

Rajesh Khare

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Education

B.S., Chemical Engineering, Institute of Chemical Technology (formerly UDCT), Mumbai, India (1989).

Ph.D., Chemical Engineering (Advisor: Michael Paulaitis), University of Delaware (1994).

Post-Doctoral (with Juan de Pablo and Arun Yethiraj), Department of Chemical Engineering and Department of Chemistry, University of Wisconsin-Madison (1995-1997).

Professional Experience

Professor, Department of Chemical Engineering, Texas Tech University (09/2016 – present)

Associate Professor, Department of Chemical Engr., Texas Tech University (09/2010 – 08/2016)

Assistant Professor, Department of Chemical Engineering, Texas Tech University (09/2005 – 08/2010)

Visiting Senior Scientist, Dept. of Chemical Engr., University of Wisconsin-Madison (09/04 – 08/05)

Adjunct Professor, Physics Department, San Diego State University (01/2004 – 08/2004)

Manager, Materials Science Modeling R&D-San Diego, Accelrys Inc. (2002–01/2004)

Manager, Atomistic Polymer R&D, Accelrys Inc., San Diego (2000–2002)

Product Development Scientist, Polymers, Accelrys Inc., San Diego (1997-2000)

Associate Lecturer, Department of Chemical Engineering, University of Wisconsin-Madison (1996), concurrent with the post-doc position.

Honors and Awards

George T. and Gladys Abell-Hanger Faculty Award, College of Engineering, Texas Tech University (2013).

Ed and Linda Whitacre Faculty Fellow, College of Engineering, Texas Tech University (2009-2012).

3M Non-tenured Faculty Award (2005, 2006, 2007).

National Talent Search (Science) Scholarship, Government of India (1983-1989).

Professional Societies

American Institute of Chemical Engineers (AIChE)

American Chemical Society (ACS)

American Physical Society (APS)

Society of Rheology (SOR)

RESEARCH ACTIVITIES

Publications

h-index: **23** (Google Scholar), **19** (Web of Science)

Refereed Book Chapters

(52) Muthukumar, L.; Khare R.; “Molecular dynamics simulation of free energy of desorption of celohexaose from a cellulose crystal surface” in *Applications of Molecular Modeling to Challenges in Clean Energy*, ACS Symposium Series (ACS Books), Eds.: G. Fitzgerald and N. Govind, Vol. 1133, pp. 1-17 (2013). **DOI:** 10.1021/bk-2013-1133.ch001.

(51) Eichinger, B. E.; Khare, R.; “Molecular Modeling” in *Encyclopedia of Polymer Science and Technology*, Wiley Interscience (2002), available online at <http://www.mrw.interscience.wiley.com/epst/articles/pst205/frame.html>.

Refereed Journal Articles

Submitted:

(50) Khabaz, F.; Khare, R.; “Molecular simulations of asphalt rheology: Application of time-temperature superposition principle”, submitted.

(49) Mani, S.; Khare, R.; “Effect of chain flexibility and interlayer interactions on the dynamics of layered polymer systems”, submitted.

(48) Ravichandran, A.; Khare, R.; Chen, C.-C.; “Predicting NRTL binary interaction parameters from molecular simulations”, submitted.

(47) Dehghani, N. L.; Khare, R.; Christopher, G. F.; “A 2D Stokesian approach to modeling flow induced deformation of particle laden interfaces”, submitted.

Published:

(46) Godbole, R.; Khabaz, F.; Khare, R.; Hedden, R. C.; “Swelling of random copolymer networks in pure and mixed solvents: Multi-component Flory-Rehner theory”, *J. Phys. Chem. B* (2017). Accepted version (ASAP Article) published online. **DOI:** 10.1021/acs.jpcc.7b02194.

(45) Khare, R.; Devarajan, D. S.; “Molecular simulations of nanocolloids”, *Current Opinion in Chemical Engineering*, **16**, 86-91 (2017).

(44) Habib, T.; Devarajan, D. S.; Khabaz, F.; Parviz, D.; Achee, T. C.; Khare, R.; Green, M. J.; “Co-solvents as liquid surfactants for boron nitride nanosheet (BNNS) dispersions”, *Langmuir*, **32**, 11591–11599 (2016).

- (43) Khabaz, F.; Mani, S.; Khare, R.; “Molecular origins of dynamic coupling between water and hydrated polyacrylate gels”, *Macromolecules*, **49**, 7551-7562 (2016).
- (42) Sirk, T. W.; Karim, M.; Lenhart, J. L.; Andzelm, J. W.; Khare, R.; “Bi-modal polymer networks: Viscoelasticity and mechanics from molecular dynamics simulation”, *Polymer*, **90**, 178–186 (2016).
- (41) Karim, M.; Indei, T.; Schieber, J. D.; Khare, R.; “Determination of linear viscoelastic properties of an entangled polymer melt by probe rheology simulations”, *Phys. Rev. E.*, **93**, 012501 (2016).
- (40) Mani, S.; Khabaz, F.; Godbole, R. V.; Hedden, R. C.; Khare, R.; “Structure and hydrogen bonding of water in polyacrylate gels: Effects of polymer hydrophilicity and water concentration”, *J. Phys. Chem. B.*, **119**, 15381-15393 (2015).
- (39) Zhang, Y.; Xue, L.; Khabaz, F.; Doerfler, R.; Quitevis, E. L.; Khare, R.; Maginn, E. J.; “Molecular topology and local dynamics govern the viscosity of imidazolium-based ionic liquids”, *J. Phys. Chem. B.*, **119**, 14934-14944 (2015).
- (38) Khabaz, F.; Khare, R.; “Glass transition and molecular mobility in styrene-butadiene rubber modified asphalt”, *J. Phys. Chem. B.*, **119**, 14261-14269 (2015).
- (37) Bari, R.; Parviz, D.; Khabaz, F.; Klaassen, C. D.; Metzler, S. D.; Hansen, M. J.; Khare, R.; Green, M. J.; “Liquid phase exfoliation and crumpling of inorganic nanosheets”, *Physical Chemistry Chemical Physics*, **17**, 9383-9393 (2015).
- (36) Sirk, T. W.; Karim, M.; Khare, K. S.; Lenhart, J. L.; Andzelm, J. W.; Khare, R.; “Bi-modal polymer networks: Composition-dependent trends in thermal, volumetric and structural properties from molecular dynamics simulation”, *Polymer*, **58**, 199–208 (2015).
- (35) Khabaz, F.; Khare, R.; “Effect of chain architecture on the size, shape, and intrinsic viscosity of chains in polymer solutions: A molecular simulation study”, *J. Chem. Phys.*, **141**, 214904 (2014).
- (34) Khare, K. S.; Khabaz, F.; Khare, R.; “Effect of carbon nanotube functionalization on mechanical and thermal properties of cross-linked epoxy–carbon nanotube nanocomposites: Role of strengthening the interfacial interactions”, *ACS Applied Materials & Interfaces.*, **6**, 6098-6110 (2014).
- (33) Sirk, T. W.; Khare, K. S.; Karim, M.; Lenhart, J. L.; Andzelm, J. W.; McKenna, G. B.; Khare, R.; “High strain rate mechanical properties of a cross-linked epoxy across the glass transition”, *Polymer*, **54**, 7048-7057 (2013).
- (32) Khare, K.; Khare, R.; “Effect of carbon nanotube dispersion on glass transition in cross-linked epoxy – carbon nanotube nanocomposites: Role of interfacial interactions”, *J. Phys. Chem. B.*, **117**, 7444-7454 (2013).
- (31) Karim, M.; Kohale, S. C.; Indei, T.; Schieber, J. D.; Khare, R.; “Determination of viscoelastic properties by analysis of probe particle motion in molecular simulations”, *Phys. Rev. E.*, **86**, 051501 (2012).

- (30) Peri, S.; Karim, Muthukumar, L.; Karim, M. N.; Khare R.; “Dynamics of cello-oligosaccharides on a cellulose crystal surface”, *Cellulose*, **19**, 1791-1806 (2012).
- (29) Khare, K.; Khare, R.; "Directed diffusion approach for preparing atomistic models of cross-linked epoxy for use in molecular simulations", *Macromolecular Theory and Simulations*, **21**, 322-327 (2012).
- (28) Soni, N.; Lin, P.-H.; Khare R.; “Effect of cross-linker length on the thermal and volumetric properties of cross-linked epoxy networks: A molecular simulation study”, *Polymer*, **53**, 1015-1019 (2012).
- (27) Hegde, G.; Chang, J.-F.; Chen, Y.-L.; Khare, R.; “Conformation and diffusion behavior of ring polymers in solution: A comparison between molecular dynamics, multiparticle collision dynamics and lattice Boltzmann simulations”, *J. Chem. Phys.*, **135**, 184901 (2011).
- (26) Lin, P.-H.; Kohale S. C.; Khare, R.; "Effect of nanoconfinement on kinetics of cross-linking reactions: A molecular simulation study", *J. Phys. Chem. B*, **115**, 12348–12355 (2011).
- (25) Peri, S.; Karim, M. N.; Khare R.; “Potential of mean force for separation of the repeating units in cellulose and hemicellulose”, *Carbohydrate Research*, **346**, 867-871 (2011).
- (24) Lin, P.-H.; Khare, R.; "Glass transition and structural properties of glycidylxypropyl-heptaphenyl polyhedral oligomeric silsesquioxane-epoxy nanocomposites: A molecular simulation study", *Journal of Thermal Analysis and Calorimetry*, **102**, 461-467 (2010).
- (23) Lin, P.-H.; Khare, R.; "Local chain dynamics and dynamic heterogeneity in cross-linked epoxy in the vicinity of glass transition", *Macromolecules*, **43**, 6505-6510 (2010).
- (22) Kohale S. C.; Khare R.; “Molecular dynamics simulation study of friction force and torque on a rough spherical particle”, *J. Chem. Phys.*, **132**, 234706 (2010).
- (21) Lin, P.-H.; Khare, R.; “Molecular simulation of crosslinked epoxy and epoxy-POSS nanocomposite”, *Macromolecules*, **42**, 4319-4327 (2009).
- (20) Kohale, S.; Khare, R.; “Cross-stream chain migration in nanofluidic channels: Effects of chain length, channel height and chain concentration”, *J. Chem. Phys.*, **130**, 104904 (2009). *Also selected for Virtual Journal of Biological Physics Research (March 15, 2009 issue).*
- (19) Kohale, S.; Khare, R.; “Molecular simulation of cooperative hydrodynamic effects in motion of a periodic array of spheres between parallel walls”, *J. Chem. Phys.*, **129**, 164706 (2008).
- (18) Alexiadis, O.; Mavrantzas, V.; Khare, R.; Beckers, J.; Baljon, A.; “End-bridging Monte Carlo simulation of bulk and grafted amorphous polyethylene above and below the glass transition”, *Macromolecules*, **41**, 987-996 (2008).

- (17) Lin, P.-H.; Khare, R.; Weeks, B. L.; Gee, R. H.; “Molecular modeling of diffusion on a crystalline pentaerythritol tetranitrate surface”, *Appl. Phys. Lett.*, **91**, 104107 (2007).
- (16) Kohale, S.; Molina, S. M.; Weeks, B. L.; Khare, R.; Hope-Weeks, L. J.; “Monitoring the formation of self-assembled monolayers of alkanedithiols using a micromechanical cantilever sensor”, *Langmuir*, **23**, 1258-1263 (2007).
- (15) Khare, R.; Koblinski, P.; Yethiraj, A.; “Molecular dynamics simulations of heat and momentum transfer at a solid-fluid interface: Relationship between thermal and velocity slip”, *International Journal of Heat and Mass Transfer*, **49**, 3401-3407 (2006).
- (14) Khare, R.; Graham, M. D.; de Pablo, J. J.; “Cross-stream migration of flexible molecules in a nanochannel”, *Phys. Rev. Lett.*, **96**, 224505 (2006).
- (13) Baljon, A. R. C.; Van Weert, M. H. M.; DeGraff, R. B.; Khare, R.; “Glass transition behavior of polymer films of nanoscopic dimensions”, *Macromolecules*, **38**, 2391-2399 (2005).
- (12) Baljon, A. R. C.; Billen, J.; Khare, R.; “Percolation of immobile domains in supercooled thin polymeric films”, *Phys. Rev. Lett.*, **93**, 255701 (2004).
- (11) Khare, R.; Sum, A. K.; Nath, S. K.; de Pablo, J. J.; “Simulation of vapor-liquid phase equilibria of primary alcohols and alcohol-alkane mixtures”, *J. Phys. Chem. B*, **108**, 10071-10076 (2004).
- (10) Nath, S. K.; Khare, R.; “New forcefield parameters for branched hydrocarbons”, *J. Chem. Phys.*, **115**, 10837-10844 (2001).
- (9) Khare, R.; de Pablo, J. J.; Yethiraj, A.; “Molecular simulation and continuum mechanics investigation of viscoelastic properties of fluids confined to molecularly thin films”, *J. Chem. Phys.*, **114**, 7593-7601 (2001).
- (8) Garde, S.; Khare, R.; Hummer, G.; “Microscopic density fluctuations and solvation in polymeric fluids”, *J. Chem. Phys.*, **112**, 1574-1578 (2000).
- (7) Khare, R.; de Pablo, J. J.; Yethiraj, A.; “Rheological, thermodynamic and structural studies of linear and branched alkanes under shear”, *J. Chem. Phys.*, **107**, 6956-6964 (1997).
- (6) Khare, R.; de Pablo, J. J.; Yethiraj, A.; “Molecular simulation and continuum mechanics study of non-isothermal planar Couette flows”, *J. Chem. Phys.*, **107**, 2589-2596 (1997).
- (5) Xu, Z.; Khare, R.; de Pablo, J. J.; Kim, S.; “On the calculation of transport properties of polymer melts from nonequilibrium molecular dynamics”, *J. Chem. Phys.*, **106**, 8285-8286 (1997).
- (4) Khare, R.; de Pablo, J. J.; Yethiraj, A.; “Rheology of confined polymer melts”, *Macromolecules*, **29**, 7910-7918 (1996).

- (3) Khare, R.; Paulaitis, M. E.; “A study of cooperative phenyl ring flip motions in glassy polystyrene by molecular simulations”, *Macromolecules*, **28**, 4495-4504 (1995).
- (2) Khare, R.; Paulaitis, M. E.; “Molecular simulations of cooperative ring flip motions in single chains of polystyrene”, *Chem. Eng. Sci.*, **49**, 2867-2879 (1994).
- (1) Khare, R.; Paulaitis, M. E.; Lustig, S. R.; “Generation of glass structures for molecular simulations of polymers containing large monomer units: Application to polystyrene”, *Macromolecules*, **26**, 7203-7209 (1993).

Conference Proceedings and Other Articles

- (8) Fardin Khabaz, Ketan S. Khare and Rajesh Khare, “Temperature dependence of creep compliance of highly cross-linked epoxy: A molecular simulation study”, *AIP Conference Proceedings*, **1599**, 262-265 (2014).
- (7) Swapnil C. Kohale and Rajesh Khare, “Molecular Hydrodynamics in Nanoparticle Suspensions”, *Proceedings of The XVth International Congress on Rheology and The Society of Rheology 80th Annual Meeting*, CP 1027, American Institute of Physics, 644-646 (2008).
- (6) Swapnil C. Kohale and Rajesh Khare, “Shear Induced Chain Migration in Flowing Polymeric Solutions: A Molecular Dynamics Study”, *Proceedings of The XVth International Congress on Rheology and The Society of Rheology 80th Annual Meeting*, CP 1027, American Institute of Physics, 558-560 (2008).
- (5) Khare, R.; “Microscopic mechanisms of cross-stream migration of chain molecules in nanochannels”, *Polymeric Materials Science and Engineering Preprints*, **231**, 507 (2006).
- (4) Garde, S.; Hummer, G.; Khare, R.; “Effect of chain length on microscopic density fluctuations and solvation in polymeric fluids”, *Polymeric Materials Science and Engineering Preprints*, **85**, 449 (2001).
- (3) Khare, R.; de Pablo, J. J.; Yethiraj, A.; “Dynamics of polymers confined to molecularly thin films”, *Polymeric Materials Science and Engineering Preprints*, **77**, 642 (1997).
- (2) Khare, R.; Paulaitis, M. E.; “Molecular simulations of phenyl ring flip motion in glassy polystyrene”, *Polymer Preprints*, **36**, 655 (April 1995).
- (1) Khare, R.; Lazaridis, T.; Paulaitis, M. E.; “An internal coordinate approach to reaction path determinations for conformational transitions in polymers”, *Chemical Design Automation News*, **8**, 1 (August 1993).

Invited Lectures

- (31) “Glass transition in layered polymeric systems: Role of the interphase”, 8th International Discussion Meeting on Relaxations in Complex Systems (8 IDMRCS), Wisla, Poland (July 2017).
- (30) “Dynamics of solvent molecules in polyacrylate gels supported on a polymeric substrate”, ACS National Meeting, San Francisco, CA (April 2017).
- (29) “Interaction of flow and chemistry: Insights from molecular simulations”, SMART FLOW 2017 Workshop on Flow Problems in Oil & Gas Industry, Houston, TX (February 2017).
- (28) “Properties of cross-linked polymers: Insights from molecular simulations”, School of Polymers and High Performance Materials, The University of Southern Mississippi, Hattiesburg, MS (January 2017).
- (27) “Molecular simulations of dynamics in glassy soft matter systems”, ACS Southwest Regional Meeting (SWRM), Galveston, TX (October 2016).
- (26) “Design of polymeric pervaporation membranes for energy efficient separation of alcohol-water mixtures”, Polymer Composites and High Performance Materials Workshop, ACS Division of Polymer Chemistry, Santa Rosa, CA (July 2016).
- (25) “Guidance for the design of pervaporation membranes from molecular simulations and experiments”, ACS National Meeting, San Diego, CA (March 2016).
- (24) “Mechanical and thermal properties of polymers: Insights from atomistic simulations”, School for Engineering of Matter, Transport and Energy, Arizona State University, Tempe, AZ (January 2015).
- (23) “Mechanical and thermal properties of polymer nanocomposites: Insights from atomistic simulations”, National Institute of Standards and Technology (NIST), Gaithersburg, MD (January 2015).
- (22) “Importance of Matrix –Filler Interactions in Cross-linked Epoxy-Carbon Nanotube Composites: A Molecular Simulation Investigation”, Polymer Composites and High Performance Materials Meeting, ACS Division of Polymer Chemistry, Santa Rosa, CA (July 2013).
- (21) “Molecular Simulation Techniques for Characterizing the Structure and Rheology of Polymer Solutions and Melts”, Corporate Strategic Research Laboratory, ExxonMobil Research and Engineering Company, NJ (August 2012).
- (20) “Particle Nanorheology Simulations: A New Technique for Determining Nanoscale Viscoelastic Properties of Complex Fluids”, Department of Biomedical and Chemical Engineering, Syracuse University (April 2012).
- (19) “Molecular simulations of thermophysical properties of cross-linked epoxy and its nanocomposites”, Air Force Research Laboratory, Dayton, OH (December 2011).

- (18) “Local viscoelastic properties of polymeric materials from particle nanorheology simulations”, Army Research Laboratory, Aberdeen Proving Ground, MD (September 2011).
- (17) “Investigation of glass transition phenomenon in polymers: Molecular simulations vs. experiments”, ACS Joint Southeastern Regional Meeting (SERM) and Southwestern Regional Meeting (SWRM), New Orleans, LA (December 2010).
- (16) “Local viscoelastic properties of complex fluids from active nanorheology simulations”, Department of Chemical and Biomolecular Engineering, Tulane University (October 2010).
- (15) “Local chain dynamics and dynamic heterogeneity in crosslinked polymers near the glass transition: A molecular perspective”, Department of Materials Science and Engineering, University of North Texas (April 2010).
- (14) “Hydrodynamic effects in confined nanoparticle suspensions”, MESOSOFT: Workshop on Mesoscale Simulations of Soft Matter Out of Equilibrium, Forschungszentrum Julich, Julich, Germany (March 2009).
- (13) “Molecular hydrodynamics at the nanoscale”, National Chemical Laboratory, Pune, India (December 2008).
- (12) “Molecular hydrodynamics at the nanoscale”, Golden Jubilee Visiting Fellowship lecture, Institute of Chemical Technology (formerly UDCT), Mumbai, India (December 2008).
- (11) “Molecular hydrodynamics near a solid surface”, Science and Engineering Faculty Day, 3M, St. Paul, MN (June 2007).
- (10) “Molecular hydrodynamics near a solid-fluid interface”, NATEX Sixth Annual Mini-Symposium, Dallas, TX (April 2007).
- (9) “Molecular hydrodynamics near a solid fluid interface”, Mohs Lectures by Placon, Rheology Research Center Seminar Series, University of Wisconsin-Madison (December 2006).
- (8) “Microscopic mechanisms of cross-stream migration of chain molecules in nanochannels”, ACS National Meeting, Atlanta (March 2006).
- (7) “Chain migration in polymer solutions flowing in nanochannels”, Department of Chemical Engineering Seminar Series, Virginia Tech (October 2005).
- (6) “Shear flow induced chain migration in nanochannels”, Rheology Research Center Seminar Series, University of Wisconsin-Madison (March 2005).
- (5) “Viscoelastic properties and glass transition behavior of nanoscopic films”, Polymer Group Seminar Series, Rensselaer Polytechnic Institute (March 2004).

- (4) “Molecular modeling for nanotechnology applications”, Department of Chemical Engineering, Washington University in St. Louis (March 2004).
- (3) “Atomistic and mesoscopic modeling of polymers”, Rheology Research Center Seminar Series, University of Wisconsin-Madison (May 2003).
- (2) “Molecular simulations and continuum mechanics investigation of shear flow of confined fluids”, Computational Science Seminar Series, San Diego State University, San Diego (December 2001).
- (1) “Rheology of confined polymer melts”, Rheology Research Center Seminar Series, University of Wisconsin-Madison (February 1997).

Contributed Conference Presentations (Oral)

Total contributed presentations > 80. Contributed presentations in last two years are listed here:

- (6) “Structure and dynamics of thin polyacrylate gel films supported on a polymeric substrate”, APS March Meeting, New Orleans, LA (presented by S. Mani, March 2017).
- (5) “Interfacial heat transfer in phase change material modified asphalt”, AIChE Annual Meeting, San Francisco, CA (presented by P. Nourian, November 2016).
- (4) “Phase behavior of polymer blends from integral equation theory and molecular simulations”, AIChE Annual Meeting, San Francisco, CA (presented by A. Ravichandran, November 2016).
- (3) "Rheology of neat and polymer modified asphalt from molecular simulations," The XVII International Congress on Rheology, Kyoto, Japan (August 2016).
- (2) “Mechanism of concentration dependence of water diffusivity in polyacrylate gels”, APS March Meeting, Baltimore, MD (presented by S. Mani, March 2016).
- (1) “Effect of composition and chain length on χ parameter of polyolefin blends: A molecular dynamics study”, APS March Meeting, Baltimore, MD (March 2016).

TEACHING/STUDENT MENTORING

Ph.D. Students Currently Supervised

- (13) Rafikul Islam, 2015 – present.
- (12) Dinesh Sundaravadivelu Devarajan, 2015 – present.
- (11) Pouria Nourian, 2014 – present.
- (10) Ashwin Ravichandran, 2013 – present.
- (9) Sriramvignesh Mani, 2013 – present.

Ph. D. Students Graduated

- (8) Fardin Khabaz, “Structural, Dynamic, and Viscoelastic Properties of Complex Materials Using Molecular Dynamics Simulations”, 2016.
- (7) Mir Karim, “Local Linear and Nonlinear Viscoelasticity of Polymeric Systems by Particle Tracking Rheology Simulations”, 2015.
- (6) Lakshmi Muthukumar, “Computational Study of Cello-Oligosaccharide Adsorption/Desorption from the Cellulose Crystal Surface during Enzymatic Hydrolysis”, 2014.
- (5) Ketan Khare, “Thermo-Mechanical Properties of Cross-linked Epoxy Based Systems: A Molecular Simulation Study”, 2013.
- (4) Govind Hegde, “Mesoscale Simulations of the Hydrodynamics of Complex Fluids”, 2012.
- (3) Po-Han Lin, “Molecular Simulation of Structural, Volumetric and Dynamic Properties of Cross-linked Epoxy and Epoxy Nanocomposites”, 2011.
- (2) Suma Peri, “Computational Studies of Cellulose Degradation for the Production of Biofuels”, 2011.
- (1) Swapnil Kohale, “Molecular Hydrodynamics in Complex Fluids”, 2010.

MS. Students Currently Supervised

Xiao Zhao, 2016 – present (co-advised with N. Nuraje).

MS Students Graduated

Amol Bhusari, 2007.

Post-docs Supervised

Nipun Soni, 2010.

Awards Won by Students Supervised

- (6) Sriramvignesh Mani and Fardin Khabaz, **Raider Red Award for Outstanding Peer-Reviewed Journal Paper**, Society of Plastics Engineers Student Chapter and Department of Chemical Engineering, Texas Tech University, September 2016.
- (5) Michael Wurmstein, **Second Place** (Topical Area: Computing and Process Control), AIChE Annual Meeting Undergraduate Student Poster Competition, Salt Lake City, UT, November 2015.

(4) Michael Wurmstein, **Winner** (Topical Area: Computing and Process Control), AIChE Annual Meeting Undergraduate Student Poster Competition, Atlanta, GA, November 2014.

(3) Ketan Khare, **First Prize**, Poster Contest at the Polymer Composites and High Performance Materials Workshop, Division of Polymer Chemistry, American Chemical Society (ACS), Santa Rosa, CA, July 2013.

(2) Po-Han Lin, **First Prize**, Student Poster Contest at the International Polyolefins Conference, Houston, TX, February 2009.

(1) Swapnil Kohale, **Best Student Poster award**, Student Poster Competition at The XVth International Congress on Rheology and The Society of Rheology 80th Annual Meeting, Monterey, CA, August 2008.