

# **Liaison Functions**

Held at the 2023 AIChE Annual Meeting

Orlando, Florida, USA  
5-10 November 2023

ISBN: 978-1-7138-9320-2

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2023) by AIChE  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2024)

For permission requests, please contact AIChE  
at the address below.

AIChE  
120 Wall Street, FL 23  
New York, NY 10005-4020

Phone: (800) 242-4363  
Fax: (203) 775-5177

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

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

### **AICHE JOURNAL FUTURES: NEW DIRECTIONS IN CHEMICAL ENGINEERING RESEARCH (INVITED TALKS)**

67a Engineering Vibrio Natriegens for Degrading and Assimilating Poly(ethylene Terephthalate).....	1
<i>Tianyu Li, Stefano Menegatti, Nathan Crook</i>	
67b Applications of Lignin-Derived Deep Eutectic Solvents in Biorefinery Processes .....	2
<i>Chang Geun Yoo, Yunxuan Wang, Jiae Ryu, Kwang Ho Kim, Xianzhi Meng, Yunqiao Pu, Yang Tian, Aymerick Eudes, Gyu Leem, Arthur Ragauskas</i>	
67c Predicting Thermodynamic and Transport Properties of Organophosphates: a Molecular Simulation Substitute for Experiments that You Don't Want to Perform.....	4
<i>Gennady Gor, Ella Ivanova</i>	
67d Leveraging Multiplex Genome Engineering and Metabolic Pathway Design to Upcycle Waste Plastics and Biomass Via Aldehyde Transformations in Live Bacteria .....	5
<i>Aditya Kunjapur</i>	
67e Surface Anisotropic Particles, Capillary Interactions, and Dynamics of Fluid Interfaces .....	6
<i>Elton Lima Correia, Sepideh Razavi</i>	
67f Designing Better Drug Delivery Particles: Protein Corona Formation and Multicomponent Aggregation of Particles in Blood Plasma.....	7
<i>Aida Lopez Ruiz, Guangliang Liu, Kathleen McEnnis</i>	
67h Stability and Kinetics of Fe-Based MOFs with Diverse Structures in Aqueous Pollutant Degradation .....	8
<i>Samuel C. Moore, Michele Sarazen</i>	

### **ANDREAS ACRIVOS AWARD FOR PROFESSIONAL PROGRESS IN CHEMICAL ENGINEERING LECTURE**

214a Charge Neutral Polymer Complexes as Battery Components .....	9
<i>Rachel Segalman</i>	

### **EMERGING JUNIOR INVESTIGATOR OPEN INNOVATION FORUM (INVITED TALKS)**

81a Beyond Surface Facilitates Electrocatalytic Reactions of Renewable Carbons.....	10
<i>Dohyung Kim</i>	
81b Rationally Designing Nanoporous Catalytic Materials for Sustainable Energy Applications .....	11
<i>Hong Je Cho</i>	
81c Nanoparticle-Based Crosslinks in Polymer Networks .....	12
<i>S. Eileen Seo</i>	
81d Metabolomics-Guided Discovery of Metabolic Design Principles and Engineering Strategies.....	13
<i>Junyoung Park</i>	

**JOHN M. PRAUSNITZ AICHE INSTITUTE LECTURE**

77a Translation of Biomedical Microtechnologies from the Lab to the Clinic..... 14  
*Mark Prausnitz*

**KICHE-US CHAPTER OPEN FORUM (INVITED TALKS)**

170a Intelligent E-Nose System: Materials Discovery to Wearable Device..... 16  
*Nosang Myung*

170b Visualizing Large-Scale Biological Conversion Processes in Real-Time..... 17  
*Taewook Kang*

170c Role of Process Systems Engineering (PSE) in Strategizing the Path to Carbon Neutrality ..... 18  
*Jay Hyung Lee*

170d Novel but Simple Method to Prepare Vanadia Catalyst with Superior Sulphur Resistance and NOx Removal Activity ..... 19  
*Do Heui Kim*

170e Effect of Interfacial Energy and Geometry to Permeation of Liquid Through Filter Pores ..... 20  
*Dongjin Seo*

170f Crystalgpt: Enhancing System-To-System Model Interchangeability in Crystallization Prediction and Control Using a Time-Series-Transformer Model..... 21  
*Joseph Kwon*

**SBE'S JAMES E. BAILEY AWARD LECTURE**

382a Can Biotechnology Deliver Cost Effective Fuels with Reduced Carbon Footprint? ..... 22  
*Gregory Stephanopoulos*

**THE LANGER PRIZE FOR INNOVATION AND ENTREPRENEURIAL EXCELLENCE AWARD PRESENTATION AND LECTURE**

2023 Langer Prize Winner Presentation: Pseudo-Random Collisions: from Data Storage to the Synthesis of Modified DNA ..... 23  
*Albert J. Keung*

**WILLIAM R. SCHOWALTER LECTURE**

171a Physically Intelligent Colloidal Systems ..... 24  
*Kathleen J. Stebe*

**SBE AWARDS LECTURES - D.I.C. WANG AND JUNE WISPELWEY BIO LEADERSHIP FELLOWSHIP**

340a Synthetic Biology 2.0: the Dawn of a New Era ..... 25  
*Huimin Zhao*

**HIGHLY EFFICIENT DOE FOR RAPID PROCESS DEVELOPMENT**

96a Highly Efficient DOE for Rapid Process Development..... 26  
*Mark Anderson*

**HOW TO MAINTAIN PRODUCTIVITY IN A CRISIS**

708a How to Maintain Productivity in a Crisis ..... 27  
*Alaina Levine*

**NETWORKING FOR NERDS: FIND AND FORGE RELATIONSHIPS THAT DELIVER ROI FOR ALL**

709a Networking for Nerds: Find and Forge Relationships that Deliver ROI for All ..... 28  
*Alaina Levine*

**Author Index**