one of the top 100 science stories” by *Discover Magazine*. Her work has enjoyed broad coverage in the popular media. To date, she has co-founded two companies that are commercializing technology from her lab.

PLENARY SESSION 1
MONDAY, JUNE 17, 2019
8:00 AM – 9:00 AM
GRAND BALLROOM

Printing Soft Matter in Three Dimensions

3D printing enables one to rapidly design and fabricate materials in arbitrary shapes on demand. I will introduce the fundamental principles that underpin 3D printing methods pioneered by our group. I will then describe the design, composition, and rheological properties of functional, structural and biological inks that we have developed, which are vastly expanding the capabilities of 3D printing. Finally, I will highlight several examples from our recent work, including the fabrication and characterization of colloidal foams, shape-shifting architectures, and soft functional devices.



PLENARY SPEAKER

Juan de Pablo
The University of Chicago

Juan de Pablo is the Liew Family Professor in Molecular Engineering at the University of Chicago, Vice President for National Laboratories and Senior Scientist at Argonne National Laboratory. A prominent materials scientist, de Pablo's research focuses on polymers, biological macromolecules, and liquid crystals by developing molecular models and computer simulations of complex processes over wide ranges of length and time scales. In addition to his approximately 500 publications and a textbook on *Molecular Engineering Thermodynamics*, he holds more than 20 patents. Among his awards, de Pablo received the Polymer Physics Prize from the American Physical Society in 2018, the DuPont Medal for Excellence in Nutrition and Health Sciences in 2016, the Intel Patterning Science Award in 2015, and the Charles Stine Award from the American Institute of Chemical Engineers in 2011. He served as chair of the Mathematical and Physical Sciences Advisory Committee for the National Science Foundation, and the Committee on Condensed Matter and Materials Research at the National Research Council. He is the founding editor of *Molecular Systems Design and Engineering* journal, and co-director of the new Center for Hierarchical Materials Design. de Pablo was inducted into the National Academy of Engineering in 2016 for "design of macromolecular products and processes via scientific computation." He is a fellow of the American Academy of Arts and Sciences, the American Physical Society, and is a foreign correspondent member of the Mexican Academy of Sciences.

PLENARY SESSION 2
TUESDAY, JUNE 18, 2019
8:00 AM – 9:00 AM
GRAND BALLROOM

Liquid crystals – from simple self-assembling systems, to autonomous materials constructs

Polymeric materials with mechano-chemically active components are able to undergo spontaneous structural rearrangements that generate internal stresses and motion. These stresses can be large in the case of liquid crystalline polymers, where elasticity becomes important. At sufficiently high concentrations, such materials form nematic phases that have defects, which serve as attractors for solutes or colloidal particles. As such, defects can also be used for directed self-assembly. Going beyond passive nematic systems, introducing internal activity gives rise to structural and dynamical features that are not found in materials at rest. Understanding how specific behaviors emerge in active liquid crystals is of interest for design of autonomous materials systems capable of delivering desired functionalities, including the possibility of transporting colloidal particles in a programmable manner. This lecture addresses the relationship between structure, activity, and motion in lyotropic liquid crystalline polymeric systems with colloidal particles. Results will be presented for actin and tubulin suspensions, where activity is generated by protein motors. A distinctive feature of these biopolymers is that characteristic contour lengths can range reach tens of microns, thereby making them amenable for study by optical microscopy. By relying on molecular and meso-scale models, it is possible to arrive at a comprehensive description of these suspensions that helps explain the connections between molecular structure, the formation and shape of distinct topological defects, the localization of particles in such defects, activity, and dynamics. One of the outcomes of such a description is the realization that hydrodynamic interactions can in some cases exacerbate or mitigate the elasticity of the underlying materials, leading to non-intuitive phenomena that do not arise at equilibrium. These findings raise the prospect that, by balancing such effects, it might be possible to design functional materials where specific, autonomous macroscopic dynamical responses are programmed into a system to create function.



UNILEVER AWARD WINNER

Lauren Zarzar
Pennsylvania State University

L Lauren is currently an assistant professor in the Department of Chemistry at The Pennsylvania State University. As an undergraduate, Lauren attended the University of Pennsylvania, earning bachelor's degrees in Chemistry (from the College of Arts and Sciences) and Economics (from Wharton). Subsequently, she attended graduate school at Harvard University in the Department of Chemistry and Chemical Biology and was advised by Joanna Aizenberg. Her graduate work on bio-inspired hydrogel micro-actuators was supported by the NSF Graduate Research Fellowship and the NDSEG Fellowship. During the summers of graduate school, Lauren worked at the Advanced Materials Laboratory of Sandia National Laboratories investigating multiphoton patterning of responsive gels and nanocrystalline metals. As a postdoctoral associate at MIT with Timothy Swager, she developed complex multiphase emulsions that are dynamically reconfigurable and responsive to external stimuli. Currently, her research group at Penn State focuses on dynamic materials, spanning complex emulsions to polymers, and the laser direct writing of diverse materials at liquid-solid interfaces. She is the recipient of the 3M Non-Tenured Faculty Award, an ARO Young Investigator Program award, and the Army Early Career Award for Scientists and Engineers (ECASE) award.

UNILEVER AWARD & LECTURE

TUESDAY, JUNE 18, 2019

4:45 PM – 5:45 PM

GRAND BALLROOM

Structural Coloration by Cascading Total Internal Reflection and Interference at Microscale Concave Interfaces

Understanding and controlling color-inducing light-matter interactions have been of fundamental and practical interest to scientists, engineers, designers, and artists for millennia. A variety of physical phenomena create color. Quantum processes are at play when light is absorbed with spectral selectivity by pigments and dyes. Material-specific optical dispersion allows prisms to separate white light into colors. By contrast, nature's most stunning color displays, including iridescent peacock feathers, butterfly wings, and opals, rely on structural coloration created by the interference of light in micrometer to nanometer scale periodic structures. I will describe a ubiquitous, but previously unrecognized, mechanism and design principle for creating iridescent structural color with large angular spectral separation. Light traveling by different trajectories of total internal reflection along a concave optical interface can interfere to generate brilliant patterns of iridescent structural color. This effect is generated at interfaces with dimensions that are orders of magnitude larger than the wavelength of visible light and thus is readily observed in systems as simple as water drops condensed on a transparent substrate. We exploit this phenomenon in more complex systems, including multiphase droplets, 3D patterned polymer surfaces, and solid micro-particles, to create patterns of iridescent color that are consistent with theoretical predictions. Given the ease by which controllable structural coloration with large angular spectral separation is generated at microscale interfaces, we expect that the design principles and predictive theory laid forth will be of interest for fundamental exploration in optics and application in functional colloidal inks and paints, displays, and sensors.



LAMER AWARD WINNER

Rong Ye
Cornell University

Rong (Rocky) Ye was born in Guangdong, China. He received his B.E. degree in Polymeric Material and Engineering from Sun Yat-sen University (Guangzhou, China) in 2011 after conducting research with Prof. Xiao-Ming Chen. He received his M.Sc. degree in inorganic chemistry at the University of California, Los Angeles in 2012. Then he moved to University of California, Berkeley and conducted his graduate research under the guidance of Profs. Gabor A. Somorjai and F. Dean Toste, and received his PhD degree in December 2017. He is one of the inaugural Presidential Postdoctoral Fellows at Cornell University, currently working with Prof. Peng Chen on using single-molecule fluorescence microscopy to probe molecular binding on nanoparticles. In addition to the Victor K. LaMer Award, he has received awards including the Chinese Government Award for Outstanding Self-financed Students Abroad, MRS Graduate Student Award, Teagle Foundation Award for Excellence in Enhancing Student Learning, and Berkeley Teaching Effectiveness Award.

LAMER AWARD & LECTURE
WEDNESDAY, JUNE 19, 2019
8:00 AM – 9:00 AM
GRAND BALLROOM

Stabilized Metal Clusters for Bridging Heterogeneous and Homogeneous Catalysts: the Case of Gold

In this talk, I will discuss the benefits and drawbacks of heterogeneous and homogeneous catalysts, and discuss the motivations to combine their advantages. I will introduce the strategy of leveraging supported dendrimer-encapsulated metal clusters as heterogenized homogeneous catalysts with high catalytic activity, product selectivity, stability against particle aggregation and leaching, and recyclability. Catalysts optimization can be achieved through the modulation of various parameters. The clusters are oxidized (e.g., with PhICl_2) or reduced (e.g., with H_2) in situ. Changing the dendrimer properties (e.g., generation, terminal functional groups), or installing secondary ligands on the surfaces of the metal clusters in addition to the dendrimers, is analogous to ligand modification in homogeneous catalysts, which affect both catalytic activity and selectivity. Similarly, the pore size of the mesoporous support is another factor in determining product distribution. In a flow reactor, the flow rate is adjusted to control the residence time of the starting material and intermediates, and thus the final product selectivity. The applications of such gold clusters in aldol reactions and lactonization will be discussed as examples in detail. In addition to the use of an oxidizer to tune the oxidation state of gold in situ under reaction conditions, interband transition-induced hot electrons are found to be an alternative effective approach. Our work suggests a novel and facile strategy for the formation of highly active gold nanocluster catalysts, which would otherwise be challenging to access, by light illumination of the interband transitions in the presence of the appropriate reactants.

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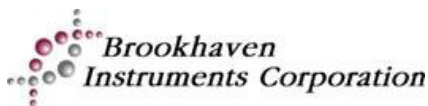
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EXHIBITORS



2019 TECHNICAL PROGRAM

Monday Plenary Session

Plenary Session

Monday, June 17, 2019, 8:00 AM–9:00 AM

Room: Grand Ballroom

8:00 AM Printing Soft Matter in Three Dimensions

Jennifer Lewis

Monday Morning Sessions

Track A: Active & Responsive Matter

Monday, June 17, 2019, 9:20 AM–11:20 AM

Room: Conference Two

Session Presider: Dan Goldman, Georgia Tech

9:20 AM Keynote: Unstable fronts and stable “critters” formed by magnetic microrollers

Paul Chaikin; Aleks Donev; Michelle Driscoll

10:00 AM Critters: stable clusters born from an unstable front

Michelle Driscoll; Ernest van der Wee; Blaise Delmotte; Aleksandar Donev; Paul Chaikin; Kyle Bishop; Stefano Sacanna; Mena Youssef; Wenjie Fei

10:20 AM Colloidal electronic cells: distributed, modular, particulate electronic devices for information collection and storage

Albert Tianxiang Liu; Pingwei Liu; Volodymyr B Koman; Michael S. Strano

10:40 AM Experimental study of the Motion of Patchy Particle Swimmers near a Liquid/Liquid Interface

Zohreh Jalilvand; Ilona Kretzschmar

11:00 AM Reconfigurable thermo-responsive active colloids

Laura Alvarez; Miguel Angel Fernandez-Rodriguez; Lucio Isa

Track C: Colloidal & Surface Forces

Monday, June 17, 2019, 9:20 AM–11:20 AM

Room: Conference Four

Session Title: Colloidal forces and self-assembly

Session Presider: Todd Sulchek, Georgia Tech

- 9:20 AM Surface Forces induced Hierarchical Pattern
Deposition of Nanoparticles
Ekhlas Homede; Anna Zigelman; Ludmila
Abezgauz; Ofer Manor
- 9:40 AM Modeling of polymer-induced colloid interactions at
multiple length scales
Alyssa Travitz; Wenlin Zhang; Ronald G. Larson
- 10:00 AM Keynote: Interfacial structure, interparticle forces
and assembly dynamics during oriented attachment
of colloidal crystals (Invited Keynote)
Jim J DeYoreo; Lili Liu; Guomin Zhu; Xin Zhang;
Dongsheng Li; Maria Sushko; Jaehun Chun; Elias
Nakouzi; Greg Schenter; Kevin Rosso; Christopher
Mundy
- 10:40 AM Improving the Estimates of Hamaker Constants
Using Atomic Force Microscopy: Effect of Surface
Roughness on Cantilever Deflections
Michael C Stevenson; Stephen P Beaudoin; David
S Corti
- 11:00 AM Understanding Calcium-Mediated Adhesion of
Nanomaterials in Reservoir Fluids: Insights from
Molecular Dynamics Simulations
Hsieh Chen; Shannon L Eichmann; Nancy A
Burnham

Track D: Colloids & Macromolecules in Life Sciences

Monday, June 17, 2019, 9:20 AM–11:20 AM

Room: Conference D

Session Title: Polymers and Gels in Biology

Session Presider: Jennifer Curtis, Georgia Tech

9:20 AM Microrheological characterization of covalent adaptable hydrogels for applications in oral delivery

Nan Wu; Kelly M Schultz

9:40 AM Viability, morphology, and dispersal of *Staphylococcus epidermidis* biofilms: soft matter analysis of heat effects

Joanne K Beckwith; J. Scott Van Epps; Michael J Solomon

10:00 AM Keynote: Non-linear elasticity and dissipation in fibrous networks, the cytoskeleton and soft tissues (Invited Keynote)

Paul A Janmey; Alison E Patteson; Anne van Oosten

10:40 AM Self-Regenerating Giant Hyaluronan Polymer Brushes

Jessica Faubel; Wenbin Wei; Hema Selvakumar; Daniel T Kovari; Joanna W Tsao; Felipe Rivas; Elaheh Rahbar; Adam R Hall; Jennifer L Washburn; Paul H Weigel; **Jennifer E Curtis**

11:00 AM Controlled small molecule release from dual-stimuli responsive microgels

Yingnan Zhang; Michael Serpe

Track E: Directed & Self-Assembly

Monday, June 17, 2019, 9:20 AM–11:20 AM

Room: Conference E

Session Title: Smart and Functional Assemblies

Session Presider: James Kindt, Emory U

9:20 AM Characterization of the structural properties of colloidal suspensions through advanced Light Scattering.

Coline Bretz; Andrea Vaccaro; Andreas Charles Völker

9:40 AM New type of porous material synthesized by the solvent segregation driven nanoparticle self-assembly

Yuyin Xi; Yun Liu

10:00 AM Photoinduced reversible morphological transformation of azobenzene-containing pseudo-2D polymers

Zili Li; Ruke Bai; Zhiquan Lin

10:20 AM Effect of crystal quality on the brilliance of structural color from self-assembled colloidal crystals

Michael J. Solomon; Tianyu Liu; Bryan Vansaders; Sharon C. Glotzer

10:40 AM Understanding and Controlling the Self-Assembly of Cellulose Nanocrystal Mesogens into Films to Achieve Desired Properties

Virginia A. Davis

11:00 AM Self Assembly of Cellulose Nanocrystals into Helical Microstructures

Martin J Pospisil; Caleb W Neufeld; Matthew Noor; Partha Saha; Virginia A Davis; Micah J Green

Track F: Electrokinetics, Micropores & Microfluidics

Monday, June 17, 2019, 9:20 AM–11:20 AM

Room: Conference Six

Session Title: Electrokinetics

Session Presider: Kyle Bishop, Columbia University

9:20 AM Oscillating Electric Fields in Liquids Create a Long-Range Steady Field: Implications for Electrokinetics

S. M. H. Hashemi Amrei; Scott Bukosky; Greg Miller; **William Ristenpart**

10:00 AM Active electrokinetic control of the concentration-polarization layer in a microchannel-Nafion membrane system

Sinwook Park; Gilad Yossifon

10:20 AM Tracking particle assembly into streamwise bands

Andrew Joseph Yee; Minami Yoda

10:40 AM Asymmetric rectified electric fields (AREFs) significantly alter induced-charge electrokinetic flows

Seyyed Mohammad Hossein Hashemi Amrei; William D. Ristenpart; Gregory H. Miller

11:00 AM Dielectrophoresis based characterization of LEA proteins

Mohamed Z Rashed; Clinton J Belott; Michael A Menze; Stuart J Williams

Track G: Emulsions, Bubbles & Foams

Monday, June 17, 2019, 9:20 AM–11:20 AM

Room: Conference B

Session Title: Emulsion Dynamics

Session Presider: Lisa Biswal, Rice U

- 9:20 AM Base oil/water emulsions: analysis of the drainage rate and critical thickness from single droplet coalescence experiments
Javier Tajuelo; Vinny Chandran Suja; Lori A Crom; Gerald G Fuller
- 9:40 AM DC Electric field assisted dynamics of emulsion droplets
Muhammad Salman Abbasi; Ryungeun Song; Hyoungsoo Kim; **Jinkee Lee**
- 10:00 AM Kinetic analysis of oil exchange between stabilized emulsions using small angle neutron scattering
Yi-Ting Lee; Lilo D Pozzo
- 10:20 AM Novel nanoemulsion using a hybrid surfactant of silicone and hydrocarbon
Makoto Uyama
- 10:40 AM Keynote: Interfacial reactions in direct and inverse miniemulsions
Katharina Landfester

Track i: Environmental Systems & Sustainability

Monday, June 17, 2019, 9:20 AM–11:20 AM

Room: Conference Seven

Session Title: Contaminants in the Environment

Session Presider: Sara Hashmi, Yale University

9:20 AM Keynote: The role of colloid and surface science in developing sustainable design guidelines for carbon nanomaterials

Leanne M Gilbertson

10:00 AM ~~Effects of Inorganic Ions and Natural Organic Matter on the Aggregation of Nanoplastics~~

Li Cai; Lingling Hu

10:20 AM Utilizing Surface Analytical Techniques to Investigate Microplastics in the Great Lakes

Abigail Snyder; Joseph A Gardella; Sherri A Mason

10:40 AM Nanoscale titanium dioxide (nTiO₂) transport in porous media: the role of mineral and chemical composition of the transport media

Tao Cheng; Zahra Sadat Rastghalam

11:00 AM Coagulation Studies in Full Scale Drinking Water Plants

Anastasia Morfesis

Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond

Monday, June 17, 2019, 9:20 AM–11:20 AM

Room: Conference C

Session Presider: Hy Bui, L'oreal USA

- 9:20 AM Processing High Solids Suspensions via Additive Manufacturing
Hannah Woods; Zach Adams; Mitchell Ketcham; Andrew Bodorff; **Blair Brettmann**
- 9:40 AM Functional polymer brush-grafted nanoparticles for use as oil lubricant additives
Bin Zhao
- 10:00 AM Rheological Characterization of Nanocellulose Materials for Quality Control
Jianshan Liao; **Victor Breedveld**
- 10:20 AM Encapsulated alkyl benzene sulfonate surfactants for stability in brine at high temperature
Ayrat Gizzatov; Mohammed Kawelah; Afnan Mashat; Amr I. Abdel-Fattah
- 10:40 AM Effects of Convection in Concentrated Surfactant Dissolution
Haiqiao Wang; Seth Lindberg; Marco Caggioni; Patrick Spicer
- 11:00 AM Challenges with Herbicidal Premixes
Ashoke SenGupta; John Hemminghaus; Gary Klopff

Track K: General

Monday, June 17, 2019, 9:20 AM–11:20 AM

Room: Salon I+II

Session Presider: Seung Soon Jang, Georgia Tech

9:20 AM Developing a model for lipid domain formation and response to electric field within a 2-dimensional monolayer

Thomas C Kinard; Steven Wrenn

9:40 AM Structuration of silica nanoparticles in water: Nanostructure and Response to Drying Stress

Solenn Moro; Caroline Parneix; Bernard Cabane; Jean-Baptiste d'Espinose; **Nicolas Sanson**

10:00 AM Solubilization of Hydrophobic Compounds in Micellar Solutions: Effects of Composition and Temperature

Andrew P Karman; Stephanie R Dungan; Susan E Ebeler; Nitin Nitin

10:20 AM Multicomponent diffusion in nonionic micellar solutions with very hydrophobic solutes

Nathan P. Alexander; Stephanie R. Dungan; Ronald J. Phillips

10:40 AM Keynote: Understanding Soft Glassy Materials with Fractal Energy Landscapes (Invited Keynote)

John C. Crocker

Track L: Jamming, Gelling & Rheology

Monday, June 17, 2019, 9:20 AM–11:20 AM

Room: Salon V+VI

Session Presider: Connie Roth, Emory U

9:20 AM Macromolecular dynamics and extensional rheology of flexible and semi-flexible polymers

Jelena Dinic; Vivek Sharma

9:40 AM Effect of varying Young's modulus of PDMS on local glass transition temperature of nearby polystyrene

Yannic J. Gagnon; Justin C. Burton; Connie B. Roth

10:00 AM Keynote: Changes in the glass formation of polymer thin films and composites: how useful is Tg as a metric? (Invited Keynote)

Francis W Starr

10:40 AM Drop Formation in Yield Stress Fluids

Ya-Wen Chang; Juan Riemondo; Hugo Minière; Josefa Guerrero-Millan

11:00 AM Exploring physics governing syneresis in colloid polymer mixtures

Qimeng Wu; Thomas Kodger; Ruben Higler; Jasper van der Gucht

Track N: Wetting & Adhesion

Monday, June 17, 2019, 9:20 AM–11:20 AM

Room: Conference A

Session Presider: David Hu, Georgia Tech

9:20 AM Do Graphene Oxide Nanostructured Coatings Mitigate Bacterial Adhesion?

Santiago Romero-Vargas Castrillón

9:40 AM 3-Dimensional hierarchical surface architecture of *piliostigma reticulatum* and its seasonal variation characteristics in biomimetics

Onoriode Paul Avbenake; Lydia-Marie Joubert; Chimezie Anyakora; **Sourojeet Chakraborty**

10:00 AM Keynote: Cellular aggregates and microparticles: spontaneous migration, eating, dancing

Francoise Brochard-Wyart

10:40 AM Two-Phase Liquid Adhesive Systems from Pollen Particles

Carson Meredith; Donglee Shin; Won Tae Choi; Haisheng Lin; Zihao Qu; Victor Breedveld

Monday First Afternoon Sessions

Track A: Active & Responsive Matter

Monday, June 17, 2019, 1:30 PM–2:50 PM

Room: Conference Two

Session Presider: Aaron Blanchard, Emory

- 1:30 PM AquaDust: responsive nanogels to understand multi-scale water stress in plants
Piyush Jain; Weizhen Liu; Jeff Melkonian; Susan Jean Riha; Michael Allen Gore; Abraham Duncan Stroock
- 1:50 PM Stimuli-responsive supramolecular microgels
Andrij Pich
- 2:10 PM Hydrogels with thermo-responsive mechanical properties
Hui Guo; Cécile Mussault; Dominique Hourdet; Alba Marcellan; **Nicolas Sanson**
- 2:30 PM Programmable nanoscale rolling motors
Alisina Bazrafshan; Aaron Blanchard; Hanquan Su; Khalid Salaita

Track D: Colloids & Macromolecules in Life Sciences

Monday, June 17, 2019, 1:30 PM–2:50 PM

Room: Conference Four

Session Title: Protein-Protein and Protein-Polymer Interactions

Session Presider: Jessica Faubel, Georgia Tech

1:30 PM How polymers affect protein adsorption

Grazia Gonella

1:50 PM A multi-technique investigation into the role of HEMA copolymer surface chemistry on the receptor accessibility, spatial localization, and release of wound healing proteins

Shohini T Sen-Britain; Derek M Britain; Wesley Hicks; Joseph A Gardella Jr.

2:10 PM Mathematical model for fibrillation kinetics of the yeast prion Sup35NM

Aditi Sharma; Sven H Behrens; Yury O Chernoff; Andreas S Bommarius

2:30 PM Distinguishing protein aggregates from contaminants in viscous mixtures with holographic video microscopy

Laura A Philips; Annemarie Winters; Mary Ann Odete; Fook Chiong Cheong

Track E: Directed & Self-Assembly

Monday, June 17, 2019, 1:30 PM–2:50 PM

Room: Conference E

Session Title: Design Principles

Session Presider: Lorenzo Di Michele, Cambridge U

1:30 PM Keynote: Principles for designing protein nanocages

Roya Zandi

2:10 PM Photo-Crosslinking of Recombinant Protein Vesicles
via Incorporation of Unnatural Amino Acids

Yirui Li

2:30 PM Symmetry-based discovery of multicomponent,
two-dimensional colloidal crystals

Nathan A Mahynski; Evan Pretti; Vincent K Shen;
Jeetain Mittal

Track F: Electrokinetics, Micropores & Microfluidics

Monday, June 17, 2019, 1:30 PM–2:50 PM

Room: Conference Six

Session Title: Phoretic Propulsion

Session Presider: Bhuvnesh Bharti, LSU

- 1:30 PM Directed propulsion of spherical particles along 3D helical trajectories using induced-charge electrophoresis
Jin Gyun Lee; Allan M. Brooks; William A. Shelton; Kyle M. Bishop; Bhuvnesh Bharti
- 1:50 PM Propulsion of asymmetric dielectric particles under high frequency AC electric fields
Xingfu Yang; Jingjing Gong; Ning Wu
- 2:10 PM Buffer solutions enable versatile particle delivery into dead-end pores
Xiaoyu Tang; Todd M. Squires
- 2:30 PM Droplet migration in ionic surfactant gradients
Nan Shi; Afnan Mashat; **Amr I Abdel-Fattah**

Track G: Emulsions, Bubbles & Foams

Monday, June 17, 2019, 1:30 PM–2:50 PM

Room: Conference B

Session Title: Emulsion Dynamics II

Session Presider: Jelena Dinic, U Chicago

1:30 PM Interfacial mechanics of PEO-PDMS block-copolymer-coated oil/water interfaces and impact on emulsification

Michael L Davidson; Moshe Gottlieb; Lynn M Walker

1:50 PM Polymeric Nanoparticles Dispersed in a Pseudo Reverse Nanoemulsion

Marta Antoniv; S. Sherry Zhu

2:10 PM Probing the Influence of Surfactant-Nanoparticle Interactions on the Stability of Emulsions

Ashwin Raman; **Clint P Aichele**

Track i: Environmental Systems & Sustainability

Monday, June 17, 2019, 1:30 PM–2:50 PM

Room: Conference Seven

Session Title: Oil & Gas

Session Presider: Stephanie Velegol, Penn State

- 1:30 PM Targeted and Stimuli-Responsive Delivery of Surfactants to the Oil-Water Interface for Applications in Oil Spill Remediation
Azeem Farinmade; Olakunle Ojo; James Trout; Duy Nguyen; Vijay John
- 1:50 PM Design of Eco-friendly Surfactant Chemical Herders for Maritime Oil Spill Remediation
Hao Zhou; Geogre John; Charles maldarelli
- 2:10 PM Interfacial effects on heterogeneous nucleation of gas hydrates and ice
Yali Zhang; **Patricia Taboada-Serrano**
- 2:30 PM Interfacial phenomena in a gas-liquid reactor for CO₂ capture from flue gas
Abishek Kasturi; Austin Ladshaw; Sotira Yiacoumi; Jorge Gabitto; Kathleen Garrabrant; Radu Custelcean; Costas Tsouris

Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond

Monday, June 17, 2019, 1:30 PM–2:50 PM

Room: Conference C

Session Presider: Blair Brettmann, Georgia Tech

- 1:30 PM Increased functionality of ultrafine fibers through large particle inclusion
Elena Ewaldz; Ian Campbell; Riddhi Patel; Joshua Randrup; Blair Brettmann
- 1:50 PM Selective CoAxial Lithography via Etching of Surfaces (SCALES): A Bottom-up Nanoscale Patterning Process
Amar Tulsidath Mohabir; Trent Weiss; Gozde Tutuncuoglu; Michael Filler; Eric Vogel
- 2:10 PM Manufacturing Smart Innovations -- Moving Colloid & Surface R&D to Manufacturing Faster and at Higher Value
Darrell Velegol
- 2:30 PM Impact of Surface Wetting and Processing Technique on High Aspect Ratio Particle Coatings
Zachary R Hinton; Joy Baxter; Charleine Ngantsan; Maria Diaz-Acevedo; Simge Uzun; Prem Patel; Lavenia Thursch; Giuseppe R Palmese; Nicolas J Alvarez

Track K: General

Monday, June 17, 2019, 1:30 PM–2:50 PM

Room: Salon I+II

Session Presider: Seung Soon Jang, Georgia Tech

1:30 PM Keynote: Microscopic theory of how surfaces and confinement determine spatially heterogeneous activated dynamics and elasticity in colloidal suspensions and thermal liquids

Kenneth S. Schweizer

2:10 PM Hydrodynamic coupling of the mechano-electro response in fluid suspensions of conducting particles

Matthew Snell; Jeffrey J Richards

2:30 PM Multiscale modeling of multicompartment micelle nanoreactors

Seung Soon Jang

Track L: Jamming, Gelling & Rheology

Monday, June 17, 2019, 1:30 PM–2:50 PM

Room: Conference D

Session Presider: Sujit Datta, Princeton

- 1:30 PM The Characterization of the Cooperative Motion in Glass-Forming Fluids using Properties of the Vibrational Spectrum and Machine Learning
Wengang Zhang; Francis Starr; Jack Douglas
- 1:50 PM Transport of tracers in nanoparticle supercooled liquids and glasses
Ryan C. Roberts; Ryan Poling-Skutvik; Jeremy C. Palmer; **Jacinta C. Conrad**
- 2:10 PM Multi-Particle Finite Element Simulation of Highly Compressed Microgel-Packings
Ahmed Elgailani; Craig E Maloney
- 2:30 PM Cyclic shear in a mesoscopic model of amorphous plasticity
Kareem Khirallah; botond tyukodi; Craig Maloney

Track N: Wetting & Adhesion

Monday, June 17, 2019, 1:30 PM–2:50 PM

Room: Conference A

Session Presider: Alexis Noel, Georgia Tech

- 1:30 PM Wetting and capillary phenomena in liquid uptake by butterflies
Artur Salamatin; Peter Adler; Konstantin Kornev
- 1:50 PM Lubricant impregnated surfaces for mitigating asphaltene adsorption
Henri-Louis Girard; Philippe Bourrienne; Robert E. Cohen; Gareth H. McKinley; Kripa K. Varanasi
- 2:10 PM Replacement rates of initially oil-filled microscopic cavities with bulk water
Hans Christian Larson; Jeong Woo Kim; Dongjin Seo
- 2:30 PM Flow-Induced Long-Term Stable Slippery Surfaces
Philipp Baumli; Hannu Teisala; Hoimar Bauer; Diana Garcia-Gonzalez; Viraj Damle; Florian Geyer; Maria D'Acunzi; Anke Kaltbeitzel; Hans-Jürgen Butt; Doris Vollmer

Monday Second Afternoon Sessions

Track A: Active & Responsive Matter

Monday, June 17, 2019, 3:10 PM–4:30 PM

Room: Conference Two

Session Presider: Albert Liu, MIT

3:10 PM Rotation of oil droplets driven by motile bacteria at interfaces

Narendra K Dewangan; Jacinta C Conrad

3:30 PM Autochemophoretic DNA motors generate 100+ piconewton forces

Aaron T Blanchard; Alisina Bazrafshan; Jacob Yi; Julia T Eisman; Kevin Yehl; Teng Bian; Andrew Mugler; Khalid Salaita

3:50 PM Hydrodynamic interactions between microswimmers trapped at interfaces

Nicholas G Chisholm; Kathleen J Stebe

4:10 PM Surface active layers of bacteria at oil-water interfaces

Jiayi Deng; Mehdi Molaei; Nicholas Chisholm; John C. Crocker; Kathleen J. Stebe

Track D: Colloids & Macromolecules in Life Sciences

Monday, June 17, 2019, 3:10 PM–4:30 PM

Room: Conference Four

Session Title: Active and Living Matter

Session President: Johnna Temenoff, Georgia Tech

3:10 PM Keynote: Collaboration and competition between active sheets for self-propelled particles (Invited Keynote)

Abhrajit Laskar; Oleg E. Shklyaev; **Anna C. Balazs**

3:50 PM Bacterial hopping and trapping in porous media

Tapomoy Bhattacharjee; **Sujit S. Datta**

4:10 PM Dynamics of filamentous phage in polymer solutions

Maxwell W Smith; Ryan Poling-Skutvik; Richard C Willson; Jacinta C Conrad

Track E: Directed & Self-Assembly

Monday, June 17, 2019, 3:10 PM–4:30 PM

Room: Conference E

Session Title: Polymer Assembly

Session Presider: Virginia Davis, Auburn U

- 3:10 PM Structure and rheology of polyelectrolyte complex coacervates
Amanda Marciel; Samanvaya Srivastava; Matthew Tirrell
- 3:30 PM Phase separation of ternary mixtures incorporating bottlebrushes: A Dissipative Particle Dynamics approach
Sidong Tu; Liying Wei; Igor Luzinov; Olga Kuksenok
- 3:50 PM Crystallization-driven self-assembly of model rod-like particles from diblock copolymers
Avanish Bharati; Steven D. Hudson; Katie M. Weigandt
- 4:10 PM Rapid Self-Assembly of Metal/Polymer Hybrid Nanoparticles and Their Use as Nanoreactors
Andrew Harrison; Tien Vuong; Michael Zeevi; Benjamin Hittel; Christina Tang

Track F: Electrokinetics, Micropores & Microfluidics

Monday, June 17, 2019, 3:10 PM–4:30 PM

Room: Conference Six

Session Title: Non-Polar Media

Session Presider: Carlos Martinez, Purdue University

- 3:10 PM Impact of Surfactant Headgroup Chemistry on Charging Processes in Nonpolar Liquids
James W. Schneider; Keyi Xu; Dennis C. Prieve; Paul J. Sides
- 3:30 PM Surface Charging Mechanism for Colloidal Overbased Detergents
Anil Agiral; Adam Cox; Lou DiFlavio
- 3:50 PM Fog collection using space-charge injection
Maher Damak; Kripa K. Varanasi
- 4:10 PM An investigation in the effect of the non-uniform electric field in the highly dispersed water in oil emulsion
Mohcen Shahbaznezhad; Hossein Sojoudi

Track G: Emulsions, Bubbles & Foams

Monday, June 17, 2019, 3:10 PM–4:30 PM

Room: Conference B

Session Title: Microbubbles and Emulsions Related to Biomolecular Applications

Session Presider: Darrell Velegol, Penn State U

- 3:10 PM Bilayer Alteration through Ultrasound-Induced Cavitation of Microbubbles
Martin P Walsh; Rohan Tikekar; Nitin Nitin; Steven Wrenn
- 3:30 PM Fluorous iron oxide nanoparticles for acoustic droplet vaporization
Alexander M. Vezeridis; **Caroline de Gracia Lux;** Sarah A. Barnhill; Sejung Kim; Wu Zhe; Sungho Jin; Jacques Lux; Nathan C. Gianneschi; Robert F. Mattrey
- 3:50 PM Mass transfer of dye-loaded, water-in-perfluorocarbon reverse emulsion with an aqueous phase
Diane L Nelson; Robert D Tilton
- 4:10 PM Kinetics of phospholipid transport to interfaces in colloidal dispersions or gels
Jennifer Staton; Stephanie Dungan; Laurence Talini

Track i: Environmental Systems & Sustainability

Monday, June 17, 2019, 3:10 PM–4:30 PM

Room: Conference Seven

Session Title: Toxicity

Session Presider: Yong-Ha Kim, LSU

3:10 PM Dissociative adsorption of chlorine on metal surfaces triggers orientational transitions of liquid crystals

Huaizhe Yu; Tibor Szilvási; Kunlun Wang; Nanqi Bao; Karthik Nayani; Robert Twieg; Manos Mavrikakis; Nicholas Lawrence Abbott

3:30 PM Anodized Aluminum with Nanoholes Impregnated with Quaternary Ammonium Compounds as Antibacterial Surfaces

Amin Valiei; Mira Okshevsky; Nicholas Lin; Nathalie Tufenkji

Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond

Monday, June 17, 2019, 3:10 PM–4:30 PM

Room: Conference C

Session Presider: Bin Zhao, University of Tennessee Knoxville

- 3:10 PM In-vitro Evaluation of Volumizing Mascara Deposited on Fake Eyelash
Matthew Devlin; Christopher Pang; Kyoo Park; Hy Si Bui
- 3:30 PM Electrospinning Polyelectrolyte Complex Fibers
Sarah L Perry; Xiangxi Meng; Juanfeng Sun; Jessica D Schiffman
- 3:50 PM Ultrathin Biobased Transparent UV-Blocking Coating Enabled by Nanoparticle Assembly
Shan Jiang; Emily Olson; Yifan Li; Ana Miller; Fei Liu; Ayuna Tsyrenova; Keith Vorst; Greg Curtzwiler; Eric Cochran
- 4:10 PM Tint Dispersions: Understanding Structure-Property Relationships
Anand K Atmuri; Justin Fantuzzo

Track K: General

Monday, June 17, 2019, 3:10 PM–4:30 PM

Room: Salon I+II

Session Presider: Bhuvnesh Bharti, Louisiana State U

- 3:10 PM Optimization of liposomal carriers for mRNA delivery
Anisha Veeren; Sarah Merkel; Mark Osborn; Joseph A Zasadzinski
- 3:30 PM Role of protein-protein interactions in the adsorption of myoglobin onto mesoporous silica materials
Kelly Lannigan; Luke Larive; Jin Gyun Lee; Bhuvnesh Bharti
- 3:50 PM Time-resolved structure changes of amyloid beta peptides from monomer to fibrillar aggregates revealed by small-angle x-ray scatterings
Na Kyung Kwon; Juhye Kang; Mi Hee Lim; So Youn Kim

Track L: Jamming, Gelling & Rheology

Monday, June 17, 2019, 3:10 PM–4:30 PM

Room: Conference D

Session Presider: Jacinta Conrad, Univ. of Houston

- 3:10 PM Interfacial Dynamics and Rheology of
Supramolecular Self-Healing
Zachary R Hinton; Aamir Shabbir; Nicolas J
Alvarez
- 3:30 PM Air entrainment through viscous fingering in drying
colloid-polymer solutions
Thitiporn Kaewpetch; Javier Buceta; **James F
Gilchrist**
- 3:50 PM Measuring the material properties of drying paint
films through microrheology
Selwin M Varghese; Reza M Rock; Steven V
Barancyk; James F Gilchrist; Christopher L Wirth

Track N: Wetting & Adhesion

Monday, June 17, 2019, 3:10 PM–4:30 PM

Room: Conference A

Session Presider: Günter K. Auernhammer, Leibniz Inst Polymer Research

3:10 PM Measuring the resilience of bioinspired grippers for reversible underwater adhesion

Alexis Noel; Jason Nadler

3:30 PM Wetting transition study of submerged superhydrophobic surface

Jinde Zhang; Keqin Zheng; Joey Mead

3:50 PM Janus liquid marbles containing oil and water as a vessel for interfacial reactions

Andrew Terhemem Tyowua; James M Mooney; Bernard Paul Binks

4:10 PM Forced Wetting in Square Capillaries

Vignesh Thammanna Gurusurthy; Chukwudumebi Ogbogu; Ilia V Roisman; Cameron Tropea; **Stephen Garoff**

Monday Poster Sessions

Track A: Active & Responsive Matter

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- A1** Electric field driven assembly and reconfiguration of active suprastructures: From micromotors to living crystals
Jin Gyun Lee; Bhuvnesh Bharti
- A2** Visible light and thermo-triggering of new asymmetric azobenzene compounds
Domenico Pirone; Marta Giamberini; Ricard García Valls
- A3** Effect of particle diameter and magnetic anisotropy on magnetorelaxometry and magnetic particle imaging performance of immobilized magnetite nanoparticles
Zhiyuan Zhao; Carlos Rinaldi
- A4** Collective dynamics of polarizable particles under confinement
Javier D Gomez; Gerrit P Gaillard; Carlos A Silvera Batista
- A5** Hydroxypropyl cellulose as a green polymer for thermo-responsive aqueous foams
Eric Weißenborn; **Christian Honnigfort**; Björn Braunschweig

Track B: Bio-Inspired Systems

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- B1** Engineering Recombinant Fusion Enzyme Vesicles for Biocatalysis
Julie A Champion; Dylan R. Dautel
- B2** A comparison between water hydration behavior of materials with nonionic EO groups and zwitterionic Sulfobetaine (SB) and Carboxybetaine (CB) groups
Chi Lan; Ruey-Yug Tsay
- B3** The uptake and translocation of CuO nanoparticles in *Arabidopsis thailana*
Kaitlin Ordiway; Angelina Montes; Nita G. Chavez Soria; Diana S. Aga; Mary A. Bisson; Joseph A. Gardella, Jr.
- B4** Surface Modified Cellulose Nanocrystal Phase Behavior
Zachariah A Pittman; Mingzhe Jiang; Christopher Kitchens
- B5** Formation and characterization of zein-based oleogel
Ko-Lan Tsung; Graciela Wild Padua
- B6** Medium composition and synthesis environment affects the morphology of protein-inorganic calcium-phosphate supraparticles
Adam A Caparco; Andreas S Bommarius; Julie A Champion
- B7** Presenting an antimicrobial peptide target for CompELS
Laurel Stefani; Richard S Sullivan; Johnna S Temenoff; Valeria T Milam

Track C: Colloidal & Surface Forces

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- C1** Surface structural evolution of Pd nanosheets during aging and their effect on (electro-)catalytic activities
Yu Zhang; Minhua Shao; Younan Xia
- C2** Coalescence-based wetting of a surface by an emulsion drop
Sourojeet Chakraborty; Suraj Borkar; Arun Ramachandran
- C3** Self-assembly of microstructures from evaporation of volatile diluted American whiskey
Martin J. Brown VI; Adam D. Carrithers; Stuart J. Williams
- C4** Stability of nanoparticles in brines: effect of ligand structure and solvent shell
Lasya Maganti; Carlos A Silvera Batista
- C5** Influence of Nanoconfinement on Geocolloidal Interactions and Relaxation Dynamics
Steve Merriman; Yuanzong Zhang; Alessandro Perego; Rundong Huang; Shifeng Huang; **Younjin Min**

Track D: Colloids & Macromolecules in Life Sciences

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- D1** Mechanically robust multilayered emulsion films for temperature-responsive drug delivery adhesive patches
Ye Jin Park; Hye Min Seo; Jin Yong Lee; Jin Woong Kim
- D2** Impedance spectroscopy based evaluation of phytoplankton health
Margaret R Jett; Karina Henson; Mohamed Z Rashed; Susan Hendricks; Stuart Williams
- D3** Interfacial behavior of monoclonal antibody-surfactant mixtures and their effect on aggregation
Aadithya Kannan; Ian C. Shieh; Gerald G. Fuller
- D4** Microbubble and Nanobubble Expansion using Perfluorocarbon Nanodroplets: A new Strategy for Enhanced Ultrasound Imaging and Therapy
Carlos J Brambila; Jacques A Lux; Robert F Mattrey; Dustin Boyd; Caroline de Gracia Lux
- D5** Characterizing Hydrogels as Drug Delivery Systems to Maximize Release of Active Protein
Lauren Lubecki; Wesley L Hicks; Robert Hard; Joseph A Gardella
- D6** Alginate bead production by co-extrusion technology and application in ginger oil encapsulation
Sharmaine Atencio; Alicia Maestro; Esther Santamaria; Jose Maria Gutierrez; **Carmen Gonzalez**

MONDAY POSTER SESSIONS

- D7** Investigating the effect of surface energy of the substrate on algal attachment
Zahra Karimi; Marisa G. Rodriguez; David M. Blersch; Virginia A. Davis
- D8** Development of DNAzyme-Lipid Nanostructures for Targeted Gene Regulation
Radhika Sharma; Khalid Salaita
- D9** Sequential Delivery of Nanoparticle Drug-Cocktails for Chemotherapy
Shani Levit; **Christina Tang**
- D10** Rheology of water in water emulsions:water-casein-pectin sytem
Esther Santamaria; Alicia Maestro; Jose Maria Gutierrez; **Carmen Gonzalez**
- D11** Development of novel stability assays for protein biopharmaceuticals using time-dependent light scattering analysis
Cathryn G Conner; James McAndrew; Stefano Menegatti; Orlin D Velev
- D12** Friction as a means of detecting biomolecules with ultrahigh sensitivity and specificity
Bakdaulet Isakhov; W T. Godbey; Noshir Pesika
- D13** Soluble Precursors in Macromolecular Complex Fluids. Light Scattering as a High Sensitivity Technique for Characterizing Colloidal Clusters
Daniel Seeman; Mikala Shremshock
- D14** Particle characterization and affect on beer flavor profiles
Mikala Shremshock; Daniel Seeman

Track E: Directed & Self-Assembly

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- E1** Microstructure effects of self-assembled graphene/
manganese oxide dispersions
Fatima A Hamade; Lindsey E Parsons; James G
Radich; Virginia A Davis
- E2** Colloid structure formation through hydrodynamic
interactions near a wall in a vertically rotated
confined cell
Md Mahmudur Rahman; John Ellery Payne; Regan
Elizabeth Wakefield; Stuart Joseph Williams
- E3** Amphiphilic Janus sphere assembly mediated with
surface-active molecules
Ayuna Tsyrenova; Muhammad Q Farooq; Jared L
Anderson; Shan Jiang
- E4** Self-Assembly of Magnetic Janus Colloids with
Radially Shifted Dipoles
Jonathan A Victoria-Camacho; Ronal A
DeLaCruz-Araujo; Ilona Kretzschmar; Ubaldo M
Cordova-Figueroa
- E5** Kinetics, ensemble dynamics, and immobilization of
colloidal ellipsoids in response to electric fields
Jiarui Yan; Aidin Rashidi; Christopher L Wirth

Track F: Electrokinetics, Micropores & Microfluidics

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

F1 Flow Behavior in a Shear Driven Highly Charged Slit Microchannel

Adham Riad; Behnam Khorshidi; Mohtada Sadrzadeh

Track G: Emulsions, Bubbles & Foams

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- G1** Phase equilibrium of Langmuir films of a natural surfactant and its correlation with stability of cosmetic emulsions
Juliana Martins Amado; Helen Conceição Ferraz; Frederico Wanderley Tavares; Gabriel Moraes Silva
- G2** One-step fabrication of Pickering double emulsions and their controlled release properties
Tong Zhang; To Ngai
- G3** Surface and interfacial interactions between cellulose nanocrystals and surfactants in brine and its implications on Pickering emulsion stability
Sanjiv Parajuli; Kevin A Green; Leeta A Prater; Trey Heath; Esteban U Benavides
- G4** Balancing Performance of Defoamers in Wood Coating Formulations
Aslin Izmitli; Akanksha Agrawal; Kevin Henderson; Mark Langille; Tian Lan; Joseph Manna
- G5** Capillary Foams: Properties and Applications
Omotola O Okesanjo; Carson J Meredith; Sven H Behrens
- G6** Preparation of highly concentrated monodispersed emulsion using microchannel emulsification
Khai Wenn Seah; Isao Kobayashi; Marcos Antonio das Neves; Mitsutoshi Nakajima
- G7** Electrogeneration of highly viscous droplets on demand
Yueming Sun; Arthur Salamatin; Jianxing Ma; Fei Peng; Konstantin Kornev

MONDAY POSTER SESSIONS

- G8** Impact of processing route and composition on bilge water emulsion formation and stability
Cole R. Davis; Carlos J. Martinez; John A. Howarter; Kendra A. Erk
- G9** Distinguishing Rocks from Drops using Holographic Video Microscopy
Rostisalav Boltyanskiy; Juliana Lumer; David B Ruffner; Fook Chiong Cheong; Laura A Philips

Track H: Energy, Catalysis & Separations

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- H1** Effect of Polymer Nanoreactor Core Material on Oxidant Availability
Andrew Harrison; Matthew Nguyen; Tien Vuong; Christina Tang
- H2** Efficient Water Oxidation in Acidic Media Enabled by Iridium-based Cubic Nanocages with 1.1-nm-thick Walls
Jiawei Zhu; Younan Xia
- H3** Colloidal metal nanoparticles for catalysis.
Chinmay Sanjay Joshi; Saptarshi Chakraborty; Christopher Kitchens

Track i: Environmental Systems & Sustainability

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- i1** Syntheses and catalytic applications of Ag-Rh core-frame nanocubes and Rh nanoboxes
Luo Zhang; Yun Zhang; Dong Qin
- i2** Effect of different colloids on Fe migration in saturated porous media under variable hydrochemical and hydrodynamic conditions
Wenjing Zhang; Xiaofei Li; Shanghai Du
- i3** Effect of nutrient matrix particle characteristics in growing media and hydroponics
Mikala Shremshock; Daniel Seeman
- i4** Understanding Fundamental Interactions between Spores, Lignin Nanoparticles, Rose Petals, and Their Impacts on Fungal Infection
Aditya A Sapre; Cathryn Conner; Orlin D Velev

Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- J1** Increasing yield and long-term stability by using poly(vinylpyrrolidone) during synthesis of gold nanoprisms
Katherinne Isabel Requejo Roque; Anton V. Liopo; Paul J. Derry; Eugene R. Zubarev
- J2** Impact of silicone slip/mar additives on the performance and surface characteristics of acrylic emulsion coatings
Tian Lan; Aslin Izmitli; Johnpeter Ngunjiri; Michaelleen Pacholski; Rachael Smith; Tim Roggow; Kevin Henderson; Tom Kalantar; Joseph Manna
- J3** Effects of Key Coating Parameters on Cationic Electrodeposition Throwpower
Fuduo Ma; Guosheng Kang; Steve Zawacky; Reza Rock
- J4** Continuous and Scalable Synthesis of Pt Multipods with Enhanced Electrocatalytic Activity toward the Oxygen Reduction Reaction
Ruhui Chen; Zhenming Cao; Zhiheng Lyu; Minghao Xie; Yifeng Shi; Younan Xia
- J5** All-water-based solution processed Ag nanofilms for highly efficient electrocatalytic reduction of CO₂ to CO
Sung Min Lee; Hyunju Lee; Junhyeong Kim; Sang Hyun Ahn; Suk Tai Chang

MONDAY POSTER SESSIONS

- J6** Both reduction kinetics and surface capping play important roles in controlling the formation of Au@Pd concave nanocubes
Minghao Xie; Shan Zhou; Jiawei Zhu; Zhiheng Lyu; Ruhui Chen; Younan Xia
- J7** A macroscale visualization technique to calculate dissolution time of polymers used in water-soluble films
Eduard A Caicedo-Casso; Kendra A Erk; Seth Lindberg

Track K: General

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- K1** Crystallization of poly(caprolactone) in Langmuir films: effects of multiple hysteresis cycles and compression rate
Bingbing LI
- K2** Effect of dispersity on the conformation of polymer-grafted nanoparticles
Tzu-Han Li; Vivek Yadav; Jacinta Conrad; Megan Robertson
- K3** Defect-assisted deposition of Au on Ag for the fabrication of core-shell nanocubes
Luo Zhang; Dong Qin
- K4** Characterization of High-Viscosity Liquids Using Surface Light Scattering Spectroscopy
Angelo S Visco; Amber R Titus; Nabin K Thapa; Anthony E Smart; William V Meyer; Alexander I Belgovskiy; J. Adin Mann; Elizabeth K Mann
- K5** Simulation of Nanoparticle Transport through Ordered Porous Media
Deepak Mangal; Jacinta C. Conrad; Jeremy C. Palmer
- K6** Novel approaches towards pi-conjugated hydrogels for bioelectronics
Marlow Durbin; Jack Terrell; Natalie Stingelin
- K7** Thermally Induced Worm-to-Sphere Shape Transitions of Linear Molecular Bottlebrushes in Water
Daniel M. Henn; **Bin Zhao**

Track L: Jamming, Gelling & Rheology

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- L1** Reversible sol-gel transition of biocellulose nanofluids via shear stress-responsive host-guest interaction
Minjeong Seo; Daehwan park; Kyounghee Shin; Ye Jin Park; Hye Min Seo; Jin Woong Kim
- L2** Particle tracking microrheology of cytoplasm with total internal reflection microscope (TIRM)
Gang Yang; To Ngai
- L3** Reduced Viscosity of Graphene Oxide Liquid Crystal Suspension with Polymer-induced Interaction
Yul Hui Shim; So Youn Kim
- L4** Probing dynamics of hydrate film formation and dissociation using interfacial rheology with sub-phase exchange.
Joseph Samaniuk; David Goggin

Track M: Particles & Molecules at Fluid Interfaces

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- M1** Building Better Bubbles: Partitioning the Proteins KFF and KYF onto the Gas-Liquid Interface of Sub-Micron Sized Bubbles
Joseph Portelli; Klaudia Kapo; Raymond Tu
- M2** Isothermal Cycles of the n-Docosanol Monolayer: Effect of Temperature & Targeted Surface Pressure
Jianzhong Chen; Chad Horton; Robert Metzger
- M3** Equilibrium Surfactant Thermodynamics as a Function of Pressure
Zachary R. Hinton; Nicolas J. Alvarez

Track N: Wetting & Adhesion

Monday, June 17, 2019, 4:45 PM–6:45 PM

Room: Grand Ballroom

- N1** Mapping wetting variations on surfaces with piconewton force and micrometric lateral resolutions
Dan Daniel; Xueqi Koh; Yunita Florida; Anqi Sng; Xing Zhang; Nikodem Tomczak
- N2** New direct measurement of the layer thickness of adsorbed polymer squeezed by an oil droplet
Jennifer Fusier; Stephane Jouenne; Nicolas Passade-Boupat; François Lequeux; Jean-Baptiste d’Espinose; **Nicolas Sanson**
- N3** Effects of lubricant characteristics on wetting behavior of slippery lubricant-infused porous surfaces
Hyuneui Lim; Thanh-Binh Nguyen; Seungchul park; Guhyeon Han
- N4** Multiphase bee-collected pollen adhesives with rate-tunable and humidity-protective functionality
Donglee Shin; J. Carson Meredith

WITHDRAWN

Tuesday Plenary Session

Plenary Session

Tuesday, June 18, 2019, 8:00 AM–9:00 AM

Room: Grand Ballroom

8:00 AM Liquid crystals – from simple self-assembling systems, to autonomous materials constructs

Juan de Pablo

Tuesday Morning Sessions

Track A: Active & Responsive Matter

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Conference Two

Session Presider: Sergiy Minko, UGA

- 9:20 AM Keynote: Active reconfiguration of hydrogels-based systems: from hydrogel membranes to assemblies of nanogels at soft interfaces
Yao Xiong; Chandan K. Choudhury; Vaibhav Palkar;
Olga Kuksenok
- 10:00 AM Light driven diffusioosmosis: passive and active manipulation of colloids at solid/liquid interface
Svetlana Santer
- 10:20 AM Stimulus-Responsive Microphase-Separation of Resilin/Elastin Block-Copolypeptides in Solution and in Thin Films
Justin J Ryan; Michael Dzuricky; Isaac Weitzhandler; Yuan Gao; Ashutosh Chilkoti; **Stefan Zauscher**
- 10:40 AM Polymer Nanocomposites Reinforced via Alignment of Magnetized SiC Whiskers
Igor Luzinov; James Townsend; Ruslan Burtovyy; Pavel Aprelev; Kostantin Kornev
- 11:00 AM “Three-body” interaction between chemically active and chemically passive particles near a wall
Jaideep Katuri; William E. Uspal; **Mihail N. Popescu**; Samuel Sanchez

Track B: Bio-Inspired Systems

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Conference Seven

Session Title: Adhesion & Biomolecular Interfaces

Session Presider: Lorraine Leon, U Central Florida

- 9:20 AM Keynote: Interfacial molecular force spectroscopy of bioinspired catecholamine macromolecules
Peyman Delparastan; Katerina Malollari; Yiran Li; Jing Cheng; Haoqi Wang; Yi Cao; **Phillip Messersmith**
- 10:00 AM Design of bio-inspired surface topographies via wrinkling superposition
Luca Pellegrino; Sepideh Khodaparast; Joao Cabral
- 10:20 AM Cholesterol induced morphological transitions and their effect on monolayer rheology
Joseph A Zasadzinski; Cain Valtierrez-Gaytan; Todd M Squires; Ian Williams
- 10:40 AM Implementing A Practical Screening Platform called CompELS for Oligonucleotide Ligands
Valeria Milam; Maeling Tapp; Joseph Slocik; Patrick Dennis; Rajesh Naik
- 11:00 AM Bio-inspired wall-shaped adhesive microstructure: effects of contact splitting and substrate roughness
Jaekang Kim; Michael Varenberg

Track C: Colloidal & Surface Forces

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: SaIon III

Session Title: Intermolecular forces in complex fluids (I)

Session Presider: Qian Chen, U Illinois Urbana-Champaign

9:20 AM Chemically tuning the mechanical properties of core shell liquid metal nanoparticles

Christopher Tabor; Zachary Farrell; Nicholas Morris

9:40 AM Emulsion impacts on hydrophobic surfaces

Maher Damak; Jolet de Ruitter; Kripa K. Varanasi

10:00 AM Keynote: Direct Force Spectroscopy - Colloidal Science of Complex Fluids and Functional Thin-Films (Invited Keynote)

Tonya Kuhl

10:40 AM Intermolecular Interactions and Rheological Properties of Ionic Liquids at Multiple Length Scales

Yuanzhong Zhang; Rundong Huang; Yuchen Zuo;
Younjin Min

11:00 AM The Electrostatic Screening-Length in Confined Concentrated Salt Solutions

William Ducker; Prudhvidhar Gaddam

Track D: Colloids & Macromolecules in Life Sciences

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Conference D

Session Title: Cell Mechanics

Session Presider: Johnna Temenoff, Georgia Tech

- 9:20 AM Megadalton polysaccharides at the cell-substratum physically regulate adhesion and migration
Shlomi Cohen; Patrycja Kotowska; Peter Achi; Patrick Chang; Rebecca Keate; Shuyi Nie; Andres Garcia; Jennifer Curtis
- 9:40 AM Straining Red Blood Cells with Liquid Crystals
Karthik Nayani; Nicholas Abbott
- 10:00 AM Keynote: A measure of molecular muscle: Development and application of fluorescence-based probes to map piconewton forces in living systems (Invited Keynote)
Khalid Salaita
- 10:40 AM Understanding interspecies blood variations through rheology and microfluidics
Jeffrey S Horner; Yu-Jiun Lin; Antony N Beris; Norman J Wagner
- 11:00 AM Modeling the Brownian hydrodynamics of intracellular motion
Akshay Maheshwari; Emma Gonzalez; Alp Sunol; Drew Endy; **Roseanna N Zia**

Track E: Directed & Self-Assembly

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Conference Four

Session Title: Non-equilibrium Assembly

Session Presider: Roya Zandi, U California Irvine

- 9:20 AM Crystal patterning via evaporation: spirals, triangles, rings, and arrays
Samantha McBride; Susmita Dash; Severine Atis; Kripa Varanasi
- 9:40 AM Stratification in drying soft matter solutions
Shengfeng Cheng; Yanfei Tang; Gary S Grest
- 10:00 AM Lysozyme Amyloid Fibrils Aggregation and Assembling in Droplet Based Confined Convective Flow on Super-Hydrophobic Surface
Peng Zhang; Manola Moretti; Marco Allione; Yuansi Tian; Sigurdur Thoroddsen; Gobind Das; Enzo Di Fabrizio
- 10:20 AM Directed micro assembly via capillary curvature attraction using a magnetic microrobot at oil/water interface
Tianyi Yao; Edward B Steager; Kathleen J Stebe
- 10:40 AM Light-powered direction-controlled colloidal micropumps
Benjamin M Tansi; Matthew L Peris; Ayusman Sen
- 11:00 AM Autonomous annealing of colloidal crystals induced by light-powered oscillations of active particles
Alicia S Altemose; Ayusman Sen

Track F: Electrokinetics, Micropores & Microfluidics

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Conference Six

Session Title: Porous Media

Session Presider: Carlos Martinez, Purdue University

9:20 AM Colloidal particle transfer from microchannel nozzle to porous substrates

Shaurya Prakash; Varun Lochab

9:40 AM Understanding the Salt Transport Properties of Graphene Oxide Membranes: Permeation Measurements and Electrokinetic Modeling

Zhongzhen Wang; Chen Ma; Meisha Shofner; Scott Siquefield; Sankar Nair

10:00 AM Molecular Transport Properties of Ionic Liquid 1-Butyl-3-methylimidazolium Hexafluorophosphate under Nanopore Confinement

Yuxin He; Arif Md Khan; Folami Ladipo; Barbara Knutson; Stephen E Rankin

10:20 AM Influence of Electrostatic Effects on Nanoparticle Escape Times from a Porous Cavity

Haichao Wu; Raphaël Sarfati; Dapeng Wang; Daniel K. Schwartz

10:40 AM Keynote: Asphaltene Deposition and Remediation in Microfluidic Porous Media

Sibani Lisa Biswal

Track G: Emulsions, Bubbles & Foams

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Conference B

Session Title: Characterizing Foam Dynamics

Session Presider: Clint Aichele, OK State

- 9:20 AM Keynote: Two Sides of the Evaporation Coin:
Stabilizing Foams and Causing Rayleigh-Taylor
Instabilities
Gerald G Fuller; Vinny C Suja; Endre J Mossige
- 10:00 AM Coalescence of nanoscopic mesas in stratifying foam
films
Chenxian Xu; Vivek Sharma
- 10:20 AM Reversible Conversion of Submicron Toroidal
Bubbles to Spherical Bubbles
Paul S Russo; Xujun Zhang; Saad Bhamla; Peter
Yunker; Jerry Qi; Andrew Gorman
- 10:40 AM Settling behavior of the proppant in viscoelastic
foams at high temperature
Jingyi Zhu; Zhaozhong Yang; Xiaogang Li
- 11:00 AM Using Hierarchical Aerophilic Surfaces to Capture
Bubbles and Prevent Foam
Leonid Rapoport; Theo Emmerich; Kripa Varanasi

Track H: Energy, Catalysis & Separations

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Conference E

Session Presider: Ryan Lively, Georgia Tech

9:20 AM Keynote: Colloids for energy storage: from 3D electrode templates to redox active materials

Paul V Braun

10:00 AM Nanoscale materials design for deeply rechargeable aqueous zinc anodes

Nian Liu

10:20 AM Self-Assembled Ceramic Membranes for Redox Flow Batteries

Greg Newbloom; Aditya Salunkhe; Yiheng Zhang

10:40 AM Enhancing current density and hydrocarbon selectivity during electrochemical reduction of CO₂ on a copper catalyst by trapping CO₂ bubbles on superhydrophobic surfaces

Sami Khan; Jonathan Hwang; Yang Shao-Horn; Kripa K Varanasi

11:00 AM Improving cyclability of ZnO cathodes through microstructural design

Kyle M McDevitt; Daniel R Mumm; Ali Mohraz

Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Conference C

Session Presider: Anand Atmuri, PPG Industries

- 9:20 AM Stimuli responsive membranes for the targeted delivery of actives
Rita del Pezzo; Susana Fernandez Prieto; Marta Giamberini
- 9:40 AM Multifunctional Bijel Micro-Ropes by Hydrodynamic In-Situ Twisting
Shankar P. Kharal; Martin F. Haase
- 10:00 AM The Geode Process: A Route to Large-Scale Manufacturing of Functionally-Encoded Semiconductor Nanowires
Maritza Mujica; Gozde Tutuncuoglu; Amar Mohabir; Sven H Behrens; Victor Breedveld; Michael A Filler
- 10:20 AM Directed printing and reconfiguration of thermoresponsive nanocomposite structures
Yusheng Guo; Jorge A. Belgodere; Jangwook P. Jung; Bhuvnesh Bharti
- 10:40 AM Highly transparent, flexible conductors and heaters based on metal nanomesh structures manufactured using an all-water-based solution process
Sung Min Lee; Seungwoo Oh; Suk Tai Chang

Track K: General

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Salon I+II

Session Presider: Bhuvnesh Bharti, Louisiana State U

- 9:20 AM Effect of the Preparation Method on the Formation and the Optical Properties of DDAB (Didodecyldimethylammonium Bromide) Dispersions
An-Hsuan Hsieh; Jaeyub Chung; David S Corti; Elias Franses
- 9:40 AM Orientation Transition of Graphene Oxide Liquid Crystal under Shear
Yul Hui Shim; So Youn Kim
- 10:00 AM Does preferential adsorption drive cononsolvency?
Swaminath Bharadwaj; **Nico van der Vegt**
- 10:20 AM Interaction nanoparticle chromatography on polymer grafted substrates at critical conditions of adsorption.
Kolattukudy P Santo; Aleksey Vishnyakov; Yefim Brun; Alexander V Neimark
- 10:40 AM Keynote: Equilibrium and Non-Equilibrium Colloidal Phenomena with Liquid Crystals
Nicholas Abbott

Track L: Jamming, Gelling & Rheology

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Salon V+VI

Session Presider: Connie Roth, Emory U

9:20 AM Nanoparticle Dynamics in Solutions of Semiflexible Polymers

Renjie Chen; Jacinta C Conrad; **Jeremy C Palmer**

9:40 AM Development of Slit and Capillary μ RheoSANS and Investigating the Structure and Rheology of Complex Fluids at High Shear Rate

Katie M Weigandt; Ryan P Murphy; Javen Weston; Steve Hudson

10:00 AM Keynote: Polymer Dynamics in Percolated Nanoparticle Networks

Rana Ashkar; Paul Butler; Antonio Faraone; Madhusudan Tyagi; Mansour Abdalbaki; Ramanan Krishnamoorti

10:40 AM Probing density changes in confined polymer systems across different polymers and potential correlation with glass transition

Yixuan Han; Connie B Roth

11:00 AM Structural breakdown in sheared carbon black suspensions

Julie B Hipp; Norman J Wagner

Track M: Particles & Molecules at Fluid Interfaces

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Salon IV

Session Presider: Joelle Frechette, Johns Hopkins U

- 9:20 AM Liquid- Hexatic-Solid Phase Transition of Hard-Disk Molecule
Shaghayegh Darjani; Vincent Pauchard; Sanjoy Banerjee; Joel Koplik
- 9:40 AM Interface-mediated assembly of tunable anisotropic nanoparticle clusters and phases
Tsung-Yeh Tang; Yilong Zhou; **Gaurav Arya**
- 10:00 AM Active colloids swimming at oil-water interfaces
Lucio Isa
- 10:40 AM Probing the Colloidal Particle Dynamics in Drying Sessile Droplets
Karam Nashwan Al-Milaji; Hong Zhao
- 11:00 AM Capillary forces on a Janus sphere at a liquid-vapor interface
Shengfeng Cheng; Yanfei Tang

Track N: Wetting & Adhesion

Tuesday, June 18, 2019, 9:20 AM–11:20 AM

Room: Conference A

Session Presider: Günter K. Auernhammer, Leibniz Inst Polymer Research

- 9:20 AM Keynote: Temperature effects on water repellency
David Quere; Timothée Mouterde; Pierre Lecointre;
Philippe Bourrienne
- 10:00 AM Wettability changes due to fatty acid-calcite
multilayer formation at elevated temperature
Martin EJ Haagh; Nathalie Schilderink; Michael **HG**
Duits; Frieder Mugele
- 10:20 AM Droplet spreading on supercooled surfaces
Varun Kulkarni; Venkata Yashasvi Lolla;
Vijayprithiv Batheyrameshbapu; Sushant Anand
- 10:40 AM Phase Switching Liquids for Anti-Icing/Frosting
Rukmava Chatterjee; Daniel Beysens; Sushant
Anand
- 11:00 AM Underwater bubble dynamics on aerophilic, porous
polymer films
Aadithya Kannan; Petar Hristov; Jin Li; Qinghua
Zhang; Ping Gao; Gerald G. Fuller

Tuesday First Afternoon Sessions

Track A: Active & Responsive Matter

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Conference Two

Session Presider: Igor Luzinov, Clemson U

- 1:30 PM Magnetic Rotational Spectroscopy with ferromagnetic nanorods for analysis of insect blood
Kostya Kornev; Pavel Aprelev; Charles Beard; Peter Adler
- 1:50 PM Chemotactic Droplet Interactions
Caleb Meredith; Pepijn Moerman; Yu-Jen Chiu; Jan Groenewold; Willem Kegel Kegel; Alfons van Blaaderen; **Lauren D. Zarzar**
- 2:10 PM Magneto-capillary soft actuators made by 3D-printing with homocomposite capillary pastes (HCPs)
Lilian B. Okello; Sangchul Roh; Orlin D. Velev

Track B: Bio-Inspired Systems

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Conference Seven

Session Title: Polymer Brushes & Polymer Phase Behavior

Session Presider: Won Min Park, Kansas State University

- 1:30 PM Giant hyaluronan polymer brushes display polyelectrolyte brush polymer physics behavior
Jessica Faubel; Riddhi Patel; Jennifer Curtis; **Blair Brettmann**
- 1:50 PM Transition studies of thermoresponsive polypeptides
Alyssa M Blake; Graham D.B Parkinson; Paul S Russo
- 2:10 PM Non-additive ion effects on collapse and swelling transitions of thermoresponsive polymers
Nico F. A. van der Vegt; Ellen E. Bruce; Pho T. Bui; Bradley A. Rogers; Paul S. Cremer

Track C: Colloidal & Surface Forces

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: SaIon III

Session Title: Colloidal forces and particle motion

Session Presider: Min, Younjin

- 1:30 PM Universal diagram for the kinetics of particle deposition in microchannels
Cesare M. Cejas; Patrick Tabeling
- 1:50 PM pH-Induced reorientation of cytochrome c on silica nanoparticles
Yao Wu; Jens Meissner; Jacques Jestin; William A Shelton; Gerhard H Findenegg; Bhuvnesh Bharti
- 2:10 PM Ion pairing in symmetric multivalent electrolytes probed via colloidal forces
Alexander M Smith; Plinio Maroni; Gregor Trefalt; Michal Borkovec
- 2:30 PM Measuring the elevation-dependent rotational diffusion tensor of a nanorod near a confining interface
Christopher Graham Bolton; Raymond Riley Dagastine

WITHDRAWN

Track D: Colloids & Macromolecules in Life Sciences

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Conference D

Session Title: Cell-Material Interactions

Session Presider: Molly Ogle, Georgia Tech

- 1:30 PM Protein corona mediates protein nanoparticle-cellular interactions
Samantha Pustulka; Kevin Ling; Stephanie Pish; Julie Champion
- 1:50 PM Controlling the cell culture microenvironment using growth factor eluting PEMs
Ivan Ding; Amy M Peterson
- 2:10 PM Enzyme encapsulation in porous silica nanoparticles to eliminate immune response and extend functional half-life
Annie Y. Heble; Khaled Nasr; Aditi Mulgaonkar; Amanda Armstrong; Xiankai Sun; Robert F. Mattrey; Jacques Lux
- 2:30 PM Interaction of Eugenol and Lignin Dimer-Functionalized Silica Nanoparticles with Model Cell Membranes
Mahsa Moradipour; Emily Chase; Arif Khan; Shadrack Asare; Poorya Kamali; Bert Lynn; Stephen Rankin; Barbara Knutson

Track E: Directed & Self-Assembly

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Conference Four

Session Title: Nucleic Acids

Session President: Vinnie Manoharan, Harvard U

1:30 PM Keynote: Multi-functional crystalline frameworks self-assembled from amphiphilic DNA nanostructures.

Ryan A Brady; Nicholas J Brooks; Will T Kaufhold; Vito Fodera; Pietro Cicuta; **Lorenzo Di Michele**

2:10 PM Invited LaMer Presentation: Transmutable nanoparticles and interchangeable lattices with reconfigurable DNA bonds

Youngeun Kim

2:30 PM Binary colloidal crystals from nucleobase-containing-polymer-brush-decorated particles

Kohji Ohno; Haruhisa Ohno

Track F: Electrokinetics, Micropores & Microfluidics

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Conference Six

Session Title: Microfluidics

Session Presider: Taylor Woehl, U Maryland

1:30 PM High-throughput microfluidics for use at X-ray free-electron lasers

Sarah L Perry; Shuo Sui; Sarthak Saha; Jennifer Wierman; C. Robin Frank; Aina Cohen

1:50 PM Passive sweat collection and its colorimetric analysis using a soft microfluidic system

Yi Zhang

2:10 PM Osmotic-Capillary Principles for Microfluidic Pumping and Fluid Management for Sweat Sensing Devices

Tamoghna Saha; Tim Shay; Michael D Dickey; Orlin D Velev

2:30 PM Microfluidic generation of magnetic alginate microparticles for magnetic templating of nerve regeneration hydrogels

Ishita Singh; Mary M. Kasper; Zhiyuan Zhao; Christine E. Schmidt; Carlos Rinaldi

Track G: Emulsions, Bubbles & Foams

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Conference B

Session Title: Transport in Foams and Emulsions**Session Presider:** Cari Dutcher, U Minnesota

- 1:30 PM Stable Gas-in-Water Foams at High Salinity via Manipulation of Nanoparticle Amphiphilicity
Chang Da; Shehab Alzobaidi; Dan Luo; Sudipta Panja; Dongdong Hu; Michael Bloom; Congwen Lu; Chola Dandamudi; Masa Prodanovic
- 1:50 PM Relationship between maximum internal phase ration of W/O emulsion and the self-assembly of the outer phase
Kei Watanabe; Takashi Teshigawara; Yuki Sugiyama; Ayako Miki
- 2:10 PM Effects of filtration on foaming performance of anti-foam laden lubricants
Vineeth Chandran Suja; Abhishek Kar; Gerald G Fuller
- 2:30 PM Directed foaming of oppositely charged fatty acid-nanoparticle mixtures: Correlating bulk structures with foam stability
Yingzhen Ma; Yao Wu; Jin Gyun Lee; Lilin He; Gernot Rother; Anne-Laure Fameau; William A. Shelton; Bhuvnesh Bharti

Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Conference C

Session Presider: Amanda Engler, 3M

1:30 PM Keynote: Humidity history and tempering of polyelectrolyte-based systems

Xuejian Lyu; **Amy Peterson**

2:10 PM Structured Fluids in Microfluidic Geometries

Yu-Jiun Lin; Jeffrey Horner; Christine Mourafetis; Brandon Illie; Matthew Lynch; Eric M. Furst; Norman J. Wagner

Track K: General

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Salon I+II

Session Presider: Nick Abbott, Cornell U

- 1:30 PM Binary fluid interface characterization with surface light scattering spectroscopy
Nabin K Thapa; Angelo S. Visco; Anthony E. Smart; William V. Meyer; Alexander I. Belgovskiy; J. Adin Mann Jr.; Elizabeth K. Mann
- 1:50 PM There are particles in my whiskey: dynamic light scattering characterization of bourbon whiskey colloids
Stuart J Williams; Sabina Islam; Orlin D Velev
- 2:10 PM Proactive oil sand tailings management: Change of bitumen extraction process
Feng Lin; Yuming Xu
- 2:30 PM Coalescence and Spreading of Drops Deposited on an Immiscible Liquid
Varun Kulkarni; Suhas Rao Tamvada; Venkata Yashasvi Lolla; Nikhil Shirdade; Sushant Anand

Track L: Jamming, Gelling & Rheology

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Salon V+VI

Session Presider: Jeremy Palmer, U Houston

- 1:30 PM Scratching viscoelastic colloidal liquid
Asheesh Shukla; Nicolas Chanut; Roland JM Pellenq; Franz-Josef Ulm; Thibaut Divoux
- 1:50 PM The hydrodynamics of the colloidal glass transition
Monica E. A. Zakhari; Jialun Wang; Gaddiel Ouaknin; Roseanna N. Zia
- 2:10 PM Rotational and translational diffusion in a 2D colloidal glass-former
Skanda Vivek; **Eric Weeks**

Track M: Particles & Molecules at Fluid Interfaces

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Salon IV

Session Presider: Carson Meredith, Georgia Tech

1:30 PM Keynote: Adsorption and interfacial stabilization with nanochitin, nanoliginin and nanocelluloses

Orlando J. Rojas

2:10 PM Dynamics of monolayer molybdenum disulfide particles at fluid-fluid interfaces

Joseph Samaniuk; David Goggin

2:30 PM Localization of clay particles at the oil–water interface in the presence of surfactants and its reflection in interfacial moduli

Joung Sook Hong; Peter Fischer

Track N: Wetting & Adhesion

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Conference A

Session Presider: Günter K. Auernhammer, Leibniz Inst Polymer Research

1:30 PM Solutal Marangoni spreading in the presence of pre-deposited insoluble surfactant monolayers

Madeline Sauleda; Stephen Garoff; Robert Tilton

1:50 PM Influence of surfactants on the flow profile close to three-phase contact lines

Benedikt Straub; Franziska Henrich; Massimiliano Rossi; Christian Kähler; Günter Auernhammer

2:10 PM Solid–Liquid–Liquid Wettability of Surfactant–Oil–Water Systems around the Phase Inversion Point

Edgar Acosta; **Aurelio Stammitti-Scarpone**

2:30 PM Evaluation of Sebum Resistance for Long-Wear Face Make-Up Products Using Contact Angle Measurements

Hy Si Bui; Mariko Hasebe; Jody Ebanks

Track O: *Langmuir* Student Award Sessions

Tuesday, June 18, 2019, 1:30 PM–2:50 PM

Room: Conference E

Session Presider: Raymond Tu, CCNY

- 1:30 PM Mechanisms of transformation of bulk aluminum-lithium alloys to aluminum metal-organic nanowires
Fujia Wang; Kostiantyn Turcheniuk; Gleb Yushin
- 1:50 PM Translational and rotational diffusion of nanoparticles in hyaluronic acid solutions
Mythreyi Unni; Lorena Maldonado; Shehaab Savliwala; Brittany Partain; Kyle Allen; Carlos Rinaldi; Suresh Narayanan; Alec Sandy; Qingteng Zhang; Eric Dufresne; Pawel Grybos; Anna Koziol; Piotr Maj; Robert Szczygiel
- 2:10 PM Generation of monodisperse emulsions using the interfacial tension of immiscible phases
Dhawal R Thakare; Grayson Schaer; Mostafa Yourdkhani; Nancy R Sottos
- 2:30 PM Manipulating surfactant transport and adsorption at an oil-water interface using electric fields
Rajarshi Sengupta; Aditya S Khair; Lynn M Walker

Tuesday Second Afternoon Sessions

Track B: Bio-Inspired Systems

Tuesday, June 18, 2019, 3:10 PM–4:30 PM

Room: Conference Seven

Session Title: Bioinspired Systems & Interfaces

Session Presider: Julie Champion, Georgia Tech

- 3:10 PM Soft but strong, bacterial cellulose microcapsules
Jie Song; Firoozeh Bahavekhorasani; Goldina Kwandou; Patrick Thomas Spicer
- 3:30 PM Multicompartmental liposome pouches to modulate drug and vaccine release
Igor Kevin Mkam Tsengam; Marzhana Omarova; Vijay T John
- 3:50 PM Comparative analysis of DNA aptamers identified via CompELS
Mary Catherine Adams; Richard Sullivan; Maeling Tapp; Rajesh R Naik; Valeria T Milam
- 4:10 PM Design Rules for Encapsulating Proteins into Complex Coacervates
Sarah L Perry; Whitney C Blocher McTigue; Abigail Cabral; Shari Traiger

Track C: Colloidal & Surface Forces

Tuesday, June 18, 2019, 3:10 PM–4:30 PM

Room: SaIon III

Session Title: Surface effects on colloidal force

Session Presider: Jim De Yoreo, PNNL

3:10 PM Effect of Surface Hydrophobicity on Interaction between Water Droplets and Solid Surfaces

Yuesheng Gao; Lei Pan

3:30 PM AFM Study of Colloidal Forces between Asymmetric Hydrophobic Bodies in Aqueous Solution

Kai Li; Zhipeng Yu; Zhenwei Wang; Weiwei Gao; Hang Jin; Yun Shen; Wei Wang; Jing Gong

3:50 PM How Nanoscale Surface Heterogeneity Impacts Transport of Nano- to Micro-Particles on Surfaces under Unfavorable Attachment Conditions

Cesar Ron; William P Jonhson

4:10 PM Influence of cap weight on the motion of a Janus particle very near a wall

Aidin Rashidi; Sepideh Razavi; Christopher L. Wirth

Track D: Colloids & Macromolecules in Life Sciences

Tuesday, June 18, 2019, 3:10 PM–4:30 PM

Room: Conference D

Session Title: Tissue-Material Interactions

Session Presider: Samantha Pustulka, Georgia Tech

3:10 PM Targeted microbubbles for lymphatic bed and lymph nodes mapping

Mary W. N. Burns; Dustin Boyd; Robert F. Mattrey;
Jacques Lux

3:30 PM Tissue response and integration in morphologically unique biomaterial implants derived from colloid-stabilized emulsions

Todd J Thorson; Elliot L Botvinick; Ali Mohraz

3:50 PM Mechanisms of anionic surfactant penetration into human skin: Investigating monomer, micelle, and submicellar aggregate penetration theories

Stephanie A. V. Morris; Ryan T. Thompson; Robert W. Glenn; K. P. Ananthapadmanabhan; **Gerald B. Kasting**

4:10 PM Structural Characterization and Control of a Drug Carrier for Intracellular Antibody Delivery

Anshul Dhankher; Hannah Howard; Julie Champion

Track F: Electrokinetics, Micropores & Microfluidics

Tuesday, June 18, 2019, 3:10 PM–4:30 PM

Room: Conference Six

Session Title: General Topics

Session Presider: Kyle Bishop, Columbia University

3:10 PM Droplet-Based Tool to Determine the Impact of Additives on Isotropic-to-Nematic Phase Transitions

Deyu Yang; Lynn M. Walker

3:30 PM Fabrication of enclosed channels for creation of 3D microfluidics paper based analytical devices (3D μ -PADs) using plasma deposition and etching

Nikhil Raj; Victor Breedveld; Dennis Hess

3:50 PM Cross-stream migration of non-spherical particles in non-Newtonian fluids, with applications to microfluidic separations

Vivek Narsimhan; Cheng-Wei Tai; Shiyan Wang

4:10 PM Death and rebirth of colloidal assemblies in electrochemically generated pH gradients

Jacqueline Weaver; **Taylor J Woehl**

Track G: Emulsions, Bubbles & Foams

Tuesday, June 18, 2019, 3:10 PM–4:30 PM

Room: Conference B

Session Title: Foams and Emulsions for Oil and Gas

Session Presider: Clint Aichele, OK State

- 3:10 PM Oil-like and Surfactant-like nature of naphthenic acids and asphaltenes and their role in crude oil emulsions
Edgar Acosta; **Amir Ghayour**
- 3:30 PM Stepwise Thinning and Nanoscopic Thickness Variations in Foam Films Formed by Aqueous Sodium Naphthenate Solutions
Chrystian Ochoa; Shang Gao; Samanvaya Srivastava; Vivek Sharma
- 3:50 PM Settling properties of diluted heavy oil emulsion: Effect of extraction additives
Feng Lin; Chongjun John Pang
- 4:10 PM The interfacial tension of water-in-diluted-bitumen emulsions at high bitumen concentrations
Sachin Goel; Niyati Joshi; Muhammad Siraj Uddin; Edgar J. Acosta; **Arun Ramachandran**; Samson Ng

Track K: General

Tuesday, June 18, 2019, 3:10 PM–4:30 PM

Room: Salon I+II

Session Presider: Stuart Williams, U Louisville

3:10 PM Comparison of Analysis Methods for Differential Dynamic Microscopy

Graham Parkinson; Xujun Zhang; Paul Russo; Jinxin Fu

3:30 PM Visualizing the inner architecture of poly(ϵ -caprolactone)-based biomaterials and its impact on performance optimization

Bingbing LI

3:50 PM Optical Tracking and Analysis of Non-Spherical, Aggregating Colloidal Systems

Thomas William Long; Ilona Kretzschmar

Track L: Jamming, Gelling & Rheology

Tuesday, June 18, 2019, 3:10 PM–4:30 PM

Room: Salon V+VI

Session Presider: Erin Koos, KU Leuven

- 3:10 PM Glycine-Alanine-Glycine hydrogels: understanding self-assembly and stability
Lavenia J. Thursch; Nicolas Javier Alvarez; David DiGuseppi; Reinhard Schweitzer-Stenner
- 3:30 PM Impact of cellulose nanocrystal source, purification, and surface modification on organogel formation and strength
Manali Banerjee; Sisira Saraswatula; Laura Grace Willows; Anna Williams; Blair Brettmann
- 3:50 PM Bi-disperse multiple particle tracking to characterize evolving gels
Matthew D Wehrman; John McGlynn; **Kelly M Schultz**
- 4:10 PM Reconfiguring cracks in shrinkable, granular packings
H. Jeremy Cho; Nancy B. Lu; Michael P. Howard; Rebekah A. Adams; **Sujit S. Datta**

Track M: Particles & Molecules at Fluid Interfaces

Tuesday, June 18, 2019, 3:10 PM–4:30 PM

Room: Salon IV

Session Presider: Joelle Frechette, Johns Hopkins U

- 3:10 PM The adsorption of modified nanoparticles at gas-liquid surface and the enhancement for foam stability with high salinity brine
Xuan Zhang; Guicai Zhang; Shehab Alzobaidi; Chang Da; Keith P Johnston
- 3:30 PM Impact of particles on droplet coalescence in solid-stabilized high internal phase emulsions
Max Kaganyuk; **Ali Mohraz**
- 3:50 PM Stoppers and Skins on clay nanotubes help stabilize oil-in-water emulsions and modulate the release of encapsulated surfactants.
Olakunle F Ojo; Azeem Farinmade; Marzhana Omarova; Vijay John; Yuri Lvov; Duy Nguyen; Diane Blake; Arijit Bose; Donghui Zhang

Track N: Wetting & Adhesion

Tuesday, June 18, 2019, 3:10 PM–4:30 PM

Room: Conference A

Session Presider: Günter K. Auernhammer, Leibniz Inst Polymer Research

- 3:10 PM The effect of particle loading on Wenzel state/
Cassie-Baxter state transition for nanocomposite
superhydrophobic coatings
Keqin Zheng; Jinde Zhang; Hanna Dodiuk; Samuel
Kenig; Carol Barry; Erick B Iezzi; Joey Mead
- 3:30 PM Boiling behavior in a droplet in contact with heated
micro-nano patterned surfaces
Navid Saneie; Varun Kulkarni; Sushant Anand
- 3:50 PM Effects of ion species on the structure and wettability
of polyelectrolyte multilayers
Zhipeng Yu; Wei Wang; Hang Jin; Yun Shen; Kai Li;
Yuntong Ge; Jing Gong
- 4:10 PM Rational design of fluorine-free and
superhydrophobic coating towards oil-water
separation
Yuwei Zhu; To Ngai

Track O: *Langmuir* Student Award Sessions

Tuesday, June 18, 2019, 3:10 PM–4:30 PM

Room: Conference E

Session Presider: Raymond Tu, CCNY

3:10 PM Colloidal Gelation Through Thermally-Triggered Surfactant Displacement

Li-Chiun Cheng; Zachary M. Sherman; James W. Swan; Patrick S. Doyle

3:30 PM Binding of lignin nanoparticles at oil-water interfaces: an ecofriendly alternative to oil spill recovery

Jin Gyun Lee; Luke L Larive; Kalliat T Valsaraj; Bhuvnesh Bharti

3:50 PM Waterbowls: reducing impacting droplet interactions by momentum redirection

Henri-Louis Girard; Dan Soto; Kripa K Varanasi

4:10 PM Collagen thin film adhesion mediated by mussel-inspired surface primers

George D Degen; Roberto Andresen Eguiluz; Eric Valois; Garrett Lindsey; Joan-Emma Shea

Tuesday Afternoon Plenary Session

Unilever Award & Lecture

Tuesday, June 18, 2019, 4:45 PM–5:45 PM

Room: Grand Ballroom

4:45 PM Structural Coloration by Cascading Total Internal Reflection and Interference at Microscale Concave Interfaces

Lauren Zarzar

Wednesday Plenary Session

LaMer Award & Lecture

Wednesday, June 19, 2019, 8:00 AM–9:00 AM

Room: Grand Ballroom

8:00 AM Stabilized Metal Clusters for Bridging
Heterogeneous and Homogeneous Catalysts: the
Case of Gold

Rong Ye

Wednesday Morning Sessions

Track A: Active & Responsive Matter

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Conference Two

Session Presider: Kostya Kornev, Clemson U

9:20 AM 2-Photon Polymerization as an Enabling Technology for Self-propelled Microstructures and Active Colloids

Nickolay Lavrik

9:40 AM Computational design of active hydrogels with controllably degradable crosslinks

Vaibhav Palkar; Chandan K. Choudhury; Olga Kuksenok

10:00 AM Electrically powered self-propelled micromotors for label-free and directed cargo delivery

Xiaoye Huo; Alicia Boymelgreen; **Gilad Yossifon**

10:20 AM Light driven thermal convection by gold nanoparticles

Joshua E Kauffman; Benjamin M Tansi; Ayusman Sen

10:40 AM Keynote: Colloidal Robotics: Shape-based Programming of Active Particles

Kyle J M Bishop

Track B: Bio-Inspired Systems

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Conference Six

Session Title: Dynamics and Rheology of Biological Colloids and Molecules

Session Presider: Julie Champion, Georgia Tech

9:20 AM Keynote: Engineering colloids to recreate biointeractive mechanisms in systems of flowing cells

Maria Santore

10:00 AM Dynamics, deformation, and stability of giant unilamellar vesicles in various flow types

Vivek Narsimhan; Charlie Lin

10:20 AM Comparison of line tension measurement methods for lipid monolayers at liquid-liquid coexistence

Joseph A Zasadzinski; Benjamin L Stottrup; Joan C Kunz

10:40 AM Cholesterol effects on monolayer structure, stability, and surface rheology

Cain Valtierrez-Gaytan; Ian Williams; Todd Squires; Joseph A Zasadzinski

11:00 AM Microrheological characterization of dynamic cellular re-engineering of the pericellular region at different matrix stiffnesses

Maryam Daviran; Kelly M. Schultz

Track C: Colloidal & Surface Forces

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Salon III

Session Title: Intermolecular forces in complex fluids (II)

Session Presider: Todd Sulchek, Georgia Tech

9:20 AM Long-range attraction between glycine-coated mica surfaces in ultradilute electrolytes

Muhammad Ghifari Ridwan; Buddha Ratna Shrestha; Geert Jan Witkamp; Himanshu Mishra

9:40 AM Interactions between bacteria lipopolysaccharide layers

Christian Redeker; Luisa Islas; Wuge H. Briscoe

10:00 AM Keynote: Direct Force Measurements by AFM with Sub-Micron Particles and Non-Conventional Colloidal Probes (Invited Keynote)

Georg Papastavrou

10:40 AM How well can you tailor the surface charge on lipid vesicles by adding charged lipids?

Deepshika Gilbile; James Kurniawan; Diego Docto; Doniko T Kingi; Denise Monahan; Tonya L Kuhl

11:00 AM Molecular Insights Into The Loss of Hydrophobicity of Desalination Membranes by Amphiphilic Contaminants

Sreekiran Raveendran Pillai; Buddha Ratna Shrestha; Muhammed Ghifari Ridwan; Adriano Santana; Tod Pascal; Himanshu Mishra

Track D: Colloids & Macromolecules in Life Sciences

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Conference D

Session Title: Nanoparticles, Encapsulation and Drug Delivery

Session Presider: Anshul Dhankher, Georgia Tech

- 9:20 AM Biomolecule Encapsulation via Electrostatically Driven Flash NanoPrecipitation
Shani Levit; Raven Smith; Rebecca Walker;
Christina Tang
- 9:40 AM Nanoclay-based enzyme cascade for decomposition of reactive oxygen species
Istvan Szilagyi; Marko Pavlovic; Szabolcs Murath
- 10:00 AM Formulation of Ultra-Stable Super Paramagnetic Iron Oxide Nanoparticles for Cryoprotecting Agent Solutions
Andreina Chiu Lam; Edward Staples; Carl Pepine; Carlos Rinaldi
- 10:20 AM Acoustic Characterization of a Nested Voltage-Sensitive Ultrasound Enhancing Agent
Michael A Flynn; Michael J Cimorelli; Brett Angel; Aaron T Fafarman; Andrew Kohut; Steven P Wrenn
- 10:40 AM Magnetic hyperthermia potentiates Paclitaxel treatment in breast cancer
Angelie M Rivera-Rodriguez; Andreina Chiu-Lam; Viacheslav M Morozov; Alexander M Ishov; Carlos Rinaldi
- 11:00 AM Near-IR one photon triggered liposome cages for calcium, ATP or your favorite small molecule
Joseph A Zasadzinski; Jeong Eun Shin; Maria O Ogunyankin

Track E: Directed & Self-Assembly

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Conference Four

Session Title: Packing and Structure

Session Presider: John Crocker, U Pennsylvania

- 9:20 AM Keynote: Colloidal crystallization on a cylinder
Vinothan N. Manoharan
- 10:00 AM Advances in template-assisted capillary assembly:
lattices, superstructures, and functional colloids
Cicely Shillingford; Veronica Grebe; Marcus Weck
- 10:20 AM Switchable regioselective assemble of triblock
microparticles based on surface material recognition
Mingzhu Liu; Xiaolong Zheng; David J. Pine;
Marcus Weck
- 10:40 AM Binary icosahedral quasicrystals of hard spheres in
spherical confinement
Da Wang; Tonnishtha Dasgupta; **Ernest B. van der
Wee**; Daniele Zanaga; Thomas Altantzis; Yaoting
Wu; Gabriele M. Coli; Christopher B. Murray; Sara
Bals; Marjolein Dijkstra; Alfons van Blaaderen
- 11:00 AM Superellipses Phase Behavior & Structures
Isaac G Torres Diaz; Michael A Bevan

Track G: Emulsions, Bubbles & Foams

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Conference B

Session Title: Applications of Foams and Emulsions

Session President: Lisa Biswal, Rice U

- 9:20 AM Preparation of microcapsules from Pickering emulsions and their use in coating films
Guanqing Sun; Xue Wang; Ren Liu
- 9:40 AM Microfluidic study of drainage, coalescence and coarsening of aqueous 2D foams and emulsions
Justin Heftel; Charles Maldarelli
- 10:00 AM Keynote: Droplet microfluidics for studying surfactant-rich interfaces: From atmospheric aerosols to bilgewater emulsions
Cari Dutcher
- 10:40 AM Oil spill dispersants formulated with bio-based surfactants and enzymes
Edgar Acosta; **Suryavarshini Sundar**; Mehdi Nouraei

Track H: Energy, Catalysis & Separations

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Conference E

Session Presider: Nian Liu, Georgia Tech

9:20 AM Keynote: Plasmonic metal oxide nanocrystals

Delia Milliron

10:00 AM Hybrid plasmonic nanomaterials for visible light induced efficient carbon dioxide photoreduction to formic acid

Dinesh Kumar; Richa Jaswal; Chan Hee Park; Cheol Sang Kim

10:20 AM Understanding the nucleation process of metal nanoparticles in solution with in situ XRD

Xuetian Ma; **Hailong Chen**

10:40 AM Phase transferable polymer encapsulated metallic nanoparticles

Matthew P Confer; Paige Harris; **Shane C Street**

11:00 AM Monitoring catalytic reductions in bimetallic nanoreactors created through orthogonal self-assembly

Shi Shi; Luo Zhang; Jaewan Ahn; Bonnie Vannatter; Dong Qin

Track i: Environmental Systems & Sustainability

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Conference Seven

Session Title: Membranes, Filters & Interfaces

Session Presider: Sara Hashmi, Yale University

9:20 AM Keynote: Nucleation and Nanoscale Interfacial Processes in the Environmental Systems

Young-Shin Jun; Qingyun Li

10:00 AM Electrochemical Redox-Mediated Systems for Environmental Separations and Remediation

Xiao Su; Lokesh Padhye; T. Alan Hatton

10:20 AM Mussel-inspired modification of porous PVDF for membrane distillation

Jianzhong Zheng; Xing Xing; Yurong Zhao; Chen Yang

10:20 AM Invited Presentation: Virus removal in a sustainable water filter

Charan Samineni; Boya Xiong; Darrell Velegol; Costas Maranas; Manish Kumar; **Stephanie Butler Velegol**

11:00 AM Enhanced Removal of Iodide from Water by Core-Shell Magnetic Nanoparticles $\text{Cu}_2\text{O}@Fe_3\text{O}_4$

Xing Xing; Jiao Li; Yurong Zhao; Jianzhong Zheng

Track J: Formulation, Processing & Manufacturing on the Colloidal Length Scale and Beyond

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Conference C

Session Presider: Sarah Perry, U Massachusetts Amherst

9:20 AM Keynote: Biodegradable nanogel-core star polymers: a platform for programmable macromolecular self-assembly

Victoria A Piunova

10:00 AM A method for reversible control over nano-roughness of colloidal particles

Michael HG Duits; Frieder Mugele; Beybin Ilhan; Carla Annink; Igor Siretanu; Duc Nguyen

10:20 AM Scalable semi-continuous synthesis of environmentally benign nanoparticles with antifungal surface functionality

Cathryn G Conner; Haobo Sun; Aditya Sapre; Orlin D Velev

10:40 AM Cellulose nanofibrils as functional carriers

Mastooreh Seyedi; Mykhailo Savchak; Nikolay Borodinov; Suraj Sharma; Sergiy Minko; Igor Luzinov

Track K: General

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Salon I+II

Session Presider: Bhuvnesh Bharti, Louisiana State U

- 9:20 AM Fabrication of Ceramic Microparticles from
Pre ceramic Polymers via Stop Flow Lithography
Alejandro Alcaraz; Johanna Schmidt; Paolo
Colombo; **Carlos Martinez**
- 9:40 AM Additive induced elongation of shape-anisotropic
blockcopolymer particles
Seonghan Lee; Jae Man Shin; Bumjoon.J Kim
- 10:00 AM Structure-function relationship of conjugated and
non-conjugated polymer blends
Caitlyn M. Wolf; Lilo D. Pozzo
- 10:20 AM Influence of hydrophilic groups and metal-ion
adsorption on polymer-chain conformation of
amidoxime-based uranium adsorbents
Alexander Wiechert; Sotira Yiacoumi; Candice
Halbert; Tomonori Saito; Costas Tsouris
- 10:40 AM Preparation and scattering properties of hollow
silica nanocubes
Frans Dekker; Bonny W. M. Kuipers; Andrei V.
Petukhov; Remco Tuinier; Albert P. Philipse
- 11:00 AM Shape engineering of the monodispersed block
copolymer particles
Eun Ji Kim; Jae Man Shin; Bumjoon J Kim

Track L: Jamming, Gelling & Rheology

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Salon V+VI

Session Presider: Kelly Schultz, Lehigh U

- 9:20 AM The dynamics of yielding in concentrated colloidal systems via rheo-XPCS
Gavin Donley; Matthew Wade; Suresh Naranayan; Simon Rogers
- 9:40 AM Thermo-responsive binary colloidal particle gels
Braulio A Macias Rodriguez; Krassimir P Velikov
- 10:00 AM Rheology of glassy and jammed emulsions
Cong Cao; Eric Weeks
- 10:20 AM Viscoelasticity of capillary foams
Omotola O Okesanjo; Michael J Tennenbaum; Alberto Fernandez-Nieves; Carson J Meredith; Sven H Behrens
- 10:40 AM Keynote: Macroscopic deformation vs single particle motion in two and three dimensions
Günter K. Auernhammer

Track M: Particles & Molecules at Fluid Interfaces

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Salon IV

Session Title: Particles and surfactants

Session Presider: Ali Mohraz, UC Irvine

9:20 AM Reversible adsorption of nanoparticles at surfactant-laden liquid-liquid interfaces

Joeri Smits; Michael Maas; Kurosch Rezwan

9:40 AM Interfacial tension and interfacial rheology of oil/water interfaces with adsorbed layers of asphaltenes

Junchi Ma; Chih-Cheng Chang; Todd M Squires; Lynn M Walker

10:00 AM Interfacial properties of asphaltenic oil/water interfaces in presence of copolymer demulsifiers

Neda Sanatkaran; Shelley L Anna; Lynn M Walker

10:20 AM Single particle orientation and rotational tracking of plasmonic gold nanoparticles on synthetic and cell membranes

Ning Fang; Kuangcai Chen

10:40 AM Understanding competitive adsorption between biomacromolecules and surfactants

Raymond Tu

Track N: Wetting & Adhesion

Wednesday, June 19, 2019, 9:20 AM–11:20 AM

Room: Conference A

Session Presider: David Hu, Georgia Tech

9:20 AM Keynote: Coupling between viscous forces and elasticity in soft adhesion

Joelle Frechette

10:00 AM Solving adhesive problems in 3D printed hybrid structures

Erik L Antonio; Pu Zhu; Igor Luzinov

10:20 AM Self-healing lubricant-impregnated surfaces for corrosion protection

Sami Khan; Kripa K Varanasi

10:40 AM Perfluoropolyether-based molecular bottlebrush as water/oil repellent additive for thermoplastics

Liyong Wei; Sidong Tu; Olga Kuksenok; **Igor Luzinov**

11:00 AM Hydration lubrication of polyzwitterionic brushes leads to nearly friction- and adhesion-free droplet motion

Dan Daniel; Alfred Chia; Lionel Moh; Rongrong Liu; Xueqi Koh; Xing Zhang; Nikodem Tomczak

Wednesday First Afternoon Sessions

Track A: Active & Responsive Matter

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Conference Two

Session Presider: Stefan Zauscher, Duke U

- 1:30 PM PEGylated NiPAM microgels: synthesis, characterization and colloidal stability
Julien Es Sayed; Cédric Lorthioir; Patrick Perrin;
Nicolas Sanson
- 1:50 PM Colloidal, Nanoelectronic State Machines Based on 2D Materials as Smart Aerosolized Probes and Recorders
Volodymyr Koman; Pingwei Liu; Daichi Kozawa; Albert Tianxiang Liu; Michael Strano
- 2:10 PM Examining the effects of surfactants on the structural and mechanical properties of a thermoresponsive polymer brush
Isaac J Gresham; Joshua D Willott; Ben A Humphreys; Edwin C Johnson; Timothy J Murdoch; Grant B Webber; Erica J Wanless; Andrew R J Nelson; Stuart W Prescott
- 2:30 PM Responsive Polymerized Liquid Metal Networks
Christopher Tabor; Carl Thrasher; Zachary Farrell; Nicholas Morris; Carson Willey

Track B: Bio-Inspired Systems

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Conference Six

Session Title: Bioinspired Self-Assembly

Session Presider: Sarah Perry, University of Massachusetts, Amherst

1:30 PM Fabrication of self-assembling antimicrobial nanofibers via peptide self-assembly

He Dong

1:50 PM Design of nanoscale assemblies using synthetically designed protein shapes as building blocks

Won Min Park

2:10 PM Nanoparticles Self-Assembly for the Preparation of Bioinspired Materials with Stimuli-Responsive Color Changing Ability

Marco Lattuada; Golnaz Isapour

2:30 PM Coming together to climb higher: agent-based modeling of fire ant tower building

Gary K Nave; Orit Peleg

Track C: Colloidal & Surface Forces

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Salon III

Session Title: Emulsions, hydrogels, catalysis (I)

Session Presider: Qian Chen, U Illinois Urbana-Champaign

- 1:30 PM Leidenfrost droplet duster
Franklin Anariba; **Reginald Thio**
- 1:50 PM Depletion forces in solutions containing mutually
repelling anionic polyelectrolytes and surfactants
Bhagyashree Jayendra Lele; Robert D Tilton
- 2:10 PM H₂O₂ Decomposition on Pd Nanocrystals with
Surface Twin Boundaries
Yifeng Shi; Kyle D Gilory; Zachary D Hood;
Younan Xia
- 2:30 PM Mapping Evanescent Wave Scattering from Form
Anisotropic Particles
Aidin Rashidi; Adrian Doicu; Alina A. Vasilyeva;
Dmitry S. Efremenko; Thomas Wriedt; **Christopher
L. Wirth**

Track D: Colloids & Macromolecules in Life Sciences

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Conference D

Session Title: Micelles, Bubbles and Droplets in Biotechnology

Session Presider: Paul Russo, Georgia Tech

- 1:30 PM Direct, PCR-less Detection of Viral RNA using
 Micelle Tagging Electrophoresis
James W. Schneider; Kimberly Hui; Lingxiao Yan;
 Todd M. Przybycien
- 1:50 PM Spontaneous nucleation of dual phase droplets for
 ultrasound contrast enhancement and drug delivery
David S. Li; Thomas Matula; Matthew O'Donnell;
 Lilo D. Pozzo
- 2:10 PM Bubble inflation using perfluorocarbon
 nanodroplets: A new theranostic platform
 Carlos J. Brambila; Jacques Lux; Robert F. Mattrey;
 Dustin Boyd; **Caroline de Gracia Lux**
- 2:30 PM Perfluoroheptane loaded hollow gold nanoshells
 reduce nanobubble threshold fluence
Joseph A Zasadzinski; Jeong Eun Shin; Maria O
 Ogunyankin

Track E: Directed & Self-Assembly

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Conference Four

Session Title: Surfactants

Session President: James Kindt, Emory U

- 1:30 PM Use of Equilibrium and Dynamic Surface Tension Behavior for Detecting Critical Micelle Concentration and Critical Aggregation Concentration
Jaeyub Chung; An-Hsuan Hsieh; David S Corti; Elias I Franses
- 1:50 PM Derivation of cluster free energy profile for octyl/dodecyl phosphocholine micelles from molecular dynamics simulations
Xiaokun Zhang; James Kindt
- 2:10 PM Temperature induced demixing of surfactant solutions in nanoporous materials: Directed pore uptake and phase separation in confinement
Yao Wu; **Yingzhen Ma;** Lilin He; Gernot Rother; William A. Shelton; Bhuvnesh Bharti
- 2:30 PM Unraveling the Solubilization and Cytotoxicity Screening in Aqueous Solution of Surface-Active Amphiphiles Integrated with Physicochemical Characterization and Simulation Approach
Ketan Chandubhai Kuperkar

Track G: Emulsions, Bubbles & Foams

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Conference B

Session Title: New Materials from Emulsions and Foams

Session President: Amanda Marciel, Rice U

- 1:30 PM Inverted Solvent Transfer Induced Phase Separation
for the Fabrication of Mechanically Robust Bijels
Mohd Azeem Khan; Martin F. Haase
- 1:50 PM Making bijels mechanically better membranes by
manipulating bicontinuous morphologies
Matthew S Schwenger; Stephen Boakye-Ansah;
Martin F Haase
- 2:10 PM Phase Transfer Catalyst -functionalized Nanosheets
in Emulsion Formation and Stabilization
Nishat Anjum; Ya-Wen Chang
- 2:30 PM Microscopic Rearrangements in the Flow of
Polydisperse Dense Emulsions
Yonglun Jiang; Carlos Orellana; Eric Weeks

Track H: Energy, Catalysis & Separations

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Conference E

Session Presider: Nian Liu, Georgia Tech

- 1:30 PM Functionalized Nanoporous Ceramic Membranes
Towards Low-Cost Electrodialysis
Greg Newbloom; Ryan Kingsbury; Rachel Malone
- 1:50 PM Vapor Phase Infiltration of Metal Oxide Dispersions
into Nanoporous Polymer Membranes for Organic
Solvent Separation
Emily K. McGuinness; Fengyi Zhang; Yao Ma; Ryan
P. Lively; Mark D. Losego
- 2:10 PM Oil Coated Bubbles for Flotation Separation of
Hydrophilic Particulates from Aqueous Dispersions
and Slurries: the Example of Flotation De-Inking
Songcheng Wang; Xue Zong; Xiaotang Du; J. Carson
Meredith; **Sven H Behrens**
- 2:30 PM DG-OSPNEY: A Gas-Phase Fixed-bed Adsorption
Model Built on MOOSE
Austin Ladshaw; Alex Wiechert; Yue Nan; Seungrag
Choi; Lawrence Tavlarides; Amy Welty; Kevin Lyon;
Jack Law; Costas Tsouris; Sotira Yiacoumi

Track i: Environmental Systems & Sustainability

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Conference Seven

Session Title: Nuclear/Energy

Session Presider: Young-Shin Jun, WashU

- 1:30 PM Mechanisms of adsorbent aging and its influence on iodine capture from nuclear fuel reprocessing off-gas
Alexander Wiechert; Austin Ladshaw; Yue Nan; Seungrag Choi; Lawrence Tavlarides; Costas Tsouris; Sotira Yiacoumi
- 1:50 PM Natural nuclide decay processes and implications in particle-particle atmospheric interactions and transport
Austin P Ladshaw; Alex Wiechert; Yong-ha Kim; Costas Tsouris; Sotira Yiacoumi
- 2:10 PM The effects of radioactive decay on the fate of radionuclides in gas and particulate phases
Yong-ha Kim; Sotira Yiacoumi; Seungjin Lee; Costas Tsouris

Track K: General

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Salon I+II

Session Presider: Jeffery Richards, Northwestern U

- 1:30 PM 2D MXene nanomaterials: Oxidation properties in various media and techniques to extend their colloidal stability
Smit A. Shah; Xiaofei Zhao; Touseef Habib; Wanmei Sun; Evan Prehn; Yexiao Chen; Hyosung An; Jodie L. Lutkenhaus; Miladin Radovic; Micah J. Green
- 1:50 PM Fabrication of Polydopamine Nanotubes as a Candidate for Chemo-Photothermal Therapy
Yuzhe Sun; Edward Davis
- 2:10 PM Synthesis and evaluation of iron oxide nanoparticle from thermal decomposition of iron oleate with post-synthesis annealing.
Sitong Liu; Carlos Rinaldi
- 2:30 PM In situ monitoring of the heterogeneous nucleation of a second metal on silver nanocubes using an isocyanide molecular probe
Jae Wan Ahn; Yiren Wu; Yun Zhang; Dong Qin

Track L: Jamming, Gelling & Rheology

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Salon V+VI

Session Presider: Eric Weeks, Emory U

- 1:30 PM The formulation and rheology of oil-induced branched wormlike micelles and liquid crystals around the phase inversion point
Francis Choi; Edgar J Acosta
- 1:50 PM Depletion attraction-induced phase transition in lung surfactant bilayers and monolayer
Clara O Ciutara; Joseph A Zasadzinski
- 2:10 PM Rheo-physical characterization of concentrated surfactant solutions
Eduard A Caicedo-Casso; Jessica Sargent; Seth Lindberg; Kendra A Erk
- 2:30 PM Atypical, non-cubical of asymptotically nonlinear viscoelasticity power law scalings of capillary suspensions
Irene Natalia; Randy H Ewoldt; **Erin Koos**

Track M: Particles & Molecules at Fluid Interfaces

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Salon IV

Session Topic: Particles and surfactants; **President:** Yao Wu, LSU

Session President: Shengfeng Cheng, Virginia Tech

- 1:30 PM Lysolipid dilatational modulus and its effects on acute respiratory distress syndrome
Joseph A Zasadzinski; Sourav Barman
- 1:50 PM Thermo-responsive behavior of surfactant under radial confinement
Yao Wu; Yingzhen Ma; Bhuvnesh Bharti; William A. Shelton
- 2:10 PM Accelerated micelle destruction near an interface allows for rapid surfactant adsorption from micellar solution
Joshua A. Mysona; Alon V. McCormick; David C. Morse
- 2:30 PM Production, structure-property relationships and toxicity aspects of surfactin biosurfactants
Ponisseril Somasundaran; Partha Patra

Track N: Wetting & Adhesion

Wednesday, June 19, 2019, 1:30 PM–2:50 PM

Room: Conference A

Session Presider: Donglee Shin, Johns Hopkins U

1:30 PM Transitions in the Three-Phase Contact Line Motion and the State of Deposition of Polymer from a Volatile Solution

Mohammad Abo Jabal; Anna Zigelman; Ofer Manor

1:50 PM Keynote: Local property changes near interfaces altered by polymer interpenetration, chain connectivity, and adhesion

Connie B. Roth; Xinru Huang; Roman R. Baglay; Michael F. Thees; Yannic J. Gagnon; Jennifer A. McGuire

2:30 PM Surface modification by chain adsorption from solution and melt, and its potential impact on property changes in thin polymer films

Michael F. Thees; Jennifer A McGuire; Xinru Huang; Connie B Roth

Wednesday Second Afternoon Sessions

Track A: Active & Responsive Matter

Wednesday, June 19, 2019, 3:10 PM–4:30 PM

Room: Conference Two

Session Presider: Nickolay Lavrik, ORNL

- 3:10 PM Rapid shape change in polymer gels via extreme thermodynamics
Michael Dimitriyev; Ya-Wen Chang; Paul Goldbart; Alberto Fernandez-Nieves
- 3:30 PM Finding the right switch: photo-control of air-water interfaces and foams with arylazopyrazole surfactants
Christian Honnigfort; Dana Glikman; Marco Schnurbus; Björn Braunschweig
- 3:50 PM Collective Multipole Oscillations Direct the Plasmonic Coupling at the Nanojunction Interfaces
Nasrin Hooshmand; Mostafa El-Sayed

Track B: Bio-Inspired Systems

Wednesday, June 19, 2019, 3:10 PM–4:30 PM

Room: Conference Six

Session Title: Bioinspired Macromolecular Assemblies

Session President: Vivek Narsimhan, Purdue U

3:10 PM Motor filament size and activity influences organization in biopolymer droplets

Kimberly Weirich; Kinjal Dasbiswas; Thomas Witten; Suriyanarayanan Vaikuntanathan; Margaret Gardel

3:30 PM Synthetic neutrophil extracellular traps (NETs): A biomimetic alternative to understand NET/ pathogen interaction

Yang Song; Shuichi Takayama

Track C: Colloidal & Surface Forces

Wednesday, June 19, 2019, 3:10 PM–4:30 PM

Room: Salon III

Session Title: Emulsions, hydrogels, catalysis (II)

Session Presider: Qian Chen, U Illinois Urbana-Champaign

- 3:10 PM Swelling Behaviour of Weakly Cross-linked
Microgels
Oliver Heywood Hughes; Paul Bartlett; Wuge H
Briscoe; Robert Sochon
- 3:30 PM Molecular diffusion in nanoscale confinement
Zechen Zhang; William A Ducker
- 3:50 PM Evaporation of droplet: The role of long-range
colloidal interactions
Mohamad Danial Shafiq; Paul Bartlett
- 4:10 PM Work of Adhesion and Spreading Coefficient as an
Efficient Tool for Assessing Biocide Performance
Duy T Nguyen; Ramakrishnan Balasubramanian;
Alex Richardson

Track E: Directed & Self-Assembly

Wednesday, June 19, 2019, 3:10 PM–4:30 PM

Room: Conference Four

Session Title: Magnetism

Session Presider: John Crocker, , U Pennsylvania

3:10 PM Magnetic field driven assembly of multicomponent
low-symmetry supraparticles

Ahmed Al Harraq; Jin Gyun Lee; Bhuvnesh Bharti

3:30 PM Magnetic particles in rotating fields: Role of
susceptibility in chain collapse

Hamed Abdi; **Craig E Maloney**

3:50 PM Magnetic field driven convection for directed
patterning in drying droplets

Jin Gyun Lee; Vanel Porter; William A. Shelton;
Bhuvnesh Bharti

Track G: Emulsions, Bubbles & Foams

Wednesday, June 19, 2019, 3:10 PM–4:30 PM

Room: Conference B

Session Title: Advances in Foams and Emulsions**Session Presider:** Chris Wirth, Cleveland State U

- 3:10 PM Revealing the role of inter-droplet interactions during nucleation in concentrated emulsions
Samira Abedi; Chauchyun Chen; Siva Vanapalli
- 3:30 PM Carbon dioxide-in-oil emulsion stabilized with modified silica nanoparticles
Keith P. Johnston; Shehab Alzobaidi; Timothy Angeles; Gianfranco Rodriguez; Robert M. Enick
- 3:50 PM Mechanics of evaporation induced spontaneous cyclic dimpling in binary liquid mixtures and its role in bubble stability
Vineeth Chandran Suja; Benjamin Gregory Lim Chadwick; Javier Tajuelo Rodriguez; Gerald G Fuller
- 4:10 PM Stabilization and characterization of CO₂ emulsions synergistically constructed with silica nanoparticles/alkyl ammonium bromide mixtures
Meng-ya Zhu; **Dong-dong Hu**; Keith P. Johnston; Lei Bao; Ling Zhao; Tao Liu

Track H: Energy, Catalysis & Separations

Wednesday, June 19, 2019, 3:10 PM–4:30 PM

Room: Conference E

Session Presider: Ryan Lively, Georgia Tech

- 3:10 PM Rational design and synthesis of bifunctional nanocrystals for probing catalytic reactions by surface-enhanced Raman scattering
Shi Shi; Yun Zhang; Yiren Wu; Jumei Li; Dong Qin
- 3:30 PM Gold Nanoparticle Colloidal Catalysts: Role of Ligands and Strategies for Recovery and Reuse
Christopher Kitchens; Saptarshi Chakraborty
- 3:50 PM Process route for hierarchically structured zeolite monolith catalyts
Moritz Weiss; Norbert Willenbacher; **Erin Koos**

Track i: Environmental Systems & Sustainability

Wednesday, June 19, 2019, 3:10 PM–4:30 PM

Room: Conference Seven

Session Title: Natural Materials: Nano-Cellulose

Session Presider: Patricia Taboada-Serrano, RIT

- 3:10 PM Fabrication of cellulose nanocrystals (CNC) with iron oxide (Fe_3O_4) nanoparticles by in-situ coprecipitation method and stability in water
Mohammad Jahid Hasan; Frankie A. Petrie; Ashley E Johnson; Mary Worthington; Erick S. Vasquez; Esteban E. Urena-Benavides
- 3:30 PM Association of nano-cellulosic material with polyelectrolyte complex coacervates
Nasreen Khan; Carly Travis; Nadia Zaragoza; Blair Brettmann
- 3:50 PM A scaled-down fluid testing device to efficiently measure hybrid CNC-polyelectrolyte particle properties as additives in water-based drilling fluids
Paul Balding; Ron Volkovinsky; Paul Russo

Track K: General

Wednesday, June 19, 2019, 3:10 PM–4:30 PM

Room: Salon I+II

Session Presider: Jeffery Richards, Northwestern U

3:10 PM Facile wet-chemistry synthesis of gold nanorings with tunable optical response

Xiaoying Lin; Zhihong Nie

3:30 PM Shape-controlled synthesis of copper nanocrystals through seed-mediated growth

Zhiheng Lyu; Younan Xia

3:50 PM Site-selective carving and co-deposition: Transformation of Ag nanocubes into concave nanocrystals encased by Au-Ag alloy frames

Jae Wan Ahn; Daniel Wang; Yong Ding; Jiawei Zhang; Dong Qin

Track M: Particles & Molecules at Fluid Interfaces

Wednesday, June 19, 2019, 3:10 PM–4:30 PM

Room: Salon IV

Session Title: Emulsions & Foams

Session Presider: Carson Meredith, Georgia Tech

3:10 PM Surface pressure and interfacial rheology of soft glassy protein layers adsorbed on the interface

Mehdi Molaei; John C Crocker

3:30 PM Protein meets Polymer - Smart Au NPs for stimulated phase transfer and peculiar Interfacial properties

Jonas Schubert; Christian Goldhahn; Helmut Schlaad; James Ferri; Andreas Fery; Munish Chanana

3:50 PM Dilational rheology of lung surfactant inhibitors

Sourav Barman; Joeseph Zasadzinski

Track N: Wetting & Adhesion

Wednesday, June 19, 2019, 3:10 PM–4:30 PM

Room: Conference A

Session Presider: Connie Roth, Emory U

3:10 PM Syntheses of supraparticles on liquid repellent surfaces

Sanghyuk Wooh

3:30 PM Bio-inspired compound eye with tunable multifunctionality by multiphase colloidal assembly

Donglee Shin; Tianxu Huang; Denise Neibloom; Yu Fu; Michael A. Bevan; Joelle Frechette

3:50 PM Effects of adhesion promoters on the contact angle of bitumen-aggregate interface

Cesare Oliviero Rossi; Paolino Caputo; Valeria Loise; Michele Porto; Domenico Miriello

4:10 PM Tribological Characterization of Triple Function Lubricant Additives Based on Organic–Inorganic Hybrid Star Polymers

Bas G. P. van Ravensteijn; Raghida Bou Zerdan; **Dongjin Seo;** Nicholas Cardirov; Takumi Watanabe; Jeffrey A Gerbec; Craig J Hawker; Jacob N Israelachvili; Matthew E Helgeson

2019 USEFUL INFORMATION

Health & Safety

For all health emergencies and all safety concerns on the Georgia Tech campus, please contact the GT Police at (404)894-2500. Calls to 9-1-1 may get a slower response.

Please note also that Georgia Tech is a smoke-free, tobacco free campus!

Transportation Options

(besides rideshares like Uber or Lyft)

Atlanta's Hartsfield-Jackson Airport MARTA rail

Trains arrive with minutes of each other, cost: \$2.50 one way.

Guests traveling to the GT Hotel & Conference Center from the Airport exit the train at the **Midtown** MARTA Station on the north line (rail map inside train). Exit the MARTA Station through the sign directing you to "Peachtree Place / Ga. Tech Stinger Shuttle." The Tech Trolley picks up directly outside the MARTA rail station entrance. Guests will want to exit the trolley on 5th Street, just west of Spring Street, which is the first stop after departing the MARTA station. Guests need to walk to the Spring Street intersection and the hotel will be directly across 5th Street. There is a revolving door at the corner of 5th Street and Spring Street that guests may enter, but to enter hotel after 9pm, they must continue down Spring Street in front of hotel to the main guest entrance which will be on the right.

To get to the airport via Tech Trolley and Marta, guests must board the Tech Trolley across the street from where they were dropped off for the hotel (in front of Great Clips Hair Salon), exit at the Midtown Marta Station and board the South Bound Train to the airport.

USEFUL INFORMATION

Taxi Service Options (Flat rate for one person from the airport to the GT Hotel & Conference Center:

\$36.50, Reverse trip: \$34.50, \$2.00 per each additional person)

- Yellow Cab 404-521-0200
- Checker Cab 404-351-1111

TECH TROLLEY (free campus transit service):



Sunday Service:

- 3:00 PM thru 9:45 PM - Approximately every 36 minutes.

Monday through Friday Service:

- 5:45 AM thru 6:30 AM - Approximately every 36 minutes.
- 6:20 AM thru 6:00 PM - Approximately every 15 minutes.
- 6:00 PM thru 9:30 PM - Approximately every 18 minutes.
- 9:30 PM thru 10:30 PM - Approximately every 36 minutes.

Some Atlanta Attractions

(within 5 miles from the GT Hotel and Conference Center)

The Georgia Aquarium

www.georgiaaquarium.org

(Banquet attendees will dine here on Tuesday evening)

World of Coca-Cola

www.worldofcoca-cola.com

The Atlanta Botanical Garden

www.atlantabotanicalgarden.org

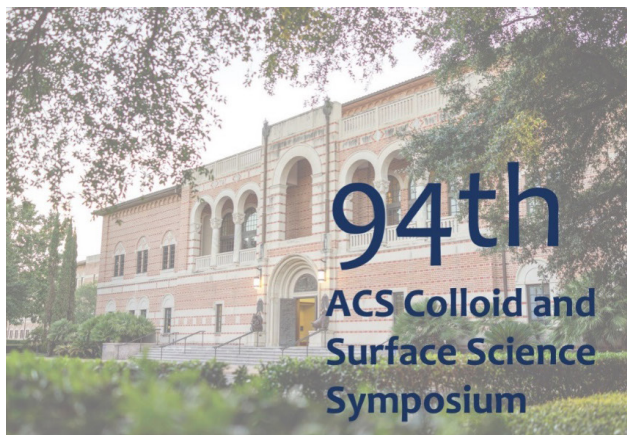
Woodruff Arts Center

www.woodruffcenter.org

Atlanta Symphony

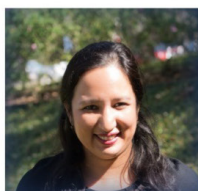
www.atlantasymphony.org

High Museum of Art	www.high.org
Fox Theatre	www.foxtheatre.org
Center for Puppetry Arts	www.puppet.org
National Center for Civil and Human Rights	www.civilandhumanrights.org
The King Center	https://thekingcenter.org/
Jimmy Carter Presidential Library	www.jimmycarterlibrary.org
CNN Studio Tours	www.cnn.com (100 CNN Center, Atlanta, GA 30303, 404-287-2491)
Margaret Mitchell House	www.margaretmitchellhouse.com
Ponce City Market	www.poncecitymarket.com
Zoo Atlanta	https://zooatlanta.org
Mercedes-Benz Stadium	www.mercedesbenzstadium.com (home of the Atlanta Falcons Foot- ball and the Atlanta United Soccer Teams)
Phillips Arena/ State Farm Arena	www.statefarmarena.com (Atlanta Hawks, concerts and other special events)
College Football Hall of Fame	www.cfbhall.com

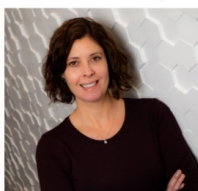


June 7-10th, 2020
Rice University
Houston, TX
www.colloids2020.org

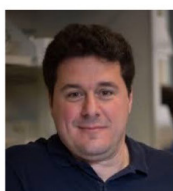
Symposium Organizers



Lisa
Biswal



Christy
Landes



Matteo
Pasquali



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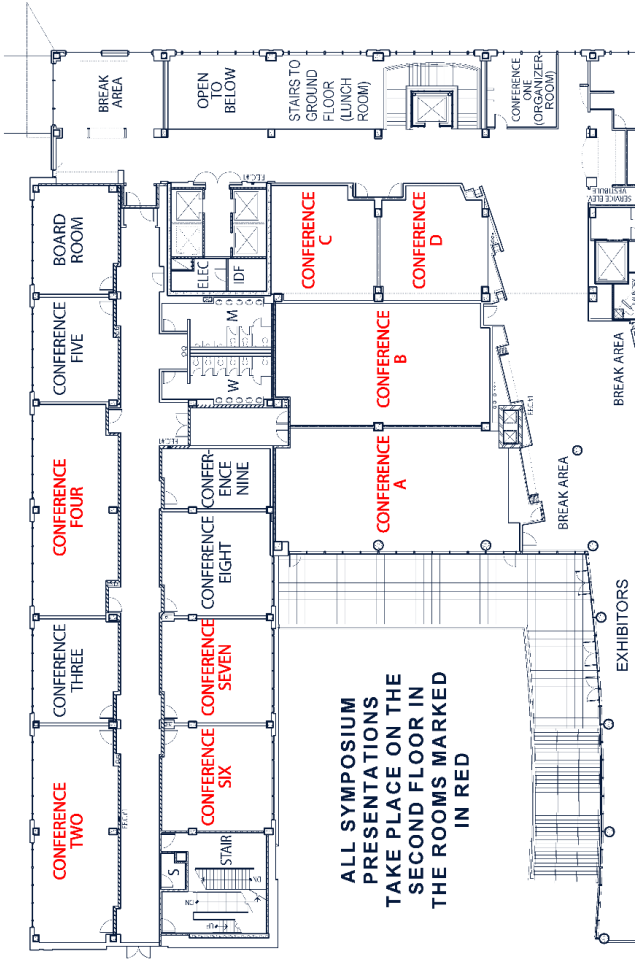
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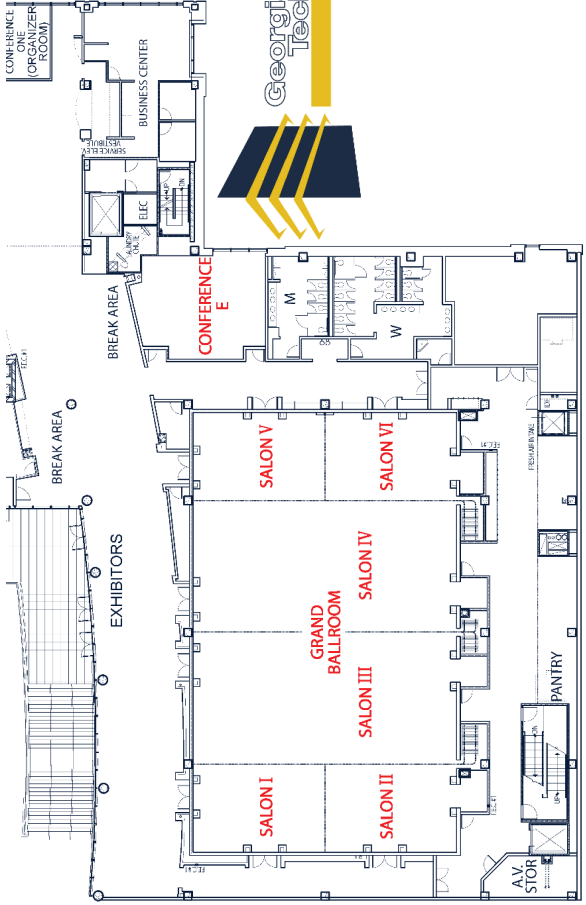
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