Dinesh Sundaravadivelu Devarajan

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EDUCATION

Ph.D., Chemical Engineering **Texas Tech University, USA** Expected Graduation: Aug 2020
GPA: 3.84/4.00

M.S., Chemical Engineering **Texas Tech University, USA** Aug 2019
GPA: 3.84/4.00

B.Tech., Chemical Engineering **Anna University, India** May 2015
GPA: 8.53/10.00 (First Class with Distinction)

RESEARCH EXPERIENCE

Graduate Research Assistant Aug 2015 - Present
Texas Tech University, USA
Thesis: Molecular Investigations of Nanocolloid Rheology
Advisor: Dr. Rajesh Khare

- In silico selection of cosolvents for boron nitride nanosheet (BNNS) exfoliation and dispersion that has applications in material processing for lithium-ion batteries
- Developed a probe rheology simulation technique to predict nanoparticle motion in polymer and colloidal systems that has direct use in designing drug delivery vehicles
- Investigated the enhancement of mobility in cross-linked epoxy systems upon deformation with a focus on molecular mechanisms underlying mechanical properties and material failure

Research Intern May - Jul 2015
University of Pittsburgh, USA
Advisor: Dr. John A. Keith

- Identified efficient CO_2 reduction methods that has application in renewable energy catalysis

PROFESSIONAL EXPERIENCE

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 exam scripts

Engineering Intern
Orchid Chemicals & Pharmaceuticals Ltd., India Jun 2013

- Exposure to the design and working principles of atmospheric and vacuum distillation units

TECHNICAL SKILLS

- Programming and Scripting Languages: C++, Python, and Shell Scripting
- Numerical Software: MATLAB
- Machine Learning: Supervised Learning - Linear Regression, Logistic Regression, Neural Networks, and SVM
- Simulation Techniques: Molecular Dynamics and Monte-Carlo
- Software Packages: LAMMPS, GROMACS, VMD, ChemDraw Bio3D, and AMBER
- Strong Knowledge of Polymer Physics, Colloid Science, and Structure-Property Relationships

JOURNAL PUBLICATIONS

- Sundaravadivelu Devarajan, D.; Khare, R.; "Linear viscoelasticity of nanocolloidal suspensions from probe rheology molecular simulations", in preparation (2020).
- Nourian, P.; Ethier, J.; Sundaravadivelu Devarajan, D.; Islam, R.; Schieber, J.D.; Khare, R.; "Determination of the low frequency viscoelastic modulus of heavily entangled polymer melts", in preparation (2020).
- 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.
- Sundaravadivelu Devarajan, D.; McKenna, G.B.; Khare, R.; "Linear Viscoelasticity of Colloidal Suspensions from Probe Rheology Simulations: Application to Nanoscopic Systems", Society of Rheology Meeting, Denver, CO, Oct 2018.

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 – July 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.
- Recipient of Dean's scholarship, TTU (Aug 2015 - Present)