

ZHEYU JIANG

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EDUCATION

Ph.D, Purdue University, Chemical Engineering 2014 – 2018
Advisors: Prof. Rakesh Agrawal and Prof. Mohit Tawarmalani

B.Ch.E with distinction, *magna cum laude*, University of Minnesota 2010 – 2014
Advisor: Prof. Michael Tsapatsis

PROFESSIONAL EXPERIENCE

Prof. Rakesh Agrawal Group, Purdue University August 2014 – October 2018
Graduate Research Assistant

- Solved a longstanding challenge in chemical engineering of developing a shortcut based method to determine the minimum reflux condition for any multi-feed, multi-product distillation column separating ideal multicomponent mixtures
- Developed an enumeration based optimization algorithm that guarantees global optimality for the first time in literature to identify optimal distillation configurations that can potentially save up to 50% of total cost or total exergy loss compared to conventional schemes
- Proposed the first systematic multi-layer approach for process intensification in multicomponent distillation, offering industrial practitioners an easy-to-follow recipe to synthesize numerous new and intensified configurations that further enhance operability, improve efficiency, and reduce total costs

The Dow Chemical Company May 2016 – August 2016
PhD Internship

- Designed new distillation configurations for several Dows processes that could save up to 10-15% in energy consumption compared to Dows current most effective technologies
- Hosted weekly meetings involving R&D, engineering, and business experts regarding potential innovation and retrofit opportunities for implementing these newly identified configurations

Prof. Michael Tsapatsis Group, University of Minnesota November 2012 – May 2014
Undergraduate Research Assistant

- For the first time, developed a solution processable method to achieve purification of sub-100 nm thin film of exfoliated MFI zeolite nanosheets based on density gradient centrifugation
- Optimized the process that prepared high performance α -alumina membrane support for MFI nanosheet coating, leading to ten-fold increase in fabrication efficiency and improved support quality
- Investigated on complete removal of structural directing agent in MFI nanosheets by acid treatment

Honeywell UOP June 2013 – August 2013
Internship

- Constructed new UniSim based simulations for UOP's Oleflex and FCC processes; and optimized their EOS models to successfully describe the VLE and LLE for all major components involved
- Established a crude oil thermodynamic properties databank for major global oil reserves

PUBLICATIONS

1. AGRAWAL, K. V., TOPUZ, B., JIANG, Z., NGUENKAM, K., ELYASSI, B., FRANCIS, L. F., TSAPATSI, M., AND NAVARRO, M. Solution-processable exfoliated zeolite nanosheets purified by density gradient centrifugation. *AIChE Journal* 59, 9 (2013), 3458–3467

2. JIANG, Z., MADENOOR RAMAPRIYA, G., TAWARMALANI, M., AND AGRAWAL, R. Minimum energy of multicomponent distillation systems using minimum additional heat and mass integration sections. *AIChE Journal* 64, 9 (2018), 3410–3418
3. JIANG, Z., MADENOOR RAMAPRIYA, G., TAWARMALANI, M., AND AGRAWAL, R. Process intensification in multicomponent distillation. *Chemical Engineering Transactions* 69 (2018)
4. JIANG, Z., AND AGRAWAL, R. Process intensification in multicomponent distillation: A review on recent advancements. (Working Paper)
5. JIANG, Z., MATHEW, T., HUFF, J., NALLASIVAM, U., TAWARMALANI, M., AND AGRAWAL, R. Global optimization of multicomponent distillation configurations: 3. global minimization of total cost for multicomponent mixture separations. (Working Paper)
6. JIANG, Z., MATHEW, T., CHEN, Z., HUFF, J., SHENVI, A., TAWARMALANI, M., AND AGRAWAL, R. Global optimization of multicomponent distillation configurations: 4. minimization of total exergy loss for multicomponent mixture separations. (Working Paper)
7. JIANG, Z., TAWARMALANI, M., AND AGRAWAL, R. An accurate minimum reflux calculation method for multi-feed, multi-product distillation columns distilling ideal multicomponent mixtures: 1. mathematical model. (Working Paper)
8. JIANG, Z., TAWARMALANI, M., AND AGRAWAL, R. An accurate minimum reflux calculation method for multi-feed, multi-product distillation columns distilling ideal multicomponent mixtures: 2. optimization model and case studies. (Working Paper)

HONORS AND AWARDS

AIChE Separations Division Graduate Student Research Award	2018
Eastman Graduate Travel Grant, Purdue University	2017
Purdue Graduate Student Government Travel Grant, Purdue University	2016
Maroon Global Excellence Scholarship, UMN	2010 – 2014
College of Science and Engineering Merit Scholarship, UMN	2012 – 2013
Charles A. Mann Award, Department of Chemical Engineering, UMN	2012 – 2013

SKILLS

Computer Languages	Java, Python
Software & Tools	L ^A T _E X, HTML, MATLAB, GAMS, Aspen Plus, Aspen Hysys, UniSim
Characterization	SEM, basic familiarity of TEM
Laboratory	Analytical and organic chemistry laboratory instruments and techniques

ACTIVITIES

First-Year Representative	2015 – 2016
<i>Purdue Chemical Engineering Graduate School Organization (GSO)</i>	
Graduate Teaching Assistant	Fall 2015
<i>CHE 378 – Heat and Mass Transfer</i>	
Graduate Teaching Assistant	Spring 2017
<i>CHE 450 – Design and Analysis of Process Systems</i>	