

ALBERT TIANXIANG LIU

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EDUCATION

Anticipated May 2019	Ph.D., Chemical Engineering, Massachusetts Institute of Technology	Cum. GPA: 5.0/5.0
June 13, 2014	B.S. with honor, Chemical Engineering, California Institute of Technology	Cum. GPA: 4.0/4.0
May 20, 2013	B.A. with honor, Chemistry, Grinnell College, <i>Valedictorian</i>	Cum. GPA: 4.0/4.0

PUBLICATIONS

2014	Liu, A. T.; Seinfeld, J. H. Analytical Solution for Transient Partitioning and Reaction of a Condensing Vapor Species in a Droplet. <i>Atmospheric Environment</i> 2014 , 48, 651–654.
2014	Lai, H. W. H.; Liu, A. T. et al.; Roberts, J. D. Conformational Preferences of N,N-Dimethylsuccinamate as a Function of Alkali and Alkaline Earth Metal Salts: Experimental Studies in DMSO and Water as Determined by ¹ H-NMR Spectroscopy. <i>J. Phys. Chem. A</i> 2014 , 118, 1965–1970.
2013	Liu, A. T. et al.; Roberts, J. D. Conformational analysis of N,N,N-Trimethyl-(3,3-dimethylbutyl)ammonium iodide by NMR spectroscopy: a sterically hindered trans-standard. <i>Magn. Reson. Chem.</i> 2013 , 51(11), 701–704.
2013	Liu, A. T. et al.; Roberts, J. D. Conformational Equilibria of N,N-Dimethylsuccinamic Acid and Its Lithium Salt as a Function of Solvent. <i>Org. Lett.</i> 2013 , 15(4), 760–763.
2013	Emenike, B. U.; Liu, A. T. et al.; Roberts, J. D. Substituent Effects on Energetics of Peptide-Carboxylate Hydrogen Bonds as Studied by ¹ H NMR Spectroscopy: Implications for Enzyme Catalysis. <i>J. Org. Chem.</i> 2013 , 78(23), 11765–11771.

PATENTS

2014	Liu, A. T.; Davis, T. M.; Lew, C. M.; Xie, D.; Elomari, S. A.; Deem, M. Method For Preparing Zeolite SSZ-52. <i>US Patent Application No. 14/480837.</i>
2014	Liu, A. T.; Davis, T. M.; Lew, C. M.; Xie, D.; Elomari, S. A.; Deem, M. Method For Preparing Zeolite SSZ-52 Using Pyrrolidinium Cations. <i>US Patent Application No. 62/047775.</i>
2014	Liu, A. T.; Davis, T. M.; Lew, C. M.; Xie, D.; Elomari, S. A.; Deem, M. Method For Preparing Zeolite SSZ-52 Using Computationally Predicted Structure Directing Agents. <i>US Patent Application No. 62/047777.</i>

PROFESSIONAL EXPERIENCE

Facilities Engineer Intern, Chevron Energy Technology Company, Chevron U.S.A. Inc. (06/2014–09/2014)

- Invented new technology to synthesize zeolite SSZ-52 (awarded 3 first-author patents)
- Work closely with experienced chemists and participate in our group idea generation process
- Responsibilities encompass both organic synthesis (zeolite templates) as well as inorganic zeolite preparations

Teaching/Laboratory Assistant

- Chemical Reaction Engineering (Prof. Frances H. Arnold, California Institute of Technology)
- Separation Processes (Prof. John H. Seinfeld, California Institute of Technology)
- Organic Chemistry Series (Prof. Stephen R. Sieck, Prof. Andrew Mobley, Grinnell College)
- Classical Mechanics (Prof. Sujeev Wickramasekara, Grinnell College)
- Organic Chemistry Laboratory (Prof. James G. Lindberg, Grinnell College)

Chemistry Students Educational Policy Committee, Grinnell College

- Elected by students for a two-year position to participate in faculty reviews, faculty hiring and promotions, extracurricular events, and faculty-student communications for the chemistry department

RESEARCH EXPERIENCE

Dr. Gregory C. Fu, California Institute of Technology (06/2012–10/2012, 06/2013–10/2013, 01/2014–06/2014)

- ♦ Chemical Catalysis, Synthetic Organic Chemistry, Methodology Development

- Asymmetric Ni-Catalyzed Borylation of Propargylic Halides
- Asymmetric Ni-Catalyzed Reduction of α -Halo Amides
- Asymmetric Ni-Catalyzed Alkylation of α -Halo Boronic Esters

Dr. John H. Seinfeld, California Institute of Technology (10/2012–06/2013)

- ♦ Chemical Engineering, Applied Mathematics, Mathematical Modeling
- ♦ Analytical Solution for Transient Uptake and Diffusion and Reaction of a Solute in an Atmospheric Droplet

Dr. John D. Roberts, California Institute of Technology (06/2011–09/2011, 12/2011–02/2012, 10/2013–01/2014)

- ♦ Physical Organic Chemistry, NMR Spectroscopy, Conformational Analysis
- ♦ Conformational analysis of N,N,N-Trimethyl-(3,3-dimethylbutyl)ammonium iodide
- ♦ Conformational Equilibria of N,N-Dimethylsuccinamic Acid and Its Lithium Salt as a Function of Solvent
- ♦ Substituent Effects on Energetics of Peptide-Carboxylate Hydrogen Bonds

Dr. Stephen R. Sieck, Grinnell College (01/2012–05/2012)

- ♦ Organic Synthesis, Cross-Metathesis, Microwave Reactions
- ♦ Oxime Cross-Metathesis towards Nitrones

Dr. Heriberto Hernandez-Soto, Grinnell College (05/2009–05/2011)

- ♦ Physical Chemistry, Computational Chemistry
- ♦ Computational Study of the Decomposition of NO₂ and N₂O gases on Cu-Al and Fe-Al Modified Zeolite Catalysts

AWARDS AND HONORS

2014	Presidential Graduate Fellow , Massachusetts Institute of Technology
2014	Gordon Wu Fellow , Princeton University
2014	Merck Index Award , California Institute of Technology, sponsored by Merck & Co., Inc.
2014	Tau Beta Pi Fellow , California Beta
2013	Jack E. Froehlich Memorial Award , California Institute of Technology
2013	David S. Koons Research Fellow , California Institute of Technology
2013	Don Shepard Award , California Institute of Technology
2013	Andrew W. Archibald Prize for Highest Scholarship, President Medal (Valedictorian) , Grinnell College
2013	Chemistry Alumni Award , Department of Chemistry, Grinnell College
2013	Phi Beta Kappa Scholar
2011	ACS Polymer Chemistry Award , Polymer Education Committee, American Chemical Society
2011–13	Summer Undergraduate Research Fellowship , California Institute of Technology
2011	Snyder Scholarship , University of Illinois at Urbana-Champaign
2010	Mentored Advanced Project Fellowship , Grinnell College
2010	Silver Medal , Grinnell College Team, Iowa Collegiate Mathematics Competition
2009	Neil Klausner Award , Grinnell College
2009–12	Dean's List , Grinnell College
2003	Silver Medal , Chinese National Olympiad of Mathematics

OTHER EXPERIENCE AND AWARDS

2011	Violinist • Recital at Sebring-Lewis Hall, Bucksbaum Center of Fine Arts
2010	Student Advisor • Hannibal Kershaw Residence Hall, Grinnell College
2010	Volunteer (Rebuild houses for those suffered from the flood) • Nashville Volunteer Center, Nashville, TN
2009	Medical Intern (Shadowed Dr. McCaw performing clinical diagnosis and three surgeries) • Supervisor: Guy McCaw, M.D., Grinnell Regional Medical Centre, Grinnell, IA
2009	Champion • Men's Single, Collegiate Table-Tennis Tournament, Grinnell College
2006–09	Gold Medals • Men's 1500m track (for 5 consecutive seasons), Nanjing Foreign Language School
2004	Host • Nanjing Foreign Language School 2004 Art Festival
1999	Level 10 (Highest Level) in Erhu Performance • Chinese Academy of Music

OTHER SKILLS

Computational Chemistry: proficient in Gaussian 03 and 09 suites of programs.

Engineering Software: proficient in Solid works.

Languages: Chinese (native), English (native), French (basic).

Computer: expert in Microsoft Word, Excel, and PowerPoint, proficient in Matlab and Mathematica.