Welcome!

Darrell Velegol

Seong H. Kim

Welcome to Penn State and to the 92nd American Chemical Society Colloid & Surface Science Symposium! Penn State researchers engage in world-class research in colloidal and surface science, through many departments, as well as through our Materials Research Institute and our NSF MRSEC Center for Nanoscale Science. The Millennium Science Complex and other facilities house world-class facilities, with outstanding technical staff. So we welcome you here. As part of the Colloid & Surface Science family, we hope that you'll feel right at home.

We thank our sponsors for their generous support. And we welcome our exhibitors and encourage you to visit their tables in the Penn Stater Hotel. We are all part of this exciting research adventure.

We hope you enjoy our 3-day program, with a dozen topical sessions, including an exciting new session on "Connecting the Dots in Industry". We have more than 60 keynotes and 81 sessions, with contributions from around the globe.

So welcome to the Symposium, and to Penn State!

Darrell Velegol & Seong H. Kim
Symposium co-chairs

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Organizing Committee

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Darrell Velegol
Distinguished Professor of Chemical Engineering

Seong H. Kim
Professor of Chemical Engineering

Session co-organizers

Active and Adaptive Matter

Ilona Kretzschmar	City College, New York
Ayusman Sen	Penn State University
Orlin Velev	NC State University

Colloidal and Surface Forces

Mike Bevan	Johns Hopkins University
Norma Alcanta	University of South Florida
Chris Wirth	Cleveland State University

Colloidal Nanoparticle Synthesis & Characterization

Jill Millstone	University of Pittsburgh
Ray Schaak	Penn State University
Alina Schimpf	UC San Diego

Connecting the dots in industry

Jim Adair	Penn State University
Huda Jerri	Firmenich
Dan Miller	Dow Chemical

Directed assembly of molecules and particles

Jim Gilchrist	Lehigh University
Chris Keating	Penn State University
Ning Wu	Colorado School of Mines

Electrokinetics and microfluidics

Kyle Bishop	Columbia University
Sarah Perry	U of Massachusetts (Amherst)
Todd Squires	U of California (Santa Barbara)

Emulsions, bubbles, foams

Sven Behrens	Georgia Tech

Lisa Biswal	Rice University
Lauren Zarzar	Penn State University

Energy systems

Enrique Gomez	Penn State University
Jae Lee	KAIST
Donghai Wang	Penn State University

Environmental systems

Jamie Lead	University of South Carolina
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Stephanie Velegol	Penn State University

General

Jacinta Conrad	University of Houston
Valeria Milam	Georgia Tech
Christian Pester	Penn State University

Molecules and particles at fluid interfaces

Laura Bradley	U of Massachusetts (Amherst)
Daeyeon Lee	University of Pennsylvania
Ali Mohraz	University of California (Irvine)

Posters

John Riley	NIST
Lorena Tribe	Penn State University (Berks)

Rheology and dynamics

Matt Helgeson	U California (Santa Barbara)
Lilian C. Hsiao	NC State University
Roseanna Zia	Stanford University

Wetting and adhesion

Joelle Frechette	Johns Hopkins University
Kate Jensen	Williams College
Tak-Sing Wong	Penn State University

Symposium Committees & Support Staff

ACS Division of Colloid & Surface Science, Symposium Committee

Jim Schneider	Carnegie Mellon University
Jacinta Conrad	University of Houston
Daeyeon Lee	University of Pennsylvania
Reghan Hill	McGill University

LaMer Award Committee

Joelle Frechette (chair)	Johns Hopkins University
Charles Maldarelli	City College NY
Amanda Haes	University of Iowa
Ning Wu	Colorado School of Mines

Unilever Award Committee

Nicholas L. Abbott	University of Wisconsin
Patricia Aikens	Melaleuca Inc.
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Photographers & poster assistants:
Inseok Chae, Mohamadamin Makarem, Xin He, Shixin Huang

Poster judges: John Riley, Lorena Tribe, Inseok Chae, Amin Makarem

Program at a Glance

Most of the events below will occur at the Penn Stater Hotel and Conference Center, except the conference banquet.

Sunday 2018 June 10

3:00-6:00	Registration / Info Desk (Conference Wing)
6:00-7:30	Welcome Reception (Deans Hall)

Monday 2018 June 11

7:00 am	Registration / Info Desk (Conference Wing)
8:00	Continental Breakfast (Break Areas)
8:15	Opening remarks (Presidents Hall)
8:30	Plenary 1: John Rogers (Presidents Hall)
9:30	Coffee Break
9:30	Exposition for Exhibitors (until 5:00 pm)
10:00	Technical sessions
12:00 pm	Lunch (Presidents Hall)
1:20	Technical sessions
3:00	Coffee Break
3:20	Technical sessions
5:30	Posters and reception - until 7:30 pm (Deans Hall)

Tuesday 2018 June 12

7:30 am	Registration / Info Desk (Conference Wing)
8:00	Continental Breakfast (Break Areas)
8:30	Plenary 2: Sharon Glotzer (Presidents Hall)
9:30	Coffee Break
9:30	Exposition for Exhibitors (until 5:00 pm)
10:00	Technical sessions
12:00 pm	Lunch (Presidents Hall)
1:20	Technical sessions
3:00	Coffee Break
3:20	Technical sessions
5:15	Unilever Award (Presidents Hall)
6:30	Banquet (**Penn State Arboretum**)

Wednesday 2018 June 13

8:00 am	Registration / Info Desk (Conference Wing)
8:00	Continental Breakfast (Break Areas)
8:30	Victor K. LaMer Award (Presidents Hall)
9:30	Coffee Break
9:30	Exposition for Exhibitors (until noon)
10:00	Technical sessions

12:00 pm Lunch (Presidents Hall)
1:20 Technical sessions
3:00 Coffee Break
3:20 Technical sessions

Sessions on June 11, 2018 (Monday)

Session title	10:00-12:00	1:20-3:00	3:20-5:00	Evening
Plenary lecture	**PH**			
Active & adaptive matter	**104**	**104**	**104**	
Colloidal nanoparticles				
Colloidal & surface forces	**105**	**105**	**105**	
Connecting the dots in industry	**206**	**206**	**206**	
Directed assembly of molecules & particles	**208**	**208**	**208**	
Electrokinetics & mirofluidics				
Emulsions, bubbles, & foams	**107**	**107**	**107**	
Energy systems				
Environmental systems	**218**	**218**	**218**	
General	**204**	**204**	**204**	
Molecules & particles at fluid interfaces	**205**	**205**	**205**	
Rheology	**207**	**207**	**207**	
Wetting & adhesion	**106**	**106**	**106**	
Posters				**DH**

Number = meeting room
PH = Presidents Hall
DH = Deans Hall

Sessions on June 12, 2018 (Tuesday)

Session title	10:00-12:00	1:20-3:00	3:20-5:00	Evening
Plenary lecture	**PH**			
Active & adaptive matter	**104**	**104**	**104**	
Colloidal nanoparticles				
Colloidal & surface forces	**105**	**105**		
Connecting the dots in industry	**206**	**206**	**206**	
Directed assembly of molecules & particles	**208**	**208**	**208**	
Electrokinetics & mirofluidics				
Emulsions, bubbles, & foams	**107**	**107**	**107**	
Energy systems				
Environmental systems				
General	**204**	**204**	**204**	
Molecules & particles at fluid interfaces	**205**	**205**	**205**	
Rheology	**207**	**207**	**207**	
Wetting & adhesion	**106**	**106**	**106**	
Unilever Award				**PH**

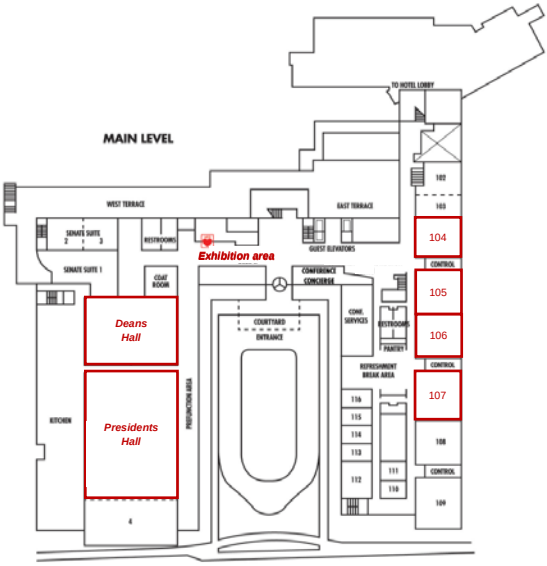
Number = meeting room
PH = Presidents Hall

Sessions on June 13, 2018 (Wednesday)

Session title	10:00-12:00	1:20-3:00	3:20-5:00	Evening
LaMer Award	**PH**			
Active & adaptive matter				
Colloidal nanoparticles	**104**	**104**	**104**	
Colloidal & surface forces				
Connecting the dots in industry	**206**	**206**	**206**	
Directed assembly of molecules & particles	**208**	**208**	**208**	
Electrokinetics & microfluidics	**105**	**105**	**105**	
Emulsions, bubbles, & foams	**107**			
Energy systems	**106**	**106**	**106**	
Environmental systems				
General	**204**	**204**	**204**	
Molecules & particles at fluid interfaces				
Rheology	**207**			
Wetting & adhesion				

Number = meeting room

Hotel Map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Plenary & Award Lectures

Plenary Speaker

John Rogers

Northwestern University

Professor John A. Rogers obtained BA and BS degrees in chemistry and in physics from the University of Texas, Austin, in 1989. From MIT, he received SM degrees in physics and in chemistry in 1992 and the PhD degree in physical chemistry in 1995. From 1995 to 1997, Rogers was a Junior Fellow at Harvard University. He joined Bell Laboratories in the Condensed Matter Physics Research Department in 1997, and served as Director of this department from 2000 to 2002. He then spent thirteen years on the faculty at University of Illinois, most recently as the Swanlund Chair Professor and Director of the Seitz Materials Research Laboratory. In 2016, he joined Northwestern University as the Simpson/Querrey Professor of Materials Science and Engineering, Biomedical Engineering and Medicine, with joint appointments in Mechanical Engineering, Electrical and Computer Engineering and Chemistry. He is Director of the Center for Bio-Integrated Electronics. His research has been recognized by many awards including a MacArthur Fellowship (2009), the Lemelson-MIT Prize (2011) and the Smithsonian Award for American Ingenuity in the Physical Sciences (2013). He is a member of the National Academy of Engineering, the National Academy of Sciences and the American Academy of Arts and Sciences.

TITLE (Talk 1). Mechanically Assembled 3D Mesostructures as Scaffolds for Multifunctional Materials

Plenary Speaker

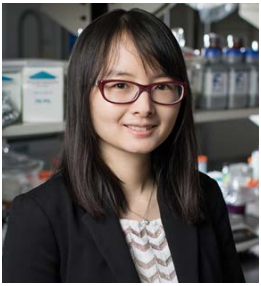
Sharon Glotzer

University of Michigan

Sharon C. Glotzer is the Anthony C. Lembke Department Chair of Chemical Engineering at the University of Michigan in Ann Arbor. Glotzer is also the John Werner Cahn Distinguished University Professor of Engineering and the Stuart W. Churchill Collegiate Professor of Chemical Engineering, and Professor of Materials Science and Engineering, Physics, Applied Physics, and Macromolecular Science and Engineering. She is a member of the National Academy of Sciences and the American Academy of Arts and Sciences, and a fellow of the American Physical Society, the American Association for the Advancement of Science, the American Institute of Chemical Engineers, the Materials Research Society, and the Royal Society of Chemistry.

Professor Glotzer's research on computational assembly science and engineering aims toward predictive materials design of colloidal and soft matter, and is sponsored by the NSF, DOE, DOD, Simons Foundation and Toyota Research Institute. Glotzer has published over 225 refereed papers and presented over 340 plenary, keynote and invited talks around the world. She is a Simons Investigator, a former National Security Science and Engineering Faculty Fellow, and the recipient of numerous other awards and honors, including the 2016 Alpha Chi Sigma Award from the American Institute of Chemical Engineers, the 2014 MRS Medal from the Materials Research Society and the 2008 Charles M.A. Stine Award from the American Institute of Chemical Engineers.

TITLE (talk 215): The colloidal glass transition, engineering entropic bonds, and inverse design of colloidal crystals.



Plenary Speaker for Unilever Award

Qian Chen

University of Illinois at Urbana Champaign

Prof. Qian Chen is currently an Assistant Professor in the Materials Science and Engineering Department at University of Illinois at Urbana-Champaign (UIUC). She obtained her PhD from the same department with Prof. Steve Granick (2012) and did her postdoc with Prof. Paul Alivisatos at UC Berkeley under the prestigious Miller Fellowship. She joined the faculty of UIUC in 2015 and since then has received awards for the research in her group such as the Victor LaMer award in ACS (2015), Forbes 30 under 30 Science List (2016), Air Force Office of Scientific Research YIP award (2017), National Science Foundation CAREER award (2018) and Sloan Research Fellow in Chemistry (2018). The research in her group focuses on the broad scheme of imaging, understanding and engineering active soft matter, including systems such as nanoparticle and colloidal self-assembly, protein aggregation, advanced battery devices, and energy-efficient water filtration.

TITLE (talk 339): Direct nanoscopic imaging: from crystallizing of nanoparticles to crumpling of polymer films

Plenary Speaker for
Victor K. LaMer Award

Kaifeng Wu

Northwestern University

Dr. Wu was born in in Jiangxi, China. He obtained his B.S. degree in materials physics from University of Science and Technology of China (2010) and his Ph.D. degree in physical chemistry from Emory University (2015, with Prof. Tim Lian). His Ph.D. work unraveled interfacial charge separation and recombination mechanisms in colloidal photocatalytic semiconductor-metal nanostructures and also established a novel, high-efficiency plasmon-induced hot electron transfer mechanism in these structures. From 2015 to 2017, he was the director's funded postdoctoral fellow at Los Alamos National Laboratory (with Dr. Victor Klimov), where he worked on the application of colloidal nanocrystals for lasers and luminescent solar concentrators. In 2017, he was enrolled into the 1000-Young-Talent program of China and joined State Key Laboratory of Molecular Reaction Dynamics, Dalian Institute of Chemical Physics, CAS, as a principle investigator. He is now the leader of "Dynamics in Optoelectronic Materials" research group, working on the ultrafast spectroscopy and device applications of colloidal low-dimensional optoelectronic materials.

TITLE (talk 340): Engineered colloidal nanostructures for carrier and photon managements in solar energy conversion.

Keynote Talks

Active and Adaptive Matter

Anna C. Balazs	University of Pittsburgh
Peer Fischer	Max Planck Inst. for Intelligent Sys.
Jinyao Tang	University of Hong Kong

Colloidal and Surface Forces

Suzanne Giasson	University of Montreal
Marina Ruths	U of Massachusetts (Lowell)

Colloidal Nanoparticle Synthesis & Characterization

Daniel Gamelin	University of Washington
Matthew R. Jones	Rice University
Jianwei Miao	UCLA
Jihyeon Yeom	MIT

Connecting the dots in industry

Nicholas Abbott	University of Wisconsin-Madison
James Adair	Pennsylvania State University
Ankit Agarwal	Imbed Biosciences
Monty Alger	Pennsylvania State University
Samiul Amin	Manhattan College Chem Engr
Gretchen Baier	The Dow Chemical Company
Michael Bevan	Johns Hopkins University
James Bohling	The Dow Chemical Company
Gavin Braithwaite	MIT
Ray Dagastine	University of Melbourne
Melik Demirel	Pennsylvania State University
Patrick Doyle	MIT
Philipp Erni	Firmenich
Jaime Ferreira	Estee Lauder Company
Matt Helgeson	U of California-Santa Barbara
Travis Hodgdon	Procter & Gamble
Abhishek Kar	Shell Global Solutions US Inc
Mark Kester	University of Virginia
Dan Miller	The Dow Chemical Company
Jonathan Spadt	RatnerPrestia
Pat Spicer	U of New South Wales Sydney
Kate Stebe	University of Pennsylvania
Darrell Velegol	Pennsylvania State University
Stephanie Velegol	Pennsylvania State University
Orlin Velev	North Caroline State University
Krassimir Velikov	Unilever

Russel Walters	Johnson & Johnson
Eric Wasserman	The Dow Chemical Company
David Weitz	Harvard University
Alisar Zahr	Revision Skincare

Directed assembly of molecules and particles

Henry Ashbaugh	Tulane University
Lisa Biswal	Rice University
Sven H. Behrens	Georgia Institute of Technology

Electrokinetics and microfluidics

Aditya Khair	Carnegie Mellon University
Sindy Tang	Stanford University

Emulsions, bubbles, foams

Tom Mason	UCLA
Lilo Pozzo	University of Washington

Energy systems

Jeong Y. Park	KAIST

Environmental systems

Vicki Chen	University of NSW (Sydney)
Susan Louise Svane Stipp	University of Copenhagen

General

Matthias Ballauff	HZB (Berlin)
Alexander Böker	Fraunhofer Institute
Alberto Fernandez-Nieves	Georgia Tech

Molecules and particles at fluid interfaces

Ka Yee Lee	University of Chicago
Robert Tilton	Carnegie Mellon University

Rheology and dynamics

Roger Bonnecaze	U of Texas (Austin)
Jaci Conrad	University of Houston

Wetting and adhesion

Hans-Jürgen Butt	Max Planck Institute for Polymer Research
Manoj K. Chaudhury	Lehigh University
Carlos Colosqui	Stony Brook University

Technical Program

Plenary Lecture 1

Monday, June 11, 2018, 8:30 AM - 9:30 AM
Location: Presidents Hall

8:30 **1. PLENARY.** Mechanically Assembled 3D Mesostructures as Scaffolds for Multifunctional Materials. **J. Rogers**; Northwestern University, Evanston, IL.

ABSTRACT: A rapidly expanding area of research in materials science focuses on the development of routes to complex functional materials that exploit engineered three dimensional (3D) architectures. This talk summarizes recently developed strategies in geometric transformation that allow for the spontaneous, guided assembly of 3D mesostructures from two dimensional (2D) precursors, where the characteristic feature sizes can span the entire mesoscopic range, from tens of nanometers to hundreds of microns and more. A goal is to create scalable capabilities for defining properties of materials systems not only through the chemical compositions and morphological characteristics of their constituents but also through well-defined, static or tunable 3D configurations. The resulting systems can be viewed as metamaterials, where engineered mesostructures lead to unique and important optical, thermal, acoustic, mechanical and electronic properties. This presentation includes a broad range of such examples.

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Active and Adaptive Matter

Monday, June 11, 2018, 10:00 AM - 12:00 PM
Location: Room 104

10:00 **2. KEYNOTE.** Nanocolloids on the move. **P. Fischer**; Micro Nano and Molecular Systems, Max Planck Institute and Univ. of Stuttgart, Stuttgart, GERMANY.

10:40 **3.** Encoding biomimetic 3D helical motion in microparticles: Finding new pathways for navigating complex environments. J. Lee, **B. Bharti**; Cain Department of Chemical Engineering, Louisiana State University, Baton Rouge, LA.

11:00 **4.** Chemical oscillation of micromotors drives reversible assembly of colloids. **A. Altemose**, A. Sen; Chemistry, Penn State, State College, PA.

11:20 **5.** Active colloidal assemblies of metallo-dielectric microcubes: Self-reconfiguring microbots and self-propelling microswimmers. **K. Han**[1], C. W. Shields IV[2], B. Bharti[3], G. P. López[4], O. D. Velev[1]; [1]Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC, [2]Wyss Institute for Biologically Inspired Engineering, Harvard University, Cambridge, MA, [3]Chemical Engineering, Louisiana State University, Baton Rouge, LA, [4]Chemical and Biological Engineering, University of New Mexico, Albuquerque, NM.

11:40 **6.** 2D Colloidal clusters that beat like a heart or wrinkle like a brain. C. Zhou[1], R. Dong[2], S. Granick[2], **W. Wang**[1]; [1]School of Materials Science and Engineering, Harbin Institute of Technology (Shenzhen), Shenzhen, CHINA, [2]Center for Soft and Living Matter, Institute of Basic Science, Ulsan, KOREA, REPUBLIC OF.

Colloidal and Surface Forces

Monday, June 11, 2018, 10:00 AM - 12:00 PM
Location: Room 105

10:00 **7. KEYNOTE.** Stimuli-Responsive and Nanostructured Polymer Films for Modulating Adhesion and Friction: Fabrications, Applications and Limitations. **S. Giasson**[1], L. Giraud[2]; [1]Chemistry and Pharmacy, Universite de Montreal, Montréal, QC, CANADA, [2]Pharmacy, Universite de Montreal, Montréal, QC, CANADA.

10:40 **8.** Proximity-induced changes in adsorption. **P. Gaddam**, R. Grayson, W. Ducker; Virginia Tech, Blacksburg, VA.

11:00 **9.** Domain Expansion Dynamics and Nanoridge-to-Mesa Instability in Stratifying, Micellar Foam Films. **V. Sharma**, Y. Zhang; Chemical Engineering, University of Illinois at Chicago, Chicago, IL.

11:20 **10.** Characterizing DNA-mediated interactions between colloidal particles and fluid membranes. **S. Merminod**, W. B. Rogers; Physics, Brandeis University, Waltham, MA.

11:40 **11.** Dynamics of graphite and graphene at fluid-fluid interfaces. **J. Samaniuk**; Chemical and Biological Engineering, Colorado School of Mines, Golden, CO.

Connecting the Dots in Industry

Monday, June 11, 2018, 10:00 AM - 12:00 PM
Location: Room 206

10:00 **12. KEYNOTE.** Measurements & Models of kT-Scale Microcapsule-Substrate Interactions to Optimize Fragrance Delivery. **M. Bevan**[1], I. Torres[1], A. Coughlan[1], H. Jerri[2]; [1]Johns Hopkins University, Baltimore, MD, [2]Firmenich, Inc., Plainsboro, NJ.

10:40 **13. KEYNOTE.** Unjustified Assumptions: How to avoid dysfunctional Industry-Academic Collaborations. **P. Spicer**; The University of New South Wales Sydney, Sydney, AUSTRALIA.

11:00 **14. KEYNOTE.** Lessons learned in developing university- industry relationships. **K. Stebe**; University of Pennsylvania, Philadelphia, PA.

11:20 **15. KEYNOTE.** Multiple emulsions: scaling up and scaling down. **M. E. Helgeson**; Department of Chemical Engineering, University of California Santa Barbara, Santa Barbara, CA.

11:40 **16. KEYNOTE.** Partnering to Win: Academic/Industry Collaborations. **G. Baier**; Dow Chemical Company, Midland, MI.

Directed Assembly of Molecules and Particles

Monday, June 11, 2018, 10:00 AM - 12:00 PM
Location: Room 208

10:00 **17. KEYNOTE.** Driving Colloids with Rotating Magnetic Fields. **S. L. Biswal**; Chemical & Biomolecular Engineering, Rice University, Houston, TX.

10:40 **18.** Inkjet printing of magnetic particles towards anisotropic magnetic properties. **K. N. Al-Milaji**, S. M. Harstad, R. L. Hadimani, H. Zhao; Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA.

11:00 **19.** Tuning the dielectrophoretic assembly of particles through surface functionalization. **N. D. Burrows**, C. D. Keating; Department of Chemistry, Pennsylvania State University, University Park, PA.

11:20 **20.** Enabling low voltage electrophoretic deposition of semiconductor nanocrystals. **A. T. Fafarman**; Chemical Engineering, Drexel University, Philadelphia, PA.

11:40 **21.** High-throughput assembly of colloidal crystals by acoustophoresis. **M. Akella**, J. Juarez; Mechanical Engineering, Iowa State University, Ames, IA.

Emulsions, Bubbles and Foams

Monday, June 11, 2018, 10:00 AM - 12:00 PM
Location: Room 107

10:00 **22. KEYNOTE.** Multi-compartment Cerberus nanoemulsions created by flow-induced droplet fusion and by self-limiting coalescence. **T. G. Mason**; Chemistry & Physics, UCLA, Los Angeles, CA.

10:40 **23.** Dynamics of partial coalescence and destabilization in 2D monodisperse emulsions. **S. Abedi**, C. Chen, S. Vanapalli; Texas Tech University, Lubbock, TX.

11:00 **24.** Microfluidic production of phase separated cellular mimics. **C. D. Crowe**, C. D. Keating; Chemistry, Pennsylvania State University, University Park, PA.

11:20 **25.** Complex multi-compartment and internally ordered emulsions. **X. Wang**[1], Y. Zhou[2], Y. Kim[1], M. A. Tsuei[1], K. Iwabata[1], J. J. de Pablo[2,3], N. L. Abbott[1]; [1]Chemical and Biological Engineering, University of Wisconsin-Madison, Madison, WI, [2]Institute for Molecular Engineering, University of Chicago, Chicago, IL, [3]Argonne National Laboratory, Chicago, IL.

11:40 **26.** Directional Emission from Dynamic Complex Emulsions. **L. Zeininger**, T. M. Swager; Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA.

Environmental Systems

Monday, June 11, 2018, 10:00 AM - 12:00 PM
Location: Room 218

10:00 **27. KEYNOTE.** Engineering New Membranes for Critical Environmental Challenges. L. Li[1], W. Zhong[1], C. Ji[1], J. Hou[1,2], **V. Chen**[1]; [1]Chemical Engineering, University of New South Wales, Sydney, AUSTRALIA, [2]Materials Science & Metallurgy, Cambridge University, Cambridge, UNITED KINGDOM.

10:40 **28.** Water desalination by capacitive deionization methods. K. Tang[1], J. Gabitto[2], S. Yiacoumi[1], **C. Tsouris**[3]; [1]Georgia Institute of Technology, Atlanta, GA, [2]Prairie View A&M University, Praire View, TX, [3]Oak Ridge National Laboratory, Oak Ridge, TN.

11:00 **29.** Moringa oleifera f-Sand Filters for SustainableWater Purification. **B. Xiong**[1], B. Piechowicz[1], Z. Wang[1], R. Marinaro[2], E. Clement[1], A. Uliana[1], M. Kumar[1], S. Velegol[1]; [1]Pennsylvania State University, Pennsylvania State University, University Park, PA, [2]School of Chemical, Biological, and Materials Engineering, University of Oklahoma, University Park, OK.

11:20 **30.** Measurement of nanoparticle sticking coefficients for Moringa-coated sand filters. **L. Samineni**[1], B. Xiong[2], S. Velegol[1], M. Kumar[1], D. Velegol[1]; [1]Department of Chemical Engineering, The Pennsylvania State University, State College, PA, [2]Department of Civil and Environmental Engineering, The Pennsylvania State University, State College, PA.

11:40 **31.** Stability and transport of two different TiO2 nanoparticles in the Canadian environment. **J. Farner Budarz**[1], J. De Tommaso[2], R. Cheong[1], H. Mantel[1], N. Tufenkji[1]; [1]Chemical Engineering, McGill University, Montreal, QC, CANADA, [2]Chemical Engineering, Politecnico di Torino, Turin, ITALY.

General Papers

Monday, June 11, 2018, 10:00 AM - 12:00 PM
Location: Room 204

10:00 **32.** Developing potential designer rules for aptamer libraries. **V. Milam**[1], R. Sullivan, 30332[1], M. Adams[1], R. Naik[2]; [1]Georgia Institute of Technology, Georgia Institute of Technology, Atlanta, GA, [2]Georgia Institute of Technology, ARFL, WPAFB, OH.

10:20 **33.** Combined Effects of Temperature and Compression/Dilation of an Air-Water Interface on Therapeutic Protein Aggregation. **C. V. Wood**[1], V. I. Razinkov[2], W. Qi[2], E. M. Furst[1], C. J. Roberts[1]; [1]Chemical and Biomolecular Engineering, University of Delaware, Newark, DE, [2]Drug Product Development, Amgen, Thousand Oaks, CA.

10:40 **34.** Controlled Delivery of Signaling Molecules using Magnetic Microrobots. **S. Das**[1], E. E. Hunter[2], E. B. Steager[2], V. Kumar[2]; [1]Chemical and Biomolecular Engineering, University of Pennsylvania, philadelphia, PA, [2]GRASP Laboratory, University of Pennsylvania, philadelphia, PA.

11:00 **35.** Investigating dehydration-induced physical strains of cellulose microfibrils in plant cell walls. **S. Huang**[1], M. Makarem[1], S. N. Kiemle[2], Y. Zheng[2], X. He[1], D. Ye[1], E. W. Gomez[1], E. D. Gomez[1], D. J. Cosgrove[2], S. H. Kim[1]; [1]Chemical Engineering, The Pennsylvania State University, University Park, PA, [2]Biology, The Pennsylvania State University, University Park, PA.

11:20 **36.** An ultra melt resistant hydrogel from food grade carbohydrates. **B. Thompson**[1], T. Horozov[2], S. D. Stoyanov[3], V. N. Paunov[2]; [1]Chemical and Biomolecular Engineering, University of Maryland, College Park, College Park, MD, [2]School of of Mathematics and Physical Sciences (Chemistry), University of Hull, Hull, UNITED KINGDOM, [3]Unilever R&D Vlaardingen, Vlaardingen, NETHERLANDS.

11:40 **37.** Optimization of Liposome-Hollow gold nanoparticle for mRNA delivery. **A. Veeren**[1], M. J. Osborn[2], S. Merkel[3], J. Shin[1], J. A. Zasadzinski[1]; [1]Department of Chemical engineering and Material science, University of Minnesota, Minneapolis, MN, [2]Department of Pediatrics, University of Minnesota,

Minneapolis, MN, [3]Stem Cell Institute, University of Minnesota, Minneapolis, MN.

Molecules and Particles at Fluid Interfaces

Monday, June 11, 2018, 10:00 AM - 12:00 PM
Location: Room 205

10:00 **38. KEYNOTE.** Fundamental aspects and applications of star polymer adsorption at fluid interfaces. **R. D. Tilton**; Department of Chemical Engineering and Department of Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA.

10:40 **39.** Tears of Wine. **P. Rathore**, C. Xu, V. Sharma; Chemical Engineering, University of Illinois at Chicago, Chicago, IL.

11:00 **40.** Adsorption dynamics and equilibrium of PEO-PDMS block copolymers at oil/water interfaces. **M. L. Davidson**[1], M. Gottlieb[2], L. M. Walker[1]; [1]Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA, [2]Chemical Engineering, Ben-Gurion University of the Negev, Beer-Sheeva, ISRAEL.

11:20 **41.** Competitive adsorption of mAbs and excipients at the air-water interface. **A. Kanthe**[1], M. Krause[2], S. Zheng[2], B. Lin[3], W. Bu[3], J. Strzalka[4], C. Maldarelli[5], R. Tu[1]; [1]Chemical Engineering, City University of New York, City College, New York, NY, [2]Drug Product Science and Technology, Bristol-Myers Squibb, New Brunswick, NJ, [3]Center for Advanced Radiation Sources, The University of Chicago, Chicago, IL, [4]Time-Resolved Research, X-Ray Science Division, Argonne National Laboratory, Chicago, IL, [5]Levich Institute, City College of New York, City College, New York, NY.

11:40 **42.** Measurement of surface tension and viscoelastic parameter values in ultra-thin liquid crystal films at the air/water interface. **N. K. Thapa**[1], H. A. Alwusaydi[1], A. E. Smart[2], W. V. Meyer[3], A. I. Belgovskiy[4], J. A. Mann, Jr.[5], E. K. Mann[1]; [1]Physics, Kent State University, Kent, OH, [2]Scattering Solutions, Inc., Costa Mesa, CA, [3]Scattering Solutions, Inc., Kent State University, Cleveland, OH, [4]Scattering Solutions, Inc., Cleveland, OH, [5]Chemical Engineering, Case Western Reserve University, Cleveland, OH.

Rheology

Monday, June 11, 2018, 10:00 AM - 12:00 PM
Location: Room 207

10:00 **43. KEYNOTE.** Phase behavior and rheology of disperse colloid-polymer mixtures. **J. Conrad**; University of Houston, Houston, TX.

10:40 **44.** First normal stress differences of attractive model colloid + polymer mixtures. **N. Park**, J. C. Conrad; Chemical and Biomolecular Engineering, University of Houston, Houston, TX.

11:00 **45.** Excess entropy scaling law in two-dimensional "attractive" colloidal fluids. **X. MA**[1], J. LIU[1], Y. Zhang[2], P. Habdas[3], A. G. Yodh[1]; [1]Physics & Astronomy, University of Pennsylvania, Philadelphia, PA, [2]Physics, Peking University, Beijing, CHINA, [3]Physics, Saint Joseph's University, Philadelphia, PA.

11:20 **46.** Direct investigation of microstructure dynamics during drying of colloid-polymer thin films. **T. Kaewpetch**, J. F. Gilchrist; Lehigh University, Bethlehem, PA.

11:40 **47.** Understanding the transient behavior of soft glassy materials far from equilibrium with Sequence of Physical Process (SPP) analysis. **J. PARK**, S. A. Rogers; Chemical and Biomolecular engineering, University of Illinois at Urbana-Champaign, Urbana, IL.

Wetting and Adhesion

Monday, June 11, 2018, 10:00 AM - 12:00 PM
Location: Room 106

10:00 **48. KEYNOTE.** Simple model to describe adaptive wetting. **H. J. Butt, Sr.**, R. Berger, Sr, W. Steffen, Sr, D. Vollmer, MS, S. Weber, Sr; Physics at interfaces, Max-Planck-Institute for Polymer Research, Mainz, GERMANY.

10:40 **49.** Exploring drop transition to Leidenfrost state on nano/micro-structured surfaces. **N. Saneie**, V. Kulkarni, S. Anand; Mechanical Engineering, University of Illinois at Chicago, CHICAGO, IL.

11:00 **50.** Liquid-based membranes as unusual particle separators. **B. Boschitsch**; Mechanical and

Nuclear Engineering, The Pennsylvania State University, University Park, PA.

11:20 **51.** Controlling wettability of 2D materials from macroscopic to nanoscopic scales using noncovalent ligand layers. **S. Claridge**; Chemistry, Purdue University, West Lafayette, IN.

11:40 **52.** Dynamics of capillary bridges and the three-phase contact line using a diffuse interface method. **F. Thomas**[1,2], J. F. Morris[1,2]; [1]Levich Institute, New York, NY, [2]Department of Chemical Engineering, The City College of New York, New York, NY.

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Active and Adaptive Matter

Monday, June 11, 2018, 1:20 PM - 3:00 PM
Location: Room 104

1:20 PM **53.** From donuts to micromotors: Novel 3-D printed janus tori. **R. D. Baker**[1], I. S. Aranson[2], A. Sen[3], T. Johnson[4], E. Lauga[4]; [1]Material Science and Engineering, Pennsylvania State University, University Park, PA, [2]Mathematics, Pennsylvania State University, University Park, PA, [3]Chemistry, Pennsylvania State University, University Park, PA, [4]Applied Mathematics, University of Cambridge, Cambridge, UNITED KINGDOM.

1:40 PM **54.** Shape-directed motion of homogeneous catalytic micromotors. **A. M. Brooks**[1], M. Tasinkevych[2], S. Sabrina[1], D. Velegol[1], K. J. Bishop[3], A. Sen[4]; [1]Chemical Engineering, The Pennsylvania State University, State College, PA, [2]Universidade de Lisboa, Lisboa, PORTUGAL, [3]Chemical Engineering, Columbia University, New York, NY, [4]Chemistry, The Pennsylvania State University, State College, PA.

2:00 PM **55.** Shape-directed dynamics of active colloids powered by contact charge electrophoresis. **Y. Dou**, K. J. M. Bishop; Chemical ENGINEERING, Columbia University, New York, NY.

2:20 PM **56.** Acoustically-Regulated Rheotaxis of Bimetallic Micromotors. **L. Ren**[1], D. Zhou[2], Z. Mao[1], P. Xu[3], T. J. Huang[4], T. E. Mallouk[3]; [1]Engineering of science and mechanics, Pennsylvania State University,

State college, PA, [2]School of Mechatronics Engineering, Harbin Institute of Technology, Harbin, CHINA, [3]Department of Chemistry, Pennsylvania State University, State college, PA, [4]Department of Mechanical Engineering and Material Science, Duke University, Durham, NC.

2:40 PM **57.** Rational design and dynamics of self-propelled colloidal bead chains: from rotators to flagella. **H. Vutukuri**; ETH, Zurich, SWITZERLAND.

Colloidal and Surface Forces

Monday, June 11, 2018, 1:20 PM - 3:00 PM
Location: Room 105

1:20 PM **58.** Morphogenesis of polycrystalline dendritic patterns from evaporation of a reactive nanofluid sessile drop. H. Wu, **W. H. Briscoe**; School of Chemistry, University of Bristol, Bristol, UNITED KINGDOM.

1:40 PM **59.** Shape dependence of particle-surface interactions in flow. **M. K. Shave**[1], A. Balciunaite[2], M. M. Santore[1]; [1]Polymer Science and Engineering, UMass Amherst, Amherst, MA, [2]Chemical Engineering, UMass Amherst, Amherst, MA.

2:00 PM **60.** Influence of cap weight on the motion of a Janus particle very near a wall. **A. Rashidi**, C. L. Wirth; Cleveland State University, Cleveland, OH.

2:20 PM **61.** Contactless particle-particle interactions in active microswimmers. **J. G. Gibbs**; Physics and Astronomy, Northern Arizona University, Flagstaff, AZ.

2:40 PM **62.** Colloidal transport by dynamic volume exclusion interaction. **M. Collins**, F. Mohajerani, S. Ghosh, D. Velegol, A. Sen; Chemistry, The Pennsylvania State University, State College, PA.

Connecting the Dots in Industry

Monday, June 11, 2018, 1:20 PM - 3:00 PM
Location: Room 206

1:20 PM **63. KEYNOTE.** How can formulation problems inspire fundamental colloid and interfacial science?. **R. Dagastine**; Department of Chemical Engineering, University of Melbourne, Melbourne, AUSTRALIA.

1:40 PM **64. KEYNOTE.** Ceramide nanoLiposomes: the road to the clinic. **M. Kester**; University of Virginia, Charlottesville, VA.

2:00 PM **65. KEYNOTE.** Colloid and Material Science Open Innovation for Cosmetics and Personal Care Industries. **S. Amin**[1,2], G. Luengo[3]; [1]Chemical Engineering, Manhattan College, Riverdale, NY, [2]Advanced Research, L'Oreal Research and Innovation, Clark, NJ, [3]Advanced Research, L'Oreal Research and Innovation, Aulnay sous Bois, FRANCE.

2:20 PM **66. KEYNOTE.** Make it disappear, the development of commercial scale self-assembled polymer pigment composites for paints with improved opacity, performance and reduced raw material demands. **J. Bohling**; The Dow Chemical Company, Collegeville, PA.

Directed Assembly of Molecules and Particles

Monday, June 11, 2018, 1:20 PM - 3:00 PM
Location: Room 208

1:20 PM **67.** 2D to 1D Morphology Transition in Self-Assembly of Hexagonally Packed VIral Colloidal Rods. **E. Grelet**, B. Sung; Centre de Recherche Paul-Pascal, CNRS & University of Bordeaux, Pessac, FRANCE.

1:40 PM **68.** Impact of molecular weight dispersity on crystalline morphology of gel-spun polyethylene fibers. **C. K. Henry**, G. Palmese, N. Alvarez; Drexel University, Philadelphia, PA.

2:00 PM **69.** Hierarchical self-assembly of a 3D mesocrystal from polydisperse anisometric plates. **A. Kim**, B. Luo, J. W. Smith, Z. Ou, Q. Chen; MatSE, University of Illinois Urbana-Champaign, Urbana, IL.

2:20 PM **70.** Measuring crystal nucleation and growth of DNA-grafted colloidal particles. **A. Hensley**, W. B. Rogers; Physics, Brandeis University, Waltham, MA.

2:40 PM **71.** Phononic properties of self-assembled nano-dicolloid crystal. **H. Kim**[1], E. M. Furst[1], G. Fytas[2]; [1]Chemical Engineering, University of Delaware,

Newark, DE, [2]Max Planck Institute for Polymer Research, Mainz, GERMANY.

Emulsions, Bubbles and Foams

Monday, June 11, 2018, 1:20 PM - 3:00 PM
Location: Room 107

1:20 PM **72.** Understanding mechanisms of spontaneous Pickering emulsions. **D. Neibloom**, M. Bevan, J. Frechette; Chemical and Biomolecular Engineering, The Johns Hopkins University, Baltimore, MD.

1:40 PM **73.** Ultrastable simple oil-in-oil and double oil-in-oil-in-oil Pickering emulsions. **A. T. Tyowua, Dr**[1], S. G. Yiase, Dr[1], B. P. Binks, Prof[2]; [1]Applied Colloid Science and Cosmeceutical Group, Department of Chemistry, Benue State University, Makurdi, Makurdi, NIGERIA, [2]School of Mathematics and Physical Science, University of Hull, HU6 7RX, UK, Hull, UNITED KINGDOM.

2:00 PM **74.** Surface and Interfacial Interactions in Dodecane/Brine Pickering Emulsions Stabilized by Combination of Cellulose Nanocrystals and Emulsion Stabilizers. **S. Parajuli**, C. Middleton, A. Rodrigues, E. Urena-Benavides; Chemical Engineering, University of Mississippi, University, MS.

2:20 PM **75.** Aqueous emulsion droplets as artificial mineralization vesicles (AMVs): Utilizing intercompartmentalphases to direct mineral synthesis. **A. Rowland**; The Pennsylvania State University, University Park, PA.

2:40 PM **76.** Stimuli-responsive Pickering emulsions stabilized by pH-sensitive peanut shaped particles. **T. G. Anjali**, M. G. Basavaraj; Chemical Engineering, Indian Institute of Technology Madras, Chennai, INDIA.

Environmental Systems

Monday, June 11, 2018, 1:20 PM - 3:00 PM
Location: Room 218

1:20 PM **77. KEYNOTE.** The interface controls the system. **S. L. Stipp**; Nano-Science Center, Department of

Chemistry, University of Copenhagen, DK-2100 Copenhagen OE, DENMARK.

2:00 PM **78.** Interaction of CO_2, CH_4 and H_2O at clay mineral surfaces. **L. Tribe**[1], R. Bennick[1], M. Kilmer[2]; [1]Division of Science, Penn State Berks, Wyomissing, PA, [2]Department of Civil and Environmental Engineering, Temple University, Philadelphia, PA.

2:20 PM **79.** Using Single Particle Mode ICP-MS for Analysis of Nanoparticles in Wastewater Effluents and Biosolids. **S. Ghoshal**, A. A. Rahim; Civil Engineering, McGill University, Montreal, QC, CANADA.

2:40 PM **80.** Heteroaggregation of oppositely charged particles in the presence of multivalent ions. **T. Cao**[1], T. Sugimoto[1,2], I. Szilagyi[1], G. Trefalt[1], M. Borkovec[1]; [1]Department of Inorganic and Analytical Chemistry, University of Geneva, Geneva, SWITZERLAND, [2]Faculty of Life and Environmental Sciences, University of Tsukuba, Tsukuba, JAPAN.

General Papers

Monday, June 11, 2018, 1:20 PM - 3:00 PM
Location: Room 204

1:20 PM **81. KEYNOTE.** Incorporation of Biological Functions into Polymer Materials: The Use of Protein-Polymer-Conjugates. **A. Boeker**, H. Charan, U. Glebe, S. Reinicke; Fraunhofer Institute for Applied Polymer Research IAP, Potsdam, GERMANY.

2:00 PM **82.** Engineering the Shape of Block Copolymer Particles. **J. Shin**[1], Y. Kim[2], K. Ku[1], G. Yi[3], B. J. Kim[1]; [1]Chemical and Biomolecular Engineering, KAIST, Daejeon, KOREA, REPUBLIC OF, [2]KAIST Institute for NanoCentury, KAIST, Daejeon, KOREA, REPUBLIC OF, [3]School of Chemical Engineering, Sungkyunkwan University, Suwon, KOREA, REPUBLIC OF.

2:20 PM **83.** Biosurfactant Solution Self-Assembly and Surface Adsorption Properties. **Y. Zhang**, P. Alexandridis, M. Tsianou; University at Buffalo, The State University of New York (SUNY), Buffalo, NY.

2:40 PM **84.** Steady-state and transient behavior of knotted polymers in extensional fields. **V. Narsimhan**[1], A.

R. Klotz[2], B. W. Soh[2], P. S. Doyle[2]; [1]Chemical Engineering, Purdue University, West Lafayette, IN, [2]Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA.

Molecules and Particles at Fluid Interfaces

Monday, June 11, 2018, 1:20 PM - 3:00 PM
Location: Room 205

1:20 PM **85.** Nanoparticle interactions with cell membrane models: The importance of lipid asymmetry. S. Nazemidashtarjandi, **A. M. Farnoud**; Chemical and Biomolecular Engineering, Ohio University, Athens, OH.

1:40 PM **86.** Magneto-capillary dynamics of amphiphilic Janus particles at curved liquid interfaces. **W. Fei**[1], M. M. Driscoll[2], P. M. Chaikin[2], K. J. Bishop[1]; [1]Chemical Engineering, Columbia University, New York, NY, [2]Physics, New York University, New York, NY.

2:00 PM **87.** The effect of bacterial secretion composition on the aggregation of particles at a liquid-liquid interface. **A. White**[1], M. Jalali-Mousavi[1], H. Bacosa[2], C. Xu[2], P. Santschi[2], A. Quigg[2], J. Sheng[1]; [1]Texas A&M Univ.-Corpus Christi, Corpus Christi, TX, [2]Texas A&M University at Galveston, Galveston, TX.

2:20 PM **88.** Molecules at the Polyelectrolyte Coacervate/Water Interface. **N. S. Zacharia**; Polymer Engineering, University of Akron, Akron, OH.

2:40 PM **89.** Measuring the scaling of interparticle interaction energies by drop tensiometry. **R. Mears**, C. MacPhee, J. Thijssen; University of Edinburgh, Edinburgh, UNITED KINGDOM.

Rheology

Monday, June 11, 2018, 1:20 PM - 3:00 PM
Location: Room 207

1:20 PM **90.** Thermal processing of colloidal gels: kinetics of quenching, coarsening and arrest. T. Nguyen[1], J. Kim[1], P. Padmanabhan[2], R. N. Zia[3], **M. E. Helgeson**[1]; [1]Department of Chemical Engineering, University of California Santa Barbara, Santa Barbara, CA, [2]School of Chemical & Biomolecular Engineering, Cornell University, Ithaca, NY,

[3]Department of Chemical Engineering, Stanford University, Stanford, CA.

1:40 PM **91.** Thermal Processing of Thermogelling Nanoemulsions as a Route to Tune Material Properties. **L. Cheng**, P. D. Godfrin, J. W. Swan, P. S. Doyle; MIT, Cambridge, MA.

2:00 PM **92.** Multiscale probing of colloidal gelation dynamics. **J. Cho**, I. Bischofberger; Mechanical Engineering, MIT, Cambridge, MA.

2:20 PM **93.** Dynamics and rheology of suspension of particles with arbitrary shapes. **M. Tan**[1], T. W. Walker[2]; [1]School of Chemical, Biological, and Environmental Engineering, Oregon State University, Corvallis, OR, [2]Chemical and Biological Engineering, South Dakota School of Mines and Technology, Rapid City, SD.

2:40 PM **94.** Colloidal Elasticity Arises from Packing of Locally Glassy Clusters. **J. Swan**[1], Z. Varga[1], K. Whitaker[2], L. Hsiao[3], M. Solomon[4], E. Furst[5]; [1]MIT, Cambridge, MA, [2]Dow Chemical Company, Midland, MI, [3]North Carolina State University, Raleigh, NC, [4]University of Michigan, Ann Arbor, MI, [5]University of Delaware, Newark, DE.

Wetting and Adhesion

Monday, June 11, 2018, 1:20 PM - 3:00 PM
Location: Room 106

1:20 PM **95.** Enhanced Condensation on Air Independent Rough Surfaces. G. Sirohia, Z. Guo, **X. Dai**; Mechanical Engineering, The University of Texas at Dallas, Richardson, TX.

1:40 PM **96.** Superhydrophobic and anti-icing coatings and nonwovens enabled by a new class of dendrimeric polymer particles. A. Williams, S. Roh, **O. D. Velev**; Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC.

2:00 PM **97.** Extreme icephobicity using passive de-icing materials. **R. Chatterjee**[1], D. Beysens[2], S. Anand[1]; [1]Mechanical and Industrial Engineering, University of Illinois at Chicago, Chicago, IL, [2]Physique et mécanique des milieux hétérogenes (PMMH), École Supérieure de Physique et de Chimie Industrielles (ESPCI), Paris, FRANCE.

2:20 PM **98.** Prediction of Wet Snow Accumulation and Adhesion on Inclined Cylindrical Surfaces. **B. Mohammadian**, M. Sarayloo, A. Abdelaal, A. Raiyan, D. K. Nims, H. Sojoudi; University of Toledo, Toledo, OH.

2:40 PM **99.** Explaining evaporation-triggered wetting transition using local force balance model and contact line fraction. R. ANNAVARAPU[1], S. Kim[2], M. Wang[2], A. Hart[2], K. Gleason[3], **H. Sojoudi**[1]; [1]MIME, The University of Toledo, TOLEDO, OH, [2]Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA, [3]Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA.

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Active and Adaptive Matter

Monday, June 11, 2018, 3:20 PM - 5:00 PM
Location: Room 104

3:20 PM **100.** Motion of patchy particle swimmers in the vicinity of a liquid/liquid interface. **Z. Jalilvand**, I. Kretzschmar; Chemical Engineering, City College of New York, New York, NY.

3:40 PM **101.** Microwheels on a microroad: enhanced translation on topographic surfaces. T. Yang, D. Marr, **N. Wu**; Colorado School of Mines, Golden, CO.

4:00 PM **102.** Active motion of LC-in-LC emulsions. **K. Nayani**, N. L. Abbott; Chemical and Biological Engineering, University of Wisconsin, Madison, Madison, WI.

4:20 PM **103.** Colloidal shuttles for programmable cargo delivery. **A. F. Demiroers**, A. R. Studart; ETH Zurich, Zurich, SWITZERLAND.

4:40 PM **104.** Cargo carrying bacteria at interfaces. **M. Molaei**[1], L. Vaccari[2], R. L. Leheny[3], K. J. Stebe[1]; [1]University of Pennsylvania, Philadelphia, PA, [2]Univeristy of Pennsylavania, Philadelphia, PA, [3]Johns Hopkins University, Baltimore, MD.

Colloidal and Surface Forces

Monday, June 11, 2018, 3:20 PM - 5:00 PM
Location: Room 105

3:20 PM **105.** Impact of polymer/surfactant complexation on the colloidal depletion force. **B. J. Lele**, R. D. Tilton; Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA.

3:40 PM **106.** kT-scale interactions and stability of colloids with adsorbed zwitterionic copolymers. **M. G. Petroff**[1], E. Garcia[1], M. Herrera-Alonso[2], M. A. Bevan[1]; [1]Chemical and Biomolecular Engineering, Johns Hopkins University, Baltimore, MD, [2]Materials Science and Engineering, Johns Hopkins University, Baltimore, MD.

4:00 PM **107.** Encoding van der Waals interactions with complex symmetries into colloids by using liquid crystallinity. **H. A. Fuster**, N. L. Abbott; Chemical and Biological Engineering, University of Wisconsin - Madison, Madison, WI.

4:20 PM **108.** Adhesion of explosive particles to textile swab surfaces. **H. P. Liddell**[1], M. H. Merrill[2]; [1]American Society for Engineering Education (ASEE-NRL), U.S. Naval Research Laboratory, Washington, DC, [2]Materials Science & Technology Division, Code 6354, U.S. Naval Research Laboratory, Washington, DC.

4:40 PM **109.** Young-Laplace/ Young-Dupre equilibrium: in the lifting of a microscale particle from liquid to air. **Z. Zhang**, B. Ayan, A. Povilianskas, I. Ozbolat, C. Drapaca; Engineering Science and Mechanics, PENN State University, State College, PA.

Connecting the Dots in Industry

Monday, June 11, 2018, 3:20 PM - 5:00 PM
Location: Room 206

3:20 PM **110. KEYNOTE.** Elucidating patents for the academic scientist. **T. Hodgdon**; PG Ventures, Procter & Gamble, Mason, OH.

4:00 PM **111.** Panel Q&A on Intellectual Property. **H. Jerri**; Firmenich, Plainsboro, NJ.

Directed Assembly of Molecules and Particles

Monday, June 11, 2018, 3:20 PM - 5:00 PM
Location: Room 208

3:20 PM **112.** Controlling anisotropic colloidal assembly. **I. Torres Diaz**, A. Mishra, M. A. Bevan; Johns Hopkins University, Baltimore, MD.

3:40 PM **113.** Two-step nucleation of colloidal clathrate crystal driven by entropy. **S. Lee**, M. Engel, S. Glotzer, 48109; University of Michigan, Ann Arbor, MI.

4:00 PM **114.** Colloidal assembly on reconfigurable electric field mediated energy landscapes. **J. Zhang**, J. Yang, Y. Zhang, M. Bevan; Chemical and Biomolecular Engineering, Johns Hopkins University, baltimore, MD.

4:20 PM **115.** Necessity of non-specific interactions for protein self-assembly. **J. Glaser**, V. Ramasubramani, S. Glotzer; Chemical Engineering, University of Michigan, Ann Arbor, MI.

4:40 PM **116.** Influence of Interaction Softness on Binary Superlattice Stability. **R. A. LaCour**, C. Adorf, S. Glotzer, 48109; Chemical Engineering, University Of Michigan, Ann Arbor, MI.

Emulsions, Bubbles and Foams

Monday, June 11, 2018, 3:20 PM - 5:00 PM
Location: Room 107

3:20 PM **117.** Controllable internal mixing in coalescing droplets induced by the solutal Marangoni convection of surfactants with distinct headgroup architectures. **J. J. Nash**[1], P. T. Spicer[2], K. A. Erk[1]; [1]School of Materials Engineering, Purdue University, West Lafayette, IN, [2]School of Chemical Engineering, The University of New South Wales, Sydney, AUSTRALIA.

3:40 PM **118.** Effect of Triblock Copolymer Surfactant Composition on Flow Induced Phase Inversion Emulsification in a Tapered Channel. **G. Duan**[1], S. Li[2], C. Cheng[2], D. Lee[1]; [1]Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA, [2]Toner Technology Area, Toner Development &

Manufacturing Group, Xerox Corporation, Webster, NY.

4:00 PM **119.** Mixing time, inversion and multiple emulsion formation in a limonene and water Pickering emulsion. **L. Sawiak**[1], K. Bailes[2], D. Harbottle[2], P. S. Clegg[1]; [1]School of Physics and Astronomy, University of Edinburgh, Edinburgh, UNITED KINGDOM, [2]School of Chemical and Process Engineering, University of Leeds, Leeds, UNITED KINGDOM.

4:20 PM **120.** Assessing equilibrium surfactant thermodynamics at elevated pressures. **Z. Hinton**, N. Alvarez; Chemical and Biological Engineering, Drexel University, Philadelphia, PA.

4:40 PM **121.** Synergism in energy and surfactant in the formation of w/o nanoemulsion. **H. Kumar**, V. Kumar; Chemical Engineering, Indian Institute of Technology Roorkee, Roorkee, INDIA.

Canceled

Environmental Systems

Monday, June 11, 2018, 3:20 PM - 5:00 PM
Location: Room 218

3:20 PM **122.** Fluorinated Surfactants: Micellization and Binding to Polymers in Aqueous Solutions. **S. Kancharla**[1], D. Bedrov[2], P. Alexandridis[1]; [1]University at Buffalo, The State University of New York (SUNY), Buffalo, NY, [2]University of Utah, Salt Lake City, UT.

3:40 PM **123.** The increased drag of a rising oil droplet induced by the attachment of extracellular polymeric streamers produced by bacteria. **A. White**, M. Jalali-Mousavi, J. Sheng; Texas A&M Univ.-Corpus Christi, Corpus Christi, TX.

4:00 PM **124.** Biophysical inhibition of pulmonary surfactant by metal nanoparticles. **Y. Yang**[1], L. Xu[1], S. Dekkers[2], F. R. Cassee[2,3], Y. Y. Zuo[1]; [1]University of Hawaii at Manoa, Honolulu, HI, [2]National Institute for Public Health and the Environment, Bilthoven, NETHERLANDS, [3]Utrecht University, Bilthoven, NETHERLANDS.

4:20 PM **125.** Design of Ecofriendly Surfactant Chemical Herders for Maritime Oil Spill Remediation. **H. ZHOU**; City College of New York, NEW YORK, NY.

4:40 PM **126.** Impact of UV-mediated TiO_2 photoreactivity on *Daphnia magna*. **J. Farner Budarz**, E. Mahé, N. Tufenkji; Chemical Engineering, McGill University, Montreal, QC, CANADA.

General Papers

Monday, June 11, 2018, 3:20 PM - 5:00 PM
Location: Room 204

3:20 PM **127.** Brownian Dynamics Simulations of Hydrodynamic Interactions Between Hydrophobic Brownian Colloids at a Air-Liquid Interface. A. Dani[1], **S. Das**[2], J. Koplik[3], P. Somasundaran[2], C. Maldarelli[1]; [1]Levich Institute and Department of Chemical Engineering, City University of New York, New York, NY, [2]Langmuir Center of Colloids and Interfaces, Columbia University, New York, NY, [3]Levich Institute and Department of Physics, City University of New York, New York, NY.

3:40 PM **128.** Industrial scale manufacturing of microfluidic based emulsions by massively parallelizing microfluidic droplet generators. **S. Yadavali**[1], H. Jeong[2], D. Lee[2], D. Issadore[1,2,3]; [1]Department of Bioengineering, University of Pennsylvania, Philadelphia, PA, [2]Department of Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA, [3]Department of Electrical and Systems Engineering, University of Pennsylvania, Philadelphia, PA.

4:00 PM **129.** Normal stress-based description of mixing dynamics in size segregated suspensions. **S. Pednekar**[1,2,3], J. Chun[3], J. Morris[1,2]; [1]Chemical Engineering, City College of New York, New York, NY, [2]Benjamin Levich Institute, New York, NY, [3]Pacific Northwest National Laboratory, Richland, WA.

4:20 PM **130.** Fluorocarbon Hydrocarbon Surfactant Mixtures in Fire-fighting Foam Formulations. **C. Hill**, J. Eastoe; University of Bristol, Bristol, UNITED KINGDOM.

4:40 PM **131.** The Science, Technology, and Art of Making Silicone Antifoams. **G. Wang**; Process Technology, Momentive Performance Materials, Friendly, WV.

Molecules and Particles at Fluid Interfaces

Monday, June 11, 2018, 3:20 PM - 5:00 PM
Location: Room 205

3:20 PM **132.** Towards realistic large area cell membrane mimics: Excluding oil, controlling composition and including ion channels. **P. J. Beltramo**[1], L. Scheidegger[2], J. Vermant[2]; [1]Chemical Engineering, University of Massachusetts Amherst, Amherst, MA, [2]ETH Zurich, Zurich, SWITZERLAND.

3:40 PM **133.** pH-modulated self-assembly of colloidal nanoparticles in a dual-droplet inkjet printing process. **K. N. Al-Milaji**, H. Zhao; Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA.

4:00 PM **134.** Bicontinuous biphasic emulsion gels for reactive separation. **G. Di Vitantonio**; chemical and biomolecular engineering, University of Pennsylvania, philadelphia, PA.

4:20 PM **135.** Using the Assembly of 2D Particles at Fluid-Fluid Interfaces to Architect Composite Materials. **E. Pentzer**, P. Wei, Q. Luo, K. Edgehouse; Case Western Reserve university, Cleveladn, OH.

4:40 PM **136.** Directed assembly of cuboidal particles through shape induced interface deformations. **T. G. Anjali**, M. G. Basavaraj; Chemical Engineering, Indian Institute of Technology Madras, Chennai, INDIA.

Rheology

Monday, June 11, 2018, 3:20 PM - 5:00 PM
Location: Room 207

3:20 PM **137.** Pinch-off Dynamics, Extensional Rheology and Printability of Polyelectrolyte Solutions. **V. Sharma**, L. N. Jimenez, J. Dinic; Chemical Engineering, University of Illinois at Chicago, Chicago, IL.

3:40 PM **138.** Dynamics, rheology, and breakup of droplets with interfacial viscosity. **V. Narsimhan**; Chemical Engineering, Purdue University, West Lafayette, IN.

4:00 PM **139.** Predicting nonlinear shear rheology of soft interfaces. **A. Raghunandan**[1], P. T. Underhill[2], J. M. Lopez[3], A. H. Hirsa[1,2]; [1]Mechanical Engr., Rensselaer Polytechnic Institute, Troy, NY,

[2]Chemical Engr., Rensselaer Polytechnic Institute, Troy, NY, [3]Mathematics, Arizona State University, Tempe, AZ.

4:20 PM **140.** Curvature effects on the lung surfactant monolayer. **S. Barman**, J. Zasadzinski; Chemical Engineering and Material Science, University of Minnesota-Twin Cities, MINNEAPOLIS, MN.

4:40 PM **141.** Effects of finite surface shear viscosity in spherical systems. **S. Gulati**[1], F. P. Riley[2], A. H. Hirsa[1,3], J. M. Lopez[4]; [1]Mechanical Engr., Rensselaer Polytechnic Institute, Troy, NY, [2]Mathematics, Rensselaer Polytechnic Institute, Troy, NY, [3]Chemical Engr., Rensselaer Polytechnic Institute, Troy, NY, [4]Mathematics, Arizona State University, Tempe, AZ.

Wetting and Adhesion

Monday, June 11, 2018, 3:20 PM - 5:00 PM
Location: Room 106

3:20 PM **142.** Spontaneous Draining of Liquids from Vertically-oriented Tubes. **C. Extrand**; Technology Development, CPC, St. Paul, MN.

3:40 PM **143.** Probing the wetting behavior of polymers under nanoconfinement. **D. Ring**; Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA.

4:00 PM **144.** Spontaneous rise of rivulets in square capillaries. V. Thammanna Gurumurthy[1], D. Rettenmaier[1], I. V. Roisman[1], C. Tropea[1], **S. Garoff**[2]; [1]Institute of Fluid Mechanics and Aerodynamics, Technische Universität Darmstadt, Darmstadt, GERMANY, [2]Carnegie Mellon Univerity, Pittsburgh, PA.

4:20 PM **145. KEYNOTE.** Applications of Kramers Theory for Wetting and Adhesion. **C. E. Colosqui**[1], D. Nandyala[2]; [1]Mechanical Engineering, Applied Mathematics & Statistics, Stony Brook University, Stony Brook, NY, [2]Mechanical Engineering, Stony Brook University, Stony Brook, NY.

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General Posters

Monday, June 11, 2018, 5:30 PM - 7:30 PM
Location: Presidents Hall

146. Drainage of Liquid from a Small Circular Hole in a Vertical Wall. **C. Extrand**; Technology Development, CPC, St. Paul, MN.

147. Dynamics of active particles near a curved wall: Guided and trapped locomotions. **P. G. Diaz-Hyland**[1], U. M. Cordova-Figueroa[1], N. Sharifi-Mood[2]; [1]Department of Chemical Engineering, University of Puerto Rico-Mayaguez, Mayaguez, PR, [2]Siemens PLM Software, Bellevue, WA.

149. Synthesis and characterization of core-shell metal-organic framework particles. **A. Fujiwara**, S. Watanabe, M. Miyahara; Department of Chemical Engineering, Kyoto University, Kyoto city, JAPAN.

150. On the role of nanoparticles in binary convective self-assembly. **N. Arai**, S. Watanabe, M. T. Miyahara; Chemical Engineering, Kyoto University, Kyoto, JAPAN.

151. Combining the power of Asymmetric Flow - Field Flow Fractionation and Charged Aerosol Detectors to characterize liposomal formulations of pharmaceutical products. **D. Van Haute**; US FDA, Jefferson, AR.

152. Application of particle deposition concepts to chemical-mechanical planarization slurries. **D. Mosley**[1], Y. Guo[2], N. K. Penta[2], R. Auger[2]; [1]Dow Electronic Materials, Collegeville, PA, [2]Dow Electronic Materials, Newark, DE.

153. Effective viscosity of a dilute emulsion of drops containing soluble surfactant. **R. Sengupta**, L. M. Walker, A. S. Khair; Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA.

154. Self-propelled droplets. **M. Vasei**; R&D, Avmor, Laval, QC, CANADA.

155. Thermodynamics of surface phase transitions. **L. Xu**, Y. Y. Zuo; University of Hawaii at Manoa, Honolulu, HI.

156. Biophysical assessment of pulmonary surfactant predicts the lung toxicity of nanomaterials. **Y. Yang**[1], S. Liu[2], Y. Zuo[1]; [1]University of Hawaii at Manoa, Honolulu, HI, [2]Chinese Academy of Sciences, Beijing, CHINA.

157. Pickering emulsions stabilized by the hetero-aggregation of mixture of oppositely charged hematite ellipsoids and spherical silica nanoparticles. **U. Siliveru**, E. Mani, B. Madivala Gurappa; Chemical Engineering, Indian Institute of Technology Madras, Chennai, INDIA.

158. Natural product gel of liquidambaric acid : Gelation behaviors, driving dorce, and self-healing ability. **K. Zhi**; school of Chemistry and Chemical Engineering, Harbin Institute of Technology, Harbin, CHINA.

159. Self-assembled particles nanocomplexes comprising Ursolic Acid and Paclitaxel for alleviateside effectsofchemotherapy and combination chemotherapy in cancer. **J. Wang**; School of Chemistry and Chemical Engineering, Harbin Institute of Technology, Harbin, CHINA.

160. Enzyme encapsulation in porous silica nanoparticles to eliminate immune response and extend functional half-life. **A. Yang**, P. Huang, R. F. Mattrey, J. Lux; Radiology, UT Southwestern Medical Center, Dallas, TX.

161. CO_2 conversion to hierarchical porous carbons for electrochemical energy storage. Y. Kim, **J. Park**, J. Lee; Department of Chemical and Biomolecular Engineering, KAIST, Daejeon, KOREA, REPUBLIC OF.

162. Synthesis and characterization of silica colloidal crystals and germanium metalattices. **P. Mahale**[1], H. Cheng[1], A. Grede[2], P. Moradifar[3], B. Lee[4], N. Alem[3], N. C. Giebink[2], J. V. Badding[5], T. E. Mallouk[6]; [1]Chemistry, The Pennsylvania State University, State college, PA, [2]Electrical Engineering, The Pennsylvania State University, State college, PA, [3]Materials Science and Engineering & Materials Research Institute, The Pennsylvania State University, State college, PA, [4]X-Ray Science Division, Advanced Photon Source, Argonne National Laboratory, Lemont, IL, [5]Chemistry, Physics and Materials Science and Engineering, The Pennsylvania State University, State college, PA, [6]Chemistry, Physics and Biochemistry and Molecular Biology, The Pennsylvania State University, State college, PA.

163. Iridescent cellulose nanocrystal films with tunable reflection wavelength for colorimetric sensors. **H. YANG**[1], S. Choi[1], J. Kim[2]; [1]Bionano Technology, HANYANG UNIVERSITY, Seoul, KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF, [2]Chemical and Molecular Engineering, HANYANG UNIVERSITY, Seoul, KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF.

164. 4-Mercaptophenylboronic acid-conjugated conductive colloidal microparticles for a high-performance glucose sensor. **S. Choi**, H. Yang, J. Kim; Hanyang University, Seoul, KOREA, REPUBLIC OF.

165. Characterization of Thermo-Responsive Polymer-Liquid Crystal Nonwovens. **S. L. Levit**[1], R. Stwodah[1], M. Gillard[1], K. Swana[2], C. Tang[1]; [1]Chemical and Life Science Engineering, Virginia Commonwealth University, Richmond, VA, [2]Natick

Soldier Research, Development & Engineering Center, Natick, MA.

166. Encapsulation of Weakly Hydrophobic Drugs into pH-Responsive Nanoparticles. **S. L. Levit**, C. Tang; Chemical and Life Science Engineering, Virginia Commonwealth University, Richmond, VA.

167. Swelling of pH-responsive weak polyelectrolyte brush grafted nanoparticles with varying brush characteristics. **D. Iqbal**[1], J. Yan[2], K. Matyjaszewski[2], R. Tilton[1]; [1]Department of Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA, [2]Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA.

168. Oils in water: Distinguishing multicomponent emulsion mixtures with holographic video microscopy. F. C. Cheong, P. Kasimbeg, J. M. Blusewicz, **L. A. Philips**; Spheryx, Inc., Spheryx, Inc., New York, NY.

169. Active colloids swimming in free solution vs. under strong confinement: a case study with Janus microswimmers undergoing induced charge electrophoresis (ICEP). L. Zhang[1], S. Granick[2], **W. Wang**[1]; [1]School of Materials Science and Engineering, Harbin Institute of Technology (Shenzhen), Shenzhen, CHINA, [2]Center for Soft and Living Matter, Institute of Basic Science, Ulsan, KOREA, REPUBLIC OF.

170. Active propulsion of particles with engineered structure, powered by AC electric fields. **K. Han**[1], C. W. Shields IV[2], F. Ma[3], G. Yossifon[4], T. Miloh[5], O. D. Velev[1]; [1]Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC, [2]Wyss Institute for Biologically Inspired Engineering, Harvard University, Cambridge, MA, [3]Energy Storage and Distributed Resources, Lawrence Berkeley National Laboratory, Berkeley, CA, [4]Mechanical Engineering, Technion – Israel Institute of Technology, Haifa, ISRAEL, [5]Mechanical Engineering, Tel Aviv University, Ramat Aviv, ISRAEL.

171. The curious case of misbehaving sedimenting colloidal sheets. R. Dong[1], **W. Wang**[2], S. Granick[1]; [1]Center for Soft and Living Matter, Institute of Basic Science, Ulsan, KOREA, REPUBLIC OF, [2]School of Materials Science and Engineering, Harbin Institute of Technology (Shenzhen), Shenzhen, CHINA.

172. Controlling disorder by electric field directed reconfiguration of nanowires to tune random lasing. **J. R. Miller**[1], P. P. Donahue[1], C. Zhang[2], N. Nye[3], C. Wang[2], R. Tang[2], D. Christodoulides[3], C. D. Keating[1], Z. Liu[2,4]; [1]Chemistry, Pennsylvania State University, University Park, PA, [2]Electrical Engineering, Pennsylvania State University,

University Park, PA, [3]CREOL, The College of Optics and Photonics, University of Central Florida, Orlando, FL, [4]Materials Research Institute, Pennsylvania State University, University Park, PA.

173. Signatures of physical aging in Carbopol microgel. **M. Agarwal**, Y. M. Joshi; Department of Chemical Engineering, IIT Kanpur, KANPUR, INDIA.

174. "Formulation Engineering": a new Chemical Engineering course in the Carnegie Mellon Colloids, Polymers and Surfaces Program. **R. D. Tilton**; Department of Chemical Engineering and Department of Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA.

175. Programmable self-assembly and suspension rheology in light-responsive colloidal systems. **S. Pradeep**, A. Kramer, L. C. Hsiao; Chemical & Biomolecular Engineering, North Carolina State University, Raleigh, NC.

176. Scale-up of Moringa coated sand filters to remove bacteria from wastewater. **H. Wang**[1], A. Pei[1], R. Dickey[1], L. Samineni[1], B. Xiong[2], D. Velegol[1], M. Kumar[1], S. Velegol[1]; [1]Department of Chemical Engineering, The Pennsylvania State University, State College, PA, [2]Department of Civil and Environmental Engineering, The Pennsylvania State University, State College, PA.

177. Directed self assembly of composite metal-dielectric particles. **N. Famularo**[1], S. Boehm[1], X. Guo[2], C. Keating[1], T. Mayer[2]; [1]Chemistry, Penn State University, University Park, PA, [2]Electrical Engineering, Penn State University, University Park, PA.

178. Microrheological characterization of covalent adaptable hydrogels during pH dependent degradation. **N. WU**, K. M. Schultz; Chemical and Biomolecular Engineering, Lehigh Univeristy, Bethlehem, PA.

179. Coacervation-based experimental model systems for intracellular organization. **A. Marianelli**[1], B. Miller[1], M. Sherman[2], C. Keating[1]; [1]Chemistry, Pennsylvania State University, University Park, PA, [2]Biochemistry and Molecular Biology, Pennsylvania State University, University Park, PA.

180. Spontaneous emulsification with surface active star polymers. **Y. Huang**[1], R. D. Tilton[2]; [1]Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA, [2]Chemical Engineering and Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA.

181. Viscosity of Water-Soluble Polymers in Brines. **E. M. Nsengiyumva**, C. Lubongo, M. T. Kawy, M. Tsianou, P.

Alexandridis; University at Buffalo, The State University of New York (SUNY), Buffalo, NY.

182. Reorganization of colloidal crystals via electric fields for controlled optical properties. **A. K. Hendrickson-Stives**, C. Keating; Chemistry, The Pennsylvania State University, University Park, PA.

183. Aqueous Benzyl Alcohol Oxidation using Polymer Nanoreactors. **A. Harrison**[1], M. Nguyen[2], T. Vuong[1], C. Tang[1]; [1]Chemical and Life Sciences Engineering, Virginia Commonwealth University, Richmond, VA, [2]Chemistry, Virginia Commonwealth University, Richmond, VA.

184. Development of dendrimeric polymer particles for biomedical membrane applications. **H. Gadhia**[1], A. Williams[1], S. Roh[1], T. Nelson[2], O. D. Velev[1]; [1]Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC, [2]Air Force Research Laboratory, Wright-Patterson Air Force Base, OH.

185. Liquid-liquid phase separation systems for prebiotic compartmentalization. **S. Choi**, C. D. Keating; Department of Chemistry, Pennsylvania State University, State College, PA.

186. Solutal Marangoni spreading in the presence of pre-deposited insoluble surfactant monolayers. **M. Sauleda**; Carnegie Mellon University, Pittsburgh, PA.

187. Effect of dispersants on adhesion of bacteria on oil/water interfaces. **N. K. Dewangan**; ChBE, University of Houston, Houston, TX.

188. Patchy Interactions and Ordering in Concentrated Suspensions. **S. Razavi**[1], J. Glaser[2], S. Glotzer[2], M. Solomon[2]; [1]University of Oklahoma, Norman, OK, [2]University of Michigan, Ann Arbor, MI.

189. Active colloidal motion by two different propulsion mechanisms studied at high particle concentrations. **K. T. Saud**, M. J. Solomon; University of Michigan, Ann Arbor, MI.

190. Interactions between Nonionic Amphiphilic Polymer and Ionic Surfactant in Aqueous Solution. **S. Kancharla**, N. A. Zoyhofski, L. Bufalini, E. Canales, M. Tsianou, P. Alexandridis; University at Buffalo, The State University of New York (SUNY), Buffalo, NY.

191. Quantification & characterization of iron-bearing colloids in abandoned mine drainage. **N. Fretz**[1], E. K. Herman[2], M. M. McGuire[1]; [1]Department of Chemistry, Bucknell University, Lewisburg, PA, [2]Department of Geology, Bucknell University, Lewisburg, PA.

192. Direct and local measure of patchy particle cap thickness. **A. Rashidi**[1], S. Razavi[2], A. Avishai[3], C. L. Wirth[1]; [1]Cleveland State University, Cleveland, OH, [2]University of Oklahoma, Norman, OK, [3]Swagelok Center of Surface Analysis and Microscopy, CWRU, Cleveland, OH.

193. Role of organic carbon in abandoned mine drainage colloids. **K. N. Ambruso**[1], E. K. Herman[2], M. M. McGuire[1]; [1]Chemistry, Bucknell University, Lewisburg, PA, [2]Geology, Bucknell University, Lewisburg, PA.

194. Reversible deposition of responsive colloids. **T. A. Prileszky**, E. M. Furst; Chemical and Biomolecular Engineering, University of Delaware, Newark, DE.

195. Thermal stability of Pickering emulsions stabilized by a mixture of oppositely charged particle and polyelectrolyte. **S. SHAHID**; Chemical Engineering Department, Indian Institute of Technology Madras, Chennai, INDIA.

196. Dynamics of Filamentous Phage in Polymer Solutions. **M. W. Smith**, R. Poling-Skutvik, R. Willson, J. Conrad; Chemical Engineering, University of Houston, HOUSTON, TX.

197. Microfluidic droplet-based tool to determine phase transitions in aqueous systems with high composition resolution. **D. Yang**, B. J. Bleier, S. L. Anna, L. M. Walker; Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA.

198. Pinch-off dynamics, printability and dripping-onto-substrate (DoS) rheometry of complex fluids. **J. Dinic**, L. N. Jimenez, V. Sharma; Univ of Illinois - Chicago, Univ of Illinois - Chicago, Chicago, IL.

199. Nanoparticle Synthesis *via* Bubbling Vapor Precursors in Bulk Liquids. **D. Kang**, S. Anand; Department of Mechanical&Industrial Engieering, University of Illinois at Chicago, Chicago, IL.

200. Morphogenic inspired assembly using particle-stabilized emulsions. **D. Shin**, J. Frechette; Johns Hopkins University, Baltimore, MD.

201. Directed assembly and reconfiguration of high-energy colloidal structures. **J. Lee**; Chemical Engineering, Louisiana State University, Baton Rouge, LA.

202. kT-scale interactions and colloidal stability between zwitterionic polymer coatings and biomaterials. **M. G. Petroff**[1], E. Garcia[1], J. Jumai'an[1], M. Herrera-Alonso[2], M. A. Bevan[1]; [1]Chemical and Biomolecular Engineering, Johns Hopkins University, Baltimore, MD, [2]Materials Science and Engineering, Johns Hopkins University, Baltimore, MD.

203. Antibacterial nanocrystalline cellulose using natural antibacterial agents for wound dressing applications. **M. Tavakolian**, M. Okshevsky, T. van de Ven, N. Tufenkji; McGill University, Montreal, QC, CANADA.

204. Self-assembly/disassembly of giant double-hydrophilic polymersomes at biologically-relevant pHs. **S. Shin**[1], P. McAninch[1], I. Henderson[2], A. Gomez[3], A. Greene[1], E. Carnes[4], W. Paxton[1]; [1]Center for Integrated Nanotechnologies, Sandia National Laboratories, Albuquerque, NM, [2]Omphalos Bioscience LLC, Albuquerque, NM, [3]Nano and Micro Sensors, Sandia National Laboratories, Albuquerque, NM, [4]Office of Research and Economic Development, University of Nebraske-Lincoln, Lincoln, NE.

205. Janus particles with varying amphiphilicity for hierarchical Pickering emulsions. **Y. Lan**, K. J. Stebe, D. Lee; Department of Chemical & Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA.

206. Continuous roll-to-roll manufacturing of surface wrinkles. **X. A. Zhang**, K. Stebe, S. Yang, D. Lee; Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA.

207. Impact of dispersion stability on asphaltenes in bulk and at oil-water interfaces. **J. Ma**, L. Walker; Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA.

208. Lyotropic liquid crystalline phases of a phytosterol ethoxylate in amide solvents. **X. Yue**[1,2], X. Chen[1], Q. Li[1], Z. Li[3]; [1]Key Laboratory of Colloid and Interface Chemistry, Shandong University, Jinan, CHINA, [2]The Xinjiang Technical Institute of Physics & Chemistry, CAS, Urumqi, CHINA, [3]Institute of High Energy Physics, CAS, Beijing, CHINA.

209. Connecting Structure and Rheology of Therapeutic Protein-Surfactant Complexes at the Air-Water Interface. **Y. S. Tein**[1], M. Zhang[1,2], Y. Liu[1,2], A. M. Woys[3], I. E. Zarraga[3], N. J. Wagner[1]; [1]Chemical and Biomolecular Engineering, University of Delaware, Newark, DE, [2]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, [3]Department of Late Stage Pharmaceutical Development, Genentech Inc, San Francisco, CA.

210. Probing the electronic structure of small metal nanoparticles using Conduction Electron Spin Resonance. **S. S. Cruz**, A. Silakov, B. J. Lear; Chemistry, Pennsylvania State University, State College, PA.

211. Off flavor compound adsorption study of mucilage based beads. **T. Peng**, N. Alcantar, D. Stebbins; Chemical Engineering, University of South Florida, Tampa, FL.

212. Two-step nucleation of colloidal clathrate crystal driven by entropy. **S. Lee**, M. Engel, S. Glotzer, 48109; University of Michigan, Ann Arbor, MI.

213. Rheology of Colloidal Fumed Silica Nanoparticle Dispersions under High Shear. **E. Fakhrabadi**; University of Toledo, University Park, PA.

214. Surface-grafted mixed polymer brushes. **M. Li**; Penn State University, University Park, PA.

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Plenary Lecture 2

Tuesday, June 12, 2018, 8:30 AM - 9:30 AM
Location: Presidents Hall

8:30 **215.** The colloidal glass transition, engineering entropic bonds, and inverse design of colloidal crystals. **S. Glotzer**; University of Michigan, Ann Arbor, MI.

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Active and Adaptive Matter

Tuesday, June 12, 2018, 10:00 AM - 12:00 PM
Location: Room 104

10:00 **216. KEYNOTE.** Convective self-sustained motion in mixtures of chemically active and passive particles. O. Shklyaev, H. Shum, V. V. Yashin, **A. C. Balazs**; Chemical Engineering, University of Pittsburgh, Pittsburgh, PA.

10:40 **217.** Aggregation and fragmentation of active superparamagnetic colloidal chains. **U. M. Córdova-Figueroa**[1], R. DeLaCruz-Araujo[1], L. Rivera-Rivera[2]; [1]Department of Chemical Engineering, University of Puerto Rico - Mayaguez, Mayaguez, PR, [2]Department of Chemical Engineering, University of Michigan, Ann Harbor, MI.

11:00 **218.** Emergence of traveling waves in linear arrays of electromechanical actuators. **S. Pandey**[1], Y. Dou[1], C. Cartier[2], O. Miller[2], K. Bishop[1]; [1]Columbia

university, New York, NY, [2]PennState, State college, PA.

11:20 **219.** Out-of-equilibrium self-assembly of mutually polarizable nanoparticle suspensions in toggled external fields. **Z. Sherman**, J. Swan; Chemical Engineering, MIT, Cambridge, MA.

11:40 **220.** Active atoms and interstitials in two-dimensional colloidal crystals. **K. Dietrich**[1], G. Volpe[2], M. Sulaiman[3], D. Renggli[1], I. Buttinoni[3], L. Isa[1]; [1]Department of Materials, ETH Zürich, Zürich, SWITZERLAND, [2]University of Gothenburg, Göteborg, SWEDEN, [3]University of Oxford, Oxford, UNITED KINGDOM.

Colloidal and Surface Forces

Tuesday, June 12, 2018, 10:00 AM - 12:00 PM
Location: Room 105

10:00 **221. KEYNOTE.** Interaction forces and nanotribology of surfaces modified with bioinspired polymer coatings. **M. Ruths**; Department of Chemistry, University of Massachusetts Lowell, Lowell, MA.

10:40 **222.** Evaluation of the cactus based-mucilage as an alternative natural dispersant to be incorporated in oil spill response strategies. **F. Guo**[1], S. Thomas[2], R. Toomey[1], N. Alcantar[1]; [1]Department of Chemical & Biomedical Engineering, University of South Florida, Tampa, FL, [2]Department of Electrical Engineering, University of South Florida, Tampa, FL.

11:00 **223.** Mechanics at the nanoscale: Local stress calculations of biomolecular interfaces. **J. M. Vanegas**[1], C. Winkeljohn[1], A. Torres-Sanchez[2], M. Arroyo[2]; [1]Physics, University of Vermont, Burlington, VT, [2]Universitat Politècnica de Catalunya-BarcelonaTech, Barcelona, SPAIN.

11:20 **224.** Wettability alteration of oil-wet carbonate minerals using low salinity-nonionic surfactant: A mechanistic study. **M. Souayeh**[1], R. S. Al-Maamari[1], M. Aoudia[1], M. Karimi[1], M. Hadji[2]; [1]Sultan Qaboos University, Muscat, OMAN, [2]Sonatrach, Algiers, ALGERIA.

Connecting the Dots in Industry

Tuesday, June 12, 2018, 10:00 AM - 12:00 PM
Location: Room 206

10:00 **225. KEYNOTE.** Connecting the Dots – Examples from Past and Present. **M. Alger**; Penn State University, University Park, PA.

10:40 **226. KEYNOTE.** Microfluidic particle factories: A tale of 2 startups spun out of the lab. **P. S. Doyle**; Chemical Engineering, MIT, Cambridge, MA.

11:20 **227. KEYNOTE.** From the spare bedroom to the board room: Growing a service company from the ground up. **G. Braithwaite**; Cambridge Polymer Group, Inc., Cambridge, MA.

11:40 **228. KEYNOTE.** To be determined. **J. Adair**; Penn State University, University Park, PA.

Directed Assembly of Molecules and Particles

Tuesday, June 12, 2018, 10:00 AM - 12:00 PM
Location: Room 208

10:00 **229. KEYNOTE.** Alkanes + Cavitands: Some-Assembly Required. **H. Ashbaugh**; Chemical and Biomolecular Engineering, Tulane University, New Orleans, LA.

10:40 **230.** Non-equilibrium close-packed block copolymer micelles. **S. Lee**, L. Chen; Rensselaer Polytechnic Institute, Troy, NY.

11:00 **231.** Nanoscale self-assembly of organic molecules using noncovalent monolayers on 2D materials as polyfunctional templates. **S. Claridge**; Chemistry, Purdue University, West Lafayette, IN.

11:20 **232.** Self-Assembly of Alkyl Polyethylene Glycol Ether Surfactants in Aqueous Solutions: Effect of Linker between Alkyl and Ethoxylate. **A. M. Bodratti**, J. Cheng, M. R. Chow, S. M. Kong, M. Tsianou, P. Alexandridis; University at Buffalo, The State University of New York (SUNY), Buffalo, NY.

11:40 **233.** Ionic liquid mediated self-aggregation of cationic gemini surfactant in solution. S. Mondal[1], **A. Pan**[1], A. Patra[2], R. K. Mitra[2], S. Ghosh[1]; [1]Department of Chemistry, Jadavpur University, KOLKATA, INDIA, [2]Department of Chemical, Biological & Macromolecular Sciences, S. N. Bose

National Centre for Basic Sciences, KOLKATA, INDIA.

Emulsions, Bubbles and Foams

Tuesday, June 12, 2018, 10:00 AM - 12:00 PM
Location: Room 107

10:00 **234. KEYNOTE.** Phase-change emulsions for use in photo-acoustic imaging and therapy. D. Li[1], Y. Lee[1], M. O'Donnell[2], **L. D. Pozzo**[1]; [1]Chemical Engineering, University of Washington, Seattle, WA, [2]Bioengineering, University of Washington, Seattle, WA.

10:40 **235.** Microbubble-generating hydrophobic porous nanoparticles as robust ultrasound contrast agents. **N. T. Blum**; Chemical and Biological Engineering, University of Colorado at Boulder, Boulder, CO.

11:00 **236.** Voltage-Sensitive Ultrasound Enhancing Agent: In Vivo and In Vitro Analysis. **M. Cimorelli**[1], B. Andrien[1], K. Barrett[1], B. Angel[2], A. Fafarman[1], A. Kohut[3], S. Wrenn[1]; [1]Chemical and Biological Engineering, Drexel University, Philadelphia, PA, [2]Cardiology, Drexel University, Philadelphia, PA, [3]Cardiology, University of Pennsylvania, Philadelphia, PA.

11:20 **237.** Thrombin-activatable nano- and microbubbles as potential ultrasound contrast agents for the detection of acute thrombosis. **J. Lux**, A. M. Armstrong, C. de Gracia Lux, W. Grozinger, R. F. Mattrey; Radiology, UT Southwestern Medical Center, Dallas, TX.

11:40 **238.** Effect of Temperature on Microbubble Elasticity. **M. Borden**, J. Lum, T. Murray; Mechanical Engineering, University of Colorado, Boulder, CO.

General Papers

Tuesday, June 12, 2018, 10:00 AM - 12:00 PM
Location: Room 204

10:00 **239. KEYNOTE.** Interaction of Proteins with Polyelectrolytes. **M. Ballauff**[1,2]; [1]Soft Matter and Functional Materials, Helmholtz-Zentrum Berlin, Berlin, GERMANY, [2]Dept. Physics, Humboldt University, Berlin, GERMANY.

10:40 **240.** Role of Anions in Adsorbate-induced Anchoring Transitions of Liquid Crystals on Surfaces with Discrete Cation Binding Sites. **N. Bao**[1], T. Szilvási[1], H. Yu[1], R. J. Twieg[2], M. Mavrikakis[1], N. L. Abbott[1]; [1]Department of Chemical and Biological Engineering, University of Wisconsin-Madison, Madison, WI, [2]Department of Chemistry and Biochemistry, Kent State University, Kent, OH.

11:00 **241.** Computational Design of New Classes of Chemoresponsive Liquid Crystalline Systems. **T. Szilvasi**[1], N. Bao[1], K. Nayani[1], H. Yu[1], P. Rai[2], R. J. Twieg[2], N. L. Abbott[1], M. Mavrikakis[1]; [1]University of Wisconsin-Madison, Madison, WI, [2]Kent State University, Kent, OH.

11:20 **242.** Electrostatically induced reorientation of cytochrome *c* on silica nanoparticles. J. Meissner[1], Y. Wu[2], W. A. Shelton[2], G. H. Findenegg[1], **B. Bharti**[2]; [1]Physical Chemistry, Technical University, Berlin, GERMANY, [2]Cain Department of Chemical Engineering, Louisiana State University, Baton Rouge, LA.

11:40 **243.** Structure-property relationships of catechol substituents as a tool for customizing coating formation. **A. Korpusik**, P. Burch, P. B. Messersmith; University of California, Berkeley, CA.

Molecules and Particles at Fluid Interfaces

Tuesday, June 12, 2018, 10:00 AM - 12:00 PM
Location: Room 205

10:00 **244. KEYNOTE.** Deciphering the structure of peripheral membrane-bound proteins and their sensitivity to the membrane context for binding. **K. C. Lee**; Chemistry, The University of Chicago, Chicago, IL.

10:40 **245.** Repelling and ordering: How polymers affect protein adsorption . **G. Gonella**; Max Planck Institute for Polymer Research, Mainz, GERMANY.

11:00 **246.** The static and dynamic properties of dipeptide hydrogels on interfaces. **F. Aviño**[1], A. B. Matheson[1], D. J. Adams[2], C. Mounteux[3], P. S. Clegg[1]; [1]Physics and Astronomy, The University of Edinburgh, Edinburgh, UNITED KINGDOM, [2]Chemestry, The University of Glasgow, Glasgow,

UNITED KINGDOM, [3]PPMD, ESPCI, Paris, FRANCE.

11:20 **247.** Connecting Structure and Rheology of Therapeutic Protein-Surfactant Complexes at the Air-Water Interface. **Y. S. Tein**[1], M. Zhang[1,2], Y. Liu[1,2], A. M. Woys[3], I. E. Zarraga[3], N. J. Wagner[1]; [1]Chemical and Biomolecular Engineering, University of Delaware, Newark, DE, [2]Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, [3]Department of Late Stage Pharmaceutical Development, Genentech Inc, San Francisco, CA.

11:40 **248.** Melting of the dipalmitoylphosphatidylcholine monolayer. **L. Xu**, Y. Y. Zuo; University of Hawaii at Manoa, Honolulu, HI.

Rheology

Tuesday, June 12, 2018, 10:00 AM - 12:00 PM
Location: Room 207

10:00 **249. KEYNOTE.** The curious dynamics and thermodynamics of soft particle glasses. **R. T. Bonnecaze**; Department of Chemical Engineering, The University of Texas at Austin, Austin, TX.

10:40 **250.** Roughness-dependent tribology effects on discontinuous shear thickening. **C. Hsu**, S. N. Ramakrishna, M. Zanini, N. D. Spencer, L. Isa; Department of Materials, ETH Zurich, Zurich, SWITZERLAND.

11:00 **251.** Rheology of non-Brownian particles suspended in a shear thickening matrix. **Y. Madraki**[1], G. Ovarlez[2], S. Hormozi[1]; [1]Mechanical Engineering, Ohio University, Athens, OH, [2]University of Bordeaux, CNRS, Solvay, LOF, Pessac, FRANCE.

11:20 **252.** Investigation of the shear-induced microstructure of carbon black suspensions for energy storage applications. **J. B. Hipp**[1], J. J. Richards[2], N. J. Wagner[1]; [1]University of Delaware, Newark, DE, [2]NIST Center for Neutron Research, Gaithersburg, MD.

11:40 **253.** Modeling thixotropy, viscoelasticity, and slip layer formation in human blood rheology. **J. S. Horner**, A. N. Beris, N. J. Wagner; Chemical & Biomolecular Engineering, University of Delaware, Newark, DE.

Wetting and Adhesion

Tuesday, June 12, 2018, 10:00 AM - 12:00 PM
Location: Room 106

10:00 **254. KEYNOTE.** Pattern Formation in Soft Elastic Films and its Relevance to Adhesion. **M. Chaudhury**; Lehigh University, Bethlehem, PA.

10:40 **255.** Correlating Stickiness to Pinch-off Dynamics and Extensional Rheology Response of Polymer Solutions. **J. Dinic**, L. N. Jimenez, V. Sharma; Chemical Engineering, University of Illinois at Chicago, Chicago, IL.

11:00 **256.** Strain-dependent surface stress in soft adhesion. **K. Jensen**; Williams College, University Park, PA.

11:20 **257.** Impact of morphological changes on adhesion hysteresis of polystyrene films. **G. D. Degen**, T. R. Cristiani, N. Cadirov, J. N. Israelachvili; Chemical Engineering, University of California, Santa Barbara, Santa Barbara, CA.

11:40 **258.** Adhesion and debonding of a pressure sensitive adhesive under water. **J. Frechette**; Chemical and Biomolecular Engineering, Johns Hopkins University, Baltimore, MD.

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Active and Adaptive Matter

Tuesday, June 12, 2018, 1:20 PM - 3:00 PM
Location: Room 104

1:20 PM **259. KEYNOTE.** Light powered artificial microswimmer: towards better controllability and biocompatibility. **J. Tang**, X. Zhan, J. Wang, J. Zheng, Z. Xiong; Chemistry, University of Hong Kong, Hong Kong, HONG KONG.

2:00 PM **260.** Light powered nanoheaters for fluid pumping and assembly. **B. M. Tansi**, M. Peris, A. Sen; Chemistry, The Pennsylvania State University, State College, PA.

2:20 PM **261.** Light-driven microswimmers: Pushing, pulling and shaping materials from within. **H. Vutukuri**; ETH, Zurich, SWITZERLAND.

2:40 PM **262.** Binary and Mixed Brushes for Adaptive Surfaces. **C. W. Pester**[1], M. Li[1], K. M. Mattson[2], D. Lunn[3], G. Su[4], M. Brady[4]; [1]The Pennsylvania State University, University Park, PA, [2]The Dow Chemical Company, Midland, MI, [3]University of Oxford, Oxford, UNITED KINGDOM, [4]Lawrence Berkeley National Laboratory, Berkeley, CA.

Colloidal and Surface Forces

Tuesday, June 12, 2018, 1:20 PM - 3:00 PM
Location: Room 105

1:20 PM **263.** Ionic liquids and dilute electrolytes: the surprising connection. **M. A. Gebbie**[1], J. N. Israelachvili[2]; [1]Materials Science & Engineering, Stanford University, Stanford, CA, [2]Chemical Engineering, University of California, Santa Barbara, Santa Barbara, CA.

1:40 PM **264.** Nanorheology, Dynamics, and Interactions of Confined Ionic Liquids. Y. Zhang, **Y. MIN**; Polymer Engineering, University of Akron, Akron, OH.

2:00 PM **265.** Diffusing probe measurements of colloidal forces in polymer hydrogels. **S. Shabaniverki**, J. Juarez; Mechanical Engineering, Iowa State University, Ames, IA.

2:20 PM **266.** Molecular insight into the carboxylic acid - alkali metal cations interactions: reversed affinity and ion pair formation. **A. P. Sthoer**[1], J. Hladilková[2], M. Lund[2], E. C. Tyrode[1]; [1]Surface and Corrosion, KTH Royal Institut of Technology, stockholm, SWEDEN, [2]Theoretical Chemistry, Lund University, Lund, SWEDEN.

2:40 PM **267.** The backbone's role in mussel-inspired peptide and peptoid adhesion. **T. R. Cristiani**[1], W. Wonderly[2], G. Degen[3], K. Cunha e Silva[2], J. Shea[2], H. Waite[4], J. Israelachvili[3]; [1]Materials, University of California Santa Barbara, Santa Barbara, CA, [2]Chemistry, University of California Santa Barbara, Santa Barbara, CA, [3]Chemical Engineering, University of California Santa Barbara, Santa Barbara, CA, [4]Molecular, Cellular, and Developmental Biology, University of California Santa Barbara, Santa Barbara, CA.

Connecting the Dots in Industry

Tuesday, June 12, 2018, 1:20 PM - 3:00 PM
Location: Room 206

1:20 PM **268. KEYNOTE.** Scaling up innovation throughput for Chemical R&D. **D. Velegol**; Chemical Engineering, Penn State University, University Park, PA.

2:00 PM **269. KEYNOTE.** Achieving broader impacts of university research through a start-up. **N. Abbott**; Department of Chemical and Biological Engineering, University of Wisconsin-Madison, Madison, WI.

2:20 PM **270. KEYNOTE.** To be determined. **A. Agarwal**; Imbed Biosciences, University Park, PA.

2:40 PM **271. KEYNOTE.** Translating academic research and innovation to practical nanomanufacturing, or: How do you find the (nano)nails for your science hammer?. **O. D. Velev**; Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC.

Directed Assembly of Molecules and Particles

Tuesday, June 12, 2018, 1:20 PM - 3:00 PM
Location: Room 208

1:20 PM **272.** Phase behavior and salt partitioning in polyelectrolyte complex coacervates. **S. Srivastava**[1], L. Li[2], M. Andreev[2], A. Marciel[2], J. de Pablo[2], M. Tirrell[2]; [1]Chemical and Biomolecular Engineering, University of California, Los Angeles, Los Angeles, CA, [2]IME, University of Chicago, Chicago, IL.

1:40 PM **273.** Structure of polyelectrolyte complex coacervates. **A. B. Marciel**[1], S. Srivastava[2], M. V. Tirrell[1]; [1]IME, The University of Chicago, Chicago, IL, [2]Chemical and Biomolecular Engineering, University of California, Los Angeles, Los Angeles, CA.

2:00 PM **274.** Coexisting coacervate systems as model non-membranous organelles. **G. Mountain**, C. Keating; Chemistry, The Pennsylvania State University, University Park, PA.

2:20 PM **275.** Electrohydrodynamic flow induced assembly of plasmonic nanoparticles in oscillatory electric fields. **T. J. Woehl**, A. Ferrick, M. Wang; Chemical and Biomolecular Engineering, University of Maryland, College Park, College Park, MD.

2:40 PM **276.** Reconfigurable self-assembly: Structural colloids of nematic liquid crystal polymer and elastomer. **W. Wei**[1], Y. Xia[2], S. Ettinger[1], S. Yang[2], A. G. Yodh[1]; [1]University of Pennsylvania, Department of Physics and Astronomy & LRSM, Philadelphia, PA, [2]University of Pennsylvania, Department of Materials Science and Engineering, Philadelphia, PA.

Emulsions, Bubbles and Foams

Tuesday, June 12, 2018, 1:20 PM - 3:00 PM
Location: Room 107

1:20 PM **277.** Ultrasound-induced interactions between bilayers and bubbles. **M. Walsh**[1], S. Alborzi[2], R. Tikekar[2], N. Nitin[3], S. Wrenn[1]; [1]Chemical and Biological Engineering, Drexel University, Philadelphia, PA, [2]Nutrition and Food Science, University of Maryland, College Park, MD, [3]Food Science and Technology, University of California, Davis, Davis, CA.

1:40 PM **278.** On the stability of bulk nano bubbles. **A. J. Jadhav**, M. Barigou; School of Chemical Engineering, University of Birmingham, Birmingham, UNITED KINGDOM.

Cancelled

2:00 PM **279.** Perfluorocarbon nanoscale emulsions: New formulation and applications as activatable ultrasound contrast agents. **C. de Gracia Lux**, J. Lux, A. M. Armstrong, W. Grozinger, R. F. Mattrey; Radiology, UT Southwestern Medical Center, Dallas, TX.

2:20 PM **280.** An Ouzo Method for Preparing Phase-Change Contrast Agents. **D. Li**, S. Schneewind, L. Pozzo; Chemical Engineering, University of Washington, Seattle, WA.

2:40 PM **281.** Effects of Polyelectrolytes Content in Complex Coacervates over Interactions with Vesicles and Vesicle Assemblies and Partitioning of Biomolecules. **F. Pir Cakmak**, A. T. Grigas, C. D. Keating; Chemistry, Penn State, University Park, PA.

General Papers

Tuesday, June 12, 2018, 1:20 PM - 3:00 PM
Location: Room 204

1:20 PM **282.** Polymer dynamics at the solid-aqueous interface as a function of surface coverage. **G. Morrin**, D. Schwartz; Chemical & Biological Engineering, University of Colorado-Boulder, Boulder, CO.

1:40 PM **283.** Probing mixtures of lipids at the air-water interface using reflectometry. **N. Elstone**[1], K. J. Edler[2], T. Arnold[3]; [1]Centre for Sustainable Chemical Technologies, University of Bath, Bath, UNITED KINGDOM, [2]Chemistry, University of Bath, Bath, UNITED KINGDOM, [3]European Spallation Source, Lund, SWEDEN.

2:00 PM **284.** Understanding the effects of sample preparation choices on methacrylate-based polymer thin films. **A. Kruse**, N. Adhikari, U. Premadasa, K. A. Cimatu; Chemistry and Biochemistry, Ohio University, Athens, OH.

2:20 PM **285.** Mechanochemisty of adsorbed molecules at tribological interfaces. **X. He**, S. Kim; Chemical engineering, Pennsylvania State University, State College, PA.

2:40 PM **286.** Complex Structured Molecules Probed at Different Interfaces. N. Adhikari[1], U. Premadasa[1], M. Khan[1], U. Erasquin[1], J. Nonkumwong[1,2], **K. A. Cimatu**[1]; [1]Chemistry and Biochemistry, Ohio University, Athens, OH, [2]Department of Chemistry, Faculty of Science, Chiang Mai University, Chiang Mai, THAILAND.

Molecules and Particles at Fluid Interfaces

Tuesday, June 12, 2018, 1:20 PM - 3:00 PM
Location: Room 205

1:20 PM **287.** Capillary Forces on a Nanoparticle at a Liquid-Vapor Interface: Analytical Theory, Numerical Solution, and Molecular Modeling. **S. CHENG**, Y. TANG; Physics, Virginia Tech, Blacksburg, VA.

1:40 PM **288.** Binding of lignin nanoparticles at oil-water interface: Ecofriendly approach to oil spill clean up.

J. Lee; Chemical Engineering, Louisiana State University, Baton Rouge, LA.

2:00 PM **289.** Effect of Hydrodynamic Interaction on the Pairwise Dielectrophoretic Attraction of Colloids Straddling a Fluid Interface. **S. das**[1], J. Koplik[2], C. Maldarelli[3], P. Somasundaran[1]; [1]Langmuir Center of Colloids and Interfaces, Columbia University, New York, NY, [2]Levich Institute and Department of Physics, City College of The City University of New York, New York, NY, [3]Levich Institute and Department of Chemical Engineering, City College of The City University of New York, New York, NY.

2:20 PM **290.** Controlling nanoparticle adsorption and surface pressure at the oil-water interface via competitive adsorption. **X. Hua**, M. Bevan, J. Frechette; Chemical and Biomolecular Engineering, Johns Hopkins University, Baltimore, MD.

2:40 PM **291.** Interaction between nearly hard sphere colloidal spheres at an Oil Water interface. **I. Muntz**[1], J. H. Thijssen[1], D. Marenduzzo[1], F. Waggett[2], P. Bartlett[2]; [1]School of Physics and Astronomy, University of Edinburgh, Edinburgh, UNITED KINGDOM, [2]School of Chemistry, University of Bristol, Bristol, UNITED KINGDOM.

Rheology

Tuesday, June 12, 2018, 1:20 PM - 3:00 PM
Location: Room 207

1:20 PM **292.** Microrheology and kinematics of a drying paint. **S. M. Varghese**[1], R. M. Rock[2], J. F. Gilchrist[3], C. L. Wirth[1]; [1]Chemical and Biomedical Engineering, Cleveland State University, Cleveland, OH, [2]PPG Industries, Allison Park, PA, [3]Chemical and Biomolecular Engineering, Lehigh University, Bethlehem, PA.

1:40 PM **293.** Branching and alignment in reverse worm-like micelles studied with simultaneous dielectric spectroscopy and RheoSANS. **J. Riley**[1], J. Richards[1], N. Wagner[2], P. Butler[1]; [1]Center for Neutron Research (NCNR), National Institute of Standards and Technology, Gaithersburg, MD, [2]Chemical and Biomolecular Engineering, University of Delaware, Newark, DE.

2:00 PM **294.** Effect of confinement on flow profiles of shear banding fluids. **P. Salipante**, V. Dharmaraj, S. Hudson; Polymers and Complex Fluids Group, National Institute of Standards and Technology, Gaithersburg, MD.

2:20 PM **295.** Shear-induced structural transitions and vesicle formation of biphasic microemulsions. **J. S. Weston**[1], K. Weigandt[2], S. Hudson[3]; [1]Georgetown University/NIST, Gaithersburg, MD, [2]NIST Center for Neutron Research, Gaithersburg, MD, [3]NIST Materials Science and Engineering Division, Gaithersburg, MD.

2:40 PM **296.** Monitoring evolution of micellar structure and dynamics with active release. **S. Amin**[1], D. Guadino[2], M. Reufer[2], F. Scheffold[3]; [1]Chemical Engineering Department, Manhattan College, Riverdale, NY, [2]LS Instruments, Fribourg, SWITZERLAND, [3]Department of Physics, University of Fribourg, Fribourg, SWITZERLAND.

Wetting and Adhesion

Tuesday, June 12, 2018, 1:20 PM - 3:00 PM
Location: Room 106

1:20 PM **297.** Viscoelastic Solids Repellent and Anti-Bacterial Coatings for Extreme Water-Saving. **J. Wang**, N. Sun, M. Corsetti, L. Wang, H. Li, P. Wong, T. Wong; The Pennsylvania State University, University Park, PA.

1:40 PM **298.** Dynamics of viscous liquids impinging on superamphiphobic macrotextures. **A. Raiyan**, T. S. Mclaughlin, R. K. Annavarapu, H. Sojoudi; Mechanical, Industrial and Manufacturing Engineering, University of Toledo, Toledo, OH.

2:00 PM **299.** Tuning underwater adhesion with cation-π interactions. **M. A. Gebbie**[1], J. N. Isrealachvili[2], J. Waite[3]; [1]Materials Science & Engineering, Stanford University, Stanford, CA, [2]Chemical Engineering, University of California, Santa Barbara, Santa Barbara, CA, [3]Molecular, Cellular, and Developmental Biology, University of California, Santa Barbara, Santa Barbara, CA.

2:20 PM **300.** The role of DOPA in interfacial adhesion of mussel inspired adhesives. **S. Kaur**, A. Narayanan, A. Joy, A. Dhinojwala; Polymer Science, The University of Akron, Akron, OH.

2:40 PM **301.** Proximal charge changes how hydrophobic adhesion depends on non-polar domains size. **H. Yeon**, C. Wang, S. H. Gellman, N. L. Abbott; University of Wisconsin-Madison, Madison, WI.

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Active and Adaptive Matter

Tuesday, June 12, 2018, 3:20 PM - 5:00 PM
Location: Room 104

3:20 PM **302.** The effect of topography on bacterial surface motility. **W. Ducker**[1], Y. Chang[1], E. Weeks[2]; [1]Chemical Engineering, Virginia Tech, Blacksburg, VA, [2]Physics, Emory University, Atlanta, GA.

3:40 PM **303.** Enzyme chemotaxis: Comparison between theory and experiment. **F. MOHAJERANI**[1], X. Zhao[2], A. Somasundar[1], S. Ghosh[2], A. Sen[2], D. Velegol[1]; [1]Chemical Engineering, Pennsylvania State University, State College, PA, [2]Chemistry, Pennsylvania State University, State College, PA.

4:00 PM **304.** Controlling the direction of motion of enzyme-coated liposomes. **A. Somasundar**[1], F. Mohajerani[1], S. Ghosh[2], D. Velegol[1], A. Sen[2]; [1]Chemical Engineering, Penn State University, State College, PA, [2]Chemistry, Penn State University, State College, PA.

4:20 PM **305.** Impulsive Enzymes: A New Force in Mechanobiology. **X. Zhao**, A. Sen; The Pennsylvania State University, State College, PA.

4:40 PM **306.** Thermo- and pH-responsive thin films made from the mucilage of *Opuntia ficus-indica*cactus. **Z. Veisi**, N. Alcantar, R. Toomey; University of South Florida, Tampa, FL.

Connecting the Dots in Industry

Tuesday, June 12, 2018, 3:20 PM - 5:00 PM
Location: Room 206

3:20 PM **307. KEYNOTE.** From Academics to Applications: How to interact with industry and startups. **D. Weitz**; Harvard University, Cambridge, MA.

4:00 PM **308.** Panel on Starting Up & Spinning Off. **D. S. Miller**; Core R&D, Formulation Science, The Dow Chemical Company, Collegeville, PA.

Directed Assembly of Molecules and Particles

Tuesday, June 12, 2018, 3:20 PM - 5:00 PM
Location: Room 208

3:20 PM **309.** Controlling Stratification of Polydisperse Nanoparticles in Drying Suspensions Using Temperature Gradients. **S. CHENG**[1], Y. TANG[1], G. S. GREST[2]; [1]Physics, Virginia Tech, Blacksburg, VA, [2]Sandia National Laboratories, Albuquerque, NM.

3:40 PM **310.** Decoupled 2D binary colloidal alloys for soft nanotemplating. **M. A. Fernandez-Rodriguez**, M. N. Antonoupoulou, L. Isa; ETH Zurich, Zurich, SWITZERLAND.

4:00 PM **311.** Whiskey webs: self-assembled micro-webs from evaporated drops as unique identifiers of bourbon whiskey. **S. Williams**[1], S. Islam[2], O. Velev[2]; [1]Mechanical Engineering, University of Louisville, Louisville, KY, [2]Chemical Engineering, North Carolina State University, Raleigh, NC.

4:20 PM **312.** Direct-write Assembly of Freeform Colloidal Structures. **A. T. Tan**[1], J. Beroz[2], M. Kolle[2], K. Kamrin[2], A. J. Hart[2]; [1]Materials Science and Engineering, MIT, Cambridge, MA, [2]Mechanical Engineering, MIT, Cambridge, MA.

4:40 PM **313.** Bi-modal polyolefin dispersion for hydrophobic coatings with high water vapor transport. **D. Malotky**[1], M. Crimmins[1], J. Romick[2]; [1]Core R&D Formulation Science, The Dow Chemical Company, Midland, MI, [2]Dow Coating Materials, Ret., The Dow Chemical Company, Midland, MI.

Emulsions, Bubbles and Foams

Tuesday, June 12, 2018, 3:20 PM - 5:00 PM
Location: Room 107

3:20 PM **314.** Pickering Nanoemulsions via Self-Assembly of Particles on Condensing Droplets. **D. Kang**, H. Bararnia, S. Anand; Department of

Mechanical&Industrial Engieering, University of Illinois at Chicago, Chicago, IL.

3:40 PM **315.** Reversible deposition of responsive colloids. **T. A. Prileszky**, E. M. Furst; Chemical Engineering, University of Delaware, Newark, DE.

4:00 PM **316.** Effect of increasing concentrations of Sodium Caseinate on the interfacial rheological properties of foams obtained from emulsions of avocado oils *Persea americana*. **S. Cabrera, Sr.**[1], A. Sandoval[2], F. Forero[3]; [1]SENNOVA, SENA, Fusagasuga, COLOMBIA, [2]Universidad del Tolima, Ibagué, COLOMBIA, [3]Universidad de Antioquia, Medellin, COLOMBIA.

4:20 PM **317.** Segregation and margination in dilute polydisperse emulsions. **S. M. Hashmi**, R. Reboucas, M. Loewenberg; Chemical & Environmental Engineering, Yale University, New Haven, CT.

4:40 PM **318.** Aqueous emulsion droplets as artificial mineralization vesicles (AMVs): Structural, compositional and nanomechanical characterization of minerals formed in AMVs. **N. Pulati**, C. Keating, A. Rowland; Chemistry, Penn State University, University Park, PA.

General Papers

Tuesday, June 12, 2018, 3:20 PM - 5:00 PM
Location: Room 204

3:20 PM **319.** Molecular insight into the carboxylic acid - alkali metal cations interactions: reversed affinity and ion pair formation. **A. P. Sthoer**[1], J. Hladilková[2], M. Lund[2], E. Tyrode[1]; [1]Surface and Corrosion, KTH Royal Institut of Technology, stockholm, SWEDEN, [2]Theoretical Chemistry, Lund University, Lund, SWEDEN.

3:40 PM **320.** Phase and orientation control of cellulose nanocrystals by Langmuir-Blodgett assembly. **I. Chae**, Z. Ounaies, S. Kim; Pennsylvania State University, University Park, PA.

4:00 PM **321.** The effect of hexadeconal and trace cholesterol on model monolayers - phase behavior, morphology, and shear viscosity. **C. Valtierrez-Gaytan**[1], S. Patton[1], I. Williams[2], M. Kohler[1], T. Squires[2], J. Zasadzinski[1]; [1]Chemical Engineering and Materials Science, University of Minnesota,

Minneapolis, MN, [2]Chemical Engineering, University of California Santa Barbara, Santa Barbara, CA.

4:20 PM **322.** Detecting, counting and characterizing sub-visible protein aggregates with holographic video microscopy. P. Kasimbeg, F. C. Cheong, D. B. Ruffner, J. M. Blusewicz, **L. A. Philips**; Spheryx, Inc., Spheryx, Inc., New York, NY.

Molecules and Particles at Fluid Interfaces

Tuesday, June 12, 2018, 3:20 PM - 5:00 PM
Location: Room 205

3:20 PM **324.** Particle collection by emulsion drops with permeable interfaces. **R. H. Davis**; Chemical and Biological Engineering, University of Colorado, Boulder, CO.

3:40 PM **325.** Formation mechanisms and structural evolution of STRIPS bijels. **S. Boakye-Ansah**; Chemical Engineering, Rowan University, Glassboro, NJ.

4:00 PM **326.** Effects of diblock carbon nanotubes on the adhesion between immiscible polymers. **F. Ide Seyni**; Chemical Engineering, University of Oklahoma, Norman, OK.

4:20 PM **327.** Solvation vs Surface Effects: Pathways in Solvent-driven Infiltration of Polymer (SIP) into Nanoparticle Packings. **N. Manohar**, R. B. Venkatesh, K. J. Stebe, D. Lee; University of Pennsylvania, Philadelphia, PA.

4:40 PM **328.** Separation of functionalized nanoparticles on polymer-grafted porous substrates. **K. P. Santo**[1], A. Vishnyakov[1], Y. Brun[2], A. V. Neimark[1]; [1]Chemical and Biochemical Engineering, Rutgers, The State University of New Jersey, Piscataway, NJ, [2]DuPont Central Research & Development, Wilmington, DE.

Rheology

Tuesday, June 12, 2018, 3:20 PM - 5:00 PM
Location: Room 207

3:20 PM **329.** Microfluidic rheology of viscoelastic fluids using digital holography microscopy. **S. Gupta**, S. A. Vanapalli; Chemical Engineering, Texas Tech University, Lubbock, TX.

3:40 PM **330.** Morphological and rheological properties of metal-complexed polymer solutions studied using a dissipative particle dynamics model. **K. P. Santo**, A. Vishnyakov, R. Kumar, A. V. Neimark; Chemical and Biochemical Engineering, Rutgers, The state University of New Jersey, Piscataway, NJ.

4:00 PM **331.** High pressure linear viscoelasticity measurements of polymer solutions and gels. **K. A. Dennis**[1], Y. Gao[2], A. Phatak[2], E. M. Furst[1]; [1]Chemical and Biomolecular Engineering, University of Delaware, Newark, DE, [2]Schlumberger, Sugar Land, TX.

4:20 PM **332.** Confinement-induced slowdown of unentangled polymer during capillary rise infiltration in nanoparticle packing. **J. Hor**[1], H. Wang[2], Z. Fakhraai[2], D. Lee[1]; [1]Department of Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA, [2]Department of Chemistry, University of Pennsylvania, Philadelphia, PA.

4:40 PM **333.** Intermolecular Association in the in-situ formed physically cross-linked poly (vinyl alcohol) cryogels. **N. JOSHI**, Y. M. Joshi; CHEMICAL ENGINEERING, INDIAN INSTITUTE OF TECHNOLOGY, kanpur, INDIA.

Wetting and Adhesion

Tuesday, June 12, 2018, 3:20 PM - 5:00 PM
Location: Room 106

3:20 PM **334.** BREATH FIGURES DYNAMICS ON SMOOTH POLYCARBONATE SURFACES: EFFECTS OF RELATIVE HUMIDITY AND REPELLENT WATER DROPLET. **S. VALETTE**, N. PIONNIER, E. CONTRAIRES, S. BENAYOUN; Ecole Centrale de Lyon, Université de Lyon, Lyon, FRANCE.

3:40 PM **335.** The effect of subphase depth on surfactant-driven Marangoni flow. **S. V. Iasella**[1,2], R. D. Tilton[1,2,3], T. M. Przybycien[1,2,3], S. Garoff[2,4], T. E. Corcoran[5]; [1]Department of Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA, [2]Center for Complex Fluids Engineering, Carnegie Mellon University, Pittsburgh, PA, [3]Department of Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA, [4]Department of Physics, Carnegie Mellon University, Pittsburgh, PA,

[5]Department of Medicine, University of Pittsburgh, Pittsburgh, PA.

4:00 PM **336.** Mapping the thickness of a lubricant film on a randomly rough surface. **S. Peppou-Chapman**, C. Neto; School of Chemistry, The University of Sydney, Sydney, AUSTRALIA.

4:20 PM **337.** Plastron recovery on submerged superhydrophobic surfaces using chemical reaction. **D. Panchanathan**, A. Rajappan, K. K. Varanasi, G. H. McKinley; Mechanical Engineering, MIT, Cambridge, MA.

4:40 PM **338.** Inline process control of wettability by means of contact angle measurement on moving surfaces. **R. Sanedrin**[1], M. Jin[2], D. Frese[3], N. Hearn[4], T. Willers[2]; [1]KRUSS USA, Matthews, NC, [2]KRUSS GmbH, Hamburg, GERMANY, [3]KRUSS USA, Hamburg, GERMANY, [4]KRUSS France, Villebon-sur-Yvette, FRANCE.

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Unilever Award Lecture

Tuesday, June 12, 2018, 5:15 PM - 6:15 PM
Location: Presidents Hall

5:15 PM **339. PLENARY.** Direct nanoscopic imaging: from crystallizing of nanoparticles to crumpling of polymer films. **Q. Chen**; Materials Science and Engineering, University of Illinois, Urbana, IL.

ABSTRACT. The research in my group focuses on understanding the organization of complex materials and biological systems in space and time. In this talk, I will discuss two types of systems imaged using electron microscopy-based methods. The first type of systems concerns crystallization kinetics of a series of nanoparticle superlattices formed in solution. We monitor, for the first time, the initial nucleation of crystallites on the fly in real-time and real-space using low-dose liquid-phase transmission electron microscopy. Single-particle tracking, statistical mechanics-based analysis and Monte Carlo simulation reveal unexpected crystallization kinetics due to inherent many-body coupling and discreteness of building blocks at the nanoscale. In the second system, we investigate the crumpling of a polymer filtration membrane used for water desalination. Their

nanoscopic three-dimensional morphology has intricate indications on their performances, particularly solvent permeation and solute retention. Both systems serve to achieve our common goal of deciphering fundamental rules of organization from “seeing is believing”.

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Victor K. LaMer Award Lecture

Wednesday, June 13, 2018, 8:30 AM - 9:30 AM
Location: Presidents Hall

8:30 **340. PLENARY.** Engineered colloidal nanostructures for carrier and photon managements in solar energy conversion. **K. Wu**; Chinese Academy of Sciences, University Park, CHINA.

ABSTRACT. The nature of solar energy conversion is light-matter interaction. High conversion efficiencies can be achieved by managing solar photons in the sunlight and/or managing charge carriers in the matter. The optical and electronic properties of colloidal nanostructures can be controllably engineered using simple-yet-versatile synthesis, enabling an ideal platform for exploring the physical principles of photon and carrier managements. In this talk, I will cover our recent progress on both aspects. I will first introduce our efforts of carrier management using various colloidal semiconductor-semiconductor and semiconductor-metal nano heterostructures, with the general goal of facilitating charge separation and suppressing charge recombination. Efficient (near unity yield) and long-lived (microsecond timescale) charge separations have indeed been achieved through rational design of donor-acceptor-catalyst like heterostructures. In the second part, I will introduce the use of colloidal nanostructures in luminescent solar concentrators for advanced photon management. Specially-designed colloidal core/shell or doped nanocrystals can absorb solar photons, efficiently emit luminescence photons and guide them to the edges of a planar concentrator. This can potentially enhance the efficiencies of edge-attached photovoltaic (PV) cells, and meanwhile, decrease the cost of modern PV devices. In parallel with introducing the photon and carrier management concepts, I will also discuss the underpinning fundamental physics, such as light absorption and emission, charge transfer, and energy transfer, studied by a variety of steady-state and ultrafast time-resolved spectroscopic techniques.

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Colloidal Nanoparticle Synthesis and Characterization

Wednesday, June 13, 2018, 10:00 AM - 12:00 PM
Location: Room 104

10:00 **341. KEYNOTE.** Atomic Electron Tomography: Adding a New Dimension to See Single Atoms in Materials. **J. Miao**; UCLA, Los Angeles, CA.

10:40 **342. KEYNOTE.** Spatial Mapping of Surface-Mediated Nanocrystal Transformations. **M. R. Jones**; Chemistry, Rice University, Houston, TX.

11:20 **343.** Analytical ultracentrifugation determination of alkane packing density inside single-wall carbon nanotubes. **J. Fagan**; Materials Science and Engineering, National Institute of Standards and Technology, Gaithersburg, MD.

11:40 **344.** Properties and applications of hairy nanocellulose. **T. van de Ven, Sr.**; Chemistry, McGill University, Montreal, QC, CANADA.

Connecting the Dots in Industry

Wednesday, June 13, 2018, 10:00 AM - 12:00 PM
Location: Room 206

10:00 **345. KEYNOTE.** Soft materials in industry: Designing delivery systems for low molecular weight payloads. **P. Erni**; Corporate Research Division, Firmenich SA, Meyrin - Geneva, SWITZERLAND.

10:40 **346. KEYNOTE.** Dispersion Science in the Service of Home and Beauty Care. **E. P. Wasserman**, N. Shah; Home & Personal Care, The Dow Chemical Company, Collegeville, PA.

11:00 **347. KEYNOTE.** To be determined. **J. Ferreira**; Estee Lauder Company, University Park, PA.

11:20 **348. KEYNOTE.** A Beauty Products Journey from Lab to Shelf: Lessons from Formulation to Scale-Up. **A. S. Zahr**; R&D, Revision Skincare, Irving, TX.

Directed Assembly of Molecules and Particles

Wednesday, June 13, 2018, 10:00 AM - 12:00 PM
Location: Room 208

10:00 **349.** Self-assembly of particle brush materials. **J. Lee**[1], Z. Wang[2], T. Deng[1], R. F. Davis[1], K. Matyjaszewski[2], M. R. Bockstaller[1]; [1]Department of materials science and engineering, Carnegie Mellon University, PITTSBURGH, PA, [2]Department of chemistry, Carnegie Mellon University, PITTSBURGH, PA.

10:20 **350.** Directional growth of a cubic superlattice assembled from nanoparticles. **B. Luo**[1], Z. Ou[1], Z. Wang[2], Q. Chen[1]; [1]Materials Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, [2]Northwestern University, Evanston, IL.

10:40 **351.** Colloids and their defect structures near wavy walls. **Y. Luo**[1], D. A. Beller[2], F. Serra[3], K. J. Stebe[1]; [1]Department of Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA, [2]School of Engineering, Brown University, Providence, RI, [3]Department Physics and Astronomy, Johns Hopkins University, Baltimore, MD.

11:00 **352.** Tunable assembly of gold nanorods in semidilute polymer solutions. **R. Poling-Skutvik**, R. Krishnamoorti, J. C. Conrad; Chemical and Biomolecular Engineering, University of Houston, Houston, TX.

11:20 **353.** Nonclassical Crystallization of a Nanoparticle Superlattice. **Z. Ou**[1], Z. Wang[2], E. Luijten[2], Q. Chen[1]; [1]Materials Science and Engineering, Univ of Illinois - Urbana, Urbana, IL, [2]Materials Science and Engineering, Northwestern University, Evanston, IL.

Electrokinetics and Microfluidics

Wednesday, June 13, 2018, 10:00 AM - 12:00 PM
Location: Room 105

10:00 **359. KEYNOTE.** Order and Chaos*: Collective Behavior of Crowded Drops in Microfluidic Systems. **S. K. Tang**; Mechanical Engineering, Stanford University, Stanford, CA.

10:40 **355.** Dispersion in steady two-dimensional flows through a parallel-plate channel. **H. C. Chu**[1], S. Garoff[2], T. M. Przybycien[3], R. D. Tilton[3], A. S. Khair[1]; [1]Department of Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA, [2]Department of Physics, Carnegie Mellon University, Pittsburgh, PA, [3]Department of Chemical Engineering and Department of Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA.

11:00 **356.** Solute gradients induce density driven flows in microfluidic systems. **Y. Gu**, V. Hegde, K. J. Bishop; Chemical Engineering, Columbia University, New York, NY.

11:20 **357.** Hydrodynamic mobility and rupture of vesicles in microfluidic channels. **S. Ahmmed**, S. Vanapalli; Chemical Engineering, Texas Tech University, Lubbock, TX.

11:40 **358.** Electric fields, microfluidics, and protein crystallography. **S. L. Perry**; Chemical Engineering, University of Massachusetts Amherst, Amherst, MA.

Emulsions, Bubbles and Foams

Wednesday, June 13, 2018, 10:00 AM - 12:00 PM
Location: Room 107

10:00 **360.** Foamability and foam stability of aqueous sodium naphthenate solutions. **V. Sharma**, C. Ochoa, W. Yang, S. Yilixiati, Y. Zhang; Chemical Engineering, University of Illinois at Chicago, Chicago, IL.

10:20 **361.** Influence of Salt on Supramolecular Oscillatory Structural Forces and Stratification in Micellar Foam Films. **S. Yilixiati**, R. Rafiq, Y. Zhang, V. Sharma; Chemical Engineering, University of Illinois at Chicago, Chicago, IL.

10:40 **362.** A simple unifying relationship for interfacial properties of alkyl-polyoxide surfactants. **Z. Hinton**, N. Alvarez; Chemical and Biological Engineering, Drexel University, Philadelphia, PA.

11:00 **363.** Instability of Bulk Dielectric Liquid under Unipolar Charge Induced Atmospheric Air Corona. **M. Haque**[1], H. Sojoudi[1], H. Marwan[2], M. Shahbaz[2]; [1]Mechanical, University of Toledo, Toledo, OH, [2]Electrical, University of Toledo, Toledo, OH.

Energy Systems

Wednesday, June 13, 2018, 10:00 AM - 12:00 PM
Location: Room 106

10:00 **365. KEYNOTE.** Chemical Reactions on Bimetal Catalysts Revealed with Ambient Pressure Surface Techniques and Hot Electron Detection. **J. Y. Park**; KAIST/IBS, Daejeon, KOREA, REPUBLIC OF.

10:40 **366.** Composite Electrolytes from Cold Sintering for Lithium Metal Batteries. **W. LEE**[1], C. Randall[2], E. Gomez[1]; [1]Chemical Engineering, Penn State Univ., University Park, PA, [2]Materials Science and Engineering, Penn State Univ., University Park, PA.

11:00 **367.** CO_2 oxidation from Mo_2CT_x (MXene) to molybdenum oxide/carbon composites for lithium ion battery anode materials. **J. Park**[1], A. Byeon[1], C. Hatter[2], C. Ahn[3], Y. Gogotsi[2], J. Lee[1]; [1]Department of Chemical and Biomolecular Engineering, KAIST, Daejeon, KOREA, REPUBLIC OF, [2]Department of Materials Science and Engineering, Drexel University, Philadelphia, PA, [3]National Nanofab Center (NNFC), Daejeon, KOREA, REPUBLIC OF.

11:20 **368.** Energy materials derived from Bijel templates. K. McDevitt, D. R. Mumm, **A. Mohraz**; Chemical Engineering and Materials Science, University of California, Irvine, CA.

11:40 **369.** Impact of polymer depletant on battery slurry performance. **S. L. Morelly**, M. H. Tang, N. J. Alvarez; Chemical and Biological Engineering, Drexel University, Philadelphia, PA.

General Papers

Wednesday, June 13, 2018, 10:00 AM - 12:00 PM
Location: Room 204

10:00 **370.** Using Stable Close-Packed Vesicular Dispersions (CPVDs) of a Cationic Surfactant in Aqueous Salt Solutions for Stabilizing Suspensions of Dense Particles Against Sedimentation. A. Hsieh, **D. Corti**, E. Franses; School of Chemical Engineering, Purdue University, West Lafayette, IN.

10:20 **371.** Aqueous nonaqueous hybrid bitumen extraction process: a pilot study. **F. Lin**, Y. Xu; Natural Resources Canada, Devon, AB, CANADA.

10:40 **372.** Waterflooding of Surfactant Solutions in a Porous Media Micromodel. **H. Yeh**, J. J. Juarez; Mechanical Engineering, Iowa State University, Ames, IA.

11:00 **373.** The Shape and Dynamics of Deformations of Viscoelastic Fluids by Water Droplets. **D. Seo**[1,2], A. M. Schrader[1], S. Chen[1], S. Page[3], P. H. Koenig[3], Y. Gizaw[4], J. N. Israelachvili[1]; [1]Chemical Engineering, University of California, Santa Barbara, Santa Barbara, CA, [2]Chemical Engineering, Brigham Young University, Provo, UT, [3]Modeling and Simulation/Computational Chemistry, The Procter & Gamble Co., West Chester, OH, [4]Winton Hill Business Center, The Procter & Gamble Co., Cincinnati, OH.

11:20 **374.** Smart soaps: Stimulus responsive soap-hydrogel bead composites for controlled dissolution and release of actives. **B. Thompson**[1], M. Rutkevicius[2], T. Horozov[2], S. D. Stoyanov[3], V. N. Paunov[2]; [1]Chemical and Biomolecular Engineering, University of Maryland, College Park, College Park, MD, [2]School of of Mathematics and Physical Sciences (Chemistry), University of Hull, Hull, UNITED KINGDOM, [3]Unilever R&D Vlaardingen, Vlaardingen, NETHERLANDS.

11:40 **375.** Directly measuring the diamond nucleation landscape to test classical nucleation theory. **M. A. Gebbie**, N. A. Melosh; Materials Science & Engineering, Stanford University, Stanford, CA.

Rheology

Wednesday, June 13, 2018, 10:00 AM - 12:00 PM
Location: Room 207

10:00 **376.** Unusual filler effect in polymer hydrogels. **I. Dellatolas**, T. Divoux, M. Guo, I. Bischofberger; MIT, Cambridge, MA.

10:20 **377.** From Hindered to Promoted Settling in Dispersions of Attractive Colloids. **J. Swan**, A. Fiore; MIT, Cambridge, MA.

10:40 **378.** Rheological characterization of dynamic re-engineering of the pericellular region by human mesenchymal stem cell-secreted enzymes in well-defined synthetic hydrogel scaffolds. **M. Daviran**[1], S. M. Longwill[2], K. M. Schultz[1]; [1]Chemical

Engineering, Lehigh University, Bethlehem, PA, [2]Bioengineering, Lehigh University, Bethlehem, PA.

11:00 **379.** Determination of macroscopic rheological properties of human mesenchymal stem cell-laden poly(ethylene glycol) hydrogels. **M. S. Mazzeo**[1], T. Chai[2], K. M. Schultz[2]; [1]Bioengineering, Lehigh University, Bethlehem, PA, [2]Chemical and Biomolecular Engineering, Lehigh University, Bethlehem, PA.

11:20 **380.** Structure and electrical properties of concentrated block copolymer/water/oil microemulsions under flow. **J. Riley**[1], N. Wagner[2], P. Butler[1]; [1]Center for Neutron Research (NCNR), National Institute of Standards and Technology, Gaithersburg, MD, [2]Chemical and Biomolecular Engineering, University of Delaware, Newark, DE.

11:40 **381.** Determining the rheological properties of an evolving hydrogenated castor oil colloidal gel during consecutive phase transitions. M. D. Wehrman[1], S. Lindberg[2], **K. M. Schultz**[1]; [1]Department of Chemical and Biomolecular Engineering, Lehigh University, Bethlehem, PA, [2]Process and Engineering Development, Procter & Gamble Co., West Chester, OH.

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Colloidal Nanoparticle Synthesis and Characterization

Wednesday, June 13, 2018, 1:20 PM - 3:00 PM
Location: Room 104

1:20 PM **382. KEYNOTE.** Dopants and Defects in Colloidal Semiconductor Nanocrystals. **D. R. Gamelin**; Chemistry, University of Washington, Seattle, Seattle, WA.

2:00 PM **383.** Surface-templated inorganic nanocrystal growth using 1-nm wide functional patterns on noncovalently functionalized 2D materials. **S. Claridge**; Chemistry, Purdue University, West Lafayette, IN.

2:20 PM **384. KEYNOTE.** Chiral Inorganic Nanostructures: Design strategies and their properties. **J. Yeom**; Massachusetts Institute of Technology (MIT), Boston, MA.

Connecting the Dots in Industry

Wednesday, June 13, 2018, 1:20 PM - 3:00 PM
Location: Room 206

1:20 PM **385. KEYNOTE.** Diffusion of Colloidal Science Theory to Social Systems to Create Better Sleep Solutions. **R. Walters**[1], D. Madden[2], T. Lipoma[2], M. Hamilton[3], J. Mindell[4], E. Leichman[4]; [1]Johnson & Johnson, Philadelphia, PA, [2]Rest Devies, Boston, MA, [3]Wellspring, Chicaho, IL, [4]St Joes, Philadelphia, PA.

1:40 PM **386. KEYNOTE.** What we do together matters. **J. H. Spadt, Esq.**; RatnerPrestia, P.C., King of Prussia, PA.

2:20 PM **387. KEYNOTE.** Demystifying air in oil - Scaling innovation from laboratory to industrial application. **A. Kar**[1], W. Cates[2], P. Savage[3], S. Remmert[1], V. C. Suja[4], G. Fuller[4]; [1]Lubricants Discovery Hub, Shell Global Solutions US Inc, Houston, TX, [2]Industrial Oils, Shell Global Solutions US Inc, Houston, TX, [3]Factory Plant Maintenance Oils, Shell Global Solutions US Inc, Houston, TX, [4]Department of Chemical Engineering, Stanford University, San Francisco, CA.

2:40 PM **388. KEYNOTE.** Use of Colloid & Surface Science at the Dow Chemical Company. **D. S. Miller**[1], T. Kuo[2], C. Nelson[2], K. Whitaker[2], A. Schmitt[2], K. Joshi[3], H. Singh[4], D. Laganella[5], T. Kalantar[2], C. Tucker[2], C. Mohler[2]; [1]Core R&D, Formulation Science, The Dow Chemical Company, Collegeville, PA, [2]Core R&D, Formulation Science, The Dow Chemical Company, Midland, MI, [3]Dow Home & Personal Care, The Dow Chemical Company, Collegeville, PA, [4]Dow Oil, Gas & Mining, The Dow Chemical Company, Freeport, TX, [5]Dow Microbial Control, The Dow Chemical Company, Collegeville, PA.

Directed Assembly of Molecules and Particles

Wednesday, June 13, 2018, 1:20 PM - 3:00 PM
Location: Room 208

1:20 PM **389.** Synergistic self-assembly of scaffolds and building blocks for directed synthesis of organic

nanomaterials. **S. Dergunov**, E. Pinkhassik; Chemistry, University of Connecticut, Storrs, CT.

1:40 PM **390.** BIUX2X2. **R. Ragan**; Materials Science, UC Irvine, Irvine, CA.

2:00 PM **391.** Microenvironment Effect on Reaction Kinetics Within Self-Assembled Polymer Nanoreactors. **A. Harrison**, T. Vuong, M. Zeevi, C. Tang; Chemical and Life Sciences Engineering, Virginia Commonwealth University, Richmond, VA.

2:20 PM **392.** Optically Active Liquid Crystal Films. **F. Mondiot**; Laboratory Surface du Verre et Interfaces, Saint-Gobain Recherche, Aubervilliers, FRANCE.

2:40 PM **393.** Change in the orientation of cellulose nanocrystals suspended in an amorphous matrix can be revealed by sum frequency generation vibrational spectroscopy (SFG). **M. Makarem**[1], I. Chae[1], S. Haung[1], D. Sawada[2], Y. Nishiyama[3], S. Kim[1]; [1]Pennsylvania State University, Univeristy Park, PA, [2]Aalto University, Helsinki, FINLAND, [3]CEntre de Recherches sur les MAcromolécules Végétales, Gières, FRANCE.

Electrokinetics and Microfluidics

Wednesday, June 13, 2018, 1:20 PM - 3:00 PM
Location: Room 105

1:20 PM **394.** Frequency-selective electrokinetic enrichment of nanocolloidal biomarkers based on polarization dynamics of their ion cloud. **N. Swami**, A. Rohani, J. Moore; Electrical & Computer Engineering, University of Virginia, Charlottesville, VA.

1:40 PM (Withdrawn)

2:00 PM **395.** Mechanisms of DNA electrophoresis in entangled micelle networks. **L. Yan**, R. Gamble, J. Schneider; Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA.

2:20 PM **396. KEYNOTE.** Electrohydrodynamics and breakup of prolate drops. **A. S. Khair**; Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA.

Energy Systems

Wednesday, June 13, 2018, 1:20 PM - 3:00 PM
Location: Room 106

1:20 PM **398.** Self-assembling redox mediators that lower charge recombination during light energy harvesting. **N. Abbott**, T. Smith; Department of Chemical and Biological Engineering, University of Wisconsin-Madison, Madison, WI.

1:40 PM **399.** Using conjugated block copolymers to examine chain length effects on exciton dissociation. **M. P. Aplan**, E. D. Gomez; Chemical Engineering, The Pennsylvania State University, University Park, PA.

2:00 PM **400.** Colloidal engineering of trimodal nanoporous adhesive coatings of algae and latex for highly efficient light harvesting. **A. D. Wallace**, M. C. Flickinger, O. D. Velev; Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC.

2:20 PM **401.** Characterizing the molecular weight of conjugated polymers used in energy applications. **R. Fair**[1], E. Gomez[1,2]; [1]Materials Science and Engineering, Penn State University, University Park, PA, [2]Chemical Engineering, Penn State University, University Park, PA.

General Papers

Wednesday, June 13, 2018, 1:20 PM - 3:00 PM
Location: Room 204

1:20 PM **402. KEYNOTE.** Instabilities in toroidal droplets. **A. Fernandez-Nieves**; Georgia Tech, Atlanta, GA.

2:00 PM **403.** Nanoscale rheology and plasma membrane fluctuations with single gold nanorods. **J. C. Crocker**, M. Molaei; University of Pennsylvania, Philadelphia, PA.

2:20 PM **404.** Encapsulation of rare earth and transition metal nanoparticles at the graphite surface. **A. Lii-Rosales**[1,2], P. A. Thiel[1,2,3]; [1]Ames Laboratory, Ames, IA, [2]Chemistry, Iowa State University, Ames, IA, [3]Materials Science & Engineering, Iowa State University, Ames, IA.

2:40 PM **405.** A control of shell conformation in p-h heterostructured water-borne semiconducting

colloids for ultra-fast and stable charge separation property. **Y. Kim**; Center for Nanoscale Materials, Argonne National Laboratory, Lemont, IL.

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Colloidal Nanoparticle Synthesis and Characterization

Wednesday, June 13, 2018, 3:20 PM - 5:00 PM
Location: Room 104

3:20 PM **406.** Formation of iron oxide nanoparticles in deep eutectic solvents: From A to Fe. **O. S. Hammond**[1], D. T. Bowron[2], L. de Campo[3], S. Diaz-Moreno[4], S. Eslava[5], K. J. Edler[1]; [1]Centre for Sustainable Chemical Technologies, University of Bath, Bath, UNITED KINGDOM, [2]STFC ISIS Neutron & Muon Source, Harwell, UNITED KINGDOM, [3]Australian Nuclear Science & Technology Organisation, Sydney, AUSTRALIA, [4]Diamond Light Source, Harwell, UNITED KINGDOM, [5]Department of Chemical Engineering, University of Bath, Bath, UNITED KINGDOM.

3:40 PM **407.** Tailoring the Structure and Property of 58-Electron Gold Nanoclusters: $Au_{103}S_2(SNap)_{41}$ vs. $Au_{102}(pMBA)_{44}$. **T. Higaki**, R. Jin; Chemistry, Carnegie Mellon University, Pittsburgh, PA.

4:00 PM **408.** Kinetic control of the synthesis of silver nanodisks. **C. Gestraud**[1], Y. Hallez[1], J. Morris[2], M. Meireles[1]; [1]Laboratoire Génie Chimique, Toulouse, FRANCE, [2]Levich Institute, City College of New York, NY.

4:20 PM **409.** Flow Synthesis and Inline Optical Measurements of Gold Nanoshells. **S. Watanabe**, J. Hosokawa, M. T. Miyahara; Department of Chemical Engineering, Kyoto University, Kyoto, JAPAN.

4:40 PM **410.** Light-triggered mRNA delivery via hollow gold nanoparticlesLight-triggered mRNA delivery via hollow gold nanoparticles. **J. Shin**, J. A. Zasadzinski, A. Veeren; Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN.

Connecting the Dots in Industry

Wednesday, June 13, 2018, 3:20 PM - 5:00 PM
Location: Room 206

3:20 PM **411. KEYNOTE.** Moringa-coated sand filters for sustainable water purification. **S. Velegol**; Chemical Engineering, Penn State University, University Park, PA.

3:40 PM **412. KEYNOTE.** Programmable Fibers for Eliminating Microfiber Pollution. **M. Demirel**; Penn State University, University Park, PA.

4:00 PM **413. KEYNOTE.** To be determined. **K. Velikov**; Unilever, University Park, PA.

Directed Assembly of Molecules and Particles

Wednesday, June 13, 2018, 3:20 PM - 5:00 PM
Location: Room 208

3:20 PM **414. KEYNOTE.** Specific and Non-Specific Ion Effects in the Formation of Abeta and Sup35NM Based Amyloids. A. Sharma[1], **S. H. Behrens**[1], Y. O. Chernoff[2], A. S. Bommarius[1]; [1]School of Chemical & Biomolecular Engineering, Georgia Institute of Technology, Atlanta, GA, [2]School of Biological Sciences, Georgia Institute of Technology, Atlanta, GA.

4:00 PM **415.** Micelle-laden hydrogels as a means to synthesize and deliver nanocrystalline hydrophobic drugs. **P. D. Godfrin**, H. Lee, J. Lee, P. S. Doyle; Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA.

4:20 PM **416.** Capillary binding as a tool for making magnetically responsive and self-repairing gels. **N. I. Castellanos**[1], S. Roh[1], B. Bharti[2], O. D. Velev[1]; [1]Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC, [2]Cain Department of Chemical Engineering, Louisiana State University, Baton Rouge, LA.

4:40 PM **417.** Amidine nanoparticles, viral capsid proteins and phospholipid vesicles: assembly driven by nanobubbles. **M. Zhang**, S. G. Lemay; MESA+ Institute for Nanotechnology, University of Twente, Enschede, NETHERLANDS.

Electrokinetics and Microfluidics

Wednesday, June 13, 2018, 3:20 PM - 5:00 PM
Location: Room 105

3:20 PM **418.** Lowering the interfacial tension of liquidmetal to near zero using electrochemical reactions. **M. Song**, M. Dickey; NC State University, Raleigh, NC.

3:40 PM **419.** Transport of ionic liquids near electrified interfaces. **P. S. Gil**, A. A. Riet, B. E. Gurkan, D. J. Lacks; Case Western Reserve University, Cleveland Heights, OH.

4:00 PM **420.** Conductivity and charge carrier concentration of surfactant doped nonpolar liquids under ambient and dried conditions. **K. Xu**, J. Oh, P. J. Sides, J. W. Schneider, D. C. Prieve; Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA.

4:20 PM **421.** Collective behavior of electrohydrodynamic colloidal motors. X. Yang, **N. Wu**; Colorado School of Mines, Golden, CO.

4:40 PM **422.** Sculpting diffusiophoretic migration with reactive solutes. **X. Tang**; University of California (Santa Barbara), Santa Barbara, CA.

Energy Systems

Wednesday, June 13, 2018, 3:20 PM - 5:00 PM
Location: Room 106

3:20 PM **423.** Modeling Adsorption Processes in Energy Systems and Resource Recovery. **S. Yiacoumi**, A. Ladshaw, C. Tsouris; Georgia Institute of Technology, Atlanta, GA.

3:40 PM **424.** Gas-Hydrate equilibrium in porous media. **P. Taboada-Serrano**[1], Y. Zhang[2]; [1]Chemical Engineering, Rochester Institute of Technology, Rochester, NY, [2]Microsystems Engineering PhD Program, Rochester Institute of Technology, Rochester, NY.

4:00 PM **425.** Generating a state diagram of Langmuir film of quantum dots. **C. Nguyen**, J. Weimer; Chemistry, The University of Alabama in Huntsville, Huntsville, AL.

General Papers

Wednesday, June 13, 2018, 3:20 PM - 5:00 PM
Location: Room 204

3:20 PM **426.** Lipid Oxidation Induced by Transition Metal Ion Binding. **V. R. Greenberger**, M. F. Poyton, T. S. Yang, P. S. Cremer; Chemistry, Pennsylvania State University, University Park, PA.

3:40 PM **427.** A reaction cascade framework for modeling the time-dependent particle size distribution during nanoparticle formation. M. Wang, **T. J. Woehl**; Chemical and Biomolecular Engineering, University of Maryland, College Park, College Park, MD.

4:00 PM **428.** Assembly of novel tripeptides hydrogels. **L. Thursch**; Chemical and Biological Engineering, Drexel University, Philadelphia, PA.

4:20 PM **429.** Engineered silica nanoparticles interact differently with lipid monolayers compared to lipid vesicles. A. Asghari Adib[1], S. Nazemidashtarjandi[1], A. Kelly[2], A. Kruse[3], K. Cimatu[3], A. E. David[2], **A. M. Farnoud**[1]; [1]Chemical and Biomolecular Engineering, Ohio University, Athens, OH, [2]Chemical Engineering, Auburn University, Auburn, AL, [3]Chemistry and Biochemistry, Ohio University, Athens, OH.

Author Index

Notes

2019 ACS CSSS Symposium

93rd COLLOID & SURFACE SCIENCE SYMPOSIUM

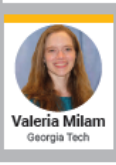
The 93rd Colloid & Surface Science Symposium of the American Chemical Society will continue a long tradition of bringing together academic and industrial researchers from across the globe to celebrate diverse experiences and common interests in colloidal systems, interfacial phenomena and soft matter topics.

We hope that you can join us from June 16th to 19th, 2019 at Georgia Tech for a memorable symposium.
See you in Atlanta!

Jennifer Lewis
Harvard University

Juan de Pablo
University of Chicago

PLENARY SPEAKERS



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