



90<sup>th</sup> Colloid &  
ACS Surface  
Science  
Symposium

June 5-8, 2016  
Harvard University  
Cambridge MA



# Welcome message from 90<sup>th</sup> CSSS Co-Chairs



**David Weitz**  
Harvard University



**Joyce Wong**  
Boston University



**Ramanathan Nagarajan**  
Natick Soldier RDEC

Welcome to Harvard University and to the 90<sup>th</sup> 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 90<sup>th</sup> 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 90<sup>th</sup> 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

<b>Welcome Message</b>	<b>2</b>
<b>Table of Contents</b>	<b>3</b>
<b>Symposium Organizers</b>	<b>4</b>
<b>COLL and CSSS Committees</b>	<b>5</b>
<b>Summary Program View</b>	<b>6</b>
<b>Sessions at a Glance</b>	<b>7</b>
<b>Sponsors</b>	<b>8</b>
<b>Plenary Speakers</b>	<b>10</b>
<b>Topical Symposia Keynote Speakers</b>	<b>11</b>
<b>Plenary Lecturers Bio</b>	<b>12</b>
<b>LaMer and Unilever Award Winners</b>	<b>14</b>
<b>Exhibitors</b>	<b>15</b>
<b>Technical Program</b>	<b>16</b>
<b>Author Index</b>	<b>70</b>
<b>Buildings and Rooms Locator</b>	<b>86</b>
<b>91<sup>st</sup> CSSS Announcement</b>	<b>93</b>

# 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)

# COLL AND CSSS COMMITTEES

## ACS Division of Colloid and Surface Chemistry (COLL) Officers

### Chair

Daniel K. Schwartz, University of Colorado

### Chair-Elect

D. Howard Fairbrother, Johns Hopkins University

### Past-Chair

Robert J. Hamers, University of Wisconsin-Madison

### Vice-Chair

Eric Borguet, Temple University

### Program Chair

Ramanathan Nagarajan (Nagu), Natick Soldier RD&E Center

### Treasurer

Marina Ruths, University of Massachusetts, Lowell

### Secretary/Newsletter Editor

Lorena Tribe, The Pennsylvania State University - Berks Campus

### Membership Secretary

Rosa Espinosa-Marzal, University of Illinois

## Colloid and Surface Science Symposium Committee

Michael Bevan (**Chair**), Johns Hopkins University

John Crocker, University of Pennsylvania

Sharon Walker, University of California - Riverside

Joelle Frechette, Johns Hopkins University

## LaMer Award Committee

Joelle Frechette (**Chair**), Johns Hopkins University

Amanda Haes, University of Iowa

Matthew Helgeson, University of California - Santa Barbara

Nathalie Tufenkji, McGill University

Charles Maldarelli, The City College of New York

Liangfang Zhang, University of California - San Diego

## Unilever Award Committee

P. Somasundaran (**Chair**), Columbia University

K.P. Ananthapadmanabhan, Unilever

Raymond Farinato, Cytec

Nicholas L. Abbott, University of Wisconsin- Madison

Patricia Aikens, BASF

Ramanathan Nagarajan, Natick Soldier RD&E Center

## Langmuir Graduate Student Oral Presentation Selection Committee

Iлона Kretzschmar, The City College of New York

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

# SPONSORS

**ACS Division of Colloid and Surface Chemistry**

<http://www.colloidssurfaces.org/>



**DIVISION OF COLLOID AND SURFACE CHEMISTRY**

**John A. Paulson School of Engineering and Applied Sciences, Harvard**

<http://www.seas.harvard.edu/>



**HARVARD**

John A. Paulson  
School of Engineering  
and Applied Sciences

**Harvard MRSEC**

<http://www.mrsec.harvard.edu/>



**Langmuir, the ACS Journal of Surfaces and Colloids**

<http://pubs.acs.org/journal/langd5>



**BASF**

<https://www.basf.com/us/en.html>



**Worcester Polytechnic Institute**

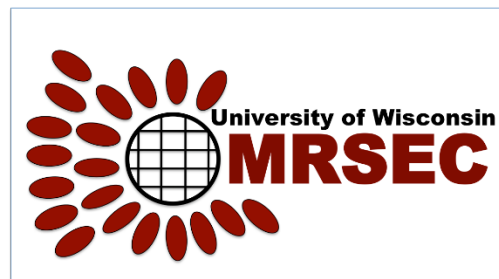
<https://www.wpi.edu/>



**WPI**

**University of Wisconsin - Madison  
MRSEC**

<http://www.mrsec.wisc.edu/>



**Cabot Corporation**

<http://www.cabotcorp.com/>





# SPONSORS

## Dow Chemical

<http://www.dow.com/>



## Research Triangle MRSEC

<http://mrsec.duke.edu/>



## Boston University Nanotechnology Innovation Center (BU nano)

<http://www.bu.edu/nano-bu/>



## MIT MRSEC

<http://web.mit.edu/cmse/>



## UC Santa Barbara, MRL MRSEC

<http://www.mrl.ucsb.edu/>



## University of Pennsylvania MRSEC

<http://www.lrsm.upenn.edu/>



## Northwestern University MRSEC

<http://www.mrsec.northwestern.edu/>



# 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.

In 1991, 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, Université Louis Pasteur (Strasbourg) 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

## Anton Paar USA

URL: <http://www.anton-paar.com>

Contact: Lillianne Hall

([lillianne.hall@anton-paar.com](mailto:lillianne.hall@anton-paar.com))



## Micromeritics Instrument Corp

URL: <http://www.micromeritics.com/>

Contact: Steve Fray  
([steve.fray@micromeritics.com](mailto:steve.fray@micromeritics.com))



## CPS Instruments, Inc

URL: <http://www.cpsinstruments.com>

Contact: Stephen Fitzpatrick

([sfitzpa@comcast.net](mailto:sfitzpa@comcast.net))



## Particle Metrix Inc

URL: <http://www.particle-metrix.de/en/company/about-us.html>

Contact: Gary Linz  
([linz@particle-metrix.com](mailto:linz@particle-metrix.com))



## KRUSS USA

URL: <http://www.krussusa.com>

Contact: Matt Hoover

([mlh@krussusa.com](mailto:mlh@krussusa.com))



## Wyatt Technology Corp.

URL: <http://www.wyatt.com>

Contact: Lindsey East  
([least@wyatt.com](mailto:least@wyatt.com))



## Malvern Instruments, Ltd.

URL: <http://www.malvern.com>

Contact: Michele Giordano

([michele.giordano@malvern.com](mailto:michele.giordano@malvern.com))



## Mass Applied Science

URL: <http://www.massappliedscience.com>

Contact: Gabriel DosRamos  
([dosramos@matec.com](mailto:dosramos@matec.com))



# TECHNICAL PROGRAM

## 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**

# TECHNICAL PROGRAM

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

**10:40 5.** Modeling diffusiophoresis during CO<sub>2</sub> 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<sub>2</sub>-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



# TECHNICAL PROGRAM

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

# TECHNICAL PROGRAM

**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

# TECHNICAL PROGRAM

T. Porter, P. Rai, *Organizers*

K. Hamad-Schifferli, *Organizer, Presiding*

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

**10:10 39.** Nanoplatfoms 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

# TECHNICAL PROGRAM

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*



# TECHNICAL PROGRAM

**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

# TECHNICAL PROGRAM

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

# TECHNICAL PROGRAM

**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<sub>2</sub> 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

# TECHNICAL PROGRAM

**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*



# TECHNICAL PROGRAM

- 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. Rühls, 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

# TECHNICAL PROGRAM

## 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**

# TECHNICAL PROGRAM

**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

# TECHNICAL PROGRAM

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. Nejadi, B. Wiesenauer, R. Noble, E. Menachem, D. Gin, C.O. Osuji



# TECHNICAL PROGRAM

**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 hydrophobic 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<sub>2</sub> 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 TiO<sub>2</sub> 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<sub>2</sub> 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**

# TECHNICAL PROGRAM

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*

# TECHNICAL PROGRAM

**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**

# TECHNICAL PROGRAM

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. Guitierrez, 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**



# TECHNICAL PROGRAM

- 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

# TECHNICAL PROGRAM

- 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.**  $\beta$ -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. Hirska
- 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

# TECHNICAL PROGRAM

- 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

# TECHNICAL PROGRAM

**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**

# TECHNICAL PROGRAM

**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. Hirs

**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**

# TECHNICAL PROGRAM

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**



# TECHNICAL PROGRAM

**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. Khajepour 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*

# TECHNICAL PROGRAM

**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**

# TECHNICAL PROGRAM

**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

# TECHNICAL PROGRAM

**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. Raghuvanshi**, 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

# TECHNICAL PROGRAM

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

# TECHNICAL PROGRAM

**11:40 334.** Designing viscosity modifiers for supercritical CO<sub>2</sub> 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



# TECHNICAL PROGRAM

**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<sub>2</sub>. **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 electrostatics 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. Hirsra

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

**3:00 351.** The emulsion stability method to determine the characteristic curvature ( $C_c$ ) 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

# TECHNICAL PROGRAM

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  $\text{Sm}^{3+}$  recovery. **Y. Wang**, H. Katepalli, D. Blankschtein, Y. Wang, T. Hatton

# TECHNICAL PROGRAM

**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*

# TECHNICAL PROGRAM

**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 Meegen**, 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 quercetin 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

# TECHNICAL PROGRAM

**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<sub>2</sub> 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

# TECHNICAL PROGRAM

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.



# TECHNICAL PROGRAM

**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. Rezvantlab**, 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

# TECHNICAL PROGRAM

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 monolayers $\Delta$ . 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  $\mu$ RheoSANS. **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.

# TECHNICAL PROGRAM

**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<sub>2</sub>O supported Pt atoms. **A. Therrien**

Science Center  
Hall A

## Wetting, Adhesion & Surface Forces

### Wetting: Particles & Anisotropic Systems

# TECHNICAL PROGRAM

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**

# TECHNICAL PROGRAM

## 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

# TECHNICAL PROGRAM

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. Raghuvanshi, 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



# TECHNICAL PROGRAM

**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.** Solute-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

# TECHNICAL PROGRAM

**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

# TECHNICAL PROGRAM

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

# TECHNICAL PROGRAM

**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

# TECHNICAL PROGRAM

## 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**

# TECHNICAL PROGRAM

**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

# TECHNICAL PROGRAM

**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*



# TECHNICAL PROGRAM

**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<sub>2</sub>). **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

# TECHNICAL PROGRAM

**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

# TECHNICAL PROGRAM

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

# TECHNICAL PROGRAM

**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

# TECHNICAL PROGRAM

## 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

Abbaspourrad, A.	243	Anna, S.L.	117	Banquy, X.	255
Abbott, N.L.	23	Anna, S.L.	466	Bansal, L.	569
Abbott, N.L.	72	Annestrand, E.	197	Banton, R.	523
Abbott, N.L.	141	Anselmo, A.C.	558	Barclay, M.	338
Abbott, N.L.	445	Anseth, K.S.	509	Barlow, D.	67
Abdala, A.	166	Aponte-Rivera, C.	453	Bartel, C.J.	68
Abdi, H.	495	Arble, C.	70	Bartenstein, J.	155
Abedi, S.	394	Armes, S.P.	106	Bartl, M.H.	211
Abu Bakar, S.	149	Armes, S.P.	136	Bartl, M.H.	484
Achari, G.	175	Armes, S.P.	137	Basan, S.	580
Acosta, E.J.	146	Armes, S.P.	155	Basu, S.	565
Acosta, E.J.	161	Armes, S.P.	332	Basu, S.	569
Acosta, E.J.	164	Armes, S.P.	333	Batchelor, W.	318
Acosta, E.J.	165	Armes, S.P.	512	Batchelor, W.	460
Acosta, E.J.	351	Armes, S.P.	559	Baudry, J.	457
Acosta, E.J.	371	Armstrong, R.C.	326	Baumgart, T.	219
Acosta, E.J.	380	Arnaudov, L.N.	463	Beaudoin, S.	354
Acosta, E.J.	402	Arora, J.S.	288	Bedolla Pantoja, M.	23
Acosta, E.J.	532	Arora, J.S.	344	Behrens, S.H.	442
Acosta, E.	6	Askar, K.	187	Behrens, S.H.	587
Adam, J.A.	256	Asthaigiri, A.	264	Beigie, C.	531
Adams, L.L.	116	Athas, J.	432	Bell, M.	450
Adhikari, P.D.	183	Athas, J.C.	370	Beller, D.	408
Adriani, G.	398	Baddorf, A.	337	Beltramo, P.J.	254
Ahiabu, A.	268	Badruddoza, A.	366	Beltran-Villegas, D.J.	410
Ahmed, M.	60	Bag, M.	277	Beltran-Villegas, D.J.	411
Ahn, K.	519	Bahng, J.	26	Bengio, E.	507
Aili, D.	245	Bai, T.	521	Ben Zion, M.	500
Aizenberg, J.	240	Baier, G.	185	Bera, T.	2
Aizenberg, J.	342	Baik, S.	384	Berdegúe, J.	57
Aizenberg, J.	567	Bain, C.D.	436	Berger, E.	280
Aizenman, A.	280	Baker, L.	340	Bermudez, V.M.	67
Akbulut, M.	55	Balaraj, V.S.	349	Berry, J.	281
Akbulut, M.	581	Balboa, A.	339	Bettega, G.	123
Albiges-Rizo, C.	538	Baldwin, K.	132	Bevan, M.A.	310
Alexandridis, P.	330	Balli, T.	109	Bevan, M.A.	314
Alison, L.	105	Balow, R.	67	Beyer, S.	398
Almeida, B.	458	Balsara, H.	523	Bhamidipati, M.	125
Alzobaidi, S.	96	Baltenneck, C.	524	Bharti, B.	312
Amemiya, Y.	529	Bancroft, R.	45	Bharti, B.	526
Amps, K.	559	Bandremer, A.	2	Bhattacharjee, S.	363
Andersen, S.I.	99	Banerjee, A.	475	Biagioli, M.	503
Angulo, A.	177	Banerjee, S.	429	Bibette, J.	457
Anikeeva, P.	303	Banquy, X.	157	Bierbaum, M.	111

# AUTHOR INDEX

Biggs, S.	391	Bosch, I.	493	Bukusoglu, E.	141
Biggs, S.	583	Boscoboinik, J.A.	70	Bulovic, V.	303
Bihannic, I.	253	Bose, A.	550	Burgess, S.	257
Bills, R.	547	Bothun, G.D.	362	Burheim, O.	190
Bishop, K.	389	Boudou, T.	538	Burshan, A.	353
Biswal, S.L.	89	Boutonnat, J.	123	Burshtein, N.	233
Biswal, S.L.	94	Bouwer, E.J.	79	Burshtein, N.	299
Biswal, S.L.	199	Bouyer, M.	123	Bussmann, M.	165
Biswal, S.L.	223	Bouzid, M.	323	Butler, P.	216
Biswal, S.L.	313	Bowley, R.M.	132	Butler, P.	576
Biswal, S.L.	506	Bowman, C.	180	Byington, M.	487
Blair, D.L.	367	Bowman, C.	382	Cadirov, N.	255
Blair, D.L.	425	Boymelgreen, A.M.	109	Cadirov, N.	589
Blair, D.L.	573	Boza Troncoso, A.	146	Caggioni, M.	86
Blair, D.L.	376	Bradley, L.	204	Caggioni, M.	88
Blair, D.L.	574	Brady, J.	17	Caggioni, M.	283
Blankschtein, D.	30	Brain, J.D.	560	Cai, L.	118
Blankschtein, D.	54	Braun, P.V.	188	Cai, L.	246
Blankschtein, D.	101	Brauser, E.M.	211	Calabrese, M.	27
Blankschtein, D.	345	Brauser, E.M.	484	Calabrese, M.	176
Blankschtein, D.	364	Brennan, D.J.	100	Calvisi, M.	98
Bleier, B.J.	117	Brettmann, B.K.	158	Camesano, T.A.	361
Blocher, W.	430	Brintlinger, T.H.	148	Canton, I.	559
Blusewicz, J.	222	Briscoe, W.H.	156	Cao, F.	184
Blusewicz, J.	305	Briscoe, W.H.	155	Carlson, T.	356
Blusewicz, J.	477	Briscoe, W.H.	414	Carpio, A.	468
Bockstaller, M.R.	231	Brlansky, J.	98	Carre, M.	43
Boehm, S.J.	415	Brljak, N.	415	Carre, M.	493
Bolton, C.G.	451	Brochard-Wyart, F.	1	Carrier, R.	356
Boltyanskiy, R.	549	Bromberg, L.	435	Carroll, N.J.	178
Boluk, Y.	7	Bromberg, L.	485	Carroll, N.J.	406
Bong, K.	119	Brosseau, Q.	47	Carter, M.	445
Bonham, J.	14	Brouchon, J.	457	Cartier, C.	389
Bonino, C.A.	443	Brown, A.	102	Castaldi, M.	207
Borden, M.A.	98	Brown, P.	30	Caulton, K.G.	557
Bordes, E.	54	Brown, P.	205	Cayre, O.	391
Borhan, A.	450	Brown, S.L.	106	Cayre, O.	420
Borkar, S.	77	Brown, S.L.	136	Cayre, O.	464
Borkar, S.	217	Browne, C.	354	Cayre, O.	542
Borkar, S.	471	Brujic, J.	496	Cayre, O.	583
Borkovec, M.	25	Brujic, J.	499	Cazeneuve, C.	592
Borkovec, M.	154	Bryson, K.	577	Cepeda, A.	291
Bosch, I.	43	Budil, D.	356	Cerbino, R.	88
Bosch, I.	126	Bukusoglu, E.	23	Chahal, A.	559



# AUTHOR INDEX

Chaikin, P.	272	Chiang, Y.	234	Coquet, C.	579
Chaikin, P.	499	Chichibu, S.F.	143	Corcoran, T.	168
Chaikin, P.	500	Chien, F.	372	Corcoran, T.	441
Chakraborty, I.	550	Chien, W.	372	Cordova-Figueroa, U.M.	36
Chang, C.	421	Chilkoti, A.	33	Cordova-Figueroa, U.M.	120
Chang, J.C.	592	Chilkoti, A.	147	Cordova-Figueroa, U.M.	502
Chang, L.	430	Chittigori, J.	242	Cordovez, B.	537
Chang, R.	286	Chiu, J.	215	Corti, D.S.	354
Chang, W.	303	Cho, J.	188	Corti, D.S.	474
Chang, Y.	20	Cho, N.	522	Coughlan, A.	314
Chang, Y.	19	Choi, F.	6	Cowan, M.	142
Chang, Y.	553	Choi, J.	392	Cracknell, R.B.	137
Changalvaie, B.	197	Choi, P.	554	Creasy, W.	435
Changalvaie, B.	291	Choi, S.	540	Cremaldi, J.	344
Charbonneau, P.	315	Choi, W.	395	Crocker, J.C.	97
Chatterjee, P.	103	Chou, C.	372	Crocker, J.C.	412
Chatterjee, P.	221	Choudhary, S.	571	Crocker, J.C.	454
Chedozeau, N.	579	Chun, J.	92	Crosby, A.	571
Chen, C.	394	Clark, H.	303	Cruz, R.	19
Chen, C.V.	465	Clarke, L.	316	Cumbal, L.H.	52
Chen, C.V.	468	Clay, M.	450	Curri, V.	123
Chen, D.	118	Clegg, P.	102	D'Angelo, P.	435
Chen, D.	243	C Nalam, P.	360	D'Angelo, P.	485
Chen, D.	403	Cohen, I.	111	D'Souza, S.	296
Chen, H.	403	Cohen, Y.	514	Da, C.	96
Chen, I.	581	Cohen Stuart, M.	253	Dacek, M.	215
Chen, L.	34	Coll, J.	123	Dacic, M.	522
Chen, R.	194	Collins, C.	489	Dagastine, R.	281
Chen, R.	273	Collins, J.	535	Dagastine, R.	451
Chen, W.	153	Colombo, G.	170	Dagastine, R.	521
Chen, W.	328	Colosqui, C.E.	439	Dahiya, P.	283
Chen, Y.	372	Colter, M.	215	Dai, Y.	120
Chen, Y.	534	Comfort, K.	488	Dandamudi, C.	96
Chen, Y.	360	Coniglio, A.	276	Dandamudi, C.	197
Cheng, C.	543	Connolly, L.	190	Dani, A.	110
Cheng, S.	413	Conrad, J.	12	Daniel, D.	342
Cheng, S.	428	Conrad, J.	127	Dao, M.M.	329
Cheng, X.	275	Conrad, J.	194	Das, S.	206
Cheng, Z.	15	Conrad, J.	317	Das, D.	270
Cheng, Z.	369	Conrad, J.	478	Dasbiswas, K.	429
Cheong, F.	477	Conrad, J.	487	Davidovitch, B.	49
Chepyala, R.	296	Consilvio, A.	468	Davis, D.	282
Chern, M.	399	Cook, B.J.	557		
Chernyshova, I.	150	Cooper, M.	263		

# AUTHOR INDEX

De, S.	56	Domanov, Y.	524	Emrick, T.	430
de Bruin, A.G.	156	Donaldson, S.	255	Erb, R.	495
Defante, A.	341	Dong, H.	143	Escobar IV, F.	509
de Folter, J.	409	Dong, H.	517	Espinosa-Marzal, R.M.	71
Del Gado, E.	10	Dong, J.	354	Espinosa-Marzal, R.M.	159
Del Gado, E.	323	Donovan, M.	524	Espinosa-Marzal, R.M.	360
Del Gado, E.	376	Doyle, P.S.	34	Estrada, A.	503
de Llergo, O.	15	Doyle, P.S.	119	Evans, B.A.	178
Demirors, A.F.	388	Doyle, P.S.	163	Extrand, C.W.	182
Dennis, A.M.	399	Doyle, P.S.	325	Extrand, C.W.	446
Dennis, P.	536	Doyle, P.S.	366	Fabris, L.	125
de Puig Guixe, H.	43	Doyle, P.S.	375	Fabry, B.	262
de Puig Guixe, H.	126	Doyle, P.S.	562	Faers, M.	14
de Puig Guixe, H.	493	Du, D.	89	Faez, S.	527
Derry, M.	106	Duan, G.	18	Faghihnejad, A.	74
Derry, M.	332	Dufficy, M.	443	Fairbrother, H.	79
DeSario, P.A.	148	Dufresne, E.	285	Fairbrother, H.	338
Dhargalkar, P.P.	400	Dufresne, E.	347	Faivre, J.	157
Dhinojwala, A.N.	341	Dukhin, A.	530	Fajalia, A.	330
Dhokai, S.D.	492	Dunér, G.	290	Falus, P.	11
Dhong, C.	75	Dutcher, C.	301	Fan, A.	98
Dhong, C.	578	Dutcher, C.	365	Fan, F.Y.	234
Dhopatkar, N.	341	Dutta, S.	376	Fears, K.	69
Di, X.	322	Duval, J.	253	Fei, Y.	197
Diao, Y.	159	Dyab, A.K.	107	Feng, J.	463
Diao, Y.	64	Dyab, A.K.	462	Feng, X.	142
Diaz A., J.A.	496	Eagan, R.L.	476	Fernandez-Nieves, A.	19
Dickey, M.D.	298	Earhart, C.	537	Fernandez-Nieves, A.	20
Dimitrakopoulos, C.	396	Eastoe, J.	334	Fernandez-Nieves, A.	280
Ding, C.	120	Eastoe, J.	513	Fernandez-Nieves, A.	472
Ding, R.	403	Ebini, R.H.	13	Ferrari, A.	70
Dinic, J.	210	Eelkema, R.	133	Ferreira Costa, D.F.	400
Dinic, J.	503	Egami, T.	328	Fielding, L.A.	332
Dinsmore, T.	45	Eggersdorfer, M.	237	Findenegg, G.	526
Dinsmore, T.	49	Eggleton, C.	523	Finkenauer, L.	231
Dinsmore, T.	140	Eichhorn, B.W.	69	Firoozabadi, A.	162
Diosady, L.	532	Elhag, A.	96	Firoozabadi, A.	167
DiPaolo, B.	537	Elkamel, A.	166	Fitzpatrick, V.	538
Discher, D.E.	561	Elliott, J.A.	292	Flytzani- Stephanopoulos, M.	336
Dixon, P.	189	Ellis, P.	20	Fong, A.	2
Do, C.	331	Ellison, C.J.	197	Foresti, D.	294
Dobbs, H.A.	160	El Seoud, O.	433	Fowler, J.	102
Docoslis, A.	308	El Soda, M.	244	Fragkopoulos, A.A.	19
Dokukin, M.	320	El Soda, M.	437		

# AUTHOR INDEX

Fragkopoulos, A.A.	280	Gehrke, L.	43	Grassian, V.H.	66
Franses, E.I.	354	Gehrke, L.	126	Green, M.	53
Franses, E.I.	474	Gehrke, L.	493	Grest, G.S.	413
Frechette, J.	75	Geiger, M.T.	443	Grier, D.G.	305
Frechette, J.	76	Geiger, M.T.	551	Grier, D.G.	477
Frechette, J.	578	Geisel, K.	60	Grinstaff, M.W.	491
Fredberg, J.J.	585	Gelb, L.	90	Grosenick, C.R.	428
French, D.	102	Ghosh, S.	284	Grosskopf, A.K.	198
Frenkel, A.	339	Giasson, S.	588	Grzelakowski, M.	518
Frese, D.	293	Giavazzi, F.	88	Grzybowski, B.	388
Fried, E.	147	Gilchrist, J.F.	568	Guha, R.	212
Fronczak, S.	354	Gilchrist, J.F.	570	Guha, R.	440
Fu, J.	286	Gilchrist, J.F.	582	Guha, R.	510
Fu, L.	315	Gilde, F.	538	Guido, S.	508
Furst, E.M.	228	Gill, G.A.	206	Guild, C.	418
Furst, E.M.	544	Gin, D.	142	Guillot, R.	123
Gad, A.P.	173	Giordano, L.	70	Guillot, R.	538
Ganesan, M.	309	Giraud, L.	588	Guilment, J.	579
Ganji, N.	362	Gleason, K.	2	Guitierrez, R.A.	178
Ganley, W.	545	Glorius, C.	110	Gulati, S.	220
Gao, P.	452	Gobert, Z.	383	Gunlycke, D.	67
Gao, Y.	404	Godfrin, P.D.	11	Guo, S.	524
Garcia, A.	19	Godfrin, P.D.	366	Guo, X.	445
Gardel, M.	429	Godfrin, P.D.	562	Gupta, A.	163
Garg, A.	389	Goel, S.	300	Gupta, A.	375
Garg, A.	510	Goel, S.	471	Gupta, S.	426
Gargava, A.	432	Goktas, H.	2	Hidrovo, C.	186
Garmann, R.	527	Goldfain, A.	527	Haase, M.	22
Garnier, G.	318	Goldfeld, D.J.	511	Hai, M.	403
Garnier, G.	460	Goldmann, W.	262	Hajizadeh, E.	533
Garoff, S.	168	Gomez-Marquez, J.	126	Hall, C.K.	312
Garoff, S.	214	Goodwin, A.P.	490	Hamad, E.Z.	84
Garoff, S.	290	Goodwin, D.G.	79	Hamad-Schifferli, K.	43
Garoff, S.	441	Gordon, V.	260	Hamad-Schifferli, K.	126
Garusinghe, U.	318	Gordon, V.	541	Hamad-Schifferli, K.	493
Garvey, C.	318	Gordon, W.O.	67	Hamers, R.J.	78
Garvey, C.	460	Gordon, W.O.	339	Hamers, R.J.	80
Gasser, U.	472	Govind Rajan, A.	54	Hamers, R.J.	152
Gault, Z.	246	Govind Rajan, A.	345	Hamilton, W.	328
Gault, Z.	327	Graham, A.L.	90	Hammer, D.A.	18
Gautam, A.	248	Graham, M.D.	31	Han, J.	472
Ge, Y.	262	Graham, S.	193	Han, K.	130
Gebbie, M.	160	Granick, S.	134	Han, M.	134
Gehan, T.S.	277	Grason, G.	49	Han, S.	498

# AUTHOR INDEX

Han, X.	277	Heydrick, S.	531	Iasella, S.V.	214
Han, Y.	331	Hiley, M.	493	Ingber, M.	90
Hann, S.D.	469	Hill, C.L.	339	Inglefield Jr., D.L.	476
Harada, T.	84	Hill, R.J.	132	Intana, T.	230
Harbottle, D.	384	Hilou, E.	89	Iordanov, I.	67
Harbottle, D.	420	Hirsa, A.H.	220	Iqbal, M.	96
Harbottle, D.	464	Hirsa, A.H.	256	Iqbal, M.	197
Harbottle, D.	542	Hirsa, A.H.	349	Irimia, D.	119
Hardy, J.A.	396	Hirsa, A.H.	350	Isa, L.	105
Harshe, Y.	528	Hlaing, E.	477	Islam, S.	476
Hart, R.	537	Ho, Y.	398	Israelachvili, J.N.	160
Hashmi, S.	269	Hodgdon, T.	405	Israelachvili, J.N.	255
Hatch, H.	497	Hoek, E.	363	Israelachvili, J.N.	519
Hatton, T.	29	Hoff, D.	26	Israelachvili, J.N.	589
Hatton, T.	30	Hoffmann, P.M.	481	Issadore, D.	114
Hatton, T.	59	Höhler, R.	93	Iwashita, T.	328
Hatton, T.	84	Holden, P.	460	Jackman, J.	522
Hatton, T.	101	Holdren, S.	69	Jacob, L.M.	80
Hatton, T.	151	Holt, S.	460	Jafari, T.	418
Hatton, T.	205	Holtze, C.	185	Jain, A.	278
Hatton, T.	364	Hong, J.	215	Jain, R.	302
Hatton, T.	375	Hong, K.	11	Jaiswal, A.	271
Hatton, T.	435	Hong, W.	45	Jalilvand, Z.	225
Hatton, T.	485	Howard, M.P.	248	Jamali, S.	326
Hatzell, K.B.	190	Hsiao, L.C.	325	Jamali, V.	444
Haun, J.	355	Hsu, D.	6	Jamison, T.F.	29
Haward, S.J.	233	Hu, H.	346	Jang, W.	18
Haward, S.J.	238	Hu, H.	566	Jang, W.	577
Haward, S.J.	299	Hu, Y.	65	Janke, C.	206
Haward, S.J.	505	Hua, X.	310	Jankowska, K.	219
He, L.	583	Huang, J.	33	Jaromin, A.	172
He, W.	49	Huang, X.	15	Jeong, H.	114
He, X.	499	Huang, X.	369	Jeziarska, J.	171
He, Y.	360	Huang, Y.	236	Jiang, L.	517
Headrick, R.J.	57	Hudson, S.D.	11	Jiang, Y.	99
Headrick, R.J.	507	Hudson, S.D.	425	Jimenez, L.N.	210
Helal, A.	234	Hudson, S.D.	497	Jimenez, L.N.	503
Helgeson, M.E.	62	Hudson, S.D.	504	Jimenez Angeles, F.	162
Helgeson, M.E.	195	Hudson, S.D.	573	Jin, F.	452
Helgeson, M.E.	435	Hull, T.	484	Jin, M.	293
Helgeson, M.E.	447	Hunter, T.	384	Jin, R.	592
Hendriksen, W.	133	Hunter, T.	542	Jin, Y.	232
Henning, R.	396	Hurrelbrink, D.	551	Joh, D.	147
Herman, E.S.	472	Hwang, H.	97	John, V.T.	267

# AUTHOR INDEX

John, V.T.	288	Kelkar, A.	474	Kogler, F.	312
John, V.T.	344	Kelleher, C.	272	Koifman, N.	201
John, V.T.	359	Kender, R.	62	Kojima, K.	143
Johnson, D.W.	436	Khair, A.	390	Kolewe, K.W.	259
Johnson, W.P.	9	Khajehpour Tadavani, S.	284	Kolewe, K.W.	396
Johnston, B.	430	Khan, E.	242	Kong, Y.	463
Johnston, K.P.	96	Khan, I.A.	362	Koo, H.	188
Johnston, K.P.	197	Khan, S.	443	Koo, P.	577
Johnston, K.P.	291	Khan, S.	551	Kooijman, E.E.	357
Jokerst, N.M.	130	Khan, S.	481	Koplik, J.	35
Joshi, K.	568	Khare, K.S.	145	Koplik, J.	46
Joshi, K.	582	Khoshnood, A.	167	Koplik, J.	501
Joshi, Y.M.	278	Kim, D.	346	Kota, A.K.	343
Josserand, V.	123	Kim, D.	566	Kotov, N.	26
Joy, M.	570	Kim, H.	392	Kotov, N.	417
Kaganyuk, M.	108	Kim, H.	393	Kourentzi, K.	127
Kah, J.C.	398	Kim, H.	393	Kramer, P.	455
Kalantar, T.	100	Kim, H.	393	Krekelberg, W.	497
Kalantar, T.	421	Kim, J.	119	Kresse, K.	179
Kalaparathi, V.	320	Kim, J.	127	Kresse, K.	461
Kalaparathi, V.	419	Kim, J.	249	Kretzschmar, I.	207
Kalasin, S.	259	Kim, J.	378	Kretzschmar, I.	225
Kalow, J.A.	30	Kim, J.	473	Kretzschmar, I.	227
Kamm, R.	398	Kim, J.	498	Kretzschmar, I.	289
Kamyabi, N.	200	Kim, J.	393	Kretzschmar, I.	501
Kang, J.	395	Kim, J.	62	Krishnamoorti, R.	317
Kanie, K.	143	Kim, S.	135	Kristiansen, K.	255
Kar, A.	510	Kim, S.	392	Krug, J.	383
Karg, M.	21	Kim, S.	393	Kuang, Z.	135
Karim, M.	36	Kim, S.	188	Kubilius, M.	515
Karim, M.	502	Kim, Y.	4	Kuech, T.	80
Karwacki, C.J.	67	Kim, Y.	141	Kuei, S.	199
Karwacki, C.J.	339	Kirby, B.	295	Kuei, S.	313
Kasemo, B.	522	Kirby, S.M.	466	Kühnemuth, R.	377
Kashi, R.S.	562	Kita-Tokarczyk, K.	518	Kumacheva, E.	229
Kasimbeg, P.	477	Klapp, S.	312	Kumacheva, E.	250
Kastilani, R.	58	Klein, E.D.	494	Kumar, A.	169
Katepalli, H.	101	Kleinerman, O.	57	Kumar, A.	543
Katepalli, H.	364	Kleinerman, O.	386	Kumar, B.	52
Kaufman, G.	549	Klotsa, D.	132	Kumar, J.	242
Kaufman, Y.	519	Knapp, E.	227	Kumar, M.	510
Kaur, K.	379	Knox, C.	67	Kumar, N.	288
Keating, C.D.	415	Koehler, S.	246	Kumar, N.	525
Kegel, W.	133	Koenig, P.	423	Kuo, L.	206

# AUTHOR INDEX

Kuo, T.	100	Lee, S.	319	Liu, Y.	11
Kuo, T.	421	Lee, W.J.	249	Liu, Y.	328
Kwak, R.	395	Lee, Y.	42	Lock, J.	356
Ladshaw, A.	206	Leger, L.	579	Long, J.	69
Ladshaw, A.	265	Leheny, R.	81	Long, T.	501
Lahini, Y.	527	Leon Gibbons, L.	516	Lopez, G.	33
Lahti, P.M.	277	Letteri, R.A.	430	Lopez, G.	130
Lal, J.	267	Levi, A.	511	Lopez, G.	178
Large, N.	245	Lewinska, A.	171	Lopez, G.	315
Large, N.	556	Lewinska, A.	172	Lopez, G.	406
Larson, R.G.	32	Lewis, J.	189	Lopez, J.M.	220
Larson, R.G.	410	Lewis, J.	234	Lopez, J.M.	256
Larson, R.G.	411	Lewis, J.	294	Lopez, J.M.	349
Larson, R.G.	423	Li, A.	33	Lopez, J.M.	350
Larson, R.G.	533	Li, D.	42	Lough, E.	196
Larson-Smith, K.	42	Li, J.	482	Lovett, J.	137
Lascaris, E.	273	Li, K.	174	Lovett, J.	512
Lattuada, M.	528	Li, L.	242	Lucci, F.	244
Lautscham, L.	262	Li, N.	219	Lucci, F.R.	437
Lavasanifar, A.	561	Li, S.	543	Luengo, G.S.	524
Lavaud, J.	123	Li, X.	267	Luengo, G.S.	592
Lavrentovich, O.	23	Li, X.	359	Luijten, E.	134
Lazouskaya, V.	232	Li, Y.	229	Lund, R.	517
Leblanc, R.M.	213	Liao, W.	206	Lundin, J.	67
Le Bouedec, G.M.	136	Liberis, I.	282	Luo, Y.	218
Lee, D.	18	Lieberman, L.	57	Luo, Y.	50
Lee, D.	22	Lieberman, L.	386	Luther, E.	400
Lee, D.	114	Likos, C.	427	Lutkenhaus, J.	56
Lee, D.	204	Lim, S.	104	Lutkenhaus, J.L.	251
Lee, D.	469	Lin, L.	415	Lutkenhaus, J.L.	352
Lee, D.	543	Lin, N.	111	Lynn, D.M.	445
Lee, D.	255	Lin, P.	372	Lyon, L.A.	472
Lee, D.	519	Lin, Y.	262	Lyu, X.	252
Lee, H.	393	Lindberg, S.	87	Lyu, X.	459
Lee, H.	392	Linder, S.	2	Ma, A.W.	507
Lee, H.	393	Lindner, P.	21	Ma, H.	174
Lee, H.	163	Liu, J.	336	Ma, T.	224
Lee, J.W.	384	Liu, P.	409	Maass, C.	500
Lee, J.	96	Liu, P.	555	Mable, C.	332
Lee, J.	197	Liu, Q.	552	MacPherson, D.J.	396
Lee, J.	507	Liu, Y.	430	Mahadevan, L.	408
Lee, K.C.	540	Liu, Y.	297	Mahavadi, S.	99
Lee, L.	38	Liu, Y.	548	Mahynski, N.A.	427
Lee, S.	395	Liu, Y.	465	Mako, N.R.	259

# AUTHOR INDEX

Maksymovych, P.	337	McElwee-White, L.	338	Mohajerani, F.	440
Maldarelli, C.	46	McEntee, M.L.	337	Mohamed, L.A.	107
Maldarelli, C.	35	McFarlane, J.	387	Mohraz, A.	108
Maldarelli, C.	110	McGarvey, D.	435	Mohraz, A.	324
Maldarelli, C.	434	McGinley, J.	412	Molaei, M.	81
Malek, N.I.	433	McKenzie, B.E.	136	Molaei, M.	454
Malo de Molina, P.	195	McKinley, G.	234	Molinero, V.	169
Maloney, C.	495	McKinley, G.	326	Momani, B.	430
Malotky, D.	547	McKinley, G.	505	Montes Ruiz-Cabello, F.	25
Mann, E.	357	McKinnon, D.	509	Mooney, D.J.	263
Manna, U.	445	McLennan, J.	211	Moore, H.	559
Manoharan, V.	408	McLennan, J.	484	Moraca, G.	168
Manoharan, V.	439	Mecca, J.	421	Moreno, N.	353
Manoharan, V.	494	Meguerdichian, A.	418	Morris, J.	92
Manoharan, V.	527	Mehrabian, S.	165	Morris, J.	572
Mansard, V.	421	Mehrabian, S.	380	Morris, J.R.	339
Mansour, H.M.	560	Meissner, J.	526	Morris, T.	557
Mao, A.	241	Melby, E.	80	Movafaghi, S.	343
Mao, A.	263	Memet, E.	408	Mozaffari, A.	35
Mao, J.	153	Menachem, E.	142	Mozaffari, A.	36
Mao, J.	511	Meng, X.	430	Muhich, C.	68
Mao, X.	151	Mensch, A.C.	80	Mukhopadhyay, S.	549
Mao, X.	205	Menzel, A.	472	Mulla, M.	391
Marciel, A.	431	Mercier, C.L.	436	Munroe, J.	284
Marcinkowski, M.	244	Meredith, J.C.	442	Muramatsu, A.	143
Marcinkowski, M.	437	Mertz, A.	90	Murphy, C.J.	80
Maroni, P.	154	Metcalf, A.	301	Musgrave, C.	68
Maroudas, D.	277	Metzger, A.	343	Muth, J.	189
Marquez, S.	15	Milam, V.T.	536	Myerson, A.S.	366
Marquez, S.	19	Miller, D.	23	Myint, K.	351
Marquez, S.	369	Miller, D.	100	Mykhaylyk, O.	332
Martin, J.	226	Miloh, T.	109	Nagabandi, N.	55
Martin, M.R.	193	Min, Y.	520	Nagarajan, R.	361
Martinez, C.	120	Minchom, J.	351	Nagarajan, R.	435
Martinsson, E.	245	Mirheydari, M.	357	Nagarajan, R.	450
Mason, T.G.	374	Mitragotri, S.	195	Nagarajan, R.	485
Matsubara, M.	143	Mitragotri, S.	558	Naik, R.R.	135
Mattheolabakis, G.	400	Mittal, J.	497	Naik, R.R.	536
Mattus, C.	387	Moaseri, E.	96	Nair, P.	561
Mayer, T.S.	415	Moaseri, E.	197	Nam, J.	285
Mayes, R.T.	206	Moaseri, E.	291	Nap, R.J.	531
McBride, S.A.	220	Moazzami Gudarzi, M.	154	Narayanan, S.	577
McBride, S.A.	349	Mochrie, S.	577	Naumann, C.	262
McCallister, R.	424	Mohajerani, F.	212		



# AUTHOR INDEX

Nava Medina, I.	369	Oncsik, T.	25	Paunov, V.N.	462
Nawar, S.	237	Osuji, C.O.	142	Pazmino, E.F.	9
Nayani, K.	286	Osuji, C.O.	322	Pazzi, J.	461
Neimark, A.V.	257	Osuji, C.	549	Peach, J.A.	334
Nejati, S.	549	Ouriemi, M.	47	Pedersen, J.	21
Nejati, S.	142	Owens, C.E.	315	Pedersen, J.A.	80
Nekouei, M.	115	Owens, J.	435	Pednekar, S.	92
Nekouei, M.	200	Owoseni, O.G.	267	Peerzade, S.M.	564
Nelson, D.	408	Owoseni, O.G.	359	Pegg, J.	513
Neurock, M.	337	Owrutsky, J.	69	Pehrsson, P.	67
Newberg, J.T.	70	Pacalin, N.	516	Pelaez-Fernandez, M.	472
Ng, S.	300	Pack, M.	566	Penfold, N.	333
Ng, S.	380	Pack, M.Y.	346	Penfold, N.	512
Ngai, T.	24	Padmanabhan, P.	449	Peng, B.	416
Ngai, T.	452	Padua, A.	54	Peng, B.	483
Nguyen, D.	237	Padua, A.	345	Perazzo, A.	508
Nguyen, T.	399	Paintrand, I.	538	Perez, E.	524
Nguyen, T.	62	Pairam, E.	280	Perry, S.L.	396
Nhan, P.	398	Palantavida, S.	320	Perry, S.L.	430
Niepa, T.H.	81	Palantavida, S.	416	Perry, S.L.	516
Nikoubashman, A.	248	Palantavida, S.	419	Personick, M.L.	448
Nir-Shapira, M.	201	Palantavida, S.	483	Persson, K.	590
Noble, R.	142	Palantavida, S.	564	Pesce, G.	276
Nordmark, B.	235	Palmer, J.C.	194	Pesika, N.	344
Noronha, S.	296	Palmer, J.C.	273	Pesika, N.	525
Nouraei, M.	402	Panagiotopoulos, A.	247	Pesika, N.	586
Nouraei, M.	532	Panagiotopoulos, A.	248	Peterson, A.M.	459
Nowak, M.	195	Panagiotopoulos, A.	427	Peterson, G.W.	67
Nowbahar, A.	421	Panyukov, S.	229	Petukhov, A.V.	409
Nunes, J.K.	198	Park, J.O.	286	Peyrin, F.	123
Nunes, J.K.	463	Park, N.Y.	12	Pham, A.T.	147
Nunes, J.K.	508	Park, Y.	489	Phan, D.	79
O'Neal, J.	202	Park, Y.	531	Phelan, F.R.	145
Ocko, S.	116	Parkinson, D.Y.	190	Philips, L.A.	222
Ogunyankin, M..	28	Parlia, S.	530	Philips, L.A.	305
Oh, C.	110	Parviz, D.	53	Philips, L.A.	477
Ohiri, K.	178	Pashazanusi, L.	525	Philipse, A.P.	409
Ohiri, K.A.	33	Pasquali, M.	57	Philipse, A.P.	555
Ohiri, U.	130	Pasquali, M.	444	Phillips, K.	567
Olivier, C.	123	Pasquali, M.	507	Pica Ciamarra, M.	276
Olmsted, P.D.	287	Pastore, R.	88	Picart, C.	123
Olsen, B.D.	435	Pastore, R.	276	Picart, C.	538
Omarova, M.	267	Pathak, B.	565	Piel, B.	173
Omarova, M.	359	Patra, P.	467	Piel, B.	203

# AUTHOR INDEX

Pietron, J.J.	148	Radhakrishna, M.	430	Rheingold, A.L.	553
Pilkington, G.A.	76	Rafiq, R.	381	Richards, J.	216
Pincus, P.	158	Raghavan, S.R.	368	Richards, J.	576
Pine, D.	496	Raghavan, S.R.	370	Richtering, W.	21
Plettinx, C.	123	Raghavan, S.R.	432	Richtering, W.	60
Polak, R.	187	Raghunandan, A.	256	Riggleman, R.	97
Polezhaev, A.V.	557	Raghunandan, A.	350	Rivera, D.	486
Poling-Skutvik, R.	127	Raghuwanshi, V.	460	Rodriguez, J.	418
Poling-Skutvik, R.	194	Raghuwanshi, V.	318	Rogers, S.A.	27
Poling-Skutvik, R.	317	Rahmani, A.M.	439	Rogers, S.A.	176
Ponnurangam, S.	150	Rai, P.	173	Rogers, W.	494
Porcar, L.	11	Rai, P.	203	Rokhlenko, Y.	549
Porcar, L.	27	Rai, P.	304	Rolison, D.R.	148
Porcar, L.	176	Ramachandran, A.	77	Romeis, D.	253
Porcar, L.	328	Ramachandran, A.	217	Rose, P.	211
Porter, T.	196	Ramachandran, A.	229	Rotello, V.M.	140
Porter, T.	215	Ramachandran, A.	300	Routh, A.F.	582
Potemkin, I.	21	Ramachandran, A.	471	Rovigatti, L.	427
Potemkin, I.	60	Ram-On, M.	514	Royer, J.R.	573
Pourmohammadbagher, A.	266	Rani, S.	70	Rubinstein, M.	229
Pozzo, L.D.	42	Ranka, M.	83	Rubinstein, M.	406
Pozzo, L.D.	58	Rao, C.V.	112	Rubio, A.	191
Pozzo, L.D.	335	Rasheed, F.	350	Ruckh, T.	303
Prasad, M.	63	Rasmuson, J.A.	3	Rudolf, A.	21
Premasiri, R.	534	Ratcliffe, L.P.	106	Rudolf, A.	60
Prileszky, T.A.	228	Ratcliffe, L.P.	136	Ruffner, D.B.	222
Prileszky, T.A.	544	Ratcliffe, L.P.	137	Ruffner, D.B.	305
Prudhomme, R.K.	144	Rathee, V.	574	Ruffner, D.B.	477
Prudhomme, R.K.	321	Raveendran, J.	308	Rühs, P.	105
Prudhomme, R.K.	401	Raverty, W.	460	Rupp, B.	310
Prudhomme, R.K.	463	Razavi, S.	289	Russell, T.P.	577
Prudhomme, R.K.	465	Razavi, S.	479	Ruths, M.	590
Prudhomme, R.K.	468	Razavilar, N.	554	Ruths, M.	591
Przybycien, T.M.	168	Razi, M.	470	Ruths, M.	592
Przybycien, T.M.	214	Redeker, C.	414	Rutkevicius, M.	51
Przybycien, T.M.	235	Redondo, A.	90	Rutledge, G.	205
Przybycien, T.M.	290	Reed, E.	18	Rutledge, G.C.	151
Przybycien, T.M.	441	Reinhart, W.F.	247	Rymaruk, M.j.	106
Qian, Y.	455	Renna, L.	277	Sabaraya, I.V.	270
Qingming, M.	185	Restagno, F.	579	Sabarirajan, D.C.	192
Qu, L.	246	Reyes, C.	315	Sachan, A.	422
Qu, X.	403	Reynaud, E.	591	Sachan, A.	540
Rachman, I.M.	492	Rezvantlab, H.	32	Safari, M.	478
		Rezvantlab, H.	411	Safari, M.	487

# AUTHOR INDEX

Saito, T.	206	Schultz, K.	87	Shen, A.Q.	238
Saleh, N.B.	270	Schultz, K.	509	Shen, A.Q.	299
Salipante, P.	504	Schweigert, I.	67	Shen, A.Q.	505
Salvi, C.	459	Scotti, A.	472	Shen, V.	497
Salzano, G.	400	Seeman, D.	425	Sheng, Y.	24
Sammalkorpi, M.	251	Seeman, N.C.	499	Shenoy, A.	112
Sammalkorpi, M.	352	Seeman, N.C.	500	Sherman, Z.M.	131
Samudrala, N.	285	Seidel, C.	377	Shi, C.	73
Sancaktar, E.	580	Sen, A.	440	Shi, C.	74
Sandman, D.J.	242	Senanayake, S.D.	418	Shields, C.W.	130
Sandy, A.	577	Senko, A.	303	Shields, W.	33
Sanedrin, R.J.	293	Seo, S.	519	Shields, W.	178
Sanford, S.P.	349	Seraji, S.	418	Shields, W.	315
Sanggo, J.E.	209	Serpe, M.	268	Shilts, K.	262
Santo, K.P.	82	Serpe, M.	404	Shin, J.	263
Santore, M.M.	259	Serra, F.	50	Shin, J.	28
Santore, M.M.	307	Sethna, J.	111	Shin, K.	378
Santos, H.	403	Seto, R.	147	Shin, S.	5
Sarfati, R.	285	Sha, R.	499	Shin, S.	8
Sarfati, R.	407	Sha, R.	500	Shin, S.	463
Sarisozen, C.	400	Shahjamali, M.M.	245	Shinohara, Y.	529
Sarisozen, C.	492	Shahjamali, M.M.	556	Shirman, T.	240
Sariyer, O.	229	Shamsi, M.H.	397	Shoab, M.	166
Sarker, M.M.	104	Shamsi, R.	430	Shoab, T.	360
Sasso, A.	276	Shan, J.	336	Shojaei-Zadeh, S.	48
Saunders, B.	137	Shardt, N.	292	Shojaei-Zadeh, S.	282
Schaeffer, D.	387	Shardt, O.	5	Shrestha, B.	157
Schall, P.	111	Shardt, O.	8	Shukla, A.	258
Schatz, G.C.	245	Sharifi-Mood, N.	22	Shukla, A.	458
Schatz, G.C.	556	Sharifi-Mood, N.	36	Shukla, A.	550
Scheithauer, C.	293	Sharifi-Mood, N.	81	Shum, A.	482
Schiffman, J.D.	259	Sharma, R.	441	Shum, A.	190
Schiffman, J.D.	396	Sharma, S.K.	213	Shum, H.	185
Schiffman, J.D.	430	Sharma, V.	37	Siegenthaler, J.	486
Schmid, A.	21	Sharma, V.	95	Silvera-Batista, C.	385
Schmidt, D.F.	591	Sharma, V.	210	Simeon, F.	84
Schmidt, M.	527	Sharma, V.	353	Sing, C.E.	430
Schmitt, A.	421	Sharma, V.	381	Singh, H.	100
Schofield, A.	102	Sharma, V.	503	Singh, R.	215
Schonke, J.	147	Sharma, Y.	239	Sisco, P.	2
Schroeder, C.M.	112	Shave, M.	307	Sivik, M.R.	405
Schroer, J.	291	Shaw, J.M.	266	Skipwith, C.	303
Schroyen, B.	575	Shay, T.	298	Skomski, D.	557
Schulte, F.	60	Shen, A.Q.	233	Sletten, E.M.	30

# AUTHOR INDEX

Slocik, J.	135	Srinivasarao, M.	286	Sun, Y.	566
Smallridge, M.J.	137	Srivastava, S.	511	Sun, Y.	49
Smith, A.	332	Stammitti, A.	161	Suteria, N.S.	426
Smith, B.D.	383	Stammitti, A.	164	Suthanthiraraj, P.P.	315
Smith, K.A.	557	Stebe, K.J.	22	Swager, T.M.	30
Smith, K.C.	234	Stebe, K.J.	44	Swager, T.M.	208
Snow, T.	156	Stebe, K.J.	50	Swan, J.W.	16
Snyder, M.A.	570	Stebe, K.J.	81	Swan, J.W.	131
So, R.	209	Stebe, K.J.	204	Swan, J.W.	306
Soheilian, R.	311	Stebe, K.J.	219	Swift, M.R.	132
Soheilian, R.	495	Stebe, K.J.	469	Sykes, E.H.	244
Sokolov, I.	320	Stetten, A.Z.	168	Sykes, E.H.	437
Sokolov, I.	416	Stevens, M.J.	413	Szakasits, M.	85
Sokolov, I.	419	Stevens, M.J.	428	Szilagyi, I.	25
Sokolov, I.	483	Stevenson, W.	143	Szleifer, I.	531
Sokolov, I.	564	Stolaroff, J.	237	Tabatabai, A.P.	367
Sokolov, K.	291	Stolzoff, M.	563	Tabeling, P.	113
Solomon, M.J.	85	Stone, H.A.	5	Taboada-Serrano, P.	348
Solomon, M.J.	309	Stone, H.A.	8	Tabor, R.	65
Solomon, M.J.	385	Stone, H.A.	198	Tait, S.L.	557
Solomon, M.J.	479	Stone, H.A.	463	Talmon, Y.	57
Somasundaran, P.	150	Stone, H.A.	465	Talmon, Y.	201
Somasundaran, P.	467	Stone, H.A.	508	Talmon, Y.	386
Sommer, J.	253	Stout, R.F.	390	Talmon, Y.	514
Son, S.	392	Stoyanov, S.D.	463	Tam, J.	126
Song, J.	86	Strano, M.	54	Tamada, K.	143
Song, K.	98	Strano, M.	345	Tang, E.	221
Song, K.	187	Stroud, R.M.	148	Tang, W.	337
Song, Y.	185	Studart, A.	105	Tang, X.	423
Sorensen, C.M.	13	Stutt, A.	305	Tang, Y.	552
Spaepen, F.	274	Style, R.	285	Tanjeem, N.	408
Spencer, J.	338	Su, J.	460	Tapp, M.	536
Spicer, P.T.	86	Su, X.	29	Tardy, B.	521
Spicer, P.T.	283	Su, Y.	453	Tasker, A.	583
Squires, T.	86	Subramaniam, A.	296	Taslimi, F.	324
Squires, T.	421	Subramaniam, A.	179	Taylor, M.	489
Squires, T.	475	Subramaniam, A.	461	Taylor, P.	102
Squires, T.	540	Sui, S.	396	Teale, S.	45
Srajer, V.	396	Suib, S.L.	418	Tempas, C.	557
Sresht, V.	30	Sumaiti, A.A.	166	ten Napel, D.N.	555
Sresht, V.	54	Sun, G.	24	Terdik, Z.	274
Sresht, V.	345	Sun, M.	291	Terdik, Z.	327
Sridhar, S.	39	Sun, T.	232	Tervoort, E.	105
Srinivasan, R.	450	Sun, Y.	346	Texeira, F.	351

# AUTHOR INDEX

Thayumanavan, S.	61	Tsouris, C.	206	Velev, O.D.	51
Therrien, A.	244	Tsouris, C.	265	Velev, O.D.	128
Therrien, A.	438	Tsouris, C.	387	Velev, O.D.	130
Thompson, K.L.	106	Tu, R.S.	227	Velev, O.D.	298
Thota, S.	242	Tu, R.S.	358	Velev, O.D.	312
Tian, W.	205	Tu, R.S.	515	Velev, O.D.	476
Tilton, M.J.	173	Tufenkji, N.	177	Vélez, J.	430
Tilton, M.J.	203	Tung, S.	26	Velikov, K.	91
Tilton, R.D.	168	Ulijn, R.	138	Velikov, K.	373
Tilton, R.D.	214	Ulijn, R.	434	Velikov, K.P.	51
Tilton, R.D.	235	Underhill, P.	103	Velpurisiva, P.	203
Tilton, R.D.	236	Underhill, P.	221	Venkataraman, D.	277
Tilton, R.D.	290	Underhill, P.	256	Venkatesh, V.	376
Tilton, R.D.	441	Underhill, P.	455	Vermant, J.	170
Timonen, J.	342	Ungar, G.	143	Vermant, J.	254
Timonen, J.V.	388	Urbach, J.S.	574	Vermant, J.	575
Tirandazi Khalilabad, P.	186	Utech, S.	263	Virtanen, O.	60
Tirrell, M.V.	153	Vaccari, L.	81	Vishnyakov, A.	82
Tirrell, M.V.	158	Vaid, Z.S.	433	Vishnyakov, A.	224
Tirrell, M.V.	431	Vaikuntanathan, S.	429	Vishnyakov, A.	257
Tirrell, M.V.	511	Vakili, M.	561	Vivek, S.	272
Tirrell, M.V.	516	Valtiner, M.	160	Vlahakis, J.	192
Tong, X.	70	Vanapalli, S.	426	Vlahovska, P.M.	47
Torchilin, V.P.	400	Vanapalli, S.A.	115	von Rybinski, W.	377
Torchilin, V.P.	492	Vanapalli, S.A.	200	Vovchok, D.	418
Torelli, M.D.	80	Vanapalli, S.A.	394	Vuong, S.	579
Torosian, S.	2	van der Schoot, P.	444	Wagner, G.W.	67
Torres Diaz, I.	310	van Duijneveldt, J.	14	Wagner, N.J.	11
Tousley, M.	142	van Duijneveldt, J.	545	Wagner, N.J.	27
Trabuco, J.R.	127	VanDyke, D.	304	Wagner, N.J.	176
Trauscht, J.	9	van Esch, J.	133	Wagner, N.J.	216
Trefalt, G.	25	Van Hooghten, R.	254	Wagner, N.J.	576
Trefalt, G.	154	van Megen, J.	377	Waite, H.	519
Trinh, K.	405	Vannozzi, C.	546	Walker, L.	117
Tristram-Nagle, S.A.	168	Van Puyvelde, P.	575	Walker, L.	329
Trout, B.D.	366	van Ravensteijn, B.	133	Walker, L.	466
Truskett, T.	291	Varga, Z.	16	Walker, T.	353
Tsao, J.	587	Vartanian, A.	80	Wallace, J.	69
Tsentalovich, D.E.	57	Vekilov, P.G.	478	Walters, M.A.	553
Tsentalovich, D.E.	507	Vekilov, P.G.	487	Wang, A.	439
Tsianou, M.	330	Velegol, D.	212	Wang, C.	180
Tsikudo, E.G.	492	Velegol, D.	389	Wang, C.	305
Tsouris, C.	4	Velegol, D.	440	Wang, C.	382
		Velegol, D.	510	Wang, C.	72

# AUTHOR INDEX

Wang, C.	336	Wei, J.	300	Winkler, N.	207
Wang, E.	559	Wei, T.	234	Winter, H.	430
Wang, G.	306	Weidlich, S.	527	Wisman, D.	557
Wang, H.	241	Weigandt, K.	424	Woish, L.	189
Wang, J.	363	Weigandt, K.	367	Wolfe, D.	383
Wang, J.	337	Weigandt, K.	425	Wong, J.Y.	531
Wang, K.	34	Weightman, R.	559	Wong, K.K.	177
Wang, K.	585	Weimer, A.W.	68	Wood, D.	140
Wang, K.	361	Weimer, J.J.	584	Wood, J.A.	308
Wang, M.	355	Weir, R.	48	Wood, A.	559
Wang, R.	480	Weirich, K.	429	Worthen, A.	96
Wang, R.	430	Weitz, D.	116	Wu, H.	414
Wang, T.	218	Weitz, D.	118	Wu, J.	246
Wang, W.	343	Weitz, D.	237	Wu, M.	539
Wang, X.	23	Weitz, D.	241	Wu, Y.	338
Wang, X.	141	Weitz, D.	243	Wynne, J.H.	67
Wang, Y.	328	Weitz, D.	246	Xi, A.	362
Wang, Y.	26	Weitz, D.	263	Xi, Y.	335
Wang, Y.	412	Weitz, D.	274	Xia, Z.	79
Wang, Y.	364	Weitz, D.	327	Xiang, J.	23
Wang, Y.	75	Weitz, D.	403	Xiao, X.	190
Wang, Y.	364	Weldon, A.L.	582	Xu, Q.	121
Wang, Y.	396	Werner, C.	253	Xu, Q.	347
Wang, Z.	184	Weston, J.S.	425	Xu, X.	591
Wang, Z.	328	White, J.	33	Xu, X.	592
Wang, Z.	480	White, R.D.	192	Xu, Z.	552
Wang, Z.	257	Wiechert, A.	206	Xuan, S.	359
Wang, Z.	244	Wiechert, A.	387	Xue, Z.	96
Ward, M.D.	305	Wiesenauer, B.	142	Yabuki, J.	143
Warren, N.	106	Wiles, H.	100	Yadavali, S.	114
Warren, N.	137	Wiley, B.J.	315	Yan, J.	134
Warren, N.	332	Wilk, K.A.	171	Yan, J.	463
Warren, N.	512	Wilkinson, B.	65	Yang, H.	41
Warren, N.	559	Wilkinson, N.	365	Yang, M.	336
Warren, P.B.	5	Willers, T.	293	Yang, W.	353
Warren, P.B.	8	Williams, C.N.	106	Yang, Y.	129
Wasik, P.	414	Williams, C.N.	136	Yang, Y.	310
Weaver, M.R.	423	Williams, D.D.	343	Yang, Y.	474
Weber, A.Z.	190	Williams, J.D.	343	Yates, J.T.	337
Webster, M.	207	Williams, M.	333	Yegin, C.	55
Webster, T.J.	40	Williamson, J.J.	287	Yellen, B.	147
Webster, T.J.	563	Willson, R.C.	127	Yellen, B.	178
Weeks, E.R.	272	Wilusz, E.	435	Yen, C.	126
Wehrman, M.	87	Wilusz, E.	485	Yeom, B.	26

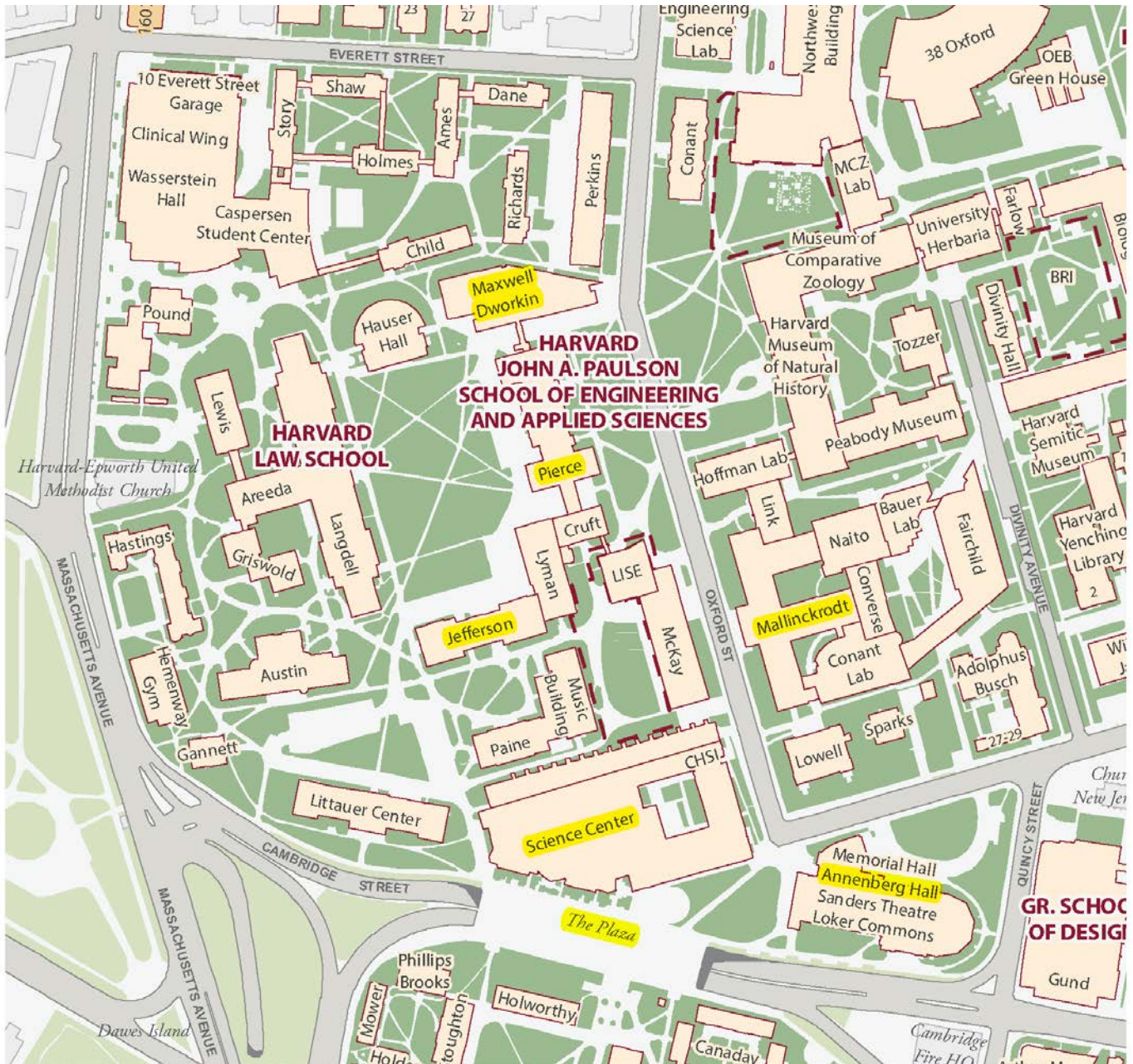
# AUTHOR INDEX

Yeom, J.	417	Zhang, B.	275	Zia, R.	453
Yeon, H.	72	Zhang, C.	434	Ziegler, L.	534
Yethiraj, A.	284	Zhang, D.	359	Zimmermann, R.	253
Yi, Z.	452	Zhang, H.	539	Zou, W.	423
Yiacoumi, S.	4	Zhang, H.	403		
Yiacoumi, S.	206	Zhang, H.	384		
Yiacoumi, S.	265	Zhang, H.	420		
Yiacoumi, S.	387	Zhang, H.	464		
Yildirim, E.	251	Zhang, L.	181		
Yildiz, H.	356	Zhang, L.	122		
Yilixiati, S.	37	Zhang, L.	241		
Yilixiati, S.	95	Zhang, M.	195		
Yilixiati, S.	381	Zhang, M.	581		
Yodh, A.G.	279	Zhang, Q.	208		
Yorulmaz, S.	522	Zhang, R.	251		
Yossifon, G.	109	Zhang, R.	352		
Youngblood, J.P.	120	Zhang, W.	243		
Yousefi, N.	177	Zhang, W.	403		
Yu, J.	531	Zhang, W.	85		
Yu, J.	153	Zhang, X.	403		
Yu, K.	420	Zhang, Y.	456		
Yu, K.	464	Zhang, Y.	251		
Yu, Y.	124	Zhang, Y.	352		
Yu, Y.	261	Zhang, Y.	442		
Zaccone, A.	349	Zhang, Y.	499		
Zachariah, M.R.	69	Zhang, Y.	33		
Zanini, M.	105	Zhang, Y.	37		
Zaraee, N.	245	Zhang, Y.	95		
Zaraee, N.	556	Zhang, Y.	381		
Zarate-Munoz, S.	351	Zhang, Y.	520		
Zarate-Munoz, S.	371	Zhang, Y.	359		
Zarket, B.C.	368	Zhang, Y.	410		
Zarzar, L.D.	30	Zhang, Z.	489		
Zasadzinski, J.A.	28	Zhao, J.	506		
Zasadzinski, J.A.	422	Zhao, Q.	519		
Zasadzinski, J.A.	540	Zhao, Y.	238		
Zauscher, S.	33	Zharov, I.	139		
Zeng, H.	73	Zhdanov, V.	522		
Zeng, H.	74	Zhong, X.	305		
Zeng, H.	539	Zhou, Y.	542		
Zeng, P.C.	349	Zhu, Z.	223		
Zeng, X.	143	Zhu, Z.	506		
Zenyuk, I.V.	190	Zhuo, R.	499		
Zenyuk, I.V.	192	Zia, R.	449		



# BUILDINGS AND ROOMS LOCATOR

## CSSS Locations Highlighted

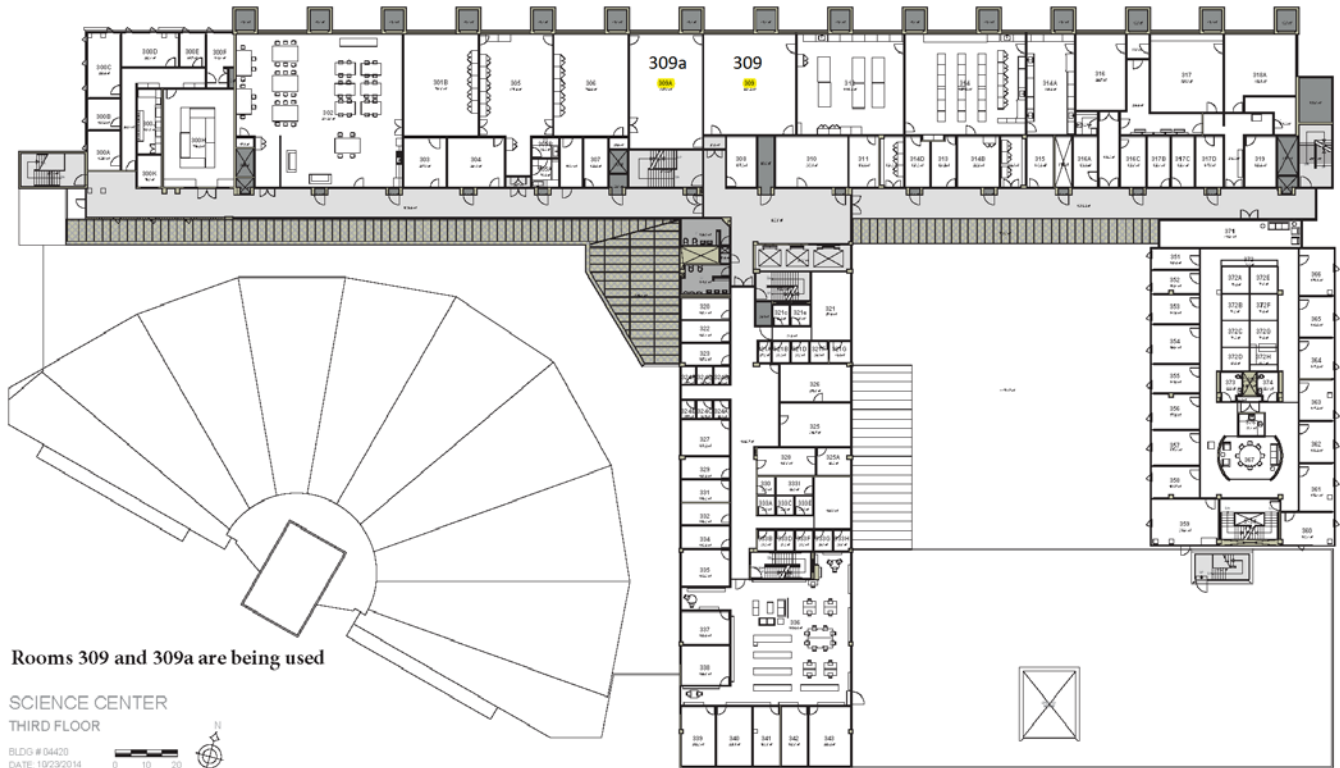






# BUILDINGS AND ROOMS LOCATOR

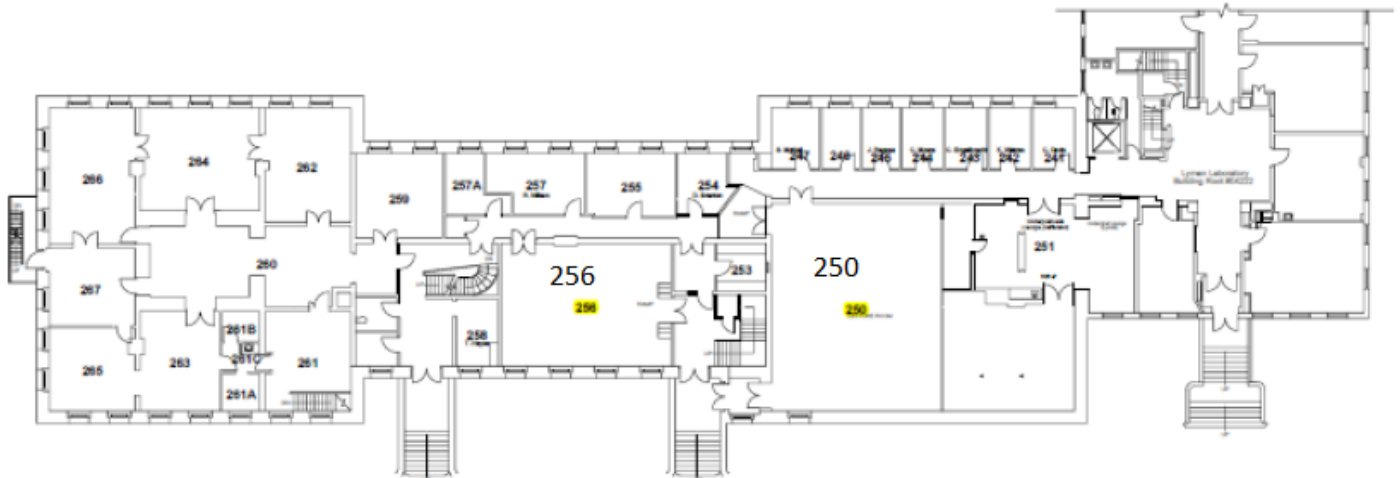
## Science Center 3<sup>rd</sup> Floor Rooms 309 and 309a





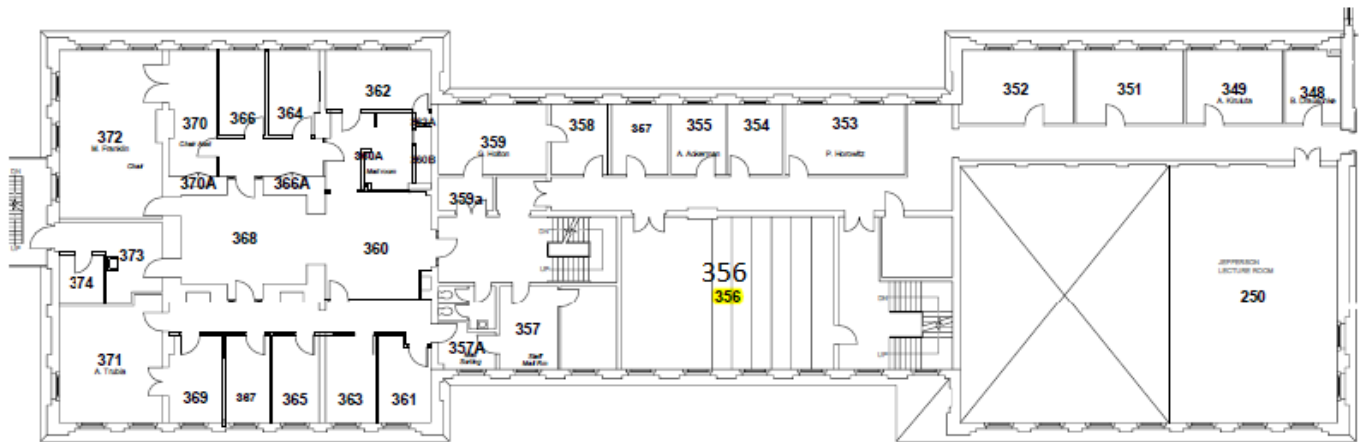
# BUILDINGS AND ROOMS LOCATOR

## Jefferson Lab Rooms 250, 256 and 356



JEFFERSON LABORATORY  
SECOND FLOOR

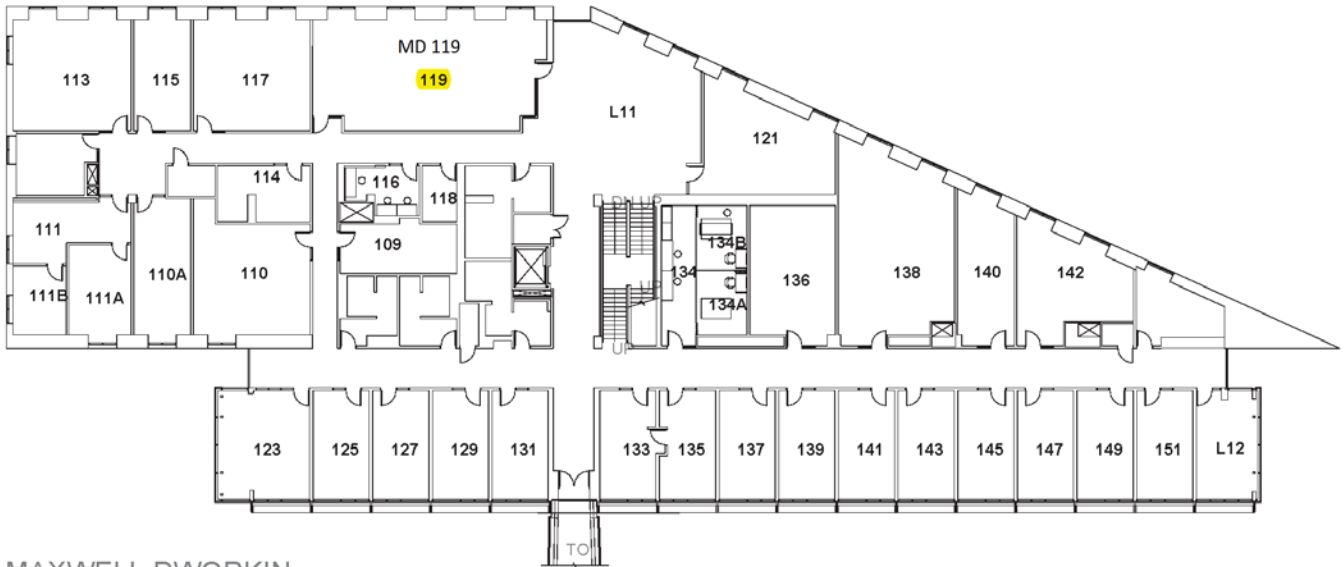
Jefferson 250 and Jefferson 256 on the 2<sup>nd</sup> floor and Jefferson 356 on the 3<sup>rd</sup> floor are being used.



JEFFERSON LABORATORY  
THIRD FLOOR

# BUILDINGS AND ROOMS LOCATOR

## Maxwell Dworkin 1<sup>st</sup> Floor MD 119



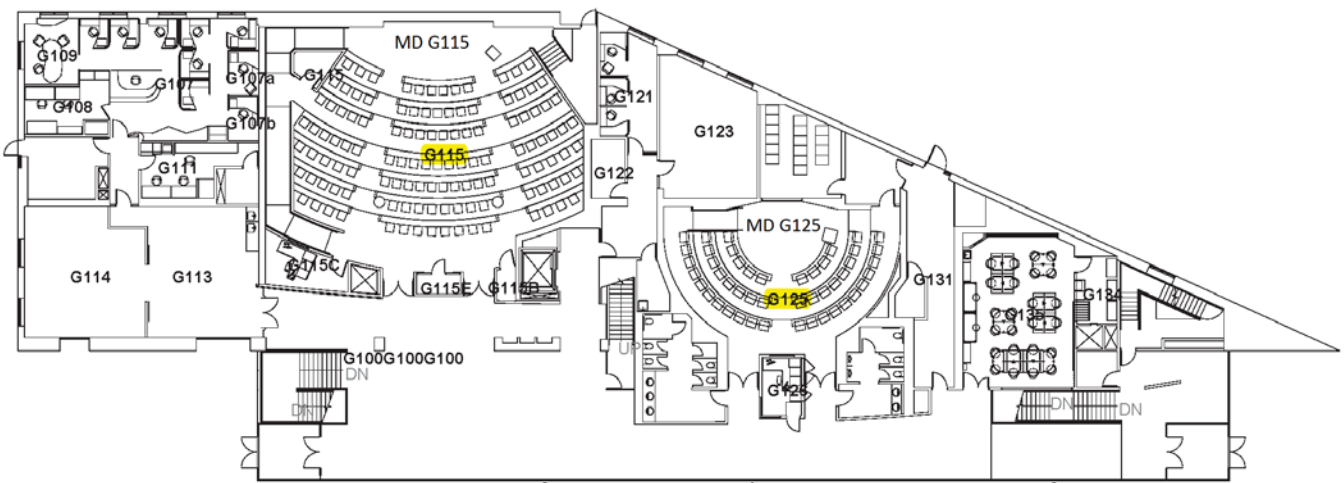
MAXWELL DWORKIN  
FIRST FLOOR

BLDG # 03762  
DATE: 11/18/2013



Meeting Room MD 119 is being used

## Maxwell Dworkin Ground Floor MD G115 and MD G125



MAXWELL DWORKIN  
GROUND FLOOR

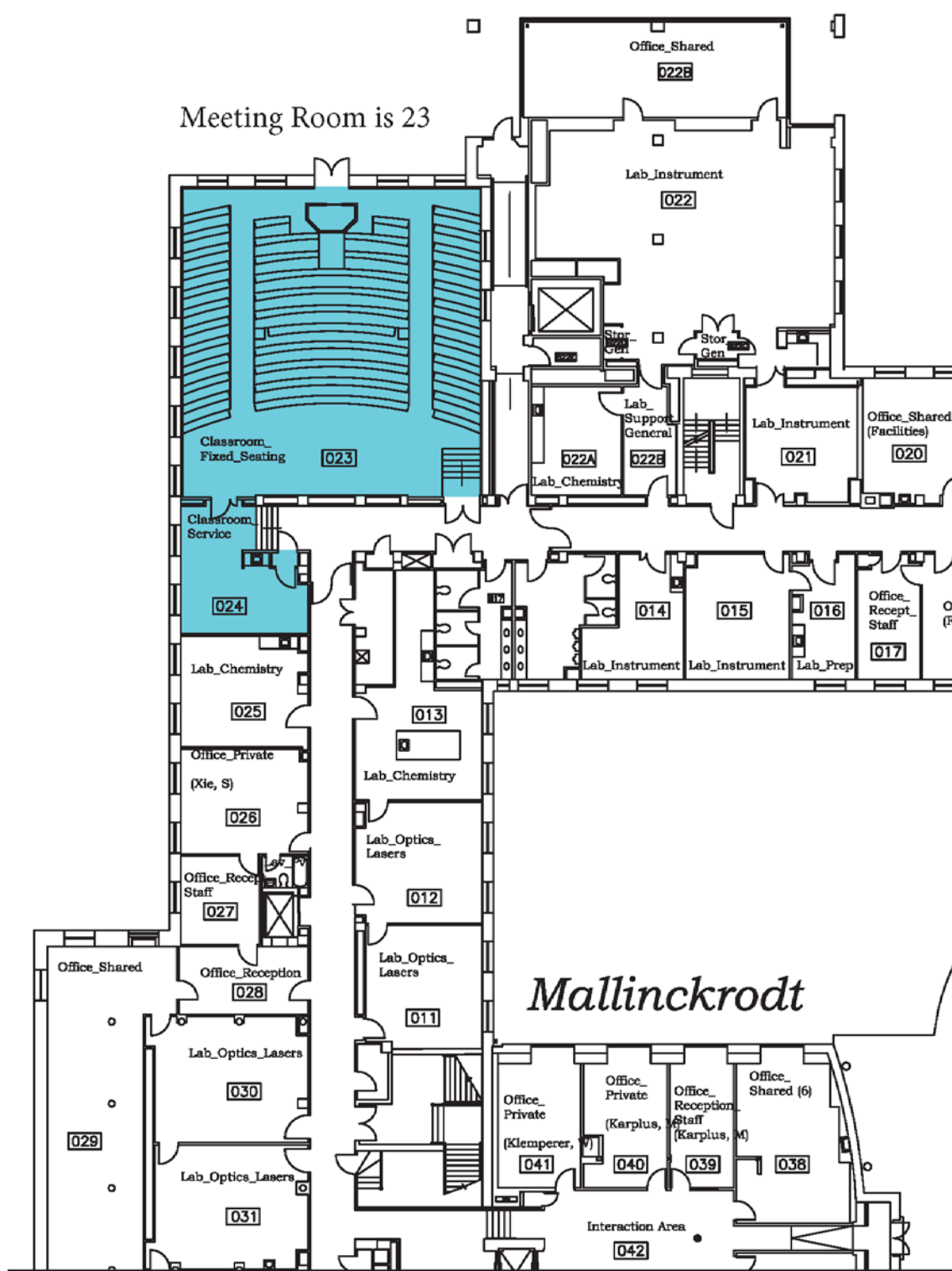
BLDG # 03762  
DATE: 11/18/2013



Meeting Rooms MD G115 and MD G125 are being used

# BUILDINGS AND ROOMS LOCATOR

## Mallinckrodt Lab Room B23





# 91<sup>st</sup> ACS Colloid & Surface Science Symposium

July 9<sup>th</sup> - 12<sup>th</sup>, 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**

kretzschmar@ccny.cuny.edu

### **George John**

gjohn@ccny.cuny.edu

### **Raymond S. Tu**

tu@ccny.cuny.edu

## Important Dates

### **Abstract Deadline**

April 15, 2017

### **Registration Open**

February 15, 2017

## Website

[www.colloids2017.org](http://www.colloids2017.org)

## Symposium Administrator

### **Annette Pineda**

apineda@ccny.cuny.edu

## 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