

SYMPOSIUM SM5

Aqueous Cytomimetic Materials
April 19 - April 20, 2017

Symposium Organizers

Takahiko Ban, Osaka University
Christine Keating, The Pennsylvania State University
Anderson Shum, The University of Hong Kong
Shuichi Takayama, University of Michigan

Proceedings Statement

All authors are invited to submit articles based on their 2017 MRS Spring Meeting presentations to the journals in the MRS portfolio (www.mrs.org/publications-news). Papers submitted and accepted for publication in MRS Advances (www.mrs.org/mrs-advances) will be available as symposium collections. Visit the MRS/Cambridge University Press Publications Booth #100 in the Exhibit Hall to learn more, including MRS Advances print options available at special rates during the meeting week only.

* Invited Paper

SESSION SM5.1: Hydrodynamics of Aqueous Two-Phase Systems
(ATPS) Droplets
Session Chairs: Takahiko Ban and Sarah Perry
Wednesday Morning, April 19, 2017
PCC North, 100 Level, Room 122 B

8:15 AM *SM5.1.01

Moving through Intracellular Phase Space [Clifford Brangwynne](#); Princeton University, United States.

8:45 AM *SM5.1.02

Membrane Formation by Interfacial Complexation in Aqueous Two-Phase Systems (ATPS) [Sarah Hann](#); University of Pennsylvania, United States.

9:15 AM SM5.1.03

Microfluidic Generation of Particle-Stabilized Water-in-Water Emulsions [Niki Abbasi](#)^{1,1,3}; ¹St. Michael's Hospital, Canada; ²Partnership between Ryerson University and St. Michael's Hospital, Canada; ⁴Ryerson University, Canada.

9:30 AM SM5.1.04

Magnetic Manipulation of Droplets in an Aqueous Two Phase Microfluidic System [Maryam Navi](#)^{1,2,3}; ¹Ryerson University, Canada; ²St. Michael's Hospital, Canada; ³A Partnership between Ryerson University and St. Michael's Hospital, Canada.

9:45 AM SM5.1.05

Controlled Electro spray Generation of Non-Spherical Aqueous Microparticles [Scott Tsai](#)^{1,3,4}; ¹Ryerson University, Canada; ²St. Michael's Hospital, Canada; ⁴Institute for Biomedical Engineering, Science and Technology (iBEST)-A Partnership between Ryerson University and St. Michael's Hospital, Canada.

10:00 AM BREAK

10:30 AM *SM5.1.06

Microfluidic Water-in-Water Droplets—Passive Generation, Cargo Encapsulation and Controlled Release [Scott Tsai](#)^{1,2}; ¹Ryerson University, Canada; ²St. Michael's Hospital, Canada.

11:00 AM *SM5.1.07

Chemical Control of Hydrodynamics in Aqueous Systems [Yuichiro Nagatsu](#); Tokyo University of Agriculture and Technology, Japan.

11:30 AM SM5.1.08

Generation of Micron-Size All-Aqueous Emulsions by Interfacial Folding [Sze Yi Mak](#)^{1,2}; ¹The University of Hong Kong, Hong Kong; ²HKU-Shenzhen Institute of Research and Innovation (HKU-SIRI), China.

11:45 AM SM5.1.09

Exploration of Emergent Collective Phenomena and Dynamic Behavior of Active Matter Subjected to Steep Spatiotemporal Thermal Gradients [Serim Ilday](#); Bilkent University, Turkey.

SESSION SM5.2: Aqueous Phase Separation for Artificial Cells
Session Chairs: John Frampton and Anderson Shum
Wednesday Afternoon, April 19, 2017
PCC North, 100 Level, Room 122 B

1:30 PM *SM5.2.01

ATPS Deserves Plausible Real-World Modeling for the Structure and Function of Living Cells [Kanta Tsumoto](#); Mie University, Japan.

2:00 PM *SM5.2.02

Assembly of Highly Stable and Self-Repairing Membrane-Mimetic 2D Materials from Lipid-Like Peptoids [Chun-Long Chen](#); Pacific Northwest National Lab, United States.

2:30 PM BREAK

3:30 PM *SM5.2.03

The PURE System for Artificial Cells [Takuya Ueda](#); University of Tokyo, Japan.

4:00 PM *SM5.2.04

Synthetic Biology in Aqueous Compartments at the Micro- and Nanoscale [Charles P. Collier](#)^{1,2}; ¹Oak Ridge National Laboratory, United States; ²University of Tennessee, United States.

4:30 PM *SM5.2.05

Self-Propelled Vesicles Using Transient Interfacial Tension in ATPS [Takahiko Ban](#); Osaka University, Japan.

SESSION SM5.3: Poster Session
Session Chairs: Yuichiro Nagatsu and Hossein Tavana
Wednesday Afternoon, April 19, 2017
8:00 PM - 10:00 PM
Sheraton, Third Level, Phoenix Ballroom

SM5.3.01

High-Throughput 3D Neural Cell Culture Analysis Facilitated by Aqueous Two-Phase Systems [Kristin Robin Ko](#); Dalhousie University, Canada.

SM5.3.02

Biopatterning of Keratinocytes in Aqueous Two-Phase Systems as a Potential Tool for Skin Tissue Engineering [Rishima Agarwal](#); Dalhousie University, Canada.

SM5.3.03

Microfluidic Platform for Examining the Phase Behavior of Condensed RNA/Protein Phases [Nicole Taylor](#); Princeton University, United States.

SM5.3.04

Dynamics of Non-Equilibrium w/w/o Double Emulsions towards Their Equilibrium State [Yochuang Chao](#); The University of Hong Kong, Hong Kong.

SM5.3.05

Effects of Acid Hydrolysis on the Fabrication of Cassava Starch Microspheres in Aqueous Two-Phase System [Huiping Xia](#); South China University of Technology, China.

SM5.3.06

Controlling Convection in Rehydrating Aqueous Two-Phase Systems [Cameron Yamanishi](#); University of Michigan, United States.

SM5.3.07

Biomimetic Membrane Platforms for Water Purification [Tae-Joon Jeon](#); Inha University, Korea (the Republic of).

SESSION SM5.4: Molecular Properties of Aqueous Systems

Session Chairs: Christine Keating and Kanta Tsumoto

Thursday Morning, April 20, 2017

PCC North, 100 Level, Room 122 B

8:15 AM *SM5.4.01

Mesoscale Studies of Ionic Vesicles with Polyhedral Geometries [Monica Olvera de la Cruz](#); Northwestern University, United States.

8:45 AM *SM5.4.02

Properties of Aqueous Two-Phase Systems [Boris Y. Zaslavsky](#); Cleveland Diagnostics, United States.

9:15 AM SM5.4.03

Supramolecular Hydrogels Compartmentalized Using Aqueous Multi-Phase Systems [Serhii Mytnyk](#); Delft University of Technology, Netherlands.

9:30 AM BREAK

10:00 AM *SM5.4.04

Nanostructured Protein Capsules [Tuomas P. Knowles](#)^{1,2}; ¹University of Cambridge, United Kingdom; ²University of Cambridge, United Kingdom.

10:30 AM *SM5.4.05

Molecular Engineering of Polyelectrolyte Complex Materials [Sarah L. Perry](#); University of Massachusetts Amherst, United States.

11:00 AM *SM5.4.06

Basic and Applied Aspects of “Microphase-Separation” on Biomimetic Membrane - Designed Bio-Inspired Membrane Can Achieve Chiral Recognition and Conversion of Target Molecules - [Hiroshi Umakoshi](#); Osaka University, Japan.

11:30 AM SM5.4.07

Aqueous Emulsion Droplets Stabilized by Lipids Vesicles as Microcompartments for Biomimetic Mineralization [Andrew Rowland](#); The Pennsylvania State University, United States.

11:45 AM SM5.4.08

Formation of Biomimetic Materials through Short Peptide Self-Assembly Under Volume Confinement [Aviad Levin](#)^{1,2}; ¹Tel Aviv University, Israel; ²University of Cambridge, United Kingdom.

SESSION SM5.5: Biotechnology Based on Aqueous Systems

Session Chairs: Chun-Long Chen and Shuichi Takayama

Thursday Afternoon, April 20, 2017

PCC North, 100 Level, Room 122 B

1:45 PM *SM5.5.01

Incorporating Aqueous Two-Phase Systems and the Lateral-Flow Immunoassay into a Single Point-of-Care Diagnostic [Daniel T. Kameji](#); University of California, Los Angeles, United States.

2:15 PM *SM5.5.02

Aqueous Two-Phase System Solution Micropatterning—Applications in Biomaterial Development and Clinical Chemistry [John Frampton](#); Dalhousie University, Canada.

2:45 PM SM5.5.03

Lipid Multilayer Grating Arrays as Label-Free Cytomimetic Aqueous Sensors [Steven Lenhart](#); Florida State University, United States.

3:00 PM BREAK

3:30 PM *SM5.5.04

Membrane Wetting, Budding and Tubulation in Vesicles Exposed to Aqueous Two-Phase Systems [Rumiana Dimova](#); Max Planck Institute of Colloids and Interfaces, Germany.

4:00 PM *SM5.5.05

Experimental and Modeling Investigation of Cell Partition in Aqueous Two-Phase Systems [Hossein Tavana](#); The University of Akron, United States.

4:30 PM SM5.5.06

Water Dehydration for Successful Underwater Adhesion [Dong Soo Hwang](#); POSTECH, Korea (the Republic of).

4:45 PM SM5.5.07

Phase Separated Proteins at Work—A Biomechanical Study of Endocytic Coat Proteins in Yeast [Louis-Philippe Bergeron-Sandoval](#); Université de Montréal, Canada.