

Dinesh Sundaravadivelu Devarajan

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TECHNICAL SKILLS & COURSES

- Programming and Scripting Languages: Python, C++, and Bash
- Numerical Software: MATLAB
- Computational Research, Molecular Modeling, Statistics, and Machine Learning Techniques
- Simulation Techniques: Coarse-grained and Atomistic Molecular Dynamics, and Monte-Carlo
- Software Packages: LAMMPS, GROMACS, VMD, ChemDraw Bio3D, and AMBER
- Certification Courses: Machine Learning (Coursera) and Machine Learning A-Z™: Hands-On Python & R In Data Science (Udemy)

EDUCATION

Ph.D., Chemical Engineering <i>GPA: 3.91/4.00</i>	Texas Tech University, USA	Aug 2020
M.S., Chemical Engineering <i>GPA: 3.84/4.00</i>	Texas Tech University, USA	Aug 2019
B.Tech., Chemical Engineering <i>GPA: 8.53/10.00 (First Class with Distinction)</i>	Anna University, India	May 2015

RESEARCH EXPERIENCE

Graduate Research Assistant Aug 2015 – Aug 2020
[Texas Tech University, USA](#)

Thesis: Molecular Investigations of Nanocolloid Rheology

Advisor: Dr. Rajesh Khare

- Developed C++ routines to build polymer and nanocolloidal models for investigating their molecular behavior.
- Developed automated protocols using MATLAB and bash scripting for performing large volumes of simulations (via HPC systems), data analysis, and data visualization
- Led collaborations with experimentalists to develop in silico selection of cosolvents for boron nitride nanosheet (BNNS) exfoliation and dispersion that has applications in material processing for lithium-ion batteries
- Implemented MATLAB and C++ routines to analyze the simulated nanoparticle motion in polymer and colloidal systems that has direct use in designing drug delivery vehicles
- Implemented C++ routines to investigate molecular mobility in atomistic cross-linked epoxy systems upon deformation with a focus on molecular mechanisms underlying mechanical properties and material failure

Research Intern Jun 2015 – Jul 2015
[University of Pittsburgh, USA](#)

Advisor: Dr. John A. Keith

- Investigated efficient CO₂ reduction methods that have applications in renewable energy catalysis

PROFESSIONAL EXPERIENCE

Lecturer

Sep 2020 – Present

Edward E. Whitacre Jr. College of Engineering, Texas Tech University, USA

- Conducting lecture and lab sessions for ~200 undergraduate students from Chemical Engineering, Petroleum Engineering, and other Engineering majors on how to handle, interpret, and analyze engineering data and get useful information out of it by employing computational thinking, statistical, and data science techniques

Teaching Assistant

Aug 2015 – Dec 2016

Texas Tech University, USA

- Fluid Transport Principles and Analysis (Graduate): Conducted lectures and discussions on fluid mechanics
- Engineering Experimentation (Undergraduate): Conducted lectures on statistics and graded the exams

SCIENTIFIC PUBLICATIONS (* INDICATES CO-FIRST AUTHORS)

- Sundaravadivelu Devarajan, D.; Khare, R.; "Linear viscoelasticity of nanocolloidal suspensions from probe rheology molecular simulations", in preparation (2021)
- Sundaravadivelu Devarajan, D.*; Islam, R.*; Khare, R.; "Probing local viscoelasticity of complex fluids using molecular simulations", in preparation (2021)
- Sundaravadivelu Devarajan, D.; Nourian, P.; McKenna, G.B.; Khare, R.; "Molecular simulation of nanocolloid rheology: Viscosity, viscoelasticity, and time-concentration superposition", *J. Rheology*, **64**, 529-543 (2020)
- Khare, R.; Sundaravadivelu Devarajan, D.; "Molecular simulations of nanocolloids", *Current Opinion in Chemical Engineering*, **16**, 86-91 (2017)
- Habib, T.; Sundaravadivelu Devarajan, D.; Khabaz, F.; Parviz, D.; Achee, T. C.; Khare, R.; Green, M. J.; "Cosolvents as liquid surfactants for boron nitride nanosheet (BNNS) dispersions", *Langmuir*, **32**, 11591-11599 (2016)

SELECTED CONFERENCE PRESENTATIONS

- Sundaravadivelu Devarajan, D.; McKenna, G.B.; Khare, R.; "Viscoelasticity and the validity of time-concentration superposition in nanocolloidal suspensions", AIChE Annual Meeting, Orlando, FL, Nov 2019
- Sundaravadivelu Devarajan, D.; Khare, R.; "Deciphering nanocolloid suspension rheology from passive probe rheology simulations", Society of Rheology Meeting, Raleigh, NC, Oct 2019

HONORS/AWARDS & LEADERSHIP

- Featured article on nanocolloid rheology in the *Journal of Rheology* (Mar 2020)
- Recipient of Best Research Article Award by The Society of Plastics Engineers (SPE), Texas Tech Chapter (Feb 2020)
- Recipient of Mark Demark scholarship for an outstanding academic record as a graduate student (Nov 2018)
- *President of Chemical Engineering Graduate Student Association (ChEGSA), TTU* (Aug 2017 – Jul 2018): Awarded with a certificate of appreciation for outstanding commitment and dedication. Initiated and organized a new student seminar activity for the graduate students to present their research works. Conducted the Annual Graduate Student Research Fair; for the first time, winners were awarded cash prizes worth \$500. Funding for the organization increased when compared to the previous annual years.