Lawrence Lai
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Education

Massachusetts Institute of Technology (Cambridge, MA; December 2018)

PhD in Chemical Engineering
Thesis Title: Alkylaromatic Reactions in Pyrolysis
Other Coursework

- Managerial Fiancance
- Patent Law (Harvard Law School)
- Entrepreneurship Lab
- Engineering Nanotechnology

University of Michigan, Ann Arbor (Ann Arbor, MI; December 2012)

B.S.E in Chemical Engineering
GPA: 4.0/4.0
Relevant Coursework

- Environmental and Sustainable Engineering
- Environmental Biology
- Chemical Engineering Process Economics
- Teaching Assistant for Separation Processes

Research Experience

Massachusetts Institute of Technology, Department of Chemical Engineering, PI: William H Green Lab (Fall 2013 – Present)

Research on alkylaromatic reactions in supercritical water and pyrolysis for crude oil upgrading

- Computer aided mechanism generation of alkylaromatic pyrolysis
- Quantum calculations for thermochemistry of alkylaromatic compounds and radicals.
- Quantum calculations of rates involving alkylaromatics using transition state theory.
- Experimental work on alkylaromatics using high pressure reactors with supercritical water.
- Maintenance of Gas Chromatography Instrumentation

University of Michigan – Ann Arbor, Department of Chemical Engineering, PI: Nina Lin

Research on isobutanol tolerance yielding strains of E.coli for Isobutanol, and potentially biofuel production. (Spring 2011 – Fall 2012)

- Development of multiplex automated genome engineering.
- Biologically engineering of E.coli strain JCL 260 for isobutanol production and disabling mismatch repair system.
- Genetic and phenotypic screening for isobutanol tolerant E.coli strains.

Publications

- L. Lai, S. Gudiyella, M. Liu and W. H. Green, “Chemistry of Alkylaromatics Reconsidered,” *Energy & Fuels*, **2018**, 32 (4), 5489-5500.
- S. Gudiyella, L. Lai, I. H. Borne, G. A. Tompsett, M. T. Timko and W. H. Green, "An Experimental and Modeling Study of Vacuum Residue Upgrading in Supercritical Water," *AIChE Journal*, **2018**, 64 (5).
- G. Carr, C. A. Class, L. Lai, Y. Kida, T. Monrose and W. H. Green, "Supercritical Water Treatment of Crude Oil and Hexylbenzene: An Experimental and Mechanistic Study on Alkylbenzene Decomposition," *Energy & Fuels*, 2**015**, 29 (8), 5290-5302.

Leadership Experience

Teaching Assistant, 10.26 – Chemical Engineering Lab (Spring 2016)

- Development of ultrasonic pulse detector equipment for nanoparticle size detection.
- Preparation of data analysis algorithm for students using MATLAB.
- Managing student team dynamics.

Instructional Aide, ChE 343 – Separation Processes (Fall 2012)

- Responsible for leading weekly discussions regarding to class material.
- Developed class project; aided students with questions such as design concepts and technical issues with design software Aspen.

President of MIT Sport Taekwondo (Spring 2018-Present)
President of Hong Kong Student Society of MIT (Fall 2015-Spring 2018)
Secretary of Omega Chi Epsilon, University of Michigan (Fall 2012)
Director of Social Affairs of the University of Michigan Engineering Council (Engineering Student Government) (Year 2011)

Computer Skills

- Extremely experienced with Microsoft Office.
- Experiencecd in Python, C++, MatLab, GitHub, Gaussian 03, and Aspen Plus.

Awards

Jane and Howard M. TenBroeck Scholarhip (University of Michigan Winter 2012)
James B. Angell Scholar (University of Michigan Winter 2012)
Holly P. Leighly outstanding second-year chemistry student award (Vincennes University 2010)
CRC Press Chemistry, Freshman award (Vincennes University 2009)

Language

Spoken: Fluent in Cantonese Chinese and English; intermediate in Mandarin Chinese
Written: Proficient in English and Chinese