Emergence in Chemical Systems 4.0 Conference

Tuesday, June 23

Emergence				
	Session Leader:	Steen Rasmussen		
9:00 – 9:15	Conference Opening: Dr. Helena Wisniewski, Vice Provost for Research and Dean for Graduate School			
9:15 – 10:15	Mark Bedau	Pragmatic pluralism about emergence	Reed College/Portland State, USA	
10:15 – 10:45	Ramanarayanan Krishnamurthy	Heterogeneity to Homogeneity: The Emergence of RNA	Scripps Research Institute, USA	
10:45 – 11:15	Coffee Break			
11:15 – 12:15	Jonathan Pascalie and René Doursat	Morphogenetic Engineering in Synthetic Biology: Programming the emergence of collective shapes in simulated colonies of microorganisms.	Complex Systems Institute, France	
12:15 – 1:15	Lunch			
1:15 – 2:15	Andrew Pohorille	Emergence of Protein Function	NASA, USA	
	Origin of Life			
	Session Leader:	Gonen Ashkenasy		
2:15 – 2:45	Sandra Pizzarello and M. Bose	The cosmic trail of reduced Nitrogen towards Earth	Arizona State University, USA	
2:45 – 3:15	Nicolle Zellner	Rethinking Solar System Bombardment:New Views on the Timing and Delivery of Lunar Impactors	Albion College, USA	
3:15 – 3:45	Coffee Break			
3:45 – 4:00	Irene Chen	Noise and evolution in the RNA World	UC Santa Barbara, USA	
4:00 – 4:15	Charles Liotta	The Mechanistic Origin of the 'pH Dichotomy' in the Reaction of Dihydroxyfumarate with Glyoxylate	Georgia Tech, USA	
4:15 – 4:30	Tom Froese	Motility at the origin of life and the evolution of the genome	Universidad Nacional Autónoma de México, Mexico	
4:30 – 4:45	Helen Hansma	Muscovite Mica, Mechanical Energy, Potassium, Crowding, and Life's Origins	University of California at Santa Barbara, USA	
4:45 - 5:00	Sheng-sheng Yu	Ester-Mediated Amide Bond Formation and the Prebiotic Origin of Peptides Georgia Tech, USA		
5:00 - 5:15	Christine He	Overcoming Strand Inhibition with Viscous Georgia Tech, USA Environments		
10:00 pm – 1:00 am	Midnight Sun Barbeque	Alaska Airlines Center, Varsity Sports Grill, Mezz	anine	

Wednesday, June 24				
Protocell				
	Session Leader: Andrew Pohorille			
9:00 - 10:00	Steen Rasmussen	Novel chemical protocells generated and controlled by solvated electronic microchips	University of Southern Denmark, Denmark	
10:00 – 10:30	Atsushi Kamimura	Reproduction of protocells: interplay of different timescale in a catalytic reaction network	University of Tokyo, Japan	
10:30 – 11:00	Coffee Break			
Self-Construction				
	Session Leader:	Jim Pantaleone		
11:00 – 12:00	Robert Pascal	The Conditions for Self-Organization in Chemical Systems	Université de Montpellier, France	
12:00 – 12:30	Agnieszka Mensfelt	Evolution of morphologies - modeling Foraminifera in Framsticks	Poznan Univeristy of Technology, Poland	
12:30 – 1:30	12:30 – 1:30 Lunch			
1:30 - 2:30	Gonen Ashkenasy	Emerging Oscillations and Bifurcation in Synthetic Replication Networks	Ben-Gurion University of the Negev, Israel	
		Systems Chemistry		
	Session Leader:	Irene Chen		
2:30 – 3:00	David Baum	Selection before the protocell	University of Wisconsin, USA	
3:00 – 3:30	Coffee Break	ee Break		
3:30 – 4:00	R. Dean Astumian	Enhanced Diffusion, Chemotaxis, and Pumping by Active Enzymes: Progress toward an Organizing Principle of Molecular Machines	The University of Maine, USA	
4:00 - 4:30	Stephan Weiss	Coupled Belousov-Zhabotinsky reactors	University of Michigan, USA	
4:30 - 5:00	Yuagsheng Cao	The free energy cost of accurate biochemical oscillations	Peking University, China	
6:00	6:00 Banquet Anchorage Museum, Bus from Gorsuch Commons		s	
		Thursday, June 25		
		Systems Chemistry		
	Session Leader:	Ágota Tóth		
9:00 – 10:00	Ricard Solé	Terraforming ecosystems with synthetic biological designs	ICREA-Complex Systems Lab UPF-IBE, Spain	
10:00 – 10:30	Christoph Kuhn	Weigh the anchor and rock on the wave of lego and perfringo: How the offspring of the first replicating oligomer sustain the RNA-world and open the world of protein synthesis	University Hospital Bern, Switzerland	
10:30 - 11:00	Coffee Break			
11:00 - 11:30	Jerzy Maselko	The First Life	University of Alaska Anchorage, USA	

How to feed an inanimate evolvable chemical systems, supplied with synthetic macronolecules of predictable properties, so as to let it self-evolve into increased complexity and life-like hehaviour					
Tom Lenaerts	11:30 – 12:30	Peter Strazewski	system, supplied with synthetic macromolecules of predictable proper-ties, so as to let it self-evolve		
1:30 - 2:00 Ion Lenaerts Communication Emergent chemical behavior in variable-volume University of the Basque Country, Spain	12:30 - 1:30	Lunch			
2:00 - 2:30 Kepa Ruiz Mirazo Emergent chemical behavior in variable-volume University of the Basque Country, Spain	1:30 - 2:00	Tom Lenaerts	√ 1		
2:30 – 3:00 Coffee Break 3:00 – 3:30 Lidia Yamamoto Emergence in Artificial Chemistries Memorial University of Newfoundland, Canada Collective dynamics of chemo-mechanical Indian Institute of Technology, India Friday, June 26 Hydrodynamics and the Formation of Precipitation Structures Session Leader: Robert Pascal 9:00 – 9:30 Jim Pantaleone Growing a chemical garden at the surface Anachorage, USA 9:30 – 10:00 Ágota Tóth Morphology control by flow-driven precipitation University of Szeged, Hungary 10:00 – 10:30 Dezso Horváth Diffusive fingering in a precipitation reaction driven by autocatalysis Chemical Networks Session Leader: Renate Wackerbauer and Jacopo Lafranceschina Particular Shark Bedau 11:00 – 11:30 Renate Wackerbauer and Jacopo Lafranceschina Tamás Bánsági Jr. The urea-urease reaction: dynamic behavior and applications Papilications Achieving synchronization with active hybrid materials: Coupling self-ossilating gels and pilozopelectire films 11:45 – 12:00 Victor Yashin Pybrid Cell – Single Cell Bacterium Fused Microdevice Selection 11:50 – 1:45 Kazulito Tabata Hybrid Cell – Single Cell Bacterium Fused Microdevice Selection 11:50 – 1:45 Elizaveta Guseva Origns of Inpolymers: mechanisms of sequence selection of UK Stony Brook University of Glasgow, UK	2:00 - 2:30	Kepa Ruiz Mirazo	Emergent chemical behavior in variable-volume University of the		
Session Leader: Coffee Break Session Leader: Chemical Networks Short Talks City of Alaska Fairbanks, USA Short Talks S	2:30 - 3:00	Coffee Break	protocount Country, Spain		
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Hydrodynamics and the Formation of Precipitation Structures	3:30 – 4:00	Punit Parmananda		Indian Institute of	
Session Leader: Robert Pascal					
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Chemical Networks Session Leader: Mark Bedau	10:00 – 10:30	Dezso Horváth			
Renate Wackerbauer and Jacopo Lafranceschina Chaotic transients in a network of Morris-Lecar neurons University of Alaska Fairbanks, USA	10:30 – 11:00	Coffee Break			
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Chaotic transients in a network of Morris-Lecar neurons		Session Leader:	Mark Bedau		
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2:00 – 2:30 Coffee Break Automated fluidic platforms for prebiotic evolution UK UK	1:30 – 1:45	Elizaveta Guseva		USA	
	1:45 – 2:00	Andrew Surman	Automated fluidic platforms for prebiotic evolution	•	
2:30 - Business Meeting	2:00 - 2:30	Coffee Break			
	2:30 -	Business Meeting			

	Saturday, June 27	
9:00 am	Major Marine Glacier and Whale Watching Cruise Tour	Bus from Gorsuch Commons



• Presentations - Arts 150

	Presentation	Q & A
1 hr.	50 min	10 min
30 min.	25 min	5 min
15 min	12 min	3 min

• Lunch – CPISB Atrium



For information contact Debora Summers, dmsummers@uaa.alaska.edu,
Dr. Jerzy Maselko, jmaselko2@uaa.alaska.edu, Dr. Jim Pantaleone, jtpantaleone@uaa.alaska.edu, or Dr. Martin Cenek, mcenek@uaa.alaska.edu,