Rajasi Shukre

Ph.D. Candidate
Chemical Engineering
Texas Tech University
✉ *rajasi.shukre@ttu.edu*
in *rajasishukre*

To understand and develop intensified process technologies for the manufacture of novel materials via experiments and computations.

Research Interests

- Molecular Simulations
- Metal Organic Frameworks
- Biomass Pyrolysis
- Gas Adsorption
- Continuous Crystallization
- Physical Characterization

Education

2016–Present **Ph.D. (Chemical Engineering)**.
Maddox Engineering Research Centre, Texas Tech University

2010–2014 **B.Tech (Chemical Engineering)**.
Laxminarayan Institute of Technology, India.

Professional Positions

2017 – Present **Ph.D. Candidate**, *Texas Tech University*,
Advisor: Dr. Chau-Chyun Chen,
Co-Advisors: Dr. Siva Vanapalli and **Dr. Rajesh Khare**
Thesis title: *Synthesis of metal organic frameworks and understanding the thermodynamics of gas adsorption in such materials using molecular simulations* .

June – Aug 2021 **Summer Intern**, *RAPID Manufacturing Institute.*
- Molecular Simulations of Gas Adsorption Equilibria
- Modular Chemical Process Intensification

2014 – 2016 **Process Engineer**, *Fluor Corp.*
- Process Design of Fuel Gas Caustic Scrubber Unit in "Rotterdam Advanced Hydrocracker Project" of Exxon Mobil (Esso Nederland, B.V.)
- Development of Piping and Instrumentation Diagrams (P&ID).
- HAZOP Study and Pressure Relief Valve Contingency Analysis.
- Co-ordination of multidisciplinary P&ID review meetings to notify Exxon Mobil of weekly updates.
- Review of vendor documents of Equipment.
- Hydraulic calculations of Control Valves in Sulfur Recovery Unit in "Clean Fuels Project" of Kuwait National Petroleum Company

June – Aug 2013 **Summer Intern**, *Techint Corporation, India.*
- Heat Exchanger Design
- Pipeline insulation

Technical Skills

- **Computational**
  Languages: C, C++, MATLAB, Python, LaTeX
  Softwares: Aspen Properties, Aspen Plus, Aspen Hysys
  Packages: RASPA, LAMMPS
- **Experimental**
  Material Characterization: SEM, BET, FTIR, PXRD
  Material Synthesis: Millifluidics, Batch Synthesis
- **Other Tools**
  Visualization: VMD, OVITO
  Others: Fusion 360, 3D Printing

Teaching Experience

Spring 2019 **Transport Lab**, ChE 3232, *Hosted Lab Sessions, graded performance of students during the sessions.*

Fall 2018 **Introduction to Chemical Processes and Engineering**, ChE 2410, *Graded assignments, hosted discussion sessions and office hours.*

Publications

To access the updated list of my work, please visit **my google scholar page**.

[1] **Rajasi Shukre**, Thomas Ericson, Daniel Unruh, Hannah Harbin, Sheima Khatib, Anthony Cozzolino, Siva Vanapalli and Chau-Chyun Chen. "Continuous Synthesis of HKUST−1 in a millifluidic reactor". In: *(In preparation)* (2021).

[2] **Rajasi Shukre**, Rajesh Khare and Chau-Chyun Chen. "Estimation of binary interaction parameters of the aNRTL model using molecular simulations". In: *(In preparation)* (2021).

[3] Gorensek, Maximilian B, **Shukre, Rajasi**, and Chen, Chau-Chyun. "Development of a thermophysical properties model for flowsheet simulation of biomass pyrolysis processes". In: *ACS Sustainable Chemistry & Engineering* 7.9 (2019), pp. 9017–9027.

Awards

2021 **Graduate School Travel Fund Scholarship**, *Texas Tech University.*

2020 **Society of Plastics Engineers Scholarship**, *Texas Tech University Chapter.*

2020-2021 **Study Abroad Competitive Scholarship**, *Texas Tech University.*

2015 **Recognition certificate for Front-End Engineering Deliverables**, *Exxon Mobil.*

Contributed Conference Presentations

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[1] **Rajasi Shukre**, Thomas Ericson, Daniel Unruh, Hannah Harbin, Sheima Khatib, Anthony Cozzolino, Siva Vanapalli and Chau-Chyun Chen. "Estimation of binary interaction parameters of the aNRTL model using molecular simulations (*Poster*)". In: *AICHE Fall Annual Meeting* (2021).

[2] **Rajasi Shukre**, Rajesh Khare and Chau-Chyun Chen. "Estimation of binary interaction parameters of the aNRTL model using molecular simulations (*Poster*)". In: *AICHE Fall Annual Meeting* (2021).

[3] Ban Caudle, **Rajasi Shukre** and Chau-Chyun Chen. "Modeling and Metrics Development for Biomass Pyrolysis Intensification Via Autothermal Operation". In: *AICHE Spring Meeting and 15th Global Congress on Process Safety* (2019).

[4] **Rajasi, Shukre** and Chau-Chyun Chen. "Thermodynamic Modeling of CO_2 Absorption in Aqueous Amino Acid Salt Solutions with Symmetric Electrolyte NRTL Model". In: *AIChE Annual Meeting* (2018).

References

Dr. Chau-Chyun Chen, *chauchyun.chen@ttu.edu*.

Dr. Rajesh Khare, *rajesh.khare@ttu.edu*.

Dr. Siva Vanapalli, *siva.vanapalli@ttu.edu*.