90th ACS Colloid & Surface Science Symposium

June 5-8, 2016
Harvard University
Cambridge MA

Welcome message from 90th CSSS Co-Chairs

David Weitz
Harvard University

Joyce Wong
Boston University

Ramanathan Nagarajan
Natick Soldier RDEC

Welcome to Harvard University and to the 90th Colloid and Surface Science Symposium. Harvard is the oldest institution of higher education in the United States, established in 1636. Harvard has been an active international center for work in various aspects of colloid and surface science, both traditional and modern, and is pleased to host the 90th ACS Colloid and Surface Science Symposium.

The Harvard CSSS will highlight advances in colloid and surface science and its intersections with diverse scientific and technological domains, through nearly 600 technical presentations, organized into 13 topical symposia, a general papers symposium and a poster session. Plenary lectures will be presented by Prof. Françoise Brochard-Wyart from Institut Curie, Paris, France and Prof. Eugenia Kumacheva from the University of Toronto, Canada. There will also be plenary award lectures by Prof. Matthew Helgeson, UC Santa Barbara, the recipient of the 2016 Unilever Award and Prof. Michelle Personick, Wesleyan University, the recipient of the 2016 Victor K. LaMer Award

As has been an important part of this summer symposium over the years, there will be an instrument exhibition highlighting advances in instrumental techniques in colloid and surface science.

Recognition of student researchers is another highlight of this meeting. The 90th CSSS will feature awards for best graduate student oral presentations, sponsored by the ACS journal Langmuir. These awards aim to recognize excellence in research as manifested in oral presentations of pre-selected graduate student presenters in the “Langmuir Graduate Student Awards Session”. Additionally, student posters will be judged for best poster award, also sponsored by the ACS journal Langmuir.

We invite you to meet with old friends and make new friends at various social events including the welcoming reception on Sunday evening, poster session reception on Monday evening and the symposium banquet on Tuesday evening.

Enjoy the Harvard Campus, Cambridge and Boston sights and have a fruitful conference!

Table of Contents

SYMPOSIUM ORGANIZERS

Symposium Co-Chairs

David Weitz (Harvard U)

Joyce Wong (Boston U)

Ramanathan Nagarajan (NSRDEC)

Topical Symposia Organizers

Colloidal Glasses and Gels

Roseanna N. Zia (Cornell U)

Marco Caggioni (P&G Research)

Microfluidics

Xiang Cheng (U Minnesota)

Cari Dutcher (U Minnesota)

Rheology of Complex Fluids

Matt Helgeson (U California - Santa Barbara)

Jacinta Conrad (U Houston)

Surface Science and Catalysis

John Russell (Naval Research Lab)

Christopher Karwacki (Edgewood Chemical Biological Center)

Emulsions, Foams and Dispersions

Matt Lynch (P&G Research)

Alberto Fernandez-Nieves (Georgia Tech)

Wetting, Adhesion and Surface Forces

Marina Ruths (U Mass-Lowell)

Hongbo Zeng (U Alberta)

Nanomaterials for Biomedicine

Prakash Rai (U Mass-Lowell)

Kimberly Hamad Schifferli (U Mass-Boston)

Tyrone Porter (Boston U)

Self-assembly at Molecular Scale

Paschalis Alexandridis (U Buffalo)

Thai Thayumanavan (U Mass-Amherst)

Biological Interfaces

Shelly Peyton (U Mass-Amherst)

Terri Camesano (Worcester Polytechnic Institute)

Jessica Schiffman (U Mass-Amherst)

Recent Developments in Nanomaterials

Ryan Hayward (U Mass-Amherst)

Raymond Tu (City University of New York)

Banahalli Ratna (Naval Research Lab)

Particle Assemblies

Arijit Bose (U Rhode Island)

Vinny Manoharan (Harvard U)

Colloidal and Interfacial Phenomena in Environmental Systems

Chad Vecitis (Harvard U)

Nathalie Tufenkji (McGill U)

Navid Saleh (U Texas - Austin)

Advanced Experimental and Simulation Techniques in Colloid and Interface Science

Maria Santore (U Mass-Amherst)

Amy Peterson (Worcester Polytechnic Institute)

General Papers

Anthony Dinsmore (U Mass-Amherst)

Poster Session

David Weitz (Harvard U)

Joyce Wong (Boston U)

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Langmuir Graduate Student Oral Presentation Selection Committee

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Sven Behrens, Georgia Institute of Technology

Darrell Velegol, The Pennsylvania State University

Michael Bevan, Johns Hopkins University

SUMMARY PROGRAM VIEW

Sunday, June 5, 2016

3:00 - 7:00 PM Registration, *Science Center Plaza Tent*

1:00 - 4:00 PM Exhibits and Posters set up, *Science Center Plaza Tent*

5:00 - 7:30 PM Welcoming Reception, *Science Center Plaza Tent*

Monday, June 6, 2016

7:00 - 5:30 PM Registration, *Science Center Plaza Tent*

8:10 - 8:20 AM Symposium Welcome, *Science Center Hall B*

8:20 - 9:20 AM Plenary Lecture I - Françoise Brochard-Wyart, Institut Curie, Paris, France, *Science Center Hall B*

9:20 - 9:40 PM Coffee Break

9:40 - 12:20 PM Technical Session I

12:20 - 2:00 PM Lunch

2:00 - 3:20 PM Technical Session II

3:20 - 3:40 PM Coffee Break

3:40 - 5:00 PM Technical Session II (Continued)

5:30 - 8:00 PM Reception, Poster Session, Exhibits, *Science Center Plaza Tent*

8:00 - 10:00 PM Exhibits and Poster Break Down, *Science Center Plaza Tent*

Tuesday, June 7, 2016

8:20 - 9:20 AM Plenary Lecture II - Eugenia Kumacheva, University of Toronto, Canada, *Science Center Hall B*

9:20 - 9:40 PM Coffee Break

9:40 - 12:20 PM Technical Session III

12:20 - 2:00 PM Lunch

2:00 - 3:20 PM Technical Session IV

3:20 - 3:40 PM Coffee Break

3:40 - 5:00 PM Technical Session IV (Continued)

5:30 - 6:30 PM Plenary - Unilever Award Lecture – Matthew Helgeson, UC Santa Barbara, *Science Center Hall B*

7:00 - 9:30 PM Symposium Banquet, *Annenberg Hall*

Wednesday, June 8, 2016

8:30 - 9:20 AM Plenary - Victor K. LaMer Award Lecture – Michelle L. Personick, Wesleyan, *Science Center Hall B*

9:20 - 9:40 PM Coffee Break

9:40 - 12:20 PM Technical Session V

12:20 - 2:00 PM Lunch

2:00 - 3:20 PM Technical Session VI

3:20 - 3:40 PM Coffee Break

3:40 - 5:00 PM Technical Session VI (Continued)

5:00 PM Symposium Concludes

Coffee Break Stations

Two Coffee Break stations will be open from 8:00 AM until 4:00 PM

June 6: *Science Center Plaza Tent; Maxwell Dworkin Ground Floor Lobby*

June 7: *Science Center Arcade; Maxwell Dworkin Ground Floor Lobby*

June 8: *Science Center Arcade; Maxwell Dworkin Ground Floor Lobby*

SESSIONS AT A GLANCE

Symposium	Mon		Tue		Wed		Meeting Room
	AM	PM	AM	PM	AM	PM	
Colloidal Glasses and Gels	A	B	C	D			Pierce 301
Microfluidics	A	B	C	D			Maxwell Dworkin MD 119
Rheology of Complex Fluids			A	B	C	D	Maxwell Dworkin MD G125
Surface Science and Catalysis	A	B	C	D			Science Center Room B10
Emulsions, Foams and Dispersions	B	A	D	F	H	G	Science Center Hall E
					C		Science Center Room B10
		E					Mallinckrodt Lab Room B23
Wetting, Adhesion and Surface Forces	A	B	D	F	G	E	Science Center Hall A
		C					Science Center Room 309
						H	Science Center Room 309a
Colloidal and Interfacial Phenomena in Environmental Systems	A	B	C	D			Jefferson 356
Biological Interfaces			A	B	C	D	Jefferson 256
Nanomaterials for Biomedicine	C	D	E	F	A	B	Maxwell Dworkin MD G115
Self-assembly at Molecular Scale	A	B	C	D	E		Pierce 209
Particle Assemblies	A	B	C	D	E	F	Jefferson 250
Recent Developments in Nanomaterials	A	B	C	D			Science Center Room 309a
Advanced Experimental and Simulation Techniques			A	B	C	D	Science Center Room 309
General Papers			A	B	C	D	Mallinckrodt Lab Room B23
Poster Session	Monday Evening, May 6						Science Center - Plaza Tent
Langmuir Student Oral Presentation Award Session	A	B					Maxwell Dworkin MD G125

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PLENARY SPEAKERS

Plenary Speaker

Françoise Brochard-Wyart
Institut Curie, Paris, France

Monday, June 6, 8:20-9:20 AM

Science Center Hall B

Unilever Award Winner

Matthew Helgeson
University of California, Santa Barbara

Tuesday, June 7, 5:30-6:30 PM

Science Center Hall B

Plenary Speaker

Eugenia Kumacheva
University of Toronto, Toronto, Canada

Tuesday, June 7, 8:20-9:20 AM

Science Center Hall B

Victor K LaMer Award Winner

Michelle L. Personick
Wesleyan University

Wednesday, June 8, 8:20-9:20 AM

Science Center Hall B

TOPICAL SYMPOSIA KEYNOTE SPEAKERS

Colloidal Glasses and Gels
Emanuela Del Gado (Georgetown)
Eric R. Weeks (Emory)

Microfluidics
Michael D. Graham (Wisconsin)
Brian Kirby (Cornell)

Rheology of Complex Fluids
Jeffrey Morris (CCNY)
Chinedum O. Osuji (Yale)

Surface Science and Catalysis
Vicki H. Grassian (UC San Diego)
Maria Flytzani-Stephanopoulos (Tufts)
L. Robert Baker (Ohio State) – LaMer Keynote

Emulsions, Foams and Dispersions
Arjun G. Yodh (U Penn)
John Brady (Cal Tech)

Wetting, Adhesion and Surface Forces
Ali N. Dhinojwala (Akron)
Rosa M. Espinosa-Marzal, (Illinois)

Nanomaterials for Biomedicine
Rakesh Jain (Harvard Medical School, MGH)
Thomas J. Webster (Northeastern)
Aaron C. Anselmo (MIT) – LaMer Keynote

Self-assembly at Molecular Scale
Nicholas L. Abbott (U Wisconsin-Madison)
Athanassios Panagiotopoulos (Princeton)

Biological Interfaces
Anita Shukla (Brown)
Anand Asthagiri (Northeastern)
Rebecca Carrier (Northeastern)
Y. Shrike Zhang (Harvard Medical School) – LaMer Keynote

Recent Developments in Nanomaterials
Rajesh R. Naik (Air Force Research Lab)
Laura Clarke (NC State)

Particle Assemblies
Orlin D. Velev (NC State)
Kathleen J. Stebe (U Penn)
Jing Yan (Princeton) – LaMer Keynote

Colloidal and Interfacial Phenomena in Environmental Systems
Robert J. Hamers (Wisconsin)
Subir Bhattacharjee (Water Planet, Inc)

Advanced Experimental and Simulation Techniques in Colloid and Interface Science
Roseanna Zia (Cornell)
Jodie L. Lutkenhaus (Texas A&M)

General Papers
Peter D. Olmsted (Georgetown)
Rui Wang (MIT) - LaMer Keynote

PLENARY LECTURERS BIO

Professor Françoise Brochard-Wyart

Françoise Brochard-Wyart is Professor Emeritus at the Université Pierre et Marie Curie (Paris VI) and Institut Universitaire de France (IUF) Member, working in the "Physical Chemistry Curie" Unit of the Institut Curie (UMR 168). Françoise Brochard-Wyart is a theoretical physico-chemist trained in liquid crystal, polymer, wetting phenomena, physics of membranes (pores and tubes) and cellular adhesion. At Institut Curie, as IUF Member, Françoise Brochard-Wyart has focused on the mechanics of model tissues covering a broad range of themes including tissue rheology, aspiration, spreading, mechanosensitivity, wetting and dewetting, adhesion and fracture, hybrid nanoparticles-cellular aggregates.

Françoise Brochard-Wyart was born in Saint-Etienne in France. After two years of preparation to "Grandes Ecoles" in Lycée Janson de Sailly, she entered the Ecole Normale Supérieure ENS Cachan in Physics where she obtained the Aggregation de Physique in 1968. In 1966-1967, she studied Solid State Physics (D.E.A. de Physique des Solides - Orsay) with J.Friedel, P.Nozières, A.Guinier and P.G.de Gennes.

In 1968, she was nominated as Assistant Professor in University d'Orsay and started her Ph.D research in the Laboratory of Solid State Physics in Orsay (1969-1974) under the supervision of P.G.de Gennes. Her doctoral thesis focused on the dynamical properties of liquid crystals. After Ph.D, she started to work on the flicker phenomenon of red blood cells in collaboration with Institut Pasteur.

In 1975, she became a researcher at Collège de France in Paris, where she investigated the dynamics of polymer chains.

In 1986, she was appointed Professor of Physical Chemistry at the University Pierre et Marie Curie (Paris) in 1986 and focused her research on the physics of interfaces, wetting and dewetting. She had industrial collaboration with Dior and Rhone Poulenc.

In1991, she joined the Institut Curie in Paris. She became a group leader of "Surfaces douces". She worked on wetting and dewetting at soft interfaces (in collaboration with Michelin, Rhodia and St Gobain) and began performing research in biophysics, on topics such as cell adhesion, artificial cells and membrane mechanics.

In 2003, she became a member of the prestigious Institut Universitaire de France. In Institut Curie, she started collaboration with biologists. She had been working on applying soft matter physics to study the biophysics of model tissues (tissue rheology, aspiration, spreading, mechanosensitivity, wetting and dewetting, adhesion and fracture). This approach has been very fruitful in unveiling striking analogies between the physics of inert soft matter (polymer, viscous pastes, silly putty) and the behavior of biological tissues. The results obtained from such analogies have suggested important implications to both tissue development and cancer. In collaboration with E. Lemichez, she studied the opening in macroapertures in cells in analogy with the dewetting of viscous liquids.

In 2014, she became Professor Emeritus and started a collaboration with Françoise Winnik in the Mana Institut in Tsukuba (Japan) working on Hybrid cell-nanoparticles aggregates.

Françoise Brochard-Wyart is an international expert in theoretical soft matter physics. She has published more than 260 peer-reviewed papers (h-index 62), 5 book chapters and 2 books. She has given more than 130 invited lectures, including international plenary and keynote lectures, led 15 grants as coordinator, and has supervised 9 post-docs and 25 completed PhDs. She has received numerous awards throughout her career, including the Prix Jean Ricard from the Société Française de Physique (French Physical Society) in 1998 and a Special Mention for the Prix Roberval in 2007. She became in 2015 Officier de la Légion d'Honneur.

PLENARY LECTURERS BIO

Professor Eugenia Kumacheva

Eugenia Kumacheva was born in Odessa, Soviet Union. She received her undergraduate degree (Cum Laude) and M.Sc. degree in The Technical University in Saint Petersburg. In 1981-1985, she conducted her Ph.D. research in Physical Chemistry of Polymers in the Russian Academy of Sciences. Her doctoral thesis focused on the new types of composite organic coatings obtained by electrodeposition from aqueous dispersions. In 1985, she became a Junior Scientist in the Department of Chemistry at the Moscow State University.

In 1991, Eugenia Kumacheva received Minerva Foundation Fellowship to conduct her postdoctoral research in polymer physics in the Department of Materials and Interfaces at the Weizmann Institute of Science. Her research focused on properties of fluid films confined between solid surfaces. Using the surface forces balance technique, she discovered confinement-induced reversible first-order liquid-to-solid transitions in ultra-thin liquid films. She also discovered a reduction in friction between the sliding surfaces bearing polymer brush-like molecules. This effect occurred due to the long-range repulsion of an entropic origin between the polymer brushes. This work shed light on the relaxation processes in confined polymer layers and the origin of very low friction in joints when biopolymer-covered surfaces slide past each other.

In 1996, Eugenia Kumacheva joined the Department of Chemistry at the University of Toronto and in 2005 she was promoted to the ranks of Professor. She conducts interdisciplinary research in polymer, surface and materials science, nanoscience and microfluidics. One area of her research includes colloidal self-assembly. She has developed new strategies for the organization of nano-, meso- and microscopic particles in complex, hierarchical structures. She has proposed a new fabrication method for the generation of polymer colloids. She conceptualized and developed continuous microfluidic synthesis of polymer particles with exquisite control over their dimensions, shapes, morphologies, and compositions. The microfluidic synthesis was scaled up, thereby paving the way for its applications in academia and industry. She also developed an exploratory microfluidic platform for studies of fast physical and chemical processes involving gas bubbles. This platform was used to model carbon dioxide circulation in nature and explore carbon dioxide sequestration.

Eugenia Kumacheva has published more than 220 peer-reviewed papers, 9 book chapters and 2 books. More than 120 students and postdocs have conducted research in her laboratory, in addition to numerous visiting students and professors from the U.S.A., Europe and Asia.

Eugenia Kumacheva is Canada Research Chair in Advanced Polymer Materials (Tier 1). She is a Fellow of the Royal Society of Canada. She has been awarded the E. Gordon Young Lectureship and the Macromolecular Science and Engineering Award (both by The Chemical Institute of Canada), the Clara Benson Award (Canadian Council of University Chemistry), the Japan-Canada WISET Lectureship and Killam Fellowship (Canada Council of Arts and Science). Since 2013, she holds the distinction of the University Professor (given to <2% of the tenured Faculty). She is a recipient of prestigious international awards including Schlumberger Scholarship (U.K.) and International Chorafas Foundation Award in Physics and Engineering and Alexander von Humboldt Senior Research Award (Germany). Her distinctions include Visiting Professorships at the Universities of Cambridge and Oxford, Harvard University, Moscow State University, Universitè Louis Pasteur (Strasburg) and the University of Bayreuth. In 2009, Eugenia became the Laureate of the L'Oreal-UNESCO Award “For Women in Science”.

Eugenia Kumacheva's public service includes her work in the Macromolecular Science and Engineering Division (NSERC Canada), Vanier-Banting Selection Board (NSERC Canada), and National L’Oreal-Unesco “Women in Science” selection committee. She is an editor or on advisory board of several scientific journals. She serves on Science Foundation review panels for U.S.A., Ireland, Germany, the Netherlands, Israel and Switzerland. She is a member of scientific advisory boards for the Waterloo Nanoscience Institute (Canada), Triangle Materials Science Center and Brookhaven National Laboratory (USA), RIKEN Institute (Japan), Freiburg Institute for Advanced Studies, Max Planck Institute for Polymer Research and Leibnitz Institute (Germany), an International Review Panel for the L'Oreal-Unesco Award and the European Union Science Council.

LAMER AND UNILEVER AWARD WINNERS

2016 Victor K LaMer Award Winner

Michelle L. Personick
Wesleyan University

Victor K. LaMer Award is given for the outstanding Ph.D. thesis in colloid or surface chemistry accepted by a US or Canadian university during the three year period prior to the award year.

Michelle L. Personick received her undergraduate degree in Chemistry from Middlebury College in 2009 and a Ph.D. degree in Chemistry from Northwestern University in 2013. Her doctoral thesis, titled "Controlling the Shape and Crystallinity of Gold and Silver Nanoparticles," was carried out under the direction of Chad A. Mirkin.

A key advance of her dissertation work was the development of a comprehensive set of design guidelines for controlling the shape of gold nanoparticles via reaction kinetics and surface passivation effects.

She is the recipient of a National Defense Science and Engineering Graduate (NDSEG) Fellowship from the Department of Defense, as well as a Graduate Research Fellowship from the National Science Foundation. Her graduate research contributed to 15 publications in journals such as the Journal of the American Chemical Society, Nano Letters, and Science.

From 2013 to 2015, Michelle Personick was a postdoctoral researcher at Harvard University with Cynthia M. Friend, co-advised by Robert J. Madix. As a member of the Integrated Mesoscale Architectures for Sustainable Catalysis (IMASC) Energy Frontier Research Center, she studied selective oxidative transformations of alcohols on nanoporous gold alloy catalysts.

In July 2015, she joined the faculty at Wesleyan University in Middletown, Connecticut as an Assistant Professor of Chemistry. Her research at Wesleyan focuses on the synthesis of noble metal alloy nanoparticles with well-defined shapes and catalytically active high-energy surfaces.

2016 Unilever Award Winner

Matthew E. Helgeson
University of California at Santa Barbara

Unilever Award is given in recognition of fundamental work in colloid or surfactant science carried out in North America by researchers in the early stages of their careers.

Matthew E. Helgeson is an Assistant Professor at the University of California, Santa Barbara. In 2004, he received a B.S. degree in Chemical Engineering from Carnegie Mellon University. In 2009, he received his Ph.D. in Chemical Engineering from the University of Delaware, where he performed doctoral research with Norman Wagner and Eric Kaler. From 2009-2012, he performed postdoctoral research in the Novartis-MIT Center for Continuous Manufacturing at the Massachusetts Institute of Technology under the supervision of Patrick Doyle. Helgeson joined the faculty of UCSB in 2012, where he holds an appointment in the Department of Chemical Engineering and is a faculty member of the Materials Research Laboratory.

Helgeson's research is devoted to the design and processing of complex fluids and colloidal soft matter with well-specified mesostructure. A common interest in his research group is to use a combination of molecular self-assembly and flow to guide the interactions and assembly of colloidal species (nanoparticles, emulsions, proteins, etc.) into emergent structures. To complement this research, the Helgeson lab develops experimental tools using scattering and microscopy to monitor the multi-scale microstructure and dynamics of these fluids, ultimately to inform their molecular-level design. Current topics of interest include the engineering of colloidal particulates and gels for applications in biotechnology, advanced separations and energy conversion.

Since joining the faculty at UCSB, Helgeson's research and teaching have been recognized with a number of awards including Early Career Awards from the National Science Foundation (2014) and the Department of Energy (2015), the inaugural Distinguished Young Rheologist Award from TA Instruments (2011), a Northrup Grumman Excellence in Teaching Award (2015), and the Victor K. LaMer Award from the ACS Division of Colloid & Surface Chemistry (2011).

EXHIBITORS

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90th ACS Colloid and Surface Science Symposium

June 5-8, 2016

Harvard University

Cambridge, MA

David Weitz, Joyce Wong and Ramanathan Nagarajan, *Symposium Co-chairs*

MONDAY MORNING

Science Center
Hall B

Plenary Lectures

R. Nagarajan, *Organizer*
D. Weitz, *Presiding*

8:10 Introductory Remarks.

8:20 Introduction of Speaker.

8:30 1. Entangled active matter: From ants to living cells. **F. Brochard-Wyart**

Jefferson
356

Colloidal & Interfacial Phenomena in Environmental Systems

N. B. Saleh, N. Tufenkji, C. D. Vecitis, *Organizers, Presiding*

9:40 2. Estimating colloidal attachments onto fibrous substrates: From nanoparticle functionalization to pathogen detection. **T. Bera**, P. Sisco, H. Goktas, A. Bandremer, A. Fong, S. Linder, K. Gleason, S. Torosian

10:00 3. Influence of surface roughness on colloid retention in impinging jet experiments. **J.A. Rasmuson**

10:20 4. Radioactivity-induced charging: Theory, measurements, and applications. **Y. Kim**, S. Yiacoumi, C. Tsouris

10:40 5. Modeling diffusiophoresis during CO_2 dissolution into aqueous suspensions. **O. Shardt**, S. Shin, P.B. Warren, H.A. Stone

11:00 6. Transport of highly concentrated microemulsion-stabilized iron oxide nanoparticles through porous media. **D. Hsu**, F. Choi, E. Acosta

11:20 7. Deposition of bentonite particles in the presence of cellulose nanocrystals from flowing suspensions onto model surfaces. **Y. Boluk**

11:40 8. Diffusiophoresis at the CO_2-water interface. **S. Shin**, O. Shardt, P.B. Warren, H.A. Stone

12:00 9. Prediction of nanoparticle and colloid attachment on unfavorable mineral surfaces using representative discrete heterogeneity. **W.P. Johnson**, J. Trauscht, E.F. Pazmino

Pierce
301

Colloidal Glasses & Gels

Gels & Sol-Gel Transition Fundamentals

M. Caggioni, R. Zia, *Organizers*
I. Kretzschmar, *Presiding*

9:40 10. Keynote Lecture: Aging in tenuous soft solids: Stretched and compressed exponential dynamics. **E. Del Gado**

10:20 11. Locally glassy dynamics in colloidal systems with competing interactions. **P.D. Godfrin**, S.D. Hudson, K. Hong, L. Porcar, P. Falus, N.J. Wagner, Y. Liu

10:40 12. Effect of depletant dispersity on phase behavior of model attractive colloid. **N.Y. Park**, J. Conrad

11:00 13. The sol-to-gel transition. **R.H. Ebini**, C.M. Sorensen

11:20 14. Microgel particles in non-aqueous colloid-polymer mixtures. **J. Bonham**, M. Faers, J. van Duijneveldt

11:40 15. Ion exchange induced gelation of zirconium phosphate nanosheet in polyelectrolyte solution. **X. Huang**, Z. Cheng, O. de Llergo, S. Marquez

12:00 16. The role of hydrodynamic interactions in colloidal dispersions with short-ranged attraction and long-ranged repulsion. **Z. Varga**, J.W. Swan

Science Center
Hall E

Emulsions, Foams & Dispersions

Active & Interesting Particles

A. Fernandez-Nieves, M. Lynch, *Organizers, Presiding*

9:40 17. Keynote Lecture: Forces, stresses and the (thermo?) dynamics of active matter. **J. Brady**

10:20 18. Enzymatic reaction-propelled microswimmers. **W. Jang**, G. Duan, E. Reed, D. Lee, D.A. Hammer

10:40 19. Epithelial cells on toroidal hydrogen. **Y. Chang**, R. Cruz, A.A. Fragkopoulos, S. Marquez, A. Garcia, A. Fernandez-Nieves

11:00 20. Defect unbinding in active nematic toroids. **P. Ellis**, Y. Chang, A. Fernandez-Nieves

11:20 21. Multi-shell hollow nanogels with responsive shell permeability. **W. Richtering**, A. Schmid, J. Pedersen, I. Potemkin, A. Rudolf, P. Lindner, M. Karg

11:40 22. Bijel fibers using solvent transfer-induced phase separation (STRIPS). M. Haase, N. Sharifi-Mood, K.J. Stebe, **D. Lee**

12:00 23. Control of shape and internal structure of spherical and non-spherical microparticles templated from liquid crystalline droplets. **X. Wang**, E. Bukusoglu, D. Miller, M. Bedolla Pantoja, J. Xiang, O. Lavrentovich, N.L. Abbott

12:20 24. A general route to prepare Janus particles based on liquid marbles. **Y. Sheng**, G. Sun, T. Ngai

Maxwell Dworkin
MD G125

Langmuir Graduate Student Oral Presentation Award Symposium

R. Nagarajan, *Organizer, Presiding*

9:40 25. Ion-specificity in particle aggregation studied by AFM colloidal probe and light scattering techniques: Towards an extended Hofmeister series. **T. Oncsik**, F. Montes Ruiz-Cabello, G. Trefalt, I. Szilagyi, M. Borkovec

10:00 26. Anomalous dispersion of ‘Hedgehog’ particles. **J. Bahng**, B. Yeom, Y. Wang, S. Tung, D. Hoff, N. Kotov

10:20 27. Using advanced rheological and neutron scattering techniques to determine signatures of branching in wormlike micelles (WLMs). **M. Calabrese**, S.A. Rogers, L. Porcar, N.J. Wagner

10:40 28. Light-triggered contents release from liposomes in a two-photon microscope. **J. Shin**, M. . Ogunyankin, J.A. Zasadzinski

11:00 29. Design of redox-responsive electrochemical interfaces for molecular recognition and advanced separation processes. **X. Su**, T.F. Jamison, T. Hatton

11:20 30. Manipulation of colloidal self-assembly using stimuli-responsive surfactants. **V. Sresht**, L.D. Zarzar, P. Brown, E.M. Sletten, J.A. Kalow, T. Hatton, T.M. Swager, D. Blankschtein

Maxwell Dworkin
MD 119

Microfluidics

Multicomponent or Active Particle Systems

X. Cheng, C. Dutcher, *Organizers*
V. Sharma, *Presiding*

9:40 31. Keynote Lecture: Theory of margination in blood and other multicomponent suspensions. **M.D. Graham**

10:20 32. Stress-gradient-induced polymer migration in microfluidics. **H. Rezvantalab**, R.G. Larson

10:40 33. Promise of elastomeric particles: Bio-sequestration, separation and delivery. **W. Shields**, K.A. Ohiri, A. Li, J. Huang, J. White, Y. Zhang, S. Zauscher, A. Chilkoti, G. Lopez

11:00 34. Effect of internal architecture on microgel deformation during flow through microfluidic constrictions. **L. Chen**, K. Wang, P.S. Doyle

11:20 35. Boundary guidance at intersecting planes in the navigation of diffusiophoretically self-propelled colloid. **A. Mozaffari**, J. Koplik, C. Maldarelli

11:40 36. Hydrodynamics of catalytically self-propelled particles. **N. Sharifi-Mood**, M. Karim, A. Mozaffari, U.M. Cordova-Figueroa

12:00 37. Visualizing nanoscopic topography and patterns in freely standing thin films. Y. Zhang, S. Yilixiati, **V. Sharma**

Maxwell Dworkin
MD G115

Nanomaterials for Biomedicine

T. Porter, P. Rai, *Organizers*
K. Hamad-Schifferli, *Organizer, Presiding*

9:40 38. Nanobiophotonics and its medical applications. **L. Lee**

10:10 39. Nanoplatforms for targeted delivery of molecular inhibitors and multi-modal imaging. **S. Sridhar**

10:40 40. Keynote Lecture: Making advances in nanomedicine that the FDA will approve. **T.J. Webster**

11:20 41. Characterizing dynamical interactions of nano-materials in biological media using real-time 3D single-particle tracking and multi-resolution imaging. **H. Yang**

11:40 42. Plasmonic nanoparticle emulsions for use as photo-acoustic imaging and therapeutic agents. D. Li, Y. Lee, K. Larson-Smith, **L.D. Pozzo**

12:00 43. Development of glass-coated gold nanoparticle tags for surface-enhanced Raman spectroscopy. **M. Carre**, H. de Puig Guixe, I. Bosch, K. Hamad-Schifferli, L. Gehrke

Jefferson
250

Particle Assemblies

Interfacial Assembly

A. Bose, V. Manoharan, *Organizers, Presiding*

9:40 44. Keynote Lecture: Curvature capillary migration. **K.J. Stebe**

10:20 45. Enhanced binding of anionic colloidal particles to water/oil interface by tuning the interfacial electric potential. W. Hong, S. Teale, R. Bancroft, **T. Dinsmore**

10:40 46. MD simulations of the drag coefficients of colloids moving along a gas/liquid interface due to Brownian fluctuations and deterministic external forces. C. Maldarelli, **J. Koplik**

11:00 47. Electric field driven particle assembly on a drop interface. **P.M. Vlahovska**, Q. Brosseau, M. Ouriemi

11:20 48. Hollow Janus cylinders at liquid interfaces. R. Weir, **S. Shojaei-Zadeh**

11:40 49. Measuring the elasticity of particulate assemblies at liquid interfaces. **W. He**, Y. Sun, B. Davidovitch, G. Grason, T. Dinsmore

12:00 50. Curvature-driven colloidal assembly near wavy boundaries. **Y. Luo**, F. Serra, K.J. Stebe

Science Center
Room 309a

Recent Developments in Nanomaterials

Synthesis & Processing

R. C. Hayward, B. Ratna, R. S. Tu, *Organizers, Presiding*

9:40 51. Tasty active colloids swimming in your cup: How to make rapidly dissolving instant coffee with motile particles. **M. Rutkevicius**, K.P. Velikov, O.D. Velev

10:00 52. One pot synthesis and characterization of gold nanocatalyst using Sacha inchi (*Plukenetia volubilis*) oil: Green approach. **B. Kumar**, L.H. Cumbal

10:20 53. Scalable processing of 2D nanosheets into 3D crumpled nanoparticles. D. Parviz, **M. Green**

10:40 54. Predicting the colloidal stability of 2D nanomaterials synthesized using liquid-phase exfoliation. **V. Sresht**, A. Govind Rajan, E. Bordes, M. Strano, A. Padua, D. Blankschtein

11:00 55. Effect of ligand chemistry on metal-organic-inorganic composites as thermal interface materials. **N. Nagabandi**, C. Yegin, M. Akbulut

11:20 56. Corrosion protection of aluminum alloy via graphene-polymer nanocomposite coatings. **S. De**, J. Lutkenhaus

11:40 57. Structure-property relations in carbon nanotube fibers by downscaling solution processing. **R.J. Headrick**, D.E. Tsentalovich, J. Berdegué, L. Liberman, O. Kleinerman, Y. Talmon, M. Pasquali

12:00 58. Scalable and controlled heteroaggregation of nanoparticles in aqueous media using electrostatic attraction and controlled steric interactions. **R. Kastilani**, L.D. Pozzo

Pierce
209

Self-Assembly at Molecular Scale

Responsive

P. Alexandridis, *Organizer*
S. Thayumanavan, *Organizer, Presiding*
W. Richtering, *Presiding*

9:40 59. Electrodeposition of self-assembled complexes of polyvinylferrocene with carbon nanotubes and pyrrole monomers: Preparation of redox-electrodes for selective, electrochemically-mediated extraction of micropollutants. **T. Hatton**

10:10 60. Hollow, core-shell and ultra-low cross-linked microgels at fluid and solid interfaces. **W. Richtering**, K. Geisel, O. Virtanen, F. Schulte, I. Potemkin, M. Ahmed, A. Rudolf

10:40 61. Responsive polymeric nanoassemblies. **S. Thayumanavan**

11:00 62. Controlling polymer bridging in thermoresponsive nanoemulsions. **J. Kim**, R. Kender, T. Nguyen, M.E. Helgeson

11:20 63. Different types of charged inverse micelles in non-polar media. **M. Prasad**

11:40 64. Interfacial molecular assembly of conjugated polymers during solution printing. **Y. Diao**

12:00 65. Self-assembly of photoswitchable carbohydrate amphiphiles and their antibacterial and antifreeze properties. **Y. Hu**, R. Tabor, B. Wilkinsion

Science Center
Room B10

Surface Science & Catalysis

Surface Chemistry in Atmospheric Environments

C. J. Karwacki, *Organizer*
J. N. Russell, *Organizer, Presiding*

9:40 66. Keynote Lecture: Surface chemistry of metal oxides in atmospheric environments. **V.H. Grassian**

10:20 67. DMMP reactivity On zirconium hydroxide under *in operando* conditions. **P. Pehrsson**, R. Balow, W.O. Gordon, I. Iordanov, V.M. Bermudez, D. Barlow, G.W. Wagner, J. Lundin, D. Gunlycke, I. Schweigert, J.H. Wynne, C. Knox, C.J. Karwacki, G.W. Peterson

10:50 68. A first-principles study of the initial hydrolysis of aluminum nitride. **C.J. Bartel**, C. Muhich, A.W. Weimer, C. Musgrave

11:10 69. Effect of atmospheric interferents on the adsorption/decomposition of dimethyl methylphosphonate on metal oxide nanoparticles. K. Fears, **S. Holdren**, J. Wallace, J. Long, J. Owrutsky, M.R. Zachariah, B.W. Eichhorn

11:40 70. Water adsorption under ambient conditions: To dissociate or not at metal oxide interfaces. **J.T. Newberg**, C. Arble, S. Rani, J.A. Boscoboinik, X. Tong, L. Giordano, A. Ferrari

Science Center
Hall A

Wetting, Adhesion & Surface Forces

Surface Forces: Confined Fluid Films

M. Ruths, H. Zeng, *Organizers, Presiding*

9:40 71. Keynote Lecture: Structure of nanoconfined fluids elucidated via force measurements. **R.M. Espinosa-Marzal**

10:20 72. Influence of the dynamic structural heterogeneity of self-assembled monolayers on hydrophobic interactions. **H. Yeon**, C. Wang, N.L. Abbott

10:40 73. Probing surface interactions and thin films drainage process of air bubble and liquid droplet using droplet probe atomic force microscopy. **C. Shi**, H. Zeng

11:00 74. Probing hydrophobic interactions of polymer surfaces and deformable surface. **H. Zeng**, C. Shi, A. Faghihnejad

11:20 75. Effects of film thickness on elastohydrodynamic deformation. **Y. Wang**, C. Dhong, J. Frechette

11:40 76. Contrasting the influences of isolated and interconnected microstructures on hydrodynamic drainage forces. **G.A. Pilkington**, J. Frechette

12:00 77. Effect of polymer confinement on the film drainage behavior between a deformable droplet and mica: An RICM study. **S. Borkar**, A. Ramachandran

MONDAY AFTERNOON

Jefferson
356

Colloidal & Interfacial Phenomena in Environmental Systems

N. B. Saleh, N. Tufenkji, C. D. Vecitis, *Organizers, Presiding*

2:00 78. Keynote Lecture: Transformations and biological impact of emerging energy storage nanomaterials. **R.J. Hamers**

2:40 79. Biofilm formation and biodegradation of carbon nanotube-polymer nanocomposites. **H. Fairbrother**, D.G. Goodwin, D. Phan, Z. Xia, E.J. Bouwer

3:00 80. Influence of membrane-associated proteins on nanoparticle interaction with model biological membranes. **J.A. Pedersen**, E. Melby, T. Kuech, A.C. Mensch, M.D. Torelli, L.M. Jacob, A. Vartanian, C.J. Murphy, R.J. Hamers

3:20 Intermission.

3:40 81. Complex colloidal motion at oil-water interfaces with bacteria. **L. Vaccari**, T.H. Niepa, M. Molaei, N. Sharifi-Mood, R. Leheny, K.J. Stebe

4:00 82. The mechanisms of asphaltene precipitation in oil studied with Brownian Dynamics simulations. **K.P. Santo**, A. Vishnyakov

4:20 83. Responsive stabilization & applications of nanoparticles in extreme salinity and high-temperature reservoirs. **M. Ranka**

4:40 84. Colloidal suspensions of MgO nanoparticles in molten salts for continuous CO_2 capture from high temperature effluent gases. **T. Harada**, F. Simeon, E.Z. Hamad, T. Hatton

Pierce
301

Colloidal Glasses & Gels

Rheology of Gels

R. Zia, *Organizer*
M. Caggioni, *Organizer*, *Presiding*

2:00 85. Effect of active Janus particles on the microscopic dynamics of fractal cluster gels. **M. Szakasits**, W. Zhang, M.J. Solomon

2:20 86. Microscale yielding of cellulose fiber gels. J. Song, M. Caggioni, T. Squires, **P.T. Spicer**

2:40 87. Characterization of the dynamic heterogeneous transition of a hydrogenated castor oil gel using multiple particle tracking microrheology. **M. Wehrman**, S. Lindberg, K. Schultz

3:00 88. Video-microscopy based micro-rheological characterization of complex fluids: An industrial perspective. **M. Caggioni**, R. Pastore, F. Giavazzi, R. Cerbino

3:20 Intermission.

3:40 89. Dynamics of two-dimensional colloidal clusters under rotating magnetic fields. **E. Hilou**, D. Du, S.L. Biswal

4:00 90. Relationships between structure and permeability in colloidal networks. **L. Gelb**, A. Mertz, M. Ingber, A.L. Graham, A. Redondo

4:20 91. Gravity-driven instabilities in fibrillar colloidal gels containing a second disperse phase. **K. Velikov**

4:40 92. Rate- and pH-dependent rheology of semi-dilute boehmite slurries. **S. Pednekar**, J. Morris, J. Chun

Science Center
Hall E

Emulsions, Foams & Dispersions

Foams & Bubbles

A. Fernandez-Nieves, M. Lynch, *Organizers*
R. Höhler, M. Helgeson, *Presiding*

2:00 93. Many body interactions in foams and emulsions. **R. Höhler**

2:30 94. Foam dynamics in micromodels. **S.L. Biswal**

2:50 95. Domain and rim growth kinetics in stratifying foam films. **Y. Zhang**, S. Yilixiati, V. Sharma

3:10 96. Foams and dispersions at high salinity and temperature. **K.P. Johnston**, E. Moaseri, M. Iqbal, J. Lee, C. Dandamudi, A. Worthen, Z. Xue, S. Alzobaidi, A. Elhag, C. Da

3:30 Intermission.

3:40 97. The origin of power-law rheology and avalanches in wet foams. **J.C. Crocker**, H. Hwang, R. Riggleman

4:00 98. Microbubble size effects on sonoporation. **M.A. Borden**, K. Song, A. Fan, M. Calvisi, J. Brlansky

4:20 99. Stabilizing aqueous foams in presence of crude oil: The critical role of nanoparticles. **S. Mahavadi**, **Y. Jiang**, **S.I. Andersen**

4:40 100. Exploration of additives for improvement of bitumen froth. **D. Miller**, H. Wiles, D.J. Brennan, T. Kuo, H. Singh, T. Kalantar

Mallinckrodt Lab
Room B23

Emulsions, Foams & Dispersions

Pickering Emulsions

A. Fernandez-Nieves, M. Lynch, *Organizers*
H. Katepalli, W. Richtering, *Presiding*

2:00 101. Effect of added co-surfactants on the stability of Pickering emulsions stabilized with oppositely-charged particle-surfactant mixtures. **H. Katepalli**, T. Hatton, D. Blankschtein

2:20 102. The secret life of Pickering emulsions: Revealed using two colours of particle. **D. French**, A. Brown, A. Schofield, J. Fowler, P. Taylor, P. Clegg

2:40 103. Role of phase change in the rheological characterization and shear stability analysis of silica-stabilized paraffin wax-in-water Pickering emulsions. **P. Chatterjee**, P. Underhill

3:00 104. Stabilization of pH-switchable Pickering emulsion by protein nanocage. **M.M. Sarker**, S. Lim

3:20 Intermission.

3:40 105. Ultrastable food-grade Pickering and network-stabilized emulsions using chitosan-modified silica nanoparticles. **L. Alison**, E. Tervoort, P. Rühs, M. Zanini, L. Isa, A. Studart

4:00 106. Bespoke contrast-matched diblock copolymer nanoparticles enable the rational design of highly transparent Pickering double emulsions. **M.j. Rymaruk**, K.L. Thompson, M. Derry, N. Warren, L.P. Ratcliffe, C.N. Williams, S.L. Brown, S.P. Armes

4:20 107. Materials from aqueous and non-aqueous Pickering emulsion and foam systems. **A.K. Dyab**, L.A. Mohamed

4:40 108. Microstructural effects on the rheology of solid-stabilized emulsions. M. Kaganyuk, **A. Mohraz**

Maxwell Dworkin
MD G125

Langmuir Graduate Student Oral Presentation Award Symposium

R. Nagarajan, *Organizer, Presiding*

2:00 109. Novel propulsion of active colloids by self-induced field gradients with potential for cargo transport. **A.M. Boymelgreen**, T. Balli, G. Yossifon, T. Miloh

2:20 110. Droplet locomotion over oil immersed superhydrophobic surfaces. **A. Dani**, C. Oh, C. Glorius, **C. Maldarelli**

2:40 111. Visualizing stress by watching particles dance: Directly measuring particle-level stresses in colloidal materials. **N. Lin**, M. Bierbaum, P. Schall, J. Sethna, I. Cohen

3:00 112. Stokes trap for multiplexed particle manipulation and assembly using fluidics. **A. Shenoy**, C.V. Rao, C.M. Schroeder

Maxwell Dworkin
MD 119

Microfluidics

Droplet & Colloids

X. Cheng, C. Dutcher, *Organizers*
P. Tabeling, *Presiding*

2:00 113. Colloidal microfluidics. **P. Tabeling**

2:20 114. Very large scale integrated droplet generation (DVLSI): Monolithic incorporation of 10K microfluidic droplet generators. **S. Yadavali**, H. Jeong, D. Lee, D. Issadore

2:40 115. Dynamics of droplet trapping and squeezing in a microfluidic constriction. **M. Nekouei**, S.A. Vanapalli

3:00 116. Towards cracking chirality's code: Breaking symmetry with microfluidics. **L.L. Adams**, S. Ocko, D. Weitz

3:20 Intermission.

3:40 117. Characterizing continuous solvent removal of colloidal droplets in microfluidic droplet arrays. **B.J. Bleier**, S.L. Anna, L. Walker

4:00 118. Single emulsion-templated fabrication of amphiphilic Janus particles for stabilizing mini-emulsions. **L. Cai**, D. Chen, D. Weitz

4:20 119. Porous microwells for geometry-selective, large-scale microparticle arrays. **J. Kim**, K. Bong, D. Irimia, P.S. Doyle

4:40 120. Shell evolution during drying of cellulose nanocrystal capsules fabricated from double emulsion drops. Y. Dai, C. Ding, U.M. Cordova-Figueroa, J.P. Youngblood, **C. Martinez**

Maxwell Dworkin
MD G115

Nanomaterials for Biomedicine

K. Hamad-Schifferli, T. Porter, *Organizers*
P. Rai, *Organizer, Presiding*

2:00 121. Intracellular protein delivery using lipid-based nanoparticles. **Q. Xu**

2:30 122. 3D bioprinting nanoinks for complex tissue regeneration. **L. Zhang**

3:00 123. Surface delivery of tuneable doses of BMP-2 from an polymeric scaffold induces volumetric bone regeneration. M. Bouyer, R. Guillot, J. Lavaud, C. Plettinx, C. Olivier, V. Curri, J. Boutonnat, J. Coll, F. Peyrin, V. Josserand, G. Bettega, **C. Picart**

3:20 Intermission.

3:40 124. Designing Janus interfaces for manipulating immune cell response. **Y. Yu**

4:00 125. Cellular uptake and cytotoxicity effects of SERS tags for use in cancer imaging. **M. Bhamidipati**, L. Fabris

4:20 126. Rapid diagnostics for infectious disease using noble metal nanoparticles. C. Yen, H. de Puig Guixe, J. Tam, J. Gomez-Marquez, I. Bosch, L. Gehrke, **K. Hamad-Schifferli**

4:40 127. Viral nanoparticle reporters in lateral flow assays: Understanding enhanced sensitivity through pore-scale binding. J. Kim, R. Poling-Skutvik, J.R. Trabuco, K. Kourentzi, R.C. Willson, **J. Conrad**

Jefferson
250

Particle Assemblies

Active & Dynamic Assembly

A. Bose, V. Manoharan, *Organizers, Presiding*

2:00 128. Keynote Lecture: Dynamically reconfigurable and self-propelling assemblies from engineered microparticles: Principles and emerging applications. **O.D. Velev**

2:40 129. Self-propelled colloids navigating mazes & organizing into machines. **Y. Yang**

3:00 130. Development of a new generation of remotely powered self-propelling active particles. **U. Ohiri**, K. Han, C.W. Shields, G. Lopez, N.M. Jokerst, O.D. Velev

3:20 Intermission.

3:40 131. Dynamic, directed self-assembly of nanoparticles via toggled interactions. **Z.M. Sherman**, J.W. Swan

4:00 133. Dissipative aggregation of colloidal building blocks. **B. van Ravensteijn**, W. Hendriksen, R. Eelkema, J. van Esch, W. Kegel

4:20 134. LaMer Keynote Lecture: Active self-assembly and segregation of self-propelled Janus colloids. **J. Yan**, M. Han, E. Luijten, S. Granick

Science Center
Room 309a

Recent Developments in Nanomaterials

Nanoscale Assemblies

R. C. Hayward, B. Ratna, R. S. Tu, *Organizers, Presiding*

2:00 135. Keynote Lecture: Exploiting biological interactions and self-assembly for multifunctional materials. J. Slocik, S. Kim, Z. Kuang, **R.R. Naik**

2:40 136. Polymerization-induced self-assembly of all-acrylic diblock copolymers via RAFT dispersion polymerization in alkanes. **L.P. Ratcliffe**, B.E. McKenzie, G.M. Le Bouedec, C.N. Williams, S.L. Brown, S.P. Armes

3:00 137. A robust cross-linking strategy for block copolymer worm gels prepared *via* polymerization-induced self-assembly. **J. Lovett**, L.P. Ratcliffe, N. Warren, S.P. Armes, M.J. Smallridge, R.B. Cracknell, B. Saunders

3:20 Intermission.

3:40 138. Evolving peptide nanomaterials. **R. Ulijn**

4:20 139. Preparation of functional membrane materials by assembly of polymer brush nanoparticles. **I. Zharov**

4:40 140. Nanoparticles on lipid membranes: From liposome gels to total liposome destruction. **D. Wood**, T. Dinsmore, V.M. Rotello

Pierce
209

Self-Assembly at Molecular Scale

Surfaces

P. Alexandridis, *Organizer*
S. Thayumanavan, *Organizer, Presiding*
A. Boza Troncoso, *Presiding*

2:00 141. Keynote Lecture: Molecular self-assembly in topological defects of liquid crystals. **N.L. Abbott**, X. Wang, E. Bukusoglu, Y. Kim

2:40 142. Polymer membranes with vertically aligned 1-nm pores by directed self-assembly. **X. Feng**, M. Tousley, M. Cowan, S. Nejati, B. Wiesenauer, R. Noble, E. Menachem, D. Gin, C.O. Osuji

3:00 143. Structure-dependent photoluminescence behavior of liquid-crystalline self-organized organic-inorganic hybrid dendrimer with a CdS nano-core. **K. Kanie**, M. Matsubara, W. Stevenson, J. Yabuki, X. Zeng, H. Dong, K. Kojima, S.F. Chichibu, K. Tamada, A. Muramatsu, G. Ungar

3:20 Intermission.

3:40 144. Size control of nanoparticles produced by flash nanoprecipitation with varying hydrophoibic cores. **R.K. Prudhomme**

4:00 145. Assembly of bile salt surfactants at single-walled carbon nanotube interfaces: A molecular simulation study. **K.S. Khare**, F.R. Phelan

4:20 146. In silico selection of nonionic surfactants for detergency application with the integrated free energy model (IFEM): A molecular approach. **A. Boza Troncoso**, E.J. Acosta

4:40 147. Crystallization kinetics of binary colloidal monolayers. **A.T. Pham**, R. Seto, J. Schonke, E. Fried, B. Yellen, D. Joh, A. Chilkoti

Science Center
Room B10

Surface Science & Catalysis

Photons & Electrons in Surface Catalysis

J. N. Russell, *Organizer*
C. J. Karwacki, *Organizer, Presiding*

2:00 148. Oxidative photocatalysis at TiO_2 aerogels driven by surface plasmon resonance of gold and non-precious metal nanoparticles. **J.J. Pietron**, P.A. DeSario, T.H. Brintlinger, R.M. Stroud, D.R. Rolison

2:30 149. Synergistic effect on the photocatalytic activity of N-doped TiO2 nanorods synthesised by novel route with exposed (110) facet. **S. Abu Bakar**

2:50 150. Poly(4-vinylpyridine) as a new platform for robust CO_2 electroreduction. I. Chernyshova, S. Ponnurangam, **P. Somasundaran**

3:20 Intermission.

3:40 151. Rationally designed electrochemical interfaces for control over reaction kinetics. **X. Mao**, G.C. Rutledge, T. Hatton

4:00 152. Photoelectron emission from diamond into water: New applications in photoelectrochemistry. **R.J. Hamers**

Science Center
Hall A

Wetting, Adhesion & Surface Forces

Charged Systems

M. Ruths, H. Zeng, *Organizers*
M. Akbulut, R. M. Espinosa-Marzal, *Presiding*

2:00 153. The effect of multivalent counterions to the structure of highly dense polystyrene sulfonate brushes. **J. Yu**, J. Mao, W. Chen, M.V. Tirrell

2:20 154. Depletion and electrical double layer forces between charged surfaces in solutions of like-charged polyelectrolytes. **M. Moazzami Gudarzi**, G. Trefalt, P. Maroni, M. Borkovec

2:40 155. Surface forces and friction mediated by self-assembled polymer spheres, worms, and hollow spheres. J. Bartenstein, S.P. Armes, **W.H. Briscoe**

3:00 156. Surface forces mediated by pH-responsive polymers. **A.G. de Bruin**, T. Snow, W.H. Briscoe

3:20 Intermission.

3:40 157. Impact of surface and polymer hydration on lubrication forces. **X. Banquy**, J. Faivre, B. Shrestha

4:00 158. Chain bridging contributions to polyelectrolyte brush conformations and interactions in the presence of multivalent ions. **B.K. Brettmann**, P. Pincus, M.V. Tirrell

4:20 159. Mechanisms underlying stabilization of ACC nanoparticles in solution. **Y. Diao**, R.M. Espinosa-Marzal

4:40 160. Ionic liquids and dilute electrolytes: The surprising connection. **M. Gebbie**, H.A. Dobbs, M. Valtiner, J.N. Israelachvili

Science Center
Room 309

Wetting, Adhesion & Surface Forces

Wetting: Oil-Water-Solid Interfaces

M. Ruths, H. Zeng, *Organizers*
Y. Min, N. Pesika, *Presiding*

2:00 161. Wettability transition of immersed solids and prediction potential of Neumann's "Equation-of-State". **A. Stammitti**, E.J. Acosta

2:20 162. Contact angle, liquid film, liquid-liquid and liquid-solid interfaces in oil-brine-substrate systems. **F. Jimenez Angeles**, A. Firoozabadi

2:40 163. Controlled oil entrapment through photo-patterned obstacles. **A. Gupta**, H. Lee, P.S. Doyle

3:00 164. Transport of self-emulsifying systems through unsaturated porous media. **A. Stammitti**, E.J. Acosta

3:20 Intermission.

3:40 165. Breakup of oil-particle clusters in simple shear. **S. Mehrabian**, M. Bussmann, E.J. Acosta

4:00 166. Adsorption mechanism and management of a polysaccharide biopolymer on carbonate minerals for EOR applications. **M. Shoaib**, A. Abdala, A.A. Sumaiti, A. Elkamel

4:20 167. Molecular thermodynamic modeling of surfactant adsorption at fluid-solid interface. **A. Khoshnood**, A. Firoozabadi

4:40 168. Enabling Marangoni transport at air-fluid interfaces through deposition of aerosolized lipid dispersions. **A.Z. Stetten**, G. Moraca, S.A. Tristram-Nagle, T. Corcoran, S. Garoff, T.M. Przybycien, R.D. Tilton

MONDAY EVENING

Science Center
Plaza Tent

Poster Session

D. Weitz, J. Y. Wong, *Organizers*

5:30 - 8:00

169. Liquid crystals from spherical particles. **A. Kumar**, V. Molinero

170. Influence of particle anisotropy on cluster rigidity and rheology of colloidal gels. **G. Colombo**, J. Vermant

171. Nanoemulsions stabilized by di-N-oxides surfactants as promising colloidal dispersions. **A. Lewinska**, J. Jezierska, K.A. Wilk

172. Anacardic acid in self-assembled systems: Link between antitumor activity and localization. **A. Jaromin**, A. Lewinska

173. Transferrin conjugated polymeric nanomedicine for targeting Pancreatic cancer using paclitaxel and gemcitabine. **A.P. Gad**, M.J. Tilton, B. Piel, P. Rai

174. Transport modeling of ellipsoidal colloids with surface charge heterogeneity in porous media. **K. Li**, H. Ma

175. Treatment of emerging contaminants using advanced oxidation processes. **G. Achari**

176. A multi-technique 'neutron approach' to characterize branching in worm-like micelles (WLMs). **M. Calabrese**, S.A. Rogers, L. Porcar, N.J. Wagner

177. Ultra-strong graphene oxide hydrogels for water treatment: Green synthesis and contaminant adsorption capacity. **N. Yousefi**, K.K. Wong, A. Angulo, N. Tufenkji

178. Dual contrast colloids with engineered acoustic and magnetic responses for bioanalytical applications. **K. Ohiri**, B.A. Evans, W. Shields, R.A. Guitiérrez, N.J. Carroll, B. Yellen, G. Lopez

179. Using magnetic levitation to build metal-amplified density-based biosensors. A. Subramaniam, **K. Kresse**

180. Functional nanoparticles and reactive latex films from thiol-Michael addition "click" miniemulsion polymerizations. **C. Wang**, C. Bowman

181. Hydrophobic light-to-heat conversion membranes for interfacial heating: Towards enhanced solar evaporation. **L. Zhang**

182. Uncertainty in contact angle estimates from a Wilhelmy tensiometer. **C.W. Extrand**

183. Electrical detection of single-walled carbon nanotubes hybridization with self-assembled monolayer assisted CVD-grown graphene film. **P.D. Adhikari**

184. Integration of video microscopy (VM) and total internal reflection microscopy (TIRM) to measure the colloidal interactions. **F. Cao**, Z. Wang

185. Osmo-solidification of all-aqueous emulsion with enhanced preservation of enzyme activity. **M. Qingming**, Y. Song, G. Baier, C. Holtze, H. Shum

186. An Integrated microfluidic device for controlled gas-liquid generation and manipulation of monodisperse droplets. **P. Tirandazi Khalilabad**, C.H. Hidrovo

187. Wear resistance in transparent coatings. **K. Song**, R. Polak, K. Askar

188. Simple fabrication of graphene composite microwires by drying-induced size reduction of hydrogel fibers. **H. Koo**, S. Kim, P.V. Braun, J. Cho

189. 3D printing of hierarchical ceramics. **J. Muth**, P. Dixon, L. Woish, J. Lewis

190. Examining phase-change-induced flow in PEFC GDLs using X-ray computed tomography. **A. Shum**, K.B. Hatzell, L. Connolly, X. Xiao, D.Y. Parkinson, O. Burheim, A.Z. Weber, I.V. Zenyuk

191. Development of chemokine-loaded thermosensitive liposomes. **A. Rubio**

192. Fabrication of free standing platinum nanoelectrode array by atomic layer deposition for polymer electrolyte membrane fuel cell electrodes. **D.C. Sabarirajan**, I.V. Zenyuk, R.D. White, J. Vlahakis

193. Mixed alkanethiol self-assembled monolayers and their formation on gold substrates. **S. Graham**, M.R. Martin

194. Simulation of nanoparticle diffusion in semidilute polymer solutions. **R. Chen**, R. Poling-Skutvik, J. Conrad, J.C. Palmer

195. Fabrication of complex microgels from multi-nanoemulsions. **M. Zhang**, M. Nowak, P. Malo de Molina, S. Mitragotri, M.E. Helgeson

196. Development of lipid-polymer hybrid nanoparticle for sustained release of doxorubicin. **E. Lough**, T. Porter

197. Copolymer-grafted stabilization of superparamagnetic iron oxide nanoclusters at high ionic strength and high temperature designed by combinatorial materials chemistry. **E. Moaseri**, M. Iqbal, B. Changalvaie, C. Dandamudi, J. Lee, E. Annestrand, Y. Fei, C.J. Ellison, K.P. Johnston

198. Microfluidic fabrication and characterization of charged microfibers. **A.K. Grosskopf**, J.K. Nunes, H.A. Stone

199. Rotational regimes and dynamics of colloidal particle chains. **S. Kuei**, S.L. Biswal

200. Microfluidic breakup of viscous drops to understand fragmentation of cancer cells. **M. Nekouei**, N. Kamyabi, S.A. Vanapalli

201. Cryo-EM characterization of mixed lipid bilayers self-assembly. **M. Nir-Shapira**, N. Koifman, Y. Talmon

202. Hydrogen-bonded polymer nanocomposites containing discrete layers of gold nanoparticles prepared by dip- and spray-assisted layer-by-layer assembly. **J. O'Neal**

203. Polymeric nanoparticle mediated targeted, triple combination treatment for glioblastoma multiforme (GBM). **P. Velpurisiva**, M.J. Tilton, B. Piel, P. Rai

204. Assembly and surface activity of Janus particles at oil-water interfaces. **L. Bradley**, K.J. Stebe, D. Lee

205. Electrochemical synthesis and energy application of electroactive polymer nanomaterials. **W. Tian**, X. Mao, P. Brown, G. Rutledge, T. Hatton

206. Adsorbents for uranium recovery from seawater. **C. Tsouris**, W. Liao, S. Das, R.T. Mayes, C. Janke, T. Saito, A. Ladshaw, S. Yiacoumi, A. Wiechert, L. Kuo, G.A. Gill

207. Surface modification of combustion ash via application of electrical potential. **M. Webster**, I. Kretzschmar, N. Winkler, M. Castaldi

208. Complex emulsion agglutination assay for sensing bacterium. **Q. Zhang**, T.M. Swager

209. Development of gram-scale synthesis of carbon dots using citric acid and calamansi (*Fortunella japonica*) via microwave-assisted method. **J.E. Sanggo**, R. So

210. Printability and extensional rheology of polymer solutions. **J. Dinic**, L.N. Jimenez, V. Sharma

211. Thermal stability of CdSe/CdS quantum dots and their application as a novel geothermal tracer. **E.M. Brauser**, M.H. Bartl, P. Rose, J. McLennan

212. Manipulation of coffee ring patterns by diffusiophoresis. **F. Mohajerani**, R. Guha, D. Velegol

213. β-galactosidase Langmuir monolayer at air/subphase interface. **S.K. Sharma**, R.M. Leblanc

214. Hydrophobic modification of drugs to enhance post-deposition dispersal of inhaled aerosol medications. **S.V. Iasella**, R.D. Tilton, T.M. Przybycien, S. Garoff

215. Development of a lipid-coated calcium phosphate nanoparticle for oligonucleotide delivery to the brain. **J. Chiu**, M. Colter, M. Dacek, J. Hong, R. Singh, T. Porter

216. A new dielectric RheoSANS instrument for the simultaneous interrogation of rheology, microstructure and electronic properties of flow battery electrodes. **J. Richards**, N.J. Wagner, P. Butler

217. The presence of aqueous films on hydrophilic particles in nonpolar solvents. **S. Borkar**, A. Ramachandran

218. Double layer structured solid lipid nanoparticles with crosslinked polymeric coating for oral delivery of curcumin. **T. Wang**, Y. Luo

219. Protein-induced membrane shape fluctuation changes on hole spanning lipid bilayers. **N. Li**, K. Jankowska, K.J. Stebe, T. Baumgart

220. Ring-sheared drop (RSD): Microgravity module for interfacial biophysics studies. **S. Gulati**, S.A. McBride, J.M. Lopez, A.H. Hirsa

221. Propulsion of Janus particles in viscous solutions. **E. Tang**, P. Chatterjee, P. Underhill

222. Total holographic characterization of multicomponent colloidal suspensions. **D.B. Ruffner**, J. Blusewicz, L.A. Philips

223. Dynamics of semiflexible colloidal chains under confinement. **Z. Zhu**, S.L. Biswal

224. Dissipative particle dynamics models for heavy oil fraction. T. Ma, **A. Vishnyakov**

225. Investigation of the motion of patchy particle swimmers. **Z. Jalilvand**, I. Kretzschmar

226. 3D printing of discontinuous fiber composites with tunable, bio-inspired microarchitectures through colloidal magnetic assembly. **J. Martin**

227. Non-equilibrium pattern formation of Janus particle and pluronic under 2D confinement. **E. Knapp**, I. Kretzschmar, R.S. Tu

228. Magnetically functionalized endoskeletal droplets. **T.A. Prileszky**, E.M. Furst

229. Universal behavior of hydrogels confined to narrow capillaries. **Y. Li**, A. Ramachandran, E. Kumacheva, O. Sariyer, M. Rubinstein, S. Panyukov

230. Physicochemical properties of Cu loaded onto core-shell Al-MCM-41: Effect of loading methods. **T. Intana**

231. Surfactant enabled stabilization and dispersion of liquid metal nanoparticles. **L. Finkenauer**, M.R. Bockstaller

232. Colloid retention and removal investigated with PDMS replicas of fresh produce. **T. Sun**, V. Lazouskaya, Y. Jin

233. Effect of fluid elasticity on spiral vortex formation in cross-slot flow. **N. Burshtein**, S.J. Haward, A.Q. Shen

234. Biphasic electrode suspensions for Li-ion semi-solid flow cells with high energy density, fast charge transport, and low-dissipation flow. **T. Wei**, F.Y. Fan, A. Helal, K.C. Smith, G. McKinley, Y. Chiang, J. Lewis

235. Validation of a coagulation assay used to determine the effect of ionic strength on the turbidity reduction capabilities of *Moringa oleifera* cationic protein fractions. **B. Nordmark**, R.D. Tilton, T.M. Przybycien

236. Equilibrium interfacial properties of poly(ethylene oxide) star polymers compared to linear polymers at the air/water and oil/water interfaces. **Y. Huang**, R.D. Tilton

237. Parallelized high-throughput millifluidic production of large double emulsions and milli-capsules composed of viscous shell material. **S. Nawar**, D. Nguyen, M. Eggersdorfer, J. Stolaroff, D. Weitz

238. Flow of wormlike micellar solutions around confined microfluidic cylinders. **S.J. Haward**, Y. Zhao, A.Q. Shen

239. Collective motion of mammalian cell cohorts in a 3D matrix. **Y. Sharma**

240. Fabrication of three-dimensional photonic structures utilizing composite colloids. **T. Shirman**, J. Aizenberg

241. Multi-compartmental microgel for controlled 3D cell assembly. **L. Zhang**, H. Wang, A. Mao, D. Weitz

242. Study of self-aggregation behavior of PEGylated curcumin nanoparticles in water and salt solutions. **E. Khan**, J. Chittigori, S. Thota, L. Li, D.J. Sandman, J. Kumar

243. Osmotic pressure triggered rapid release of encapsulated enzyme with enhanced retention of activity. **W. Zhang**, A. Abbaspourrad, D. Chen, D. Weitz

244. Ethanol dehydrogenation on Cu (111) and Pt / Cu (111) single atom alloys. **M. El Soda**, F. Lucci, M. Marcinkowski, A. Therrien, Z. Wang, E.H. Sykes

245. Effect of surfactant bilayers and substrate on the refractive index sensitivity and catalytic properties of anisotropic gold nanoparticles. **M.M. Shahjamali**, E. Martinsson, N. Zaraee, N. Large, G.C. Schatz, D. Aili

246. Rheological behaviors of graphene oxide suspensions. **L. Qu**, J. Wu, L. Cai, S. Koehler, Z. Gault, D. Weitz

247. Equilibrium crystal phases of triblock Janus colloids. **W.F. Reinhart**, A. Panagiotopoulos

248. Axial dispersion of Brownian colloids in microfluidic channels. **M.P. Howard**, A. Gautam, A. Panagiotopoulos, A. Nikoubashman

249. Generation and 2D positioned array of conductive Janus magnetic microparticles for high performance pressure sensing. **W.J. Lee**, J. Kim

TUESDAY MORNING

Science Center
Hall B

Plenary Lectures

R. Nagarajan, *Organizer*
J. Y. Wong, *Presiding*

8:20 Introduction of Speaker.

8:30 250. Nanoparticle self-assembly: Bridging the gap between molecules and nanoparticles. **E. Kumacheva**

Science Center
Room 309

Advanced Experimental & Simulation Techniques in Colloid & Interface Science

A. M. Peterson, M. M. Santore, *Organizers*
P. J. Beltramo, *Presiding*

9:40 251. Keynote Lecture: Experiments and simulations connecting water-driven transitions in polyelectrolyte complexes and multilayers. **J.L. Lutkenhaus**, M. Sammalkorpi, Y. Zhang, E. Yildirim, R. Zhang

10:20 252. The effect of the first layer on polyelectrolyte multilayer structure. **X. Lyu**

10:40 253. Electrokinetics as an alternative to neutron reflectivity for evaluation of segment density distribution in PEO brushes. **R. Zimmermann**, D. Romeis, I. Bihannic, M. Cohen Stuart, J. Sommer, C. Werner, J. Duval

11:00 254. Tension control and lipid microdomain formation using planar large area model biomembranes. **P.J. Beltramo**, R. Van Hooghten, J. Vermant

11:20 255. Real-time measurements of lipid domain rearrangements, membrane thickness, and intermembrane forces during membrane hemifusion. **K. Kristiansen**, D. Lee, S. Donaldson, N. Cadirov, X. Banquy, J.N. Israelachvili

11:40 256. Predictive modeling and measurements of non-Newtonian interfaces coupled to bulk flow. **J.M. Lopez**, A. Raghunandan, J.A. Adam, P. Underhill, A.H. Hirsa

12:00 257. Adhesion and translocation of nanoparticles through lipid bilayers. S. Burgess, Z. Wang, **A. Vishnyakov**, A.V. Neimark

Jefferson
256

Biological Interfaces

Microorganisms, Cells, & Gels

T. A. Camesano, S. Peyton, *Organizers*
J. D. Schiffman, *Organizer, Presiding*

9:40 258. Keynote Lecture: Antimicrobial smart materials: From responsive hydrogels to polymer-drug conjugates. **A. Shukla**

10:20 259. Dynamic adhesion of *Staphylococcus aureus* to poly(ethylene glycol) surfaces. **K.W. Kolewe**, S. Kalasin, N.R. Mako, M.M. Santore, J.D. Schiffman

10:40 260. Three-dimensional structure and competition for resources can give pre-formed, multicellular aggregates a growth advantage in early biofilm development. **V. Gordon**

11:00 261. Imaging trafficking in living cells with Janus particle probes. **Y. Yu**

11:20 262. Examining spatio-temporal dynamics of adhesion linkers during cell migration using cadherin-functionalized polymer-tethered lipid multi-bilayers of adjustable stiffness. **Y. Ge**, K. Shilts, Y. Lin, L. Lautscham, W. Goldmann, B. Fabry, C. Naumann

11:40 263. Deterministic encapsulation of single cells in thin tunable microgels for niche modeling and therapeutic delivery. **A. Mao**, J. Shin, S. Utech, M. Cooper, D. Weitz, D.J. Mooney

12:00 264. Keynote Lecture: 'Touch-and-go' behavior of cancer cells in spatially-confined, fiber-like environments is a predictor of metastatic potential. **A. Asthagiri**

Jefferson
356

Colloidal & Interfacial Phenomena in Environmental Systems

N. B. Saleh, N. Tufenkji, C. D. Vecitis, *Organizers, Presiding*

9:40 265. Adsorption modeling for nuclear energy applications. **A. Ladshaw**, S. Yiacoumi, C. Tsouris

10:00 266. Effect of surface contamination and water chemistry on the behaviors of kaolinite, illite and montmorillonite clays. **A. Pourmohammadbagher**, J.M. Shaw

10:20 267. Oil dispersing gel-like surfactant mesophases and their structures. O.G. Owoseni, **M. Omarova**, V.T. John, X. Li, J. Lal

10:40 268. Stimuli-responsive polymer-based assemblies for monitoring pH of solutions. **A. Ahiabu**, M. Serpe

11:00 269. Light scattering: Non-invasive assessment of nucleation, gelation, and colloidal growth in-situ in environmental systems. **S. Hashmi**

11:20 270. Role of metal-oxides on titania-multiwalled carbon nanotube heterostructure aggregation and transport in aqueous environment. **N.B. Saleh**, D. Das, I.V. Sabaraya

11:40 271. Characterization of titanium dioxide nanoparticles deposition on rough surfaces using combined quartz crystal microbalance with dissipation (QCM-D) and generalized ellipsometry (GE). **A. Jaiswal**

Pierce
301

Colloidal Glasses & Gels

M. Caggioni, R. Zia, *Organizers*
J. Conrad, *Presiding*

9:40 272. Keynote Lecture: 2D and 3D colloidal glass transitions: Does dimensionality really matter? **E.R. Weeks**, S. Vivek, C. Kelleher, P. Chaikin

10:20 273. Glass polyamorphism and metastable criticality in liquids with tetrahedral symmetry. R. Chen, E. Lascaris, **J.C. Palmer**

10:40 274. Traction force rheology of colloidal glass. **Z. Terdik**, D. Weitz, F. Spaepen

11:00 275. Structures and dynamics of glass-forming colloidal liquids under spherical confinement. B. Zhang, **X. Cheng**

11:20 276. Many facets of intermittent dynamics in colloidal and molecular glasses. **R. Pastore**, A. Coniglio, G. Pesce, A. Sasso, M. Pica Ciamarra

11:40 277. Tunable percolation in binary semiconducting polymer nanoparticle glasses. **L. Renna**, M. Bag, T.S. Gehan, X. Han, P.M. Lahti, D. Maroudas, D. Venkataraman

12:00 278. Transient flow of a fluidity model in a simple shear flow with inertia: Prediction of shear banding. A. Jain, **Y.M. Joshi**

Science Center
Hall E

Emulsions, Foams & Dispersions

Drops

A. Fernandez-Nieves, M. Lynch, *Organizers, Presiding*

9:40 279. Keynote Lecture: Particles and liquid crystals in drying droplet. **A.G. Yodh**

10:20 280. Charged toroidal droplets. **A.A. Fragkopoulos**, E. Berger, A. Aizenman, E. Pairam, A. Fernandez-Nieves

10:40 281. Collisions between drops and bubbles: Coalescence maps. J. Berry, **R. Dagastine**

11:00 282. Coalescence of multiple droplets on surfaces. **I. Liberis**, D. Davis, S. Shojaei-Zadeh

11:20 283. Arrested coalescence of viscoelastic droplets: Connectivity and restructuring. **P. Dahiya**, M. Caggioni, P.T. Spicer

11:40 284. Electrohydrodynamic behavior of droplets in a microfluidic oil-in-oil emulsion. **S. Khajehpour Tadavani**, J. Munroe, S. Ghosh, A. Yethiraj

12:00 285. Mechanical instabilities in particle laden droplets. **N. Samudrala**, J. Nam, R. Sarfati, R. Style, E. Dufresne

12:20 286. New director configuration in tactoidal droplets of lyotropic chromonic liquid crystals. **K. Nayani**, J. Fu, R. Chang, J.O. Park, M. Srinivasarao

Mallinckrodt Lab
Room B23

General Papers

T. Dinsmore, *Organizer, Presiding*

9:40 287. Keynote Lecture: Phase transitions in lipid bilayers: Registration, anti-registration, and flip-flop. J.J. Williamson, **P.D. Olmsted**

10:20 288. Transition of liposomes from unilamellar to bilamellar structures through a crowding mechanism. **J.S. Arora**, N. Kumar, V.T. John

10:40 289. Janus particle layers at air/water interfaces. S. Razavi, **I. Kretzschmar**

11:00 290. Marangoni transport of particles at the fluid-fluid interface. **G. Dunér**, R.D. Tilton, T.M. Przybycien, S. Garoff

11:20 291. Reversible assembly of gold nanoparticle clusters with tunable near infrared extinction. **E. Moaseri**, B. Changalvaie, M. Sun, A. Cepeda, J. Schroer, K. Sokolov, T. Truskett, K.P. Johnston

11:40 292. Vapor-liquid equilibrium of multicomponent systems with interfacial curvature. **N. Shardt**, J.A. Elliott

12:00 293. Measuring static and advancing contact angles with a liquid needle. **R.J. Sanedrin**, M. Jin, D. Frese, C. Scheithauer, T. Willers

12:20 294. Acoustophoretic printing. **D. Foresti**, J. Lewis

Maxwell Dworkin
MD 119

Microfluidics

Biological & Environmental Applications

X. Cheng, *Organizer*
C. Dutcher, *Organizer, Presiding*

9:40 295. Keynote Lecture: Measuring and manipulating cancer-specific extracellular shed vesicle population. **B. Kirby**

10:20 296. Proof of concept for the rational design of paper based point of care (PoC) diagnostic device. A. Subramaniam, S. D'Souza, **R. Chepyala**, S. Noronha

10:40 297. Capturing circulating tumor cell with hierarchical micro/nano patterned surfaces. **Y. Liu**

11:00 298. Hydrogel-enabled osmotic pumping for microfluidics: Towards sweat sequestering for wearable human-device interfaces. **T. Shay**, O.D. Velev, M.D. Dickey

11:20 299. Spiral vortex formation in cross-slot flow. **N. Burshtein**, S.J. Haward, A.Q. Shen

11:40 300. Measurement of solubility and dissolution rate of water in bitumen using a microfluidic technique. S. Goel, J. Wei, S. Ng, **A. Ramachandran**

12:00 301. Using microfluidics to measure interfacial properties of atmospheric aerosol particle mimics. **C. Dutcher**, A. Metcalf

Maxwell Dworkin
MD G115

Nanomaterials for Biomedicine

K. Hamad-Schifferli, P. Rai, *Organizers*
T. Porter, *Organizer, Presiding*

9:40 302. Keynote Lecture: Reengineering tumor microenvironment to improve cancer treatment: Bench to bedside. **R. Jain**

10:20 303. Fabrication and characterization of a quantum dot based nanosensor for cellular potassium imaging. **H. Clark**, T. Ruckh, C. Skipwith, W. Chang, A. Senko, V. Bulovic, P. Anikeeva

10:50 304. Multifunctional theranostic silica-gold core-shell nanoparticles for breast cancer applications. **D. VanDyke**, P. Rai

11:10 305. Holographic characterization of protein aggregates. **D.B. Ruffner**, J. Blusewicz, C. Wang, X. Zhong, A. Stutt, M.D. Ward, D.G. Grier, L.A. Philips

11:30 306. Coarse-grained modeling of monoclonal antibody self-association in concentrated solution. **G. Wang**, J.W. Swan

11:50 307. Exploiting adhesive surface heterogeneity for controlled targeting in flowing delivery packages. **M. Shave**, M.M. Santore

Jefferson
250

Particle Assemblies

Field-Driven Assembly

A. Bose, V. Manoharan, *Organizers, Presiding*

9:40 308. Electrokinetically driven, template-free assembly of colloidal spheres into stable 3-D microstructures. J. Raveendran, J.A. Wood, **A. Docoslis**

10:00 309. High density equilibrium phases of colloidal ellipsoids by optically enhanced direct current electric fields. **M. Ganesan**, M.J. Solomon

10:20 310. Controlling positional and orientational assembly of anisotropic particles in AC electric fields. **I. Torres Diaz**, B. Rupp, X. Hua, Y. Yang, M.A. Bevan

10:40 311. Smart assembly of magnetic microparticles utilizing 3D magnetic fields. **R. Soheilian**

11:00 312. Multidirectional colloidal assembly in concurrent electric and magnetic fields. **B. Bharti**, F. Kogler, C.K. Hall, S. Klapp, O.D. Velev

11:20 313. Conformations and dynamical regimes of rotating elastic filaments. **S. Kuei**, S.L. Biswal

11:40 314. Non-equilibrium colloidal potentials and assembly via magnetic dipolar, hydrodynamic and depletion interactions. **A. Coughlan**, M.A. Bevan

12:00 315. Configurable assembly of microparticles via acoustic standing waves. **W. Shields**, C.E. Owens, C. Reyes, P.P. Suthanthiraraj, L. Fu, B.J. Wiley, P. Charbonneau, G. Lopez

Science Center
Room 309a

Recent Developments in Nanomaterials

Nanoparticles as Heaters & Probes

R. C. Hayward, B. Ratna, R. S. Tu, *Organizers, Presiding*

9:40 316. Keynote Lecture: Embedded metal nanoparticles as light-driven, localized heaters within polymeric solids. **L. Clarke**

10:20 317. Structure and dynamics of nanoparticles and polymer in model colloid-polymer suspension. **R. Poling-Skutvik**, J. Conrad, R. Krishnamoorti

10:40 318. Nanoparticles assemblies within cellulose fiber matrices: Structure and interactions. **V. Raghuwanshi**, U. Garusinghe, C. Garvey, W. Batchelor, G. Garnier

11:00 319. Plasmonics-enabled single-molecule and temperature detection. **S. Lee**

11:40 320. Ultrabright fluorescent mesoporous silica nanoparticles as nanothermometers. **V. Kalaparthi**, S. Palantavida, M. Dokukin, I. Sokolov

12:00 321. Narrow absorption wavelength organic NIR nanoparticles enable multiplexed photoacoustic imaging. **R.K. Prudhomme**

Maxwell Dworkin
MD G125

Rheology of Complex Fluids

J. Conrad, *Organizer*
M. E. Helgeson, *Organizer, Presiding*

9:40 322. Keynote Lecture: Complex fluids with hierarchical dynamics and critical gelation in thermoreversible suspensions. X. Di, **C.O. Osuji**

10:20 323. Hardening and yielding of colloidal gels. **M. Bouzid**, E. Del Gado

10:40 324. Microstructural response of the colloidal gel to shear flow. **F. Taslimi**, A. Mohraz

11:00 325. Yielding and recovery of thermoresponsive nanoemulsion gels. **L.C. Hsiao**, P.S. Doyle

11:20 326. Microstructure, rheology and heterogeneity in thixotropic elasto-visco-plastic (TEVP) fluids. **S. Jamali**, G. McKinley, R.C. Armstrong

11:40 327. Study of mechanical properties and memory formation in transparent filled rubber. **Z. Gault**, Z. Terdik, D. Weitz

12:00 328. Origin of viscoelasticity in colloidal suspensions: A mechanistic investigation. **W. Chen**, T. Egami, L. Porcar, Y. Wang, T. Iwashita, Z. Wang, W. Hamilton, Y. Liu

Pierce
209

Self-Assembly at Molecular Scale

Probed by Small-Angle Scattering

S. Thayumanavan, *Organizer*
P. Alexandridis, *Organizer, Presiding*
L. Walker, *Presiding*

9:40 329. The impact of processing, structural history and formulation on the crystallization of block copolymer micelles with dispersed nanoparticles. M.M. Dao, **L. Walker**

10:10 330. Surfactant self-assembly in aqueous solutions: Modulation by polymers, cosolvents, and solutes. A. Fajalia, P. Alexandridis, **M. Tsianou**

10:40 331. Small angle neutron scattering studies on polymeric self-assembled system. **C. Do**, Y. Han

11:00 332. *In situ* SAXS studies of diblock copolymer nanoparticles formed during polymerization-induced self-assembly in non-polar media. **M. Derry**, L.A. Fielding, N. Warren, C. Mable, A. Smith, O. Mykhaylyk, S.P. Armes

11:20 333. Cationic and reactive primary amine-stabilized nanoparticles by RAFT aqueous dispersion polymerization. **M. Williams**, N. Penfold, S.P. Armes

11:40 334. Designing viscosity modifiers for supercritical CO_2 microemulsions. J. Eastoe, **J.A. Peach**

12:00 335. Electric field alignment of conjugated polymers. **Y. Xi**, L.D. Pozzo

Science Center
Room B10

Surface Science & Catalysis

Surface Catalysis

C. J. Karwacki, *Organizer*
J. N. Russell, *Organizer*, *Presiding*

9:40 336. Keynote Lecture: Design of single atom metal catalysts on various supports. **M. Flytzani-Stephanopoulos**, M. Yang, J. Liu, C. Wang, J. Shan

10:20 337. Au-CO complex formation and migration at uncoordinated Au sites. **M.L. McEntee**, J. Wang, W. Tang, M. Neurock, A. Baddorf, P. Maksymovych, J.T. Yates

10:50 338. Depositing nanostructures using electron beams: Insights from surface science. **H. Fairbrother**, L. McElwee-White, Y. Wu, M. Barclay, J. Spencer

11:20 339. In situ/operando studies of adsorption of chemical warfare agents and simulants on emerging POM and MOF materials. **W.O. Gordon**, A. Balboa, J.R. Morris, A. Frenkel, C.L. Hill, C.J. Karwacki

11:50 340. LaMer Keynote Lecture: Using ultrafast soft X-ray spectroscopy and nano-patterned surfaces to understand interfacial charge transfer in catalytic systems. **L. Baker**

Science Center
Hall A

Wetting, Adhesion & Surface Forces

Wetting: Tuning Surface Responses

M. Ruths, H. Zeng, *Organizers, Presiding*

9:40 341. Keynote Lecture: Measuring structure of confined water between two hydrophilic surfaces. **A.N. Dhinojwala**, N. Dhopatkar, A. Defante

10:20 342. Dynamic levitation of droplet on lubricated surfaces. **D. Daniel**, J. Timonen, J. Aizenberg

10:40 343. Tunable superomniphobic surfaces for sorting droplets by surface tension. **S. Movafaghi**, W. Wang, A. Metzger, D.D. Williams, J.D. Williams, A.K. Kota

11:00 344. Hierarchical patterning of hydrogels by replica molding of impregnated breath figures leads to superoleophobicity. **J.S. Arora**, J. Cremaldi, N. Pesika, V.T. John

11:20 345. The role of dispersion interactions, electrostatics, and entropy in the interfacial behavior of MoS_2. **A. Govind Rajan**, V. Sresht, A. Padua, M. Strano, D. Blankschtein

11:40 346. Air entrainment effects of drop impact on lubricated surfaces. **M.Y. Pack**, H. Hu, D. Kim, Y. Sun

12:00 347. Direct measurements of surface stress of stretched soft solids. **Q. Xu**, E. Dufresne

TUESDAY AFTERNOON

Science Center
Room 309

Advanced Experimental & Simulation Techniques in Colloid & Interface Science

A. M. Peterson, M. M. Santore, *Organizers*
V. Sharma, *Presiding*

2:00 348. Electrical-double-layer potential distribution in nanoporous electrodes from molecular modeling and electrodynamics analysis. **P. Taboada-Serrano**

2:20 349. Theoretical and experimental investigation of fibrillization kinetics and rheology of insulin solution. **V.S. Balaraj**, P.C. Zeng, S.P. Sanford, S.A. McBride, A. Zaccone, J.M. Lopez, A.H. Hirsa

2:40 350. Effects of oscillatory forcing on viscous and inviscid Langmuir films. **F. Rasheed**, A. Raghunandan, J.M. Lopez, A.H. Hirsa

3:00 351. The emulsion stability method to determine the characteristic curvature (Cc) of practical alkyl ethoxylate surfactants. **S. Zarate-Munoz**, F. Texeira, K. Myint, J. Minchom, E.J. Acosta

3:20 Intermission.

3:40 352. The effect of water on the thermal transition observed in poly(allylamine hydrochloride)-poly(acrylic acid) complexes. **Y. Zhang**, R. Zhang, M. Sammalkorpi, J.L. Lutkenhaus

4:00 353. Dynamic surface tension measurements with maximum bubble pressure tensiometry. N. Moreno, T. Walker, A. Burshan, W. Yang, **V. Sharma**

4:20 354. A new method for determining the Hamaker constant of solids using an atomic force microscope. **S. Fronczak**, J. Dong, C. Browne, E.I. Franses, S. Beaudoin, D.S. Corti

4:40 355. The evolution of multivalent nanoparticle adhesion revealed using nano adhesive dynamics simulations. **M. Wang**, J. Haun

Jefferson
256

Biological Interfaces

Charge & Ion-Containing Biomolecules

S. Peyton, J. D. Schiffman, *Organizers*
T. A. Camesano, *Organizer, Presiding*

2:00 356. Keynote Lecture: Interactions of intestinal lumen contents with the mucosa: Implications for molecular, particulate, and microbe transport to underlying tissues. H. Yildiz, T. Carlson, J. Lock, D. Budil, **R. Carrier**

2:40 357. Effect of surface ions on lipid-protein binding. **M. Mirheydari**, E. Mann, E.E. Kooijman

3:00 358. Dynamics of polypeptide adsorption at the aqueous/liquid crystal interface. **R.S. Tu**

3:20 Intermission.

3:40 359. Transitions from unilamellar to multilamellar structures of liposomes induced by interactions with hydrophobically modified polypeptoids. **Y. Zhang**, S. Xuan, X. Li, D. Zhang, O.G. Owoseni, M. Omarova, **V.T. John**

4:00 360. Development of a non-living model system for cell membranes to investigate cell injury by nanoparticles. **T. Shoaib**, Y. He, Y. Chen, P. C Nalam, R.M. Espinosa-Marzal

4:20 361. QCM-D and AFM study of antimicrobial peptide interactions with model cell membranes. **K. Wang**, R. Nagarajan, T.A. Camesano

4:40 362. Nanoparticle binding restructures anionic lipid monolayers: Effect of nanoparticle charge on saturated or unsaturated lipids. **G.D. Bothun**, N. Ganji, I.A. Khan, A. Xi

Jefferson
356

Colloidal & Interfacial Phenomena in Environmental Systems

N. B. Saleh, N. Tufenkji, C. D. Vecitis, *Organizers, Presiding*

2:00 363. Keynote Lecture: Macromolecular engineering of water purification membranes. J. Wang, E. Hoek, **S. Bhattacharjee**

2:40 364. Carboxyl functionalized non-magnetic and magnetic silica nanoparticles for Sm^{3+} recovery. **Y. Wang**, H. Katepalli, D. Blankschtein, Y. Wang, T. Hatton

3:00 365. Understanding process effects in the flocculation of anisotropic particles using structure visualization, with water treatment applications. **N. Wilkinson**, C. Dutcher

Pierce
301

Colloidal Glasses & Gels

Biological, Biomimetic, & Protein Gels

M. Caggioni, R. Zia, *Organizers*
E. Del Gado, *Presiding*

2:00 366. Core-shell composite hydrogels for controlled nanocrystal formation and release of hydrophobic active pharmaceutical ingredients. **A. Badruddoza**, P.D. Godfrin, A.S. Myerson, B.D. Trout, P.S. Doyle

2:20 367. Extending colloidal aggregation to proteins. **A.P. Tabatabai**, K. Weigandt, D.L. Blair

2:40 368. Multilayer hybrid capsules: Towards a biomimetic egg. **B.C. Zarket**, S.R. Raghavan

3:00 369. Self-oscillating iron-based Belousov-Zhabotinsky gelatin. **I. Nava Medina**, X. Huang, S. Marquez, Z. Cheng

3:20 Intermission.

3:40 370. Shape changes in hydrogel sheets triggered by specific small molecules. **J.C. Athas**, S.R. Raghavan

4:00 371. Cloud point tunable nonionic surfactant-polysaccharide hydrogels. **S. Zarate-Munoz**, E.J. Acosta

4:20 372. Non-Fickian DNA diffusion in nanoslit micropost arrays. **Y. Chen**, F. Chien, P. Lin, W. Chien, C. Chou

4:40 373. Dielectric contrast driven phase transitions in cellulose microfibril dispersions. **K. Velikov**

Science Center
Hall E

Emulsions, Foams & Dispersions

Formation, Flow & Stability

A. Fernandez-Nieves, M. Lynch, *Organizers*
T. G. Mason, A. Cohen, *Presiding*

2:00 374. Cerberus nanoemulsions produced by multi-droplet flow-induced fusion and self-limiting coalescence. **T.G. Mason**

2:30 375. Nanoemulsion formation: Controlling and predicting droplet size. **A. Gupta**, T. Hatton, P.S. Doyle

2:50 376. Making a jammed emulsion flow: Local rearrangements and correlated motion. **V. Venkatesh**, S. Dutta, D.L. Blair, E. Del Gado

3:10 377. New insights into the stability of nanoemulsions and their interaction with solid surfaces: A combined fluorescence approach. **J. van Megen**, R. Kühnemuth, C. Seidel, W. von Rybinski

3:30 Intermission.

3:40 378. Extremely stable nanoscale emulsions: Engineering interface, drop-to-drop interaction, and transdermal delivery. **K. Shin**, J. Kim

4:00 379. Formulation of saponin stabilized nanoemulsion by ultrasonic method and its role to protect the degradation of quercitin from UV light. **K. Kaur**

4:20 380. Hydrodynamics of water-in-bitumen emulsification. **S. Mehrabian**, E.J. Acosta, S. Ng

4:40 381. Supramolecular structural forces in stratifying foam films and micelle aggregation number. **S. Yilixiati**, Y. Zhang, R. Rafiq, V. Sharma

Mallinckrodt Lab
Room B23

General Papers

T. Dinsmore, *Organizer, Presiding*

2:00 382. Step-growth “clickable” polymeric monodisperse microspheres. **C. Wang**, C. Bowman

2:20 383. Characterizing the surface coating of silver nanoparticles made from plant extracts. **B.D. Smith**, Z. Gobert, J. Krug, D. Wolfe

2:40 384. Surface properties of caesium contaminated clays and routes for separation. **H. Zhang**, S. Baik, T. Hunter, J.W. Lee, D. Harbottle

3:00 385. Behavior of metallodielectric Janus particles under direct current electric fields. **C. Silvera-Batista**, M.J. Solomon

3:20 Intermission.

3:40 386. The effect of carbon nanotube parameters on their phase behavior in super-acid solutions. **L. Liberman**, O. Kleinerman, Y. Talmon

4:00 387. High-gradient magnetic filtration of uranium oxide particles. A. Wiechert, J. McFarlane, C. Mattus, D. Schaeffer, S. Yiacoumi, **C. Tsouris**

4:20 388. Magnetofluidic tweezing of nonmagnetic colloids. **J.V. Timonen**, A.F. Demirors, B. Grzybowski

4:40 389. Finite particle zeta potentials at high ionic strength. **A. Garg**, C. Cartier, K. Bishop, D. Velegol

Maxwell Dworkin
MD 119

Microfluidics

Charge-related or Thin Film Effects

C. Dutcher, *Organizer*
X. Cheng, *Organizer, Presiding*

2:00 390. Effects of ion sterics on diffusiophoresis in concentrated electrolytes. **R.F. Stout**, A. Khair

2:20 391. Preparation and characterization of colloidal inkjet inks. **M. Mulla**, O. Cayre, S. Biggs

2:40 392. Spatiotemporal electrodynamics of charged analytes near permselective membrane. **J. Choi**, H. Lee, S. Son, H. Kim, S. Kim

3:00 393. Concentration independent micro/nanofluidic diode using asymmetric ion concentration polarization layer. **H. Lee**, H. Lee, J. Kim, H. Kim, H. Kim, S. Kim

3:20 Intermission.

3:40 394. Microfluidic study of CO_2 dissolution and solubility in aqueous electrolyte solutions. **S. Abedi**, S.A. Vanapalli, C. Chen

4:00 395. Nanofluidic resistive pulse sensing in aqueous two-phase system. S. Lee, J. Kang, W. Choi, **R. Kwak**

4:20 396. Graphene-based microfluidics for serial crystallography. S. Sui, Y. Wang, D.J. MacPherson, K.W. Kolewe, V. Srajer, R. Henning, J.D. Schiffman, J.A. Hardy, C. Dimitrakopoulos, **S.L. Perry**

4:40 397. Understanding the fidelity of wax printed micropatterns. **M.H. Shamsi**

Maxwell Dworkin
MD G115

Nanomaterials for Biomedicine

T. Porter, P. Rai, *Organizers*
K. Hamad-Schifferli, *Organizer, Presiding*

2:00 398. Probing vasculature permeability of nanomaterials for biomedicine with a microfluidic model. Y. Ho, G. Adriani, S. Beyer, R. Kamm, P. Nhan, **J.C. Kah**

2:30 399. Thick-shelled quantum dots in fluorescence resonance energy transfer (FRET)-based biosensors. **A.M. Dennis**, M. Chern, T. Nguyen

3:00 400. Dual stimuli-sensitive mixed micelles as promoters of chemotherapeutic drug and miRNA co-delivery in tumor tissue. G. Salzano, D.F. Ferreira Costa, **C. Sarisozen**, E. Luther, G. Mattheolabakis, P.P. Dhargalkar, V.P. Torchilin

3:20 Intermission.

3:40 401. Nano- and microparticle delivery vehicles for biologics and other soluble therapeutics formulated by flash nanoprecipitation. **R.K. Prudhomme**

4:00 402. Self-dispersing organogel (SDOG). **M. Nouraei**, E.J. Acosta

4:20 403. DNA origami and gold nanorods functionalized calcium phosphate @ phospholipid hybrid nanoparticles for advancing biomedical applications. H. Zhang, X. Qu, H. Chen, R. Ding, D. Chen, W. Zhang, X. Zhang, H. Santos, **M. Hai**, D. Weitz

4:40 404. Stimuli-responsive microgel-based systems for controlled drug release. **Y. Gao**, M. Serpe

Jefferson
250

Particle Assemblies

Self-Assembly & its Applications

A. Bose, V. Manoharan, *Organizers, Presiding*

2:00 405. Designing consumer products by managing particle self-assembly. K. Trinh, M.R. Sivik, **T. Hodgdon**

2:20 406. Molecular design rules for programmable polypeptide granular assemblies. **N.J. Carroll**, G. Lopez, M. Rubinstein

2:40 407. Maximum likelihood analysis of Brownian trajectories. **R. Sarfati**

3:00 408. Self-assembly of colloidal spheres on cylinder. **N. Tanjeem**, E. Memet, D. Beller, D. Nelson, L. Mahadevan, V. Manoharan

3:20 Intermission.

3:40 409. Field-induced assembly of superparamagnetic colloidal spheres confined in thermo-reversible microtubes. **P. Liu**, J. de Folter, A.V. Petukhov, A.P. Philipse

4:00 410. Modeling Janus colloid structural re-configuration. **D.J. Beltran-Villegas**, Y. Zhang, R.G. Larson

4:20 411. Mechanically-actuated phase transition of Janus colloids. **H. Rezvantalab**, D.J. Beltran-Villegas, R.G. Larson

4:40 412. Forming diverse colloidal crystals with DNA colloids via self-assembly. **Y. Wang**, J. McGinley, J.C. Crocker

Science Center
Room 309a

Recent Developments in Nanomaterials

Nanoparticle Assemblies & Properties

R. C. Hayward, B. Ratna, R. S. Tu, *Organizers, Presiding*

2:00 413. Evaporation-induced nanoparticle self-assembly in polymer films. **S. Cheng**, G.S. Grest, M.J. Stevens

2:20 414. Hierarchical surface patterns *via* novel evaporation induced self-assembly process. **P. Wasik**, C. Redeker, H. Wu, W.H. Briscoe

2:40 415. Patterned topological features as nucleation sites for nanowire assembly in applied electric field. **S.J. Boehm**, N. Brljak, L. Lin, T.S. Mayer, C.D. Keating

3:00 416. Self-assembly of cellulose acetate nanoparticle, nanorod, and crystalline morphologies. **B. Peng**, S. Palantavida, I. Sokolov

3:20 Intermission.

3:40 417. Chiral templating of self-assembling nanostructures by circularly polarized light. **J. Yeom**, N. Kotov

4:00 418. Nickel doped cerium oxide catalysts for CO removal by preferential oxidation and water-gas shift reaction. **C. Guild**, S. Seraji, A. Meguerdichian, T. Jafari, J. Rodriguez, D. Vovchok, S.D. Senanayake, S.L. Suib

4:20 419. Study of the nature of ultrabrightness in fluorescent dye encapsulated nanoporous silica particles. **V. Kalaparthi**, S. Palantavida, I. Sokolov

Maxwell Dworkin
MD G125

Rheology of Complex Fluids

J. Conrad, M. E. Helgeson, *Organizers*
V. Sharma, *Presiding*

2:00 420. Two step yielding in 2D colloidal glass: Attraction tuned by electrolyte in subphase. **H. Zhang**, K. Yu, O. Cayre, D. Harbottle

2:20 421. Aging oil-water interfaces with asphaltene adsorption: Interface rheology and heterogeneity. **C. Chang**, A. Nowbahar, V. Mansard, J. Mecca, A. Schmitt, T. Kalantar, T. Kuo, T. Squires

2:40 422. Measuring the dilatational modulus of human lung surfactant monolayersΔ. A. Sachan, **J.A. Zasadzinski**

3:00 423. Mesoscopic modelling of the effects of salt and additives on the rheological properties of commercial wormlike micellar solutions. **W. Zou**, X. Tang, P. Koenig, M.R. Weaver, R.G. Larson

3:20 Intermission.

3:40 424. Extensional flow small angle neutron scattering of wormlike micelles. **K. Weigandt**, R. McCallister

4:00 425. Understanding fluid structure at high shear rates: Developing μRheoSANS. **J.S. Weston**, K. Weigandt, S.D. Hudson, D. Seeman, D.L. Blair

4:20 426. Microfluidic shear viscometers for complex fluid rheology. **S. Gupta**, N.S. Suteria, S. Vanapalli

Pierce
209

Self-Assembly at Molecular Scale

Particles & Gels

S. Thayumanavan, *Organizer*
P. Alexandridis, *Organizer, Presiding*
S. L. Perry, *Presiding*

2:00 427. Keynote Lecture: Bottom-up with a twist: A new approach for colloidal crystal assembly. N.A. Mahynski, L. Rovigatti, C. Likos, **A. Panagiotopoulos**

2:40 428. Self-assembly of artificial actin filaments. **S. Cheng**, C.R. Grosenick, M.J. Stevens

3:00 429. Liquid-like bundles of crosslinked actin filaments contract without motors. **K. Weirich**, S. Banerjee, K. Dasbiswas, S. Vaikuntanathan, M. Gardel

3:20 Intermission.

3:40 430. Molecular engineering of polyelectrolyte complex materials. L. Chang, Y. Liu, X. Meng, W. Blocher, J. Vélez, B. Johnston, R. Shamsi, R. Wang, M. Radhakrishna, R.A. Letteri, B. Momani, H. Winter, T. Emrick, C.E. Sing, J.D. Schiffman, **S.L. Perry**

4:00 431. Probing phase transitions in dynamic biopolymer complexation. **A. Marciel**, M.V. Tirrell

4:20 432. Rapid electro-formation of robust and transparent biopolymer gels in prescribed 3-D shapes. **A. Gargava**, J. Athas, S.R. Raghavan

4:40 433. Vesicle formation by self-assembly of ionic liquid based surfactants and cholesterol: A novel approach towards drug delivery. Z.S. Vaid, **N.I. Malek**, O. El Seoud

Science Center
Room B10

Surface Science & Catalysis

Biosurface Chemistry & Catalysis

J. N. Russell, *Organizer*
C. J. Karwacki, *Organizer, Presiding*

2:00 434. Reversible pH-switching of an artificial hydrolase based on peptide nanofibers and hydrogel. **C. Zhang**, **C. Maldarelli**, R. Ulijn

2:30 435. An intelligent second skin for chemical biological protection based on organohydrogels. E. Wilusz, **R. Nagarajan**, P. D'Angelo, M.E. Helgeson, B.D. Olsen, T. Hatton, L. Bromberg, J. Owens, D. McGarvey, W. Creasy

3:00 436. On the release of cargo from responsive polymer brushes. **C.L. Mercier**, D.W. Johnson, C.D. Bain

3:20 Intermission.

3:40 437. Lowering the barrier to C-H activation using Pt/Cu single atom alloys. **M. Marcinkowski**, M. El Soda, F.R. Lucci, E.H. Sykes

4:00 438. The impact of structure on the catalytic behavior of Cu_2O supported Pt atoms. **A. Therrien**

Science Center
Hall A

Wetting, Adhesion & Surface Forces

Wetting: Particles & Anisotropic Systems

M. Ruths, H. Zeng, *Organizers*
A. N. Dhinojwala, J. Yu, *Presiding*

2:00 439. Crossovers from dynamics to kinetics of colloidal particle adsorption at liquid interfaces: A Langevin dynamics approach. **C.E. Colosqui**, A.M. Rahmani, A. Wang, V. Manoharan

2:20 440. Evaporative diffusiophoresis in coffee rings modulates particle patterns. **R. Guha**, F. Mohajerani, A. Sen, D. Velegol

2:40 441. Transport of a partially wetted single particle at the liquid/vapor interface under the influence of an externally imposed surfactant generated Marangoni stress. **R. Sharma**, T. Corcoran, S. Garoff, T.M. Przybycien, R.D. Tilton

3:00 442. Bubble meets droplet: Particle-assisted reconfiguration of wetting and dewetting. **J.C. Meredith**, Y. Zhang, S.H. Behrens

3:20 Intermission.

3:40 443. Controlled wettability and characterization of nanofibrous platforms through incorporation of functionalized fumed silica particles. **M.T. Geiger**, M. Dufficy, C.A. Bonino, S. Khan

4:00 444. Wetting behavior, shape, and morphology of sessile lyotropic liquid crystal microdroplets on solid surfaces. **V. Jamali**, P. van der Schoot, M. Pasquali

4:20 445. Behaviors of 'caged' liquid crystal droplets in suspension and on surfaces. **X. Guo**, U. Manna, M. Carter, N.L. Abbott, D.M. Lynn

4:40 446. Forces, pressures and energies associated with liquid rising in heterogeneous capillary tubes with chemical gradients. **C.W. Extrand**

TUESDAY EVENING

Science Center
Hall B

Unilever Award Lecture

R. Nagarajan, *Organizer*
K. P. Ananth, P. Somasundaran, *Presiding*

5:30 Introduction of Award Winner.

5:40 447. Complex nanoemulsions: Novel building blocks for colloidal materials. **M.E. Helgeson**

WEDNESDAY MORNING

Science Center
Hall B

Victor K. LaMer Award Lecture

R. Nagarajan, *Organizer*
J. Frechette, *Presiding*

8:20 Introduction of Award Winner.

8:30 448. Understanding shape control of noble metal nanoparticles through the lens of basic chemistry. **M.L. Personick**

Science Center
Room 309

Advanced Experimental & Simulation Techniques in Colloid & Interface Science

A. M. Peterson, M. M. Santore, *Organizers*
R. Zimmermann, *Presiding*

9:40 449. Keynote Lecture: Gravitational collapse of colloidal gels: Structure, dynamics, and rheology. **R. Zia**, P. Padmanabhan

10:20 450. Using time-evolution of sessile drop profiles to estimate solvent diffusivity in solid substrates. **M. Clay**, M. Bell, R. Srinivasan, A. Borhan, R. Nagarajan

10:40 451. Extending total internal reflection microscopy to systems of anisotropic particles. **C.G. Bolton**, R. Dagastine

11:00 452. Interaction of colloidal particles at an oil-water interface. **Z. Yi**, **P. Gao**, **F. Jin**, **T. Ngai**

11:20 453. Hydrodynamic entrainment in spherically confined colloidal suspensions. **C. Aponte-Rivera**, Y. Su, R. Zia

11:40 454. A novel apparatus to study particle-laden interface: Simultaneous measurement of surface pressure and interfacial particle interactions. **M. Molaei**, J.C. Crocker

12:00 455. Using a stochastic field theory to understand active colloidal suspensions. **Y. Qian**, P. Kramer, P. Underhill

Jefferson
256

Biological Interfaces

Biomaterials

T. A. Camesano, J. D. Schiffman, *Organizers*
S. Peyton, *Organizer, Presiding*

9:40 456. LaMer Keynote Lecture: Inverse opal scaffolds for biomedical applications. **Y. Zhang**

10:20 457. Study of the kinetics of cell specific adhesion in porous media as a function of cell velocity. **J. Brouchon**, J. Baudry, J. Bibette

10:40 458. Intrinsic degradation of alkanethiol self-assembled monolayer surfaces for cell confinement studies. **B. Almeida**, A. Shukla

11:00 459. Effect of assembly pH on polyelectrolyte multilayer surface properties and BMP-2 release. **A.M. Peterson**, X. Lyu, C. Salvi

11:20 460. Bio-deuterated cellulose thin films for the visualization of biomolecules at the solid/liquid interface. **G. Garnier**, V. Raghuwanshi, J. Su, C. Garvey, W. Batchelor, W. Raverty, S. Holt, P. Holden

11:40 461. A cellulose paper-assisted (CEPA) method for forming giant lipid vesicles of arbitrary lipid compositions in arbitrary aqueous buffers. **A. Subramaniam**, K. Kresse, J. Pazzi

12:00 462. Naturally occurring date palm spores (*Phoenix dactylifera*): Morphology and behaviour at fluid-fluid interfaces. **A.K. Dyab**, V.N. Paunov

Science Center
Hall E

Emulsions, Foams & Dispersions

Interfacial Phenomena

A. Fernandez-Nieves, M. Lynch, *Organizers*
P. Somasundaran, Y. W. Chang, *Presiding*

9:40 463. Nanoemulsions obtained via bubble bursting at a compound air-oil-water interface. **J. Feng**, J.K. Nunes, S. Shin, J. Yan, Y. Kong, R.K. Prudhomme, L.N. Arnaudov, S.D. Stoyanov, H.A. Stone

10:00 464. Behaviour of polymer-nanoparticle composites at the air-water interface. **K. Yu**, H. Zhang, O. Cayre, D. Harbottle

10:20 465. Visualization of dispersant dynamics at liquid-liquid interfaces using Nile red-polyethylene glycol (NR-PEG) surfactant-dyes. **C.V. Chen**, Y. Liu, H.A. Stone, R.K. Prudhomme

10:40 466. Tuning the interfacial mechanics of particle/surfactant-laden interfaces. **S.M. Kirby**, S.L. Anna, L. Walker

11:00 467. Interdependent conformational changes of proteins and oil molecules at oil-'protein solution' interface. P. Patra, **P. Somasundaran**

11:20 468. Dynamic interfacial tension (IFT) studies of aqueous polymer-surfactant solutions: Using instantaneous IFT measurements to quickly determine critical aggregation concentrations. **C.V. Chen**, A. Carpio, R.K. Prudhomme, A. Consilvio

11:40 469. Templating polyelectrolyte complexes at an all-aqueous interface. **S.D. Hann**, K.J. Stebe, D. Lee

12:00 470. Interfacial phenomena in oil sands industry: Effect of steam-assisted gravity drainage (SAGD) produced water properties on diluted bitumen/water transient interfacial tension. **M. Razi**

12:20 471. Drainage of a thin film of Bingham fluid between two viscous Newtonian drops undergoing a head-on collision. **S. Goel**, **A. Ramachandran**, S. Borkar

Science Center
Room B10

Emulsions, Foams & Dispersions

Stability, Interactions & Macroscopic Behavior

A. Fernandez-Nieves, M. Lynch, *Organizers*
U. Gasser, J. Crocker, *Presiding*

9:40 472. Particle deswelling and phase behavior of pNIPAM microgels at high concentrations. **U. Gasser**, A. Scotti, E.S. Herman, M. Pelaez-Fernandez, J. Han, A. Menzel, L.A. Lyon, A. Fernandez-Nieves

10:00 473. Novel associative nanoparticles as nanoscale particulate crosslinkers for rheological control of complex aqueous gel fluids. **J. Kim**

10:20 474. Effect of interparticle interactions on agglomeration and sedimentation rates of colloidal silica microspheres. **Y. Yang**, A. Kelkar, D.S. Corti, E.I. Franses

10:40 475. Soluto-inertial phenomena: Designing long range, long-lasting, surface-specific colloidal interactions. **A. Banerjee**, T. Squires

11:00 476. Revisiting the colloidal fundamentals of water-dispersible polymers: Nanoscale interactions and self-assembly of polymer nanoparticles and gels. **S. Islam**, D.L. Inglefield Jr., R.L. Eagan, O.D. Velev

11:20 477. Characterizing the size distribution, composition and stability of chemical mechanical polishing slurry agglomerates. **F. Cheong**, E. Hlaing, P. Kasimbeg, J. Blusewicz, D.B. Ruffner, D.G. Grier, L.A. Philips

11:40 478. Applying differential dynamic microscopy to characterize disperse suspensions. **M. Safari**, P.G. Vekilov, J. Conrad

12:00 479. Direct measurement of the electrophoretic mobility in concentrated colloidal suspensions. **S. Razavi**, M.J. Solomon

Mallinckrodt Lab
Room B23

General Papers

T. Dinsmore, *Organizer, Presiding*

9:40 480. LaMer Keynote Lecture: Effects of self-energy of the ions on the double layer structure and properties at the dielectric interface. **R. Wang**, Z. Wang

10:20 481. Small-amplitude atomic force microscopy study of nanoconfined liquids. **S. Khan**, P.M. Hoffmann

10:40 482. Electro-microfluidic-extrusion of viscous liquid jets for printing applications. **A. Shum**, J. Li

11:00 483. Single excitation multiplex probes using energy transfer between dyes encapsulated in silica discoid. **S. Palantavida**, B. Peng, I. Sokolov

11:20 484. Experimental evaluation of kinetic and thermodynamic reaction parameters of colloidal nanocrystals. **E.M. Brauser**, T. Hull, J. McLennan, M.H. Bartl

11:40 485. Sensing and inactivation of *Bacillus anthracis* sterne by brominated polymers. **P. D'Angelo**, L. Bromberg, T. Hatton, E. Wilusz, R. Nagarajan

12:00 486. Understanding the influence of surface coverage, pH, and solution phase micelle concentration on the kinetics of the partitioning of a cationic surfactant and an anionic dye from aqueous solution to the surface of silica nanoparticles derivatized with a pH switchable polymer. **D. Rivera**, J. Siegenthaler

12:20 487. Protein conformational flexibility enables the formation of dense liquid clusters: Tests using solution shear. **M. Byington**, M. Safari, J. Conrad, P.G. Vekilov

Maxwell Dworkin
MD G115

Nanomaterials for Biomedicine

K. Hamad-Schifferli, T. Porter, *Organizers*
P. Rai, *Organizer, Presiding*

9:40 488. Nanomaterials for biomedicine: How fluid dynamics influenced gold nanoparticle behavior and cellular deposition. **K. Comfort**

10:10 489. Novel nanoemulsion for controlled drug release with ultrasound imaging monitoring. **Y. Park**, C. Collins, M. Taylor, Z. Zhang

10:30 490. Rational interfacial engineering of soft and hard nanoscale colloids for next generation ultrasound contrast agents. **A.P. Goodwin**

11:00 491. Nanoparticle tumor localization, intracellular trafficking disruption, and prolonged drug delivery improve survival in peritoneal mesothelioma. **M.W. Grinstaff**

11:30 492. A nanomedicine-based curcumin and doxorubicin combination treatment of glioblastoma with scFv-targeted micelles: In vitro evaluation in 2D and 3D tumor models. **C. Sarisozen**, S.D. Dhokai, E.G. Tsikudo, I.M. Rachman, V.P. Torchilin

11:50 493. Diagnosis of tropical viral diseases in lateral flow immunoassays. **H. de Puig Guixe**, M. Carre, M. Hiley, I. Bosch, K. Hamad-Schifferli, L. Gehrke

Jefferson
250

Particle Assemblies

Clusters, Colloidal Molecules, & Patchy Particles

A. Bose, V. Manoharan, *Organizers, Presiding*

9:40 494. Ground states and assembly pathways of colloidal clusters. **E.D. Klein**, W. Rogers, V. Manoharan

10:00 495. Paramagnetic colloids in rotating fields: From chains through chaos to clusters and molecules. **H. Abdi**, R. Soheilian, R. Erb, C. Maloney

10:20 496. DNA surface reorganization: A method for cluster and patchy particle design. **J.A. Diaz A.**, J. Brujic, D. Pine

10:40 497. Computational studies of the depletion-driven self-assembly of patchy trimer colloids and cubic colloids. **H. Hatch**, W. Krekelberg, V. Shen, S.D. Hudson, J. Mittal

11:00 498. Precision registry of monodisperse biphasic Janus microparticles for 2D positioned colloidal array. **S. Han**, J. Kim

11:20 499. Controlling the valence of emulsion droplets using DNA origami directed patch formation. **Y. Zhang**, X. He, R. Zhuo, R. Sha, N.C. Seeman, J. Brujic, P. Chaikin

11:40 500. Colloidal architecture with DNA origami. **M. Ben Zion**, C. Maass, R. Sha, N.C. Seeman, P. Chaikin

12:00 501. Magnetic Janus particle chain assembly rate: From experiment to theory. **T. Long**, I. Kretzschmar, J. Koplik

12:20 502. Collective translational and rotational dynamics of active clusters. M. Karim, **U.M. Cordova-Figueroa**

Maxwell Dworkin
MD G125

Rheology of Complex Fluids

J. Conrad, M. E. Helgeson, *Organizers*
J. W. Swan, *Presiding*

9:40 503. Extensional relaxation times and pinch-off dynamics of dilute and semi-dilute polymer solutions. **J. Dinic**, L.N. Jimenez, M. Biagioli, A. Estrada, V. Sharma

10:00 504. Flow measurements in microfluidic channels with in-line holographic microscopy. **P. Salipante**, S.D. Hudson

10:20 505. Elastic instabilities in planar elongational flow of monodisperse polymer solutions. **S.J. Haward**, G. McKinley, A.Q. Shen

10:40 506. Deterministic lateral displacement of semi-flexible chains in pillar arrays. **J. Zhao**, Z. Zhu, S.L. Biswal

11:00 507. Measuring carbon nanotube length via extensional viscosity, and the relationship of length to liquid crystalline transition. **M. Pasquali**, D.E. Tsentalovich, J. Lee, R.J. Headrick, E. Bengio, A.W. Ma

11:20 508. Flow-induced gelation of microfiber suspensions. **J.K. Nunes**, A. Perazzo, S. Guido, H.A. Stone

11:40 509. Characterization of covalently adaptable hydrogel scaffolds using passive microrheology. F. Escobar IV, D. McKinnon, K.S. Anseth, **K. Schultz**

12:00 510. Origins of concentration gradients for diffusiophoresis. **D. Velegol**, A. Garg, R. Guha, A. Kar, M. Kumar

Pierce
209

Self-Assembly at Molecular Scale

Polyelectrolyte & Polypeptide

P. Alexandridis, S. Thayumanavan, *Organizers*
L. Leon Gibbons, S. Swaminathan, *Presiding*

9:40 511. Polyelectrolyte complex hydrogels: Self-assembly at low and high polymer concentrations. **S. Srivastava**, D.J. Goldfeld, A. Levi, J. Mao, M.V. Tirrell

10:00 512. pH-Responsive non-ionic diblock copolymers: Protonation of a morpholine end-group induces an order-order transition. **N. Penfold**, J. Lovett, N. Warren, S.P. Armes

10:20 513. pH tunable self-assembly of a methacrylate-based hydrophobic cationic copolymer. **J. Pegg**, J. Eastoe

10:40 514. Effect of polyelectrolyte stiffness and solution pH on the nanostructure of complexes formed by cationic amphiphiles and negatively charged polyelectrolytes. **M. Ram-On**, Y. Cohen, Y. Talmon

11:00 515. Interfacial self-assemblies of low-cost amphipathic polypeptides. **M. Kubilius**, R.S. Tu

11:20 516. Chirality induced tuning of polypeptide complexation. **L. Leon Gibbons**, N. Pacalin, S.L. Perry, M.V. Tirrell

11:40 517. Protein-like nanoparticles based on orthogonal self-assembly of chimeric peptides. **H. Dong**, L. Jiang, R. Lund

12:00 518. Control of amphiphilic block copolymer self-assembly by polymer end groups. **M. Grzelakowski**, K. Kita-Tokarczyk

Science Center
Hall A

Wetting, Adhesion & Surface Forces

Adhesion: Biomimetic, Biological, & Complex Systems

M. Ruths, H. Zeng, *Organizers, Presiding*

9:40 519. Versatile underwater adhesive with microarchitecture triggered by solvent exchange. **D. Lee**, Q. Zhao, K. Ahn, S. Seo, Y. Kaufman, J.N. Israelachvili, H. Waite

10:20 520. Dynamics and mechanism of self-assembly and formation of functional silk-based structures from silk fibroin proteins. Y. Zhang, **Y. Min**

10:40 521. Adsorbed polymer-surfactant layer structure studied with atomic force microscopy. B. Tardy, T. Bai, **R. Dagastine**

11:00 522. Influence of divalent cations on deformation and rupture of adsorbed lipid vesicles. **M. Dacic**, J. Jackman, S. Yorulmaz, V. Zhdanov, B.-. Kasemo, N. Cho

11:20 523. Determining the effects of ligand density on membrane deformability and rolling of artificial capsules. H. Balsara, **R. Banton**, C. Eggleton

11:40 524. Changes of mechanical properties and adhesion of stratum corneum corneocytes's as a function of depth and hydration level. **S. Guo**, C. Baltenneck, Y. Domanov, M. Donovan, E. Perez, G.S. Luengo

12:00 525. Enhancement of van der Waals mediated adhesion of mosquito leg to rough surfaces. **L. Pashazanusi**, N. Pesika, N. Kumar

WEDNESDAY AFTERNOON

Science Center
Room 309

Advanced Experimental & Simulation Techniques in Colloid & Interface Science

A. M. Peterson, M. M. Santore, *Organizers*
B. Bharti, *Presiding*

2:00 526. Understanding protein-nanoparticle interactions using small angle scattering technique. **B. Bharti**, J. Meissner, G. Findenegg

2:20 527. Tracking nanoparticles and measuring their interactions in a nano-fluidic optical fiber. **Y. Lahini**, S. Faez, R. Garmann, A. Goldfain, S. Weidlich, M. Schmidt, V. Manoharan

2:40 528. Universal breakup of colloidal clusters in simple shear flow. **Y. Harshe**, M. Lattuada

3:00 529. Effect of coherence on ultra-small-angle scattering. **Y. Shinohara**, Y. Amemiya

3:20 Intermission.

3:40 530. Measuring particle size in concentrated dispersions at elevated temperatures: Acoustic spectroscopy. **A. Dukhin**, S. Parlia

4:00 531. Polymer surface modification of superparamagnetic nanoparticles to achieve single particle dispersions in high salinity environments. **J. Yu**, R.J. Nap, S. Heydrick, C. Beigie, Y. Park, I. Szleifer, J.Y. Wong

4:20 532. HLD-NAC guided design of dilutable self-micro emulsifying delivery systems (SMEDS). **M. Nouraei**, E.J. Acosta, L. Diosady

4:40 533. Hybrid population balance: Brownian dynamics simulations of colloidal latex particles with HEUR associative polymers. **E. Hajizadeh**, R.G. Larson

Jefferson
256

Biological Interfaces

T. A. Camesano, *Organizer*
S. Peyton, J. D. Schiffman, *Organizers, Presiding*

2:00 534. Multiplexing metabolomic-based disease diagnosis by surface enhanced Raman spectroscopy (SERS) platform. **Y. Chen**, R. Premasiri, L. Ziegler

2:20 535. Cell-free mutant polymerase selection in microfluidic emulsion droplets. **J. Collins**

2:40 536. Identifying aptamer as reagents for particle precipitation. **V.T. Milam**, M. Tapp, P. Dennis, R.R. Naik

3:00 537. Analyzing non-ionic colloidal interactions with optofluidics' nanotweezer surface. B. DiPaolo, R. Hart, C. Earhart, **B. Cordovez**

3:20 Intermission.

3:40 538. Internalization of matrix-bound BMP-2 by cells and associated endocytosis pathways. F. Gilde, R. Guillot, I. Paintrand, V. Fitzpatrick, T. Boudou, C. Albiges-Rizo, **C. Picart**

4:00 539. The role of pulmonary surfactant associate protein B in model phospholipid monolayer. **M. Wu**, H. Zeng, H. Zhang

4:20 540. Relating interfacial shear rheology to monolayer morphology. **J.A. Zasadzinski**, A. Sachan, T. Squires, S. Choi, K.C. Lee

4:40 541. Soft polymer mechanics in the initiation and robustness of bacterial biofilms. **V. Gordon**

Science Center
Hall E

Emulsions, Foams & Dispersions

Formation & Macroscopic Behavior

A. Fernandez-Nieves, M. Lynch, *Organizers*
T.A. Prileszky, J. W. Kim, *Presiding*

2:00 542. Transitional emulsion phase inversion induced by oil-dispersed pH responsive particle emulsifiers. **Y. Zhou**, O. Cayre, T. Hunter, D. Harbottle

2:20 543. Mechanistic steps and factors involved in flow-induced phase inversion of emulsions. **A. Kumar**, S. Li, C. Cheng, D. Lee

2:40 544. Hierarchical emulsion networks from endoskeletal droplets. **T.A. Prileszky**, E.M. Furst

3:00 545. Emulsification of hydrocarbon oil into structured platelet suspensions. **W. Ganley**, J. van Duijneveldt

3:20 Intermission.

3:40 546. Effect on drop coalescence of polymer-coated Janus gold nanoparticle compatibilizers: van der Waals interactions and Marangoni stresses. **C. Vannozzi**

4:00 547. Storage stable concentrated emulsions of hydrofluoroethers and perfluoroethers. **D. Malotky**, R. Bills

4:20 548. Silicone microemulsions. **Y. Liu**

4:40 549. Generation of cellulose nanofiber based microcapsules with tunable mechanical properties. **G. Kaufman**, S. Mukhopadhyay, Y. Rokhlenko, S. Nejati, R. Boltyanskiy, C. Osuji

Mallinckrodt Lab
Room B23

General Papers

T. Dinsmore, *Organizer, Presiding*

2:00 550. Core-shell rubbery fillers for massive electrical conductivity enhancement and toughening of a polystyrene-graphene nanoplatelet composite. I. Chakraborty, A. Shukla, **A. Bose**

2:20 551. A molecular engineering approach to developing polymer-nanoparticle networks and nanocomposites. **M.T. Geiger**, D. Hurrelbrink, S. Khan

2:40 552. Single molecular adhesion of a stimuli responsive polymer on the surface of molybdenum disulfide (MoS_2). **Y. Tang**, Z. Xu, Q. Liu

3:00 553. Reverse micelles from hydrogen bonding surfactants. **M.A. Walters**, Y. Chang, A.L. Rheingold

3:20 Intermission.

3:40 554. Molecular dynamics study of the diffusivity of a hydrophobic drug cucurbitacin B in pseudo-poly(ethylene oxide-b-caprolactone) micelle environments. **N. Razavilar**, P. Choi

4:00 555. Observation of depletion induced crystallization of magnetic colloids at an oil-water interface. **P. Liu**, D.N. ten Napel, A.P. Philipse

4:20 556. Structural *versus* plasmonic evolution during sulfidation of silver nanoprisms. **M.M. Shahjamali**, N. Zaraee, N. Large, G.C. Schatz

4:40 557. Metal-organic coordination networks at surfaces to control single-site transition metal oxidation state. **C. Tempas**, D. Skomski, B.J. Cook, T. Morris, A.V. Polezhaev, D. Wisman, K.A. Smith, K.G. Caulton, S.L. Tait

Maxwell Dworkin
MD G115

Nanomaterials for Biomedicine

K. Hamad-Schifferli, P. Rai, *Organizers*
T. Porter, *Organizer, Presiding*

2:00 558. LaMer Keynote Lecture: Modulating nanoparticle properties and features for enhanced biological performance. **A.C. Anselmo**, S. Mitragotri

2:40 559. Mucin-inspired thermoresponsive synthetic hydrogels induce stasis in human pluripotent stem cells and human embryos. **N. Warren**, I. Canton, K. Amps, A. Chahal, A. Wood, R. Weightman, E. Wang, H. Moore, S.P. Armes

3:00 560. Advances in biomimetic nanomaterials for multifunctional inhalation aerosols in pulmonary biomedicine. **H.M. Mansour**, J.D. Brain

3:20 Intermission.

3:40 561. Filomicelles delay clearance in vivo, and deliver retinoids & chemotherapeutics in irreversible control of carcinoma cell fate. **P. Nair**, M. Vakili, A. Lavasanifar, D.E. Discher

4:00 562. Injectable hydrogel beads for delivery of high concentration mAb formulations. **P.D. Godfrin**, R.S. Kashi, P.S. Doyle

4:20 563. Mechanism of antibacterial properties of chitosan selenium nanoparticles. **M. Stolzoff**, T.J. Webster

4:40 564. Tumor targeted NIR mesoporous silica nanoparticles for *in-vivo* applications. **S.M. Peerzade**, S. Palantavida, I. Sokolov

Jefferson
250

Particle Assemblies

Evaporative & Convective Assembly

A. Bose, V. Manoharan, *Organizers, Presiding*

2:00 565. Control of buckling dynamics in contact-free mixed colloidal droplet. **B. Pathak**, S. Basu

2:20 566. Anisotropy alone does not suppress the coffee ring effect: Competition between capillary and viscous forces in evaporating colloidal drop. **D. Kim**, M. Pack, H. Hu, Y. Sun

2:40 567. Sol-gel chemistry of inverse opals. **K. Phillips**, J. Aizenberg

3:00 568. Marangoni flow in colloidal self-assembly and deposition. **K. Joshi**, J.F. Gilchrist

3:20 Intermission.

3:40 569. Buckling dynamics in evaporating nanoparticles laden droplets on various hydrophobic heated substrates. **L. Bansal**, S. Basu

4:00 570. Fabrication of tunable periodic defects in convectively assembled colloidal crystals through stress relaxation. **M. Joy**, M.A. Snyder, J.F. Gilchrist

4:20 571. Mesoscale nanoparticle assemblies from dynamic capillary bridge. **S. Choudhary**, A. Crosby

4:40 132. Propulsion of two-sphere swimmers and collective behavior. **D. Klotsa**, **K. Baldwin**, R.J. Hill, R.M. Bowley, M.R. Swift

Maxwell Dworkin
MD G125

Rheology of Complex Fluids

M. E. Helgeson, *Organizer*
J. Conrad, *Organizer, Presiding*

2:00 572. Keynote Lecture: Simulation of frictional and adhesive forces in colloidal dispersions: Yielding, thickening, jamming. **J. Morris**

2:40 573. A rheological signature of frictional interactions in shear thickening suspensions. **J.R. Royer**, D.L. Blair, S.D. Hudson

3:00 574. Continuous shear thickening using boundary stress microscopy. **V. Rathee**, D.L. Blair, J.S. Urbach

3:20 Intermission.

3:40 575. High frequency rheology of partially dispersed colloidal dispersions. **B. Schroyen**, P. Van Puyvelde, J. Vermant

4:00 576. Design, synthesis, and characterization of mixed ionic/electronic conducting surface layers adsorbed on metal oxide particle. **J. Richards**, N.J. Wagner, P. Butler

4:20 577. Equilibrium structures and dynamics of cadmium sulfide nanoparticles in polymeric matrices. **W. Jang**, P. Koo, K. Bryson, S. Narayanan, A. Sandy, T.P. Russell, S. Mochrie

Science Center
Room 309a

Wetting, Adhesion & Surface Forces

Adhesion & Wetting

H. Zeng, *Organizer*
M. Ruths, *Organizer, Presiding*
D. Lee, *Presiding*

2:00 578. Enhancement of wet adhesion during peeling of soft materials. **J. Frechette**, C. Dhong

2:20 579. Interfacial instabilities induced by copolymers during coextrusion. S. Vuong, N. Chedozeau, J. Guilment, C. Coquet, L. Leger, **F. Restagno**

2:40 580. Effect of surface properties of the uv laser irradiated nylon cords on adhesion. **S. Basan**, E. Sancaktar

3:00 581. Adsorption dynamics of graphene oxide on charged self-assembled monolayers. **M. Akbulut**, I. Chen, M. Zhang

3:20 Intermission.

3:40 582. Uniform cracks in nanoparticle films deposited by convective assembly. A.L. Weldon, K. Joshi, A.F. Routh, **J.F. Gilchrist**

4:00 583. Exemplifying the effect of spreading coefficients on the morphology of microcapsules obtained from a solvent extraction synthesis method. **L. He**, A. Tasker, O. Cayre, S. Biggs

4:20 584. Contributions to the uncertainty budget of the Hamaker constant as determined from theoretical force-distance curves. **J.J. Weimer**

4:40 585. Unjamming and spreading of a cellular aggregate as a model of breast cancer migration. **K. Wang**, J.J. Fredberg

Science Center
Hall A

Wetting, Adhesion & Surface Forces

Surface Forces: Lubrication & Textured Surfaces

M. Ruths, H. Zeng, *Organizers*
X. Banquy, W. H. Briscoe, *Presiding*

2:00 586. Porous polymer surfaces exhibiting low friction. **N. Pesika**

2:40 587. Role of surface roughness for colloidal interactions in aqueous media. **J. Tsao**, S.H. Behrens

3:00 588. Adhesion, friction and lubrication of nano- and micro-structured surface coatings. **L. Giraud**, S. Giasson

3:20 Intermission.

3:40 589. Influence of humidity on Gecko-inspired adhesives. **N. Cadirov**, J.N. Israelachvili

4:00 590. Nanotribology of a catechol-functionalized alkane with terminal chain branching. **M. Ruths**, K. Persson

4:20 591. Nanoscale friction of uniaxially stretched polymer films. **X. Xu**, E. Reynaud, D.F. Schmidt, M. Ruths

4:40 592. Preparation and tribological characterization of biomimetic patterned polymer textures as skin coating models. **R. Jin**, X. Xu, C. Cazeneuve, J.C. Chang, M. Ruths, G.S. Luengo

AUTHOR INDEX

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AUTHOR INDEX

AUTHOR INDEX

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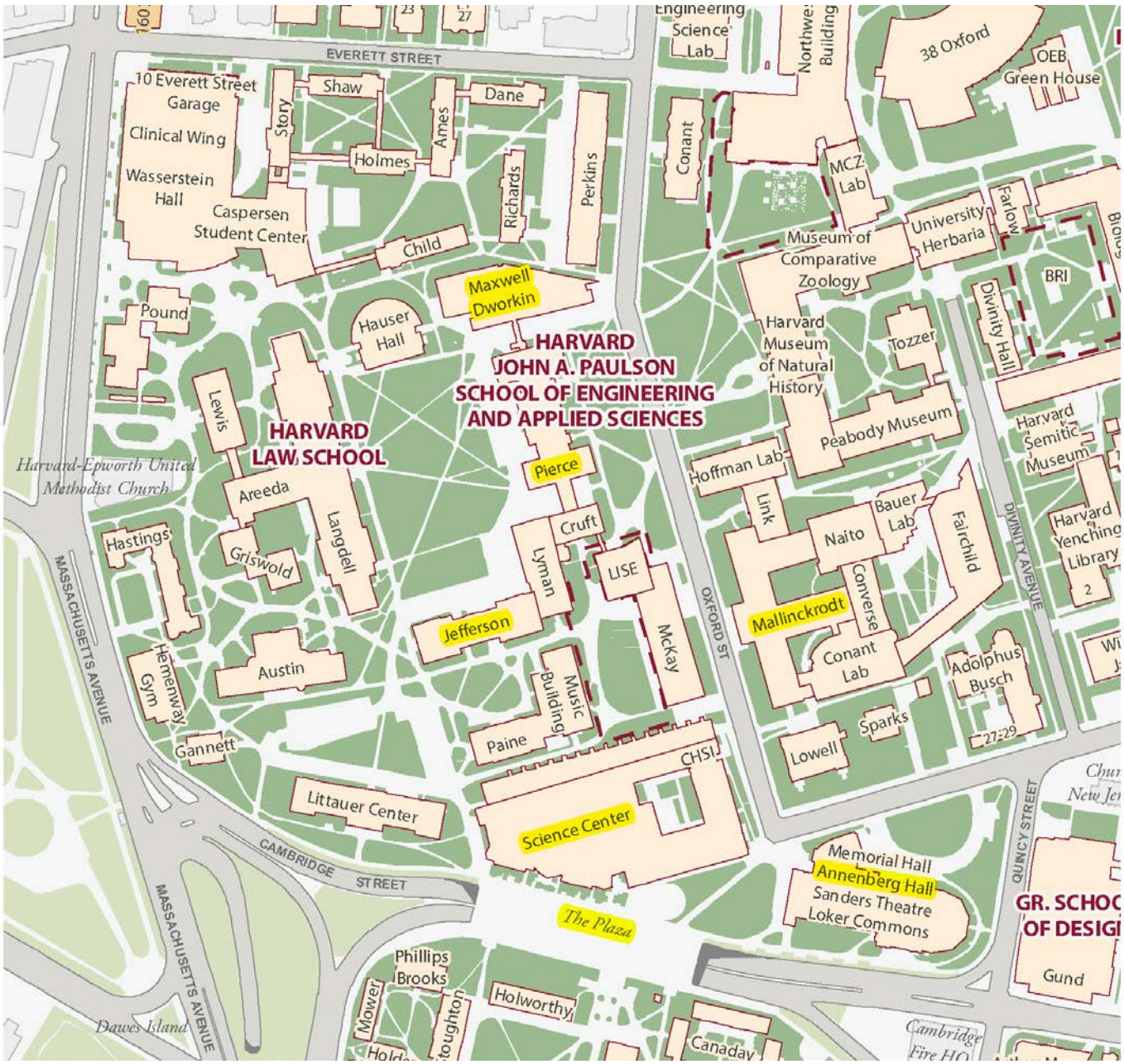
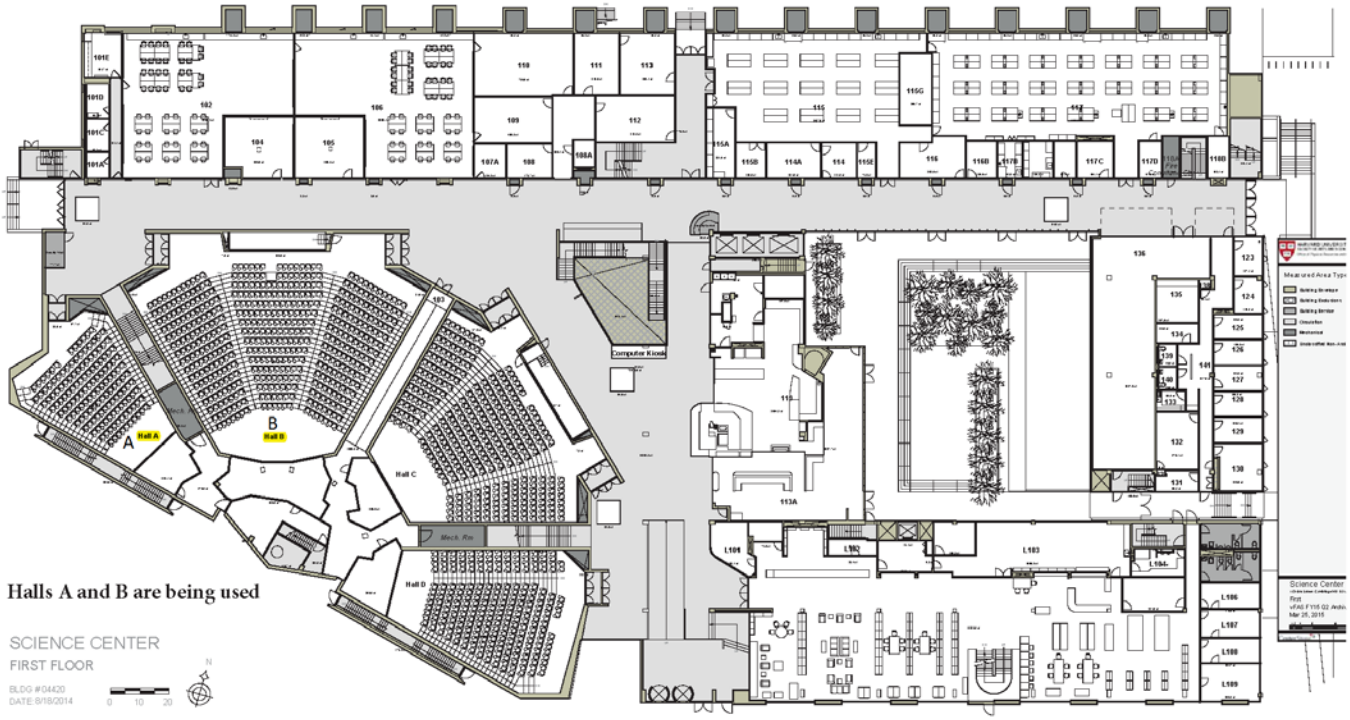
CSSS Locations Highlighted

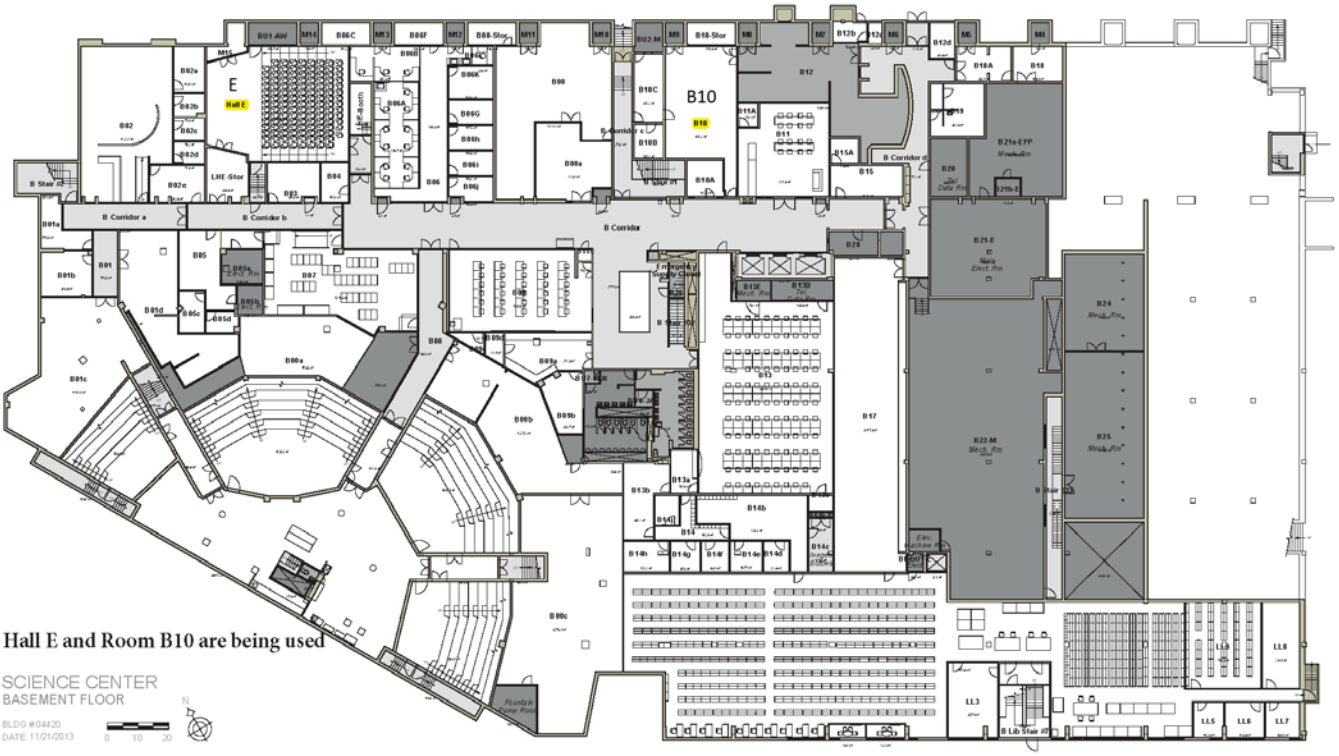


BUILDINGS AND ROOMS LOCATOR

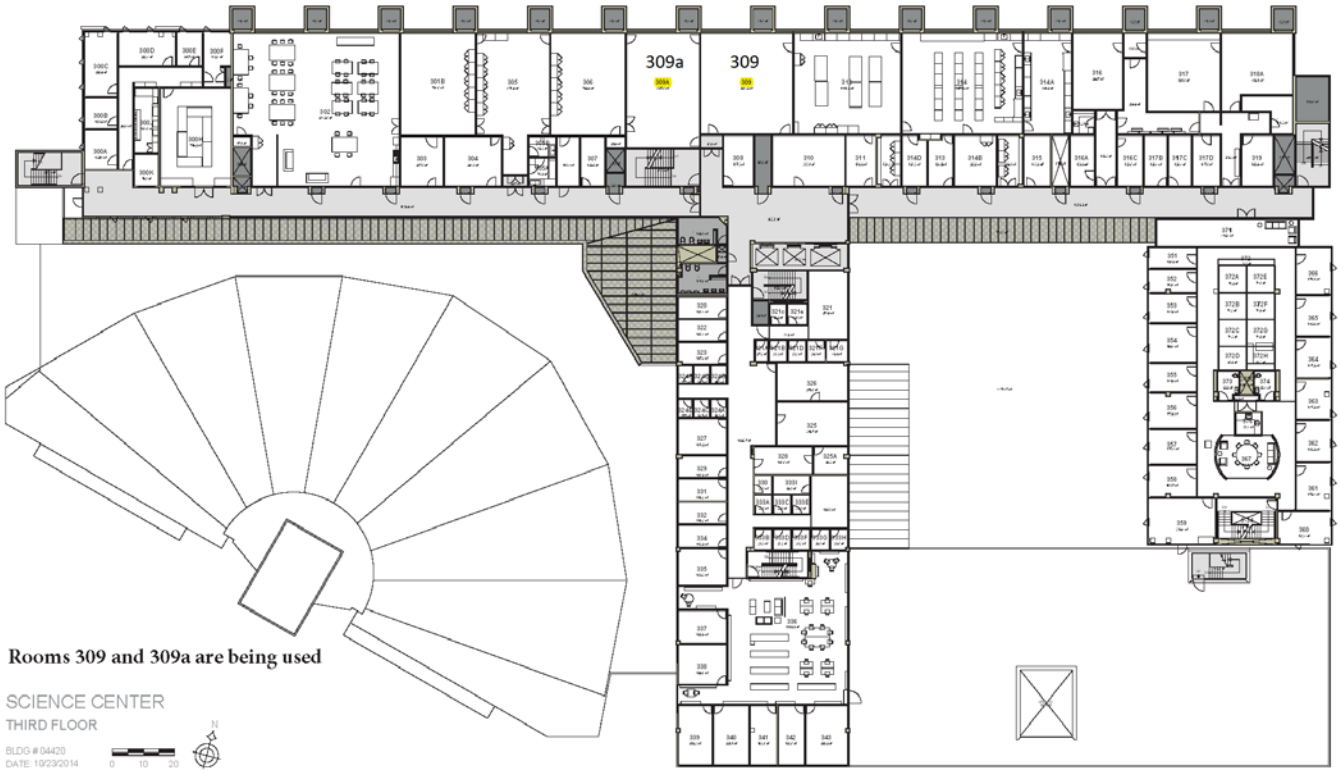
Science Center 1st Floor Halls A and B



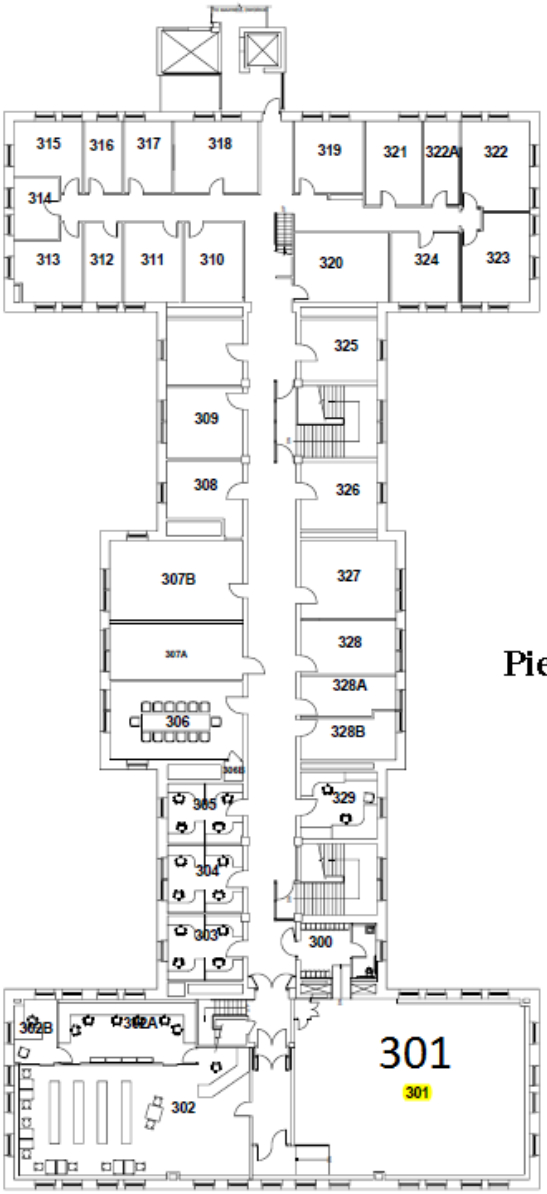
Science Center Basement Hall E and Room B10



Science Center 3rd Floor Rooms 309 and 309a



Pierce Hall Rooms 209 and 301



PIERCE HALL
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BLDG # 03764
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Room 301 is used

Meeting Rooms
Pierce 209 and Pierce 301
are being used

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SECOND FLOOR
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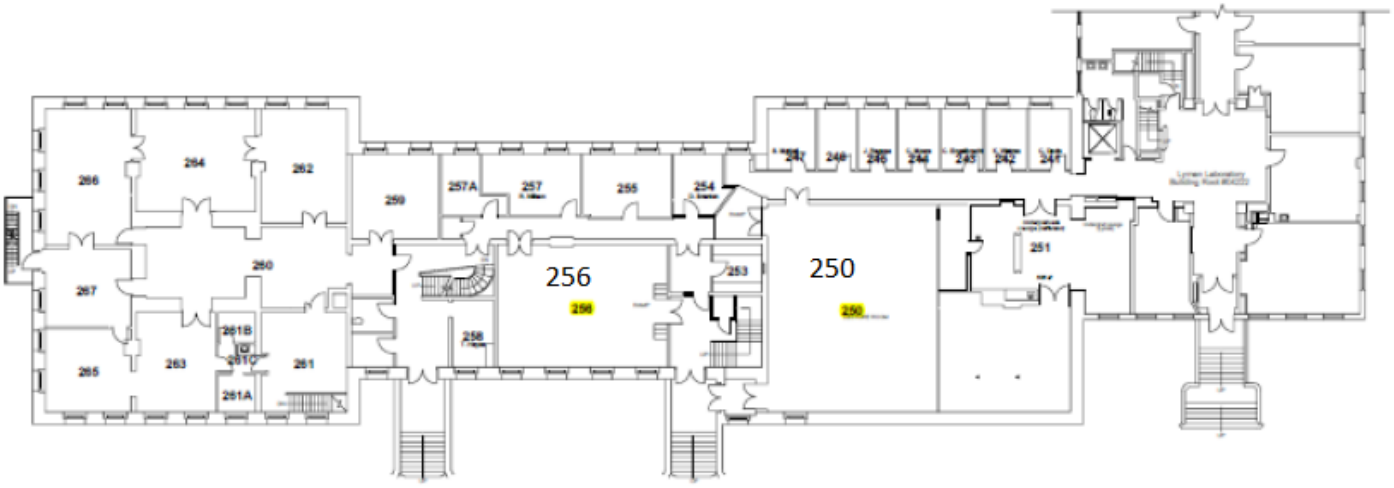
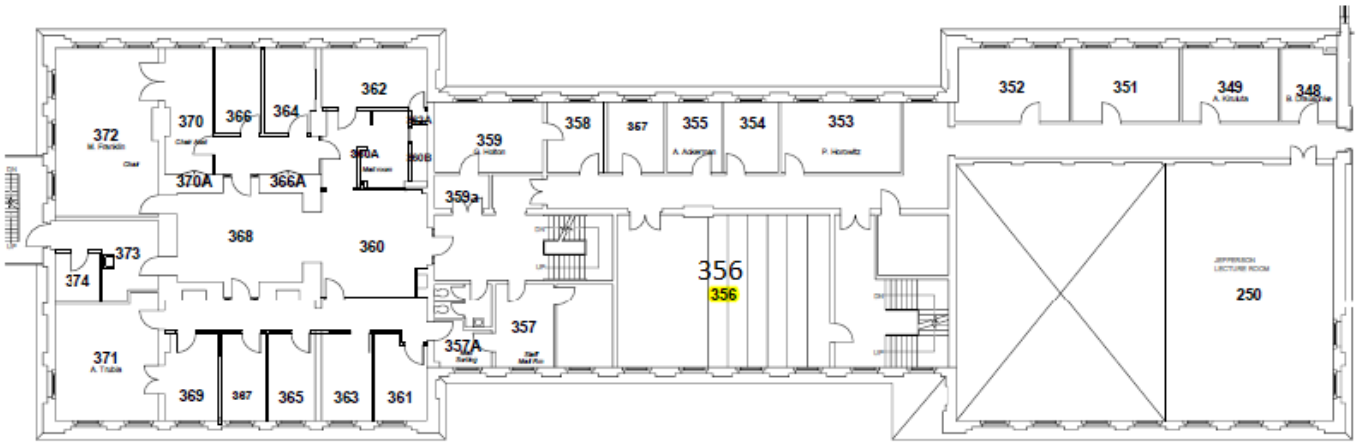
Room 209 is used

Jefferson Lab Rooms 250, 256 and 356



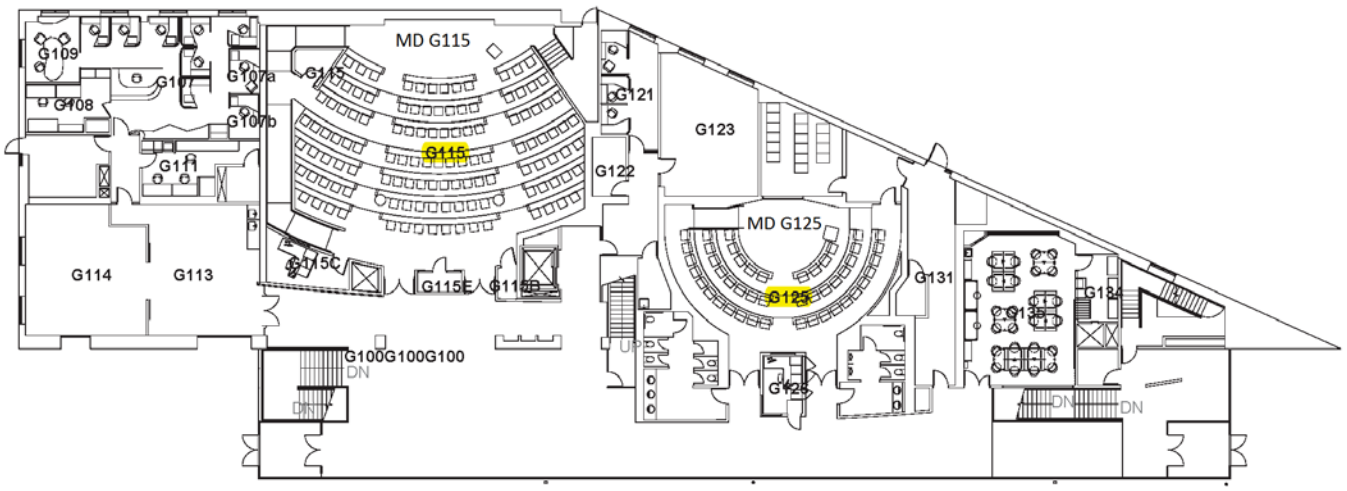
Jefferson 250 and Jefferson 256 on the 2nd floor and Jefferson 356 on the 3rd floor are being used.



Maxwell Dworkin 1st Floor MD 119

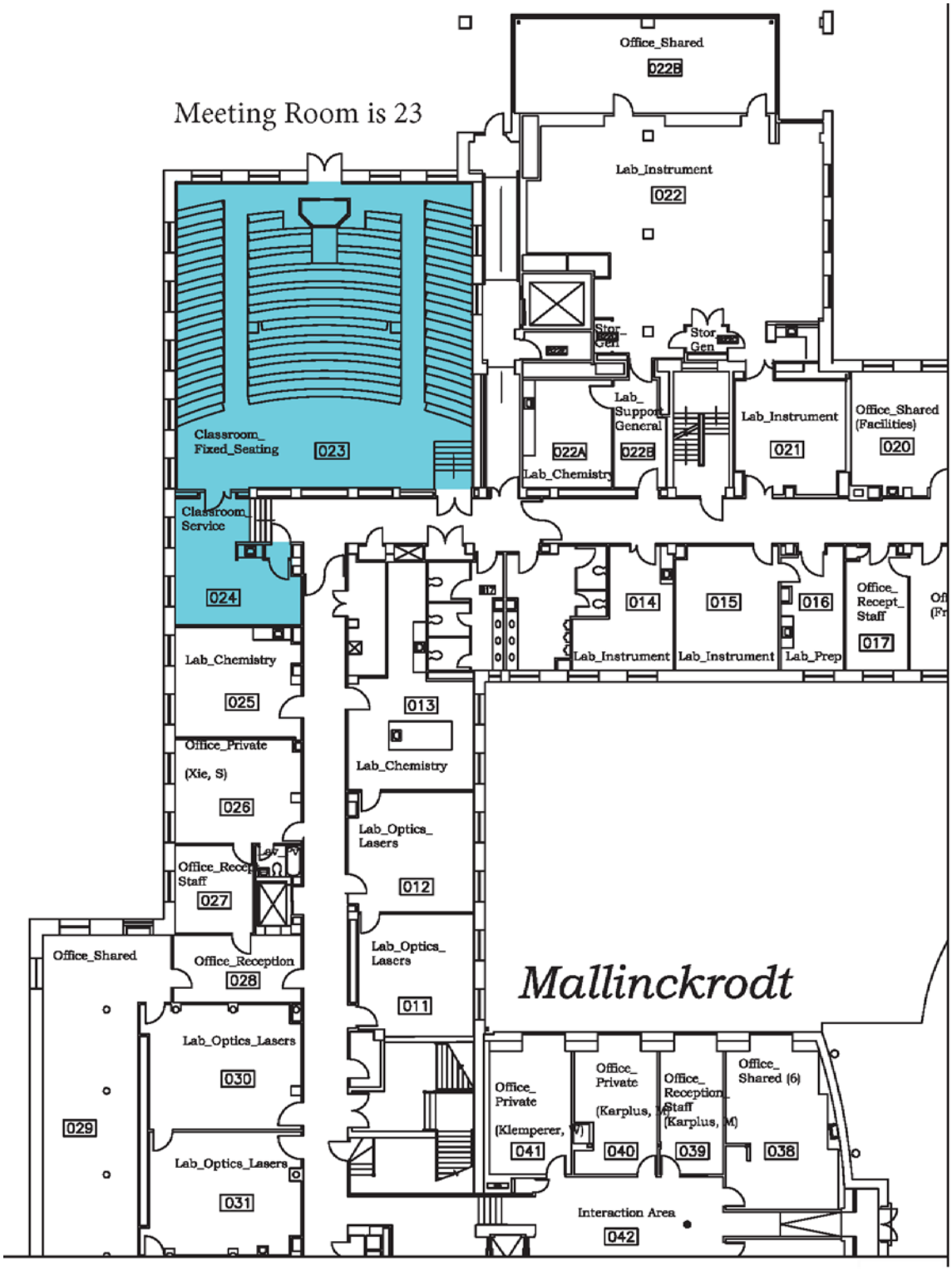
Meeting Room MD 119 is being used

Maxwell Dworkin Ground Floor MD G115 and MD G125



Meeting Rooms MD G115 and MD G125 are being used

Mallinckrodt Lab Room B23



91st ACS Colloid & Surface Science Symposium

July 9th - 12th, 2017

The City College of New York

Plenary Speakers

Kathleen J. Stebe
Richer and Elizabeth Goodwin Professor
Department of Chemical and Biomolecular Engineering
University of Pennsylvania

Markus Antonietti
Director for Colloid Chemistry
Max Planck Institute of Colloids and Interfaces

Symposium Co-Chairs

Ilona Kretzschmar
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Important Dates

Abstract Deadline
April 15, 2017

Registration Open
February 15, 2017

Website

www.colloids2017.org

Symposium Administrator

Annette Pineda
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Technical Sessions & Organizers

Electrokinetics and Microfluidics
Kyle Bishop | Penn State
Aditya Khair| Carnegie Mellon University

Patchy and Active Colloids
Ubaldo M Cordova Figueroa | University of Puerto Rico Mayagüez
Jacinta Conrad | University of Houston

Polymers and Biomacromolecules at Interfaces
Pinar Akcora | Stevens Institute of Technology
Tonya Kuhl | UC Davis

Directed and Self-Assembly at the Molecular Scale
Rein Ulijn | CUNY ASRC
Lorraine Leon | U Chicago

Directed and Self-Assembly at the Colloidal Scale
Ning Wu | Colorado School of Mines
Lisa Biswal | Rice University

Colloid and Surface Forces
Ray Dagastine | University of Melbourne
Norma Alcantar | University of South Florida

Wetting and Adhesion
Noshir Pesika | Tulane
David Hu | Georgia Tech

Rheology and Dynamics
Todd Squires | UCSB
James Gilchrist | Lehigh University

Colloids and Surface Science in Medicine & Personal Care Products
Stephen Herman | New York Society for Cosmetic Chemists
Kaushal Rege | Arizona State University

Environmental Catalysis and Energy Science
Alissa Park | Columbia University
Feng Jiao | U Delaware

Particles at Interfaces
David Harbottle | University of Leeds
Daeyeon Lee | U Penn

Emulsions, Bubbles and Foams
Sven Behrens | Georgia Tech
Mark Bordon | University of Colorado Boulder

General Papers
Prajna Dhar | University of Kansas
Rosanna Zia | Cornell University