

SiWei (Andy) Chang

EDUCATION

- University of Illinois Urbana Champaign (UIUC), PhD in Chemical Engineering** 2012-2017
Carnegie Mellon University (CMU), BS in Chemical Engineering 2008
- Minor in Biomedical Engineering
 - Honors: Dean's List Fall 2004 and fall 2007

WORK AND RESEARCH EXPERIENCE

- UIUC Catalysis Research, PhD candidate (Urbana, IL)** 2012-Current
- Project management: Designed (via Solidworks) and constructed an UHV reactor system
 - Acquired advanced surface science knowledge and its application through physical vapor decomposition, AES, LEED, TPD, TPR, and RMBS
 - Developed kinetics and mechanistic models for reaction networks
 - Developed Labview and C++ programs for automation of TPD, TPR and AES data collection
 - UHV equipment and electronic equipment repair
- Procter and Gamble Hair-Care R&D Scientist (Cincinnati, OH)** 2008-2011
- Conducted independent research to test surfactant technology in hair-care
 - Designed JMP software models to optimize shampoo formulations, saving over \$4.2 million
 - Discovered new co-surfactants that can increase shampoo lather performance by 20%
 - Invented new method to test shampoo stability which reduce shampoo testing time by 66%
 - Optimized shampoo formulas to reduce total scale up time by 10%
- CMU Biomedical Research, Researcher (Pittsburgh, PA)** 2006-2008
- Conducted research on Emery-Dreifuss Muscular Dystrophy mutated proteins
 - Performed independent research examining protein (Nesprin 1-alpha) stability and cell mechanics
 - Performed bacteria culturing, PCR, gene expression, protein purification, and protein expression
 - Biomedical research results published in 2010 and presented at Johns Hopkins University

PUBLICATIONS

1. **Chang, S. A.**; Vermani, V.; Flaherty, D. W.; Effects of Phosphorus on C-C, C-O, and C-H Bond Rupture during Acetic Acid Decomposition over Ru (0001) and P_x-Ru(0001) *J. Catal.* 353 (2017),181-191
2. **Chang, S. A.**; Vermani, V.; Flaherty, D. W.; Effects of Phosphorus and Alkyl Substituents on C-H, C-C, and C-O Bond Rupture within Carboxylic Acids on Ru(0001) *J. Vac. Sci. Technol. A*, Vol. 35, No. 5, (2017)
3. **Chang, S. A.**; Flaherty, D. W.; Mechanistic Study of Formic Acid Decomposition over Ru(0001) and P_x-Ru(0001): Effects of Phosphorus on C-H and C-O Bond Rupture *J. Phys. Chem. C*, 2016, 120 (44), pp 25425–25435
4. Zhong, Z.; **Chang, S. A.**; Kalinowski, A.; Wilson, K. L.; Dahl, K. N., Stabilization of the spectrin-like domains of nesprin-1alpha by the evolutionarily conserved "adaptive" domain. *Cell Mol Bioeng* 2010, 3 (2), 139-150.
5. **Chang, S. A.**; Sampath, A.; Flaherty, D. W.; Effects of Phosphorus on selective dehydrogenation: Cyclohexene reaction over Ru(0001) and P_x-Ru(0001) (To be submitted) *J. Catal.*

PRESENTATIONS

1. "Mechanism Study of the Effects of Phosphorus and Alkyl Substituents on C-H, C-C, and C-O Bond Rupture within Carboxylic Acids on Ru(0001)" Catalysis Club of Chicago Spring Symposium (Chicago, Illinois) 2017(Poster)
2. "Carboxylic acid decomposition over Ru(0001) and P_x-Ru(0001): Effect of P-atoms on bond rupture" AIChE 2016 (Oral)
3. "Carboxylic acid decomposition over Ru(0001) and P_x-Ru(0001): Effect of P-atoms on bond rupture" AVS Prairie Chapter Symposium 2016 (Oral)
4. "Mechanistic Study of C-O bond rupture on Ruthenium Phosphides I: Transient and Steady State Measurements with Carboxylic acid" Catalysis Club of Chicago Spring Symposium (Chicago, Illinois) 2016 (Poster)

PRESENTATIONS cont.'

5. "Deconvoluting the Effect of Solvation and Acid Strength on Zeolite Catalysis: Model Systems for Complex Materials" Catalysis Club of Chicago Spring Symposium (Chicago, Illinois) 2015 (Poster)
6. "Deconvoluting the Effect of Solvation and Acid Strength on Zeolite Catalysis: Model Systems for Complex Materials" 14th annual CHBE Graduate Research Symposium (Urbana, Illinois) 2015 (poster)
7. "Conformational stability of the spectrin-like repeats in nesprin-1a" Meeting of the Minds, (Pittsburgh PA) summer 2007(Oral)
8. "Conformational stability of the spectrin-like repeats in nesprin-1a", Johns Hopkins University (Baltimore, Maryland) summer 2007(Oral)

HONORS

- Winner of Fall 2016 Hanratty Travel Award
- 2nd place for poster presentation at the 14th annual CHBE Graduate Research Symposium 2015
- Ranked as excellent TA by student course evaluation Spring 2014, Fall 2014, Spring 2015, Fall 2015
- Honorable Mention on National Science Foundation Graduate Research Fellowship Program 2011
- CMU Summer Undergraduate Research Fellowship (SURF) 2007
- CMU Small Undergraduate Research Grant (SURG) 2008
- National Institute of Health Academy Finalist Spring of 2008
- Dean's list Fall of 2004 and Fall of 2007

TEACHING AND OUTREACH

UIUC CHBE Teaching Assistant (Champaign, IL)	2013-2015
<ul style="list-style-type: none">• Lectured over 170 students and led 35 student discussion sessions in Mass Transport course• Prepared discussion session and exam materials in Mass Transport concepts• Evaluated laboratory reports and data presentations in Unit Operation course• Ranked as excellent TA three consecutive semesters by student course evaluations	
Weston Preparatory, Head Teacher (Panama City, Panama)	2011- 2012
<ul style="list-style-type: none">• Managed 5 employees and \$100,000 annual operating budget• Taught over 50 high school students in AP subjects: Calculus, Chemistry, and Physics	
Carnegie Mellon University, Teaching Assistant (Pittsburgh, PA)	2005-2006
<ul style="list-style-type: none">• Taught over 50 students per semester on computer programming and website publishing fundamentals• Edited Computing Course Manual and graded homework and exams	
Undergraduate Mentoring (Champaign, IL)	2014-2016
<ul style="list-style-type: none">• Trained undergraduate researcher in proper lab safety protocols• Develop and manage undergraduate research project• Helped student develop strong presentation and technical writing	
Graduate Student Advisory Council, External Vice President (Champaign, IL)	2012-2013
<ul style="list-style-type: none">• Organized annual Department Winter Reception Dinner and End of the Year CHBE Picnic; hosted over 100 guests and 50 guests respectively• Fundraised for Toys for Tot for the annual Winter Reception Dinner Raffle• Planned the annual Department Research Poster Symposium 2013	
Society of Asian Scientists and Engineers (SASE)	2008-2014
<ul style="list-style-type: none">• SASE Cincinnati Professional Chapter Co-Founder 2008-2011: Community service chair, Organized SASE professional community service• SASE National Officer 2008-2011: Secured P&G and GE internships for four students• UIUC SASE Advisor 2012-2015: Co-Founded UIUC SASE chapter, advised undergraduate executive board on event planning and career development	

RELEVANT SKILLS

Solidworks, Matlab, Labview, MathCad, AutoCAD, Reactor design, Reactor construction, Reactor automation, Microsoft Windows & Office, MacOs, Simulink, Dreamweaver; Language: C++, Java, and UNIX; Language: Fluent in Chinese Mandarin