**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.

---

**SESSION SM5.1: Hydrodynamics of Aqueous Two-Phase Systems (ATPS) Droplets**

**Session Chairs:** Takahiko Ban and Sarah Perry

*SM5.1.01*
Moving through Intracellular Phase Space
Clifford Brangwynne; Princeton University, United States.

*SM5.1.02*
Membrane Formation by Interfacial Complexation in Aqueous Two-Phase Systems (ATPS)
Sarah Han; University of Pennsylvania, United States.

*SM5.1.03*
Microfluidic Generation of Particle-Stabilized Water-in-Water Emulsions
Niki Abbasi; 1, 2; St. Michael’s Hospital, Canada; 3; Partnership between Ryerson University and St. Michael’s Hospital, Canada; 4; Ryerson University, Canada.

*SM5.1.04*
Magnetic Manipulation of Droplets in an Aqueous Two Phase Microfluidic System
Marvam Nav; 1, 2, 3; Ryerson University, Canada; 4; St. Michael’s Hospital, Canada; 5; A Partnership between Ryerson University and St. Michael’s Hospital, Canada.

*SM5.1.05*
Controlled Electrospray Generation of Non-Spherical Aqueous Microparticles
Scott Tsai; 1, 2; Ryerson University, Canada; 3; St. Michael’s Hospital, Canada; 4; Institute for Biomedical Engineering, Science and Technology (iBEST)- A Partnership between Ryerson University and St. Michael’s Hospital, Canada.

---

**SESSION SM5.2: Aqueous Phase Separation for Artificial Cells**

**Session Chairs:** John Frampton and Anderson Shum

*SM5.2.01*
ATPS Enables Realistic and Dynamic Behavior of Active Matter Subjected to Steep Spatiotemporal Thermal Gradients
Serim Ilday; Bilkent University, Turkey.

*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.

*SM5.2.03*
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

*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*
Bipatterning of Keratinocytes in Aqueous Two-Phase Systems as a Potential Tool for Skin Tissue Engineering
Rishima Agrawal; 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
Youchuang 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 Yamashita; 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. Knowles1, 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 Levin1, 2; 1Tel Aviv University, Israel; 2University of Cambridge, United Kingdom.

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.

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. Kamei; 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 Lenhert; 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.