

Arthur J. Shih

Forney Hall of Chemical Engineering
480 Stadium Mall Drive
West Lafayette, IN 47907

Email: shih9@purdue.edu
Website: arthurjshih.com

Education

Ph.D.	Purdue University - West Lafayette, Chemical Engineering	2018 (expected)
B.S.E.	University of Michigan - Ann Arbor, Chemical Engineering	2013
	Minors in Mathematics and Music	

Professional Experience

Graduate Research Assistant	Purdue University - West Lafayette, Chemical Engineering	
	Dissertation Advisor: Fabio H. Ribeiro	2013 -
Research Scientist	Avery Dennison Corporation, Pasadena, CA	2012
Undergraduate Research Assistant	University of Michigan - Ann Arbor, Chemical Engineering	
	Undergraduate Research Advisor: Ralph T. Yang	2012 - 2013
	Undergraduate Research Advisor: Thomas Wang	2008 - 2011

Publications

- C. Paolucci, I. Khurana, A.A. Parekh, S. Li, **A.J. Shih**, H. Li, J.R. Di Iorio, J.D. Albarracin-Caballero, A. Yezerets, J.T. Miller, W.N. Delgass, F.H. Ribeiro, W.F. Schneider, R. Gounder, "Dynamic multinuclear sites formed by mobilized copper ions in NO_x selective catalytic reduction", *Science*, 357 (6354) 898 (2017)
- **A.J. Shih**, "Demonstrating Macroscopic Momentum Balances in a Fluid Mechanics Course," *Chemical Engineering Education*, *Chemical Engineering Education*, 51 (4) 176 (2017)
- J.D. Albarracin-Caballero, I. Khurana, J.R. Di Iorio, **A.J. Shih**, J.E. Schmidt, M. Dusselier, M.E. Davis, A. Yezerets, J.T. Miller, F.H. Ribeiro, R. Gounder, "Structural and Kinetic Changes to Small-Pore Cu-Zeolites After Hydrothermal Aging Treatments and Selective Catalytic Reduction of NO_x with Ammonia," *Reaction Chemistry & Engineering*, 2, 169 (2017)
- C. Paolucci, A.A. Parekh, I. Khurana, J.R. Di Iorio, H. Li, J.D. Albarracin Caballero, **A.J. Shih**, T. Anggara, W.N. Delgass, J.T. Miller, F.H. Ribeiro, R. Gounder, W.F. Schneider, "Catalysis in a Cage: Condition-Dependent Speciation and Dynamics of Exchanged Cu Cations in SSZ-13 Zeolites," *J. Am. Chem. Soc.*, 138, 18 (2016)
- C. Yin, L. Wang, S. Rivillon, **A.J. Shih**, R.T. Yang, "SCR of Nitric Oxide by Hydrogen over Pd and Ir based Catalysts with Different Supports," *Catalysis Letters*, 145 (7) 1491 - 1499 (2015)

Oral Presentations

- **A.J. Shih**, H. Li, A. Kumar, J.M. Gonzalez, I. Khurana, C. Paolucci, A.L. Villa, W.N. Delgass, R. Gounder, A. Yezerets, W.F. Schneider, J.T. Miller, and F.H. Ribeiro, "Nature of SO₂-poisoned Cu-SSZ-13 Catalysts under Ammonia Selective Catalytic Reduction (NH₃-SCR)," *2017 American Institute of Chemical Engineers (AIChE) Meeting*, Minneapolis, MN, November 1, 2017
- **A.J. Shih**, F.H. Ribeiro, "Cleaning Dirty Diesel: A Tango between Two Copper Ions," *Dawn or Doom Symposium: Three Minute Thesis*, West Lafayette, IN, September 26, 2017
- **A.J. Shih**, F.H. Ribeiro, "Cleaning Dirty Diesel: the Copper Catalyst," *21st Annual Great Lakes Chinese American Chemical Society*, Evanston, IL, June 10, 2017

- A.J. Shih, F.H. Ribeiro, "Nature of SO₂-poisoned Cu-SSZ-13 Catalysts under Ammonia Selective Catalytic Reduction (NH₃-SCR)," *Purdue Catalysis Center Seminar*, West Lafayette, IN, May 24, 2017
- A.J. Shih, I. Khurana, A.A. Parekh, J.D. Albarracin Caballero, C. Paolucci, J.R. Di Iorio, H. Li, W.N. Delgass, A. Yezerets, J.T. Miller, W.F. Schneider, R. Gounder, F.H. Ribeiro, "Understanding the Nature and Speciation of the Active Sites on Cu-SSZ-13 During the Selective Catalytic Reduction of NO_x," *24th International Symposium on Chemical Reaction Engineering (ISCRE)*, Minneapolis, MN, June 13, 2016
- A.J. Shih, F.H. Ribeiro, "Synthesis of Cu-zeolite Catalysts: Three Synthesis Regimes during the Liquid Ion Exchange of Copper into SSZ-13 and ZSM-5 Zeolites," *Purdue Catalysis Center Seminar*, West Lafayette, IN, September 30, 2015

Poster Presentations

- A.J. Shih, Fabio H. Ribeiro, "A Molecular Dance to Cleaner Air: An Intersection between Enzymatic, Homogeneous, and Heterogeneous Catalysis," *37th Midwest Enzyme Chemistry Conference (MECC)*, Chicago, IL, October 14, 2017
- A.J. Shih, H. Li, A. Kumar, J.M. Gonzalez, I. Khurana, C. Paolucci, A.L. Villa, W.N. Delgass, R. Gounder, A. Yezerets, W.F. Schneider, J.T. Miller, and F.H. Ribeiro, "Nature of SO₂-poisoned Cu-SSZ-13 Catalysts under Ammonia Selective Catalytic Reduction (NH₃-SCR)," *2017 Cross-Cut Lean Exhaust Emissions Reduction Simulations (CLEERS) Workshop*, Ann Arbor, MI, October 4, 2017
- A.J. Shih, H. Li, A. Kumar, J.M. Gonzalez, I. Khurana, C. Paolucci, A.L. Villa, W.N. Delgass, R. Gounder, A. Yezerets, W.F. Schneider, J.T. Miller, and F.H. Ribeiro, "Nature of SO₂-poisoned Cu-SSZ-13 Catalysts under Ammonia Selective Catalytic Reduction (NH₃-SCR)," *Stanford Catalysis Center Summer Institute*, Palo Alto, CA, August 15, 2017
- A.J. Shih, H. Li, A. Kumar, J.M. Gonzalez, I. Khurana, C. Paolucci, A.L. Villa, W.N. Delgass, R. Gounder, A. Yezerets, W.F. Schneider, J.T. Miller, and F.H. Ribeiro, "Nature of SO₂-poisoned Cu-SSZ-13 Catalysts under Ammonia Selective Catalytic Reduction (NH₃-SCR)," *Catalysis Club of Chicago (CCC) 2017 Spring Symposium*, Naperville, IL, May 16, 2017
- A.J. Shih, H. Li, A. Kumar, J.M. Gonzalez, I. Khurana, C. Paolucci, A.L. Villa, W.N. Delgass, R. Gounder, A. Yezerets, W.F. Schneider, J.T. Miller, F.H. Ribeiro, "Nature of SO₂-poisoned Cu-SSZ-13 Catalysts under Ammonia Selective Catalytic Reduction (NH₃-SCR) Conditions," *38th Annual Michigan Catalysis Society (MCS) Spring Symposium*, Ann Arbor, MI, May 2, 2017
- A.J. Shih, I. Khurana, A.A. Parekh, C. Paolucci, J.R. Di Iorio, H. Li, W.N. Delgass, A. Yezerets, J.T. Miller, W.F. Schneider, R. Gounder, F.H. Ribeiro, "Reduction of NO_x Emissions from Automotive Diesel Engines," *Big Ten+ Graduate School Exposition*, West Lafayette, IN, September 25, 2016
- A.J. Shih, I. Khurana, A.A. Parekh, C. Paolucci, J.R. Di Iorio, H. Li, W.N. Delgass, A. Yezerets, J.T. Miller, W.F. Schneider, R. Gounder, F.H. Ribeiro, "Reduction of NO_x Emissions from Automotive Diesel Engines," *2016 Chemical Engineering Industrial Advisory Council (IAC) Meeting*, West Lafayette, IN, September 9, 2016
- A.J. Shih, J.D. Albarracin Caballero, I. Khurana, A.A. Parekh, W.F. Schneider, J.T. Miller, A. Yezerets, R. Gounder, W.N. Delgass, F.H. Ribeiro, "Automotive NO_x Abatement by NH₃ Selective Catalytic Reduction on Copper-Exchanged Zeolites," *24th Purdue Chemical Engineering Research Symposium*, West Lafayette, IN, August 20, 2015

Professional Development

- **Purdue Graduate School Workshops:** Grant Proposal Writing Series (2015 -), Future Faculty and Professionals Workshops (2015 -), Communications Workshops (2014 - 2017), Responsible Conduct of Research (2015 -), Engaging Research Presentations Series (2017)
- NSF Proposal Workshop with CBET Program Directors (2017)

Teaching Experience

- **Teaching Fellow:** Fluid Mechanics (Fall 2014, 100 students and Spring 2016, 50 students)
- **Teaching Development:** Educational Methods in Engineering (2017)
- **Undergraduate Students Mentored (Research):**
 - Andres Peña Lozano (2015, Chemical Engineering, Univ. Nacional de Colombia)
 - Lucia Perez (2014, Chemical Engineering, Univ. Nacional de Colombia)

Professional Service and Outreach

- **Member:**
 - American Institute of Chemical Engineers (AIChE)
 - American Chemical Society (ACS)
- **Manuscript Reviewer:**
 - Journal of Catalysis
- **Purdue Catalysis Center:**
 - Ribeiro Research Group Safety Officer (2014 - 2017)
 - Purdue Catalysis Center Webmaster (2013 - 2018)
- **Departmental Service:**
 - 23rd Annual Graduate Research Symposium, Catalysis Session Chair (2015)
 - Purdue ChE Graduate Student Organization Publications Chair (2015 - 2016)
 - 22nd Annual Graduate Research Symposium, Catalysis Session Chair (2014)
 - Purdue ChE Graduate Student Organization Co-curricular Chair (2014 - 2015)
- **Outreach Activities (K-12):**
 - Murdock After School Science Club (4th grade) (2014 -)
 - Innovation-to-Reality Program (6th - 8th grade) (Summer 2015)
 - Tau Beta Pi MindSET Program (6th to 8th grade) (2011 - 2013)
 - University of Michigan Tech Day (11th - 12th grade) (2008 - 2012)
- **Outreach Activities (Community):**
 - Food Finders Food Bank (2017 -)

Honors and Awards

Ecological Sciences & Engineering Symposium - Three Minute Thesis Finalist (Purdue University)	2017
Eastman Chemical Travel Award (Purdue University)	2017
College of Engineering Travel Grant (Purdue University)	2017
Great Lakes Chinese American Chemical Society - 2 nd Place Oral Presentation	2017
Dow Chemical Company Travel Award (International Symposia on Chemical Reaction Engineering)	2016
George M. Landes Prize for Technical Communication (University of Michigan)	2013