

Krishnaroop Chaudhuri

Polymer Rheologist | Soft Matter Scientist | Materials Characterization and Machine Learning

Postdoctoral Associate, Department of Mechanical Engineering, University of Colorado Boulder

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Open to R&D and scientist roles in polymers and materials, AI/ML for materials, and materials-characterization facility leadership.

12

peer-reviewed
publications

197

citations (Google
Scholar, Oct 2026)

7

h-index

12+

years in polymer and
soft matter research

13

researchers
mentored at 3
universities

4

research institutions
in the U.S. and India

PROFILE

Polymer rheologist and soft matter scientist (PhD, 2020) with 12+ years in polymer physics, soft matter and materials characterization across national-laboratory, industry-sponsored and university research. Connects polymer microstructure to flow, adhesion and mechanical behavior using shear, oscillatory, extensional and capillary rheology, dynamic mechanical analysis (DMA), differential scanning calorimetry (DSC), confocal microscopy and atomic force microscopy (AFM), and pairs that experimental work with Python, PyTorch and MATLAB modeling and machine learning. Recent work includes replacing the toxic organomercury-catalyzed resin used in photoelastic particles, a solvent-free melt-compounding route for UHMWPE/HDPE blends (part of a team that won a national technology innovation award), and rheolyzer, software under development that reports entanglement and flow behavior from rheometry data. Has trained 13 researchers at three universities in rheometry, microscopy, profilometry and programming.

Research interests: Rheology, soft materials, granular materials, suspensions, polymer coatings, polymer physics, polymer processing, adhesion and wetting, optics, mathematical modeling, machine learning for materials, contamination in polymer films.

SELECTED HIGHLIGHTS

- Engineering mercury-free photoelastic polyurethane particles (CU Boulder): screened commercial resins and identified a replacement for the toxic organomercury-catalyzed industry-standard resin with comparable rheological and stress-optical properties.
- Designed a solvent-free melt-compounding route for disentangled UHMWPE/HDPE blends that matched the mechanical properties of solution blending without its solvent and environmental cost; member of the team that won the 10th National Award for Technology Innovation (1 of 4 winners from 273 nominations).
- Created a real-time confocal microscopy and image-analysis method to watch dye penetrate block copolymer coatings, with a MATLAB kinetics model of the mechanism (first author, *Macromol. Rapid Commun.* 2023); collaborated with DTRA, the U.S. Naval Research Laboratory and Cornell University.
- Derived scaling laws linking polymer-melt rheology (Rouse and reptation dynamics) to the growth rate of wetting ridges, measured with a new AFM and profilometry method (first author, *Soft Matter* 2022).
- Developing rheolyzer, a Python/PyTorch package that reads oscillatory shear rheology data and reports entanglement, flow behavior and model-free viscoelastic quantities with stated uncertainties.

TECHNICAL SKILLS

Rheology and Mechanical Testing: Shear and oscillatory rheology (SAOS, LAOS), extensional rheology, capillary rheometry, dynamic mechanical analysis (DMA), differential scanning calorimetry (DSC), adhesion testing (texture analyzer), tribology and force measurement

Microscopy and Imaging: Confocal microscopy, atomic force microscopy (AFM), optical and stylus profilometry, optical microscopy, high-speed imaging, photoelasticity, image analysis, fluorescence particle tracking

Materials and Processing: Adhesives and adhesion (pressure-sensitive adhesives, PSAs), polymer melt compounding, polymer blends (UHMWPE/HDPE), polyurethane casting, block copolymer coatings, hydrogels, elastomers, suspensions, granular materials, soft wetting, 3D printing (FDM filament and SLA on a Formlabs Form 3B with Clear resin V4.1), injection molding (industry training), SolidWorks

Programming and Data Science: Python (PyTorch, NumPy, SciPy, pandas, OpenCV, pytest), MATLAB, LabVIEW, JavaScript, machine learning, physics-informed neural networks (PINNs), image-processing pipelines, constitutive and kinetics modeling, Git/GitHub

EXPERTISE BY APPLICATION AREA

Area	What has been done	Documented in
Materials characterization and instrumentation	Rheometry, DMA, DSC, confocal microscopy, AFM, optical and stylus profilometry and high-speed imaging; helped build a tribology instrument for natural fibers (force measurement, optical imaging, LabVIEW/MATLAB data acquisition); training of graduate and undergraduate researchers on shared instruments across three universities.	Macromol. Rapid Commun. 2023 Soft Matter 2022 Cincinnati and CU Boulder appointments
AI and machine learning for materials	Python (PyTorch, NumPy, SciPy, pandas, OpenCV) and MATLAB; physics-based forward models combined with neural networks; image-processing pipelines for high-speed imaging of thousands of particle images.	rheolyzer (in development) CU Boulder appointment
Adhesion, pressure-sensitive adhesives (PSAs) and coatings	Adhesion testing with a texture analyzer, including PSAs; adhesion in photoelastic polyurethane particles and adhesive testing; capillary detachment of microparticles from liquid-liquid interfaces; wetting and spreading on polymer surfaces; diffusion and penetration of small molecules through block copolymer coatings.	Soft Matter 2023 Soft Matter 2022 J. Polym. Sci. 2025 Macromol. Rapid Commun. 2023 ACS Appl. Mater. Interfaces 2024
Polyurethanes, elastomers, hydrogels and soft solids	Mercury-free polyurethane particles with tuned microstructure (ethylene glycol fillers, crystalline domains) characterized by shear rheology, DSC and DMA; collaborative work on thermogelling hydrogels for spinal-cord therapy; elastomers and suspensions.	CU Boulder, 2024 to present Mitochondrion 2022
Polyolefins, polymer blends and processing	Solvent-free melt compounding of disentangled UHMWPE with HDPE; shear, extensional, capillary and LAOS rheology to define processing windows for high-shear and free-surface applications; a framework to quantify the extent of UHMWPE dissolution in blends; polyurethane casting; injection molding (industry training); FDM and SLA 3D printing.	J. Rheol. 2020 Polym. Eng. Sci. 2019 Macromolecules 2018 National Innovation Award (team), 2021
Teaching and mentoring	An upcoming introductory rheology lecture series with hands-on demonstrations (Fall 2027); guest lectures in polymer physics and chemical engineering thermodynamics; introductory calculus as visiting professor; mentor to 5 graduate students, 6 undergraduates and 2 visiting scholars.	University of Colorado Boulder (Fall 2027) University of Cincinnati (2024) FLAME University, India (2020)

EDUCATION

PhD, Engineering Sciences (coursework in Chemical Engineering) 2020

Academy of Scientific and Innovative Research (AcSIR) / CSIR-National Chemical Laboratory, Pune, India

- Thesis: Blends of ultra-high molecular weight polyethylene and high density polyethylene: Dissolution, rheology, and modeling.
- Advisors: Prof. Ashish K. Lele and Dr. Harshawardhan V. Pol.
- Graduate coursework: Polymer Physics, Statistical Mechanics, Transport Phenomena, Thermodynamics, Numerical Analysis, Non-linear Dynamics, Advanced Polymer Chemistry, Reaction and Reactor Engineering, Small Angle

APPOINTMENTS AND RESEARCH EXPERIENCE

University of Colorado Boulder, Boulder, CO

2024 – Present

Postdoctoral Associate, Department of Mechanical Engineering, Vriend Lab (Prof. Nathalie Vriend)

- Engineer mercury-free photoelastic polyurethane particles to replace the toxic organomercury-catalyzed industry-standard resin; screen commercial resins and identify a replacement with comparable rheological and stress-optical properties.
- Tune photoelastic response through polymer microstructure by blending polyurethane with ethylene glycol fillers and characterizing crystalline domains with shear rheology and DSC.
- Characterize particle suspensions and granular matter with shear rheology, DMA, DSC and optical microscopy.
- Build self-directed AI/ML image-processing methods to analyze high-speed imaging data across thousands of particle images from photoelastic granular physics experiments.
- Study adhesion in photoelastic particles and test adhesives.
- Mentor two undergraduate researchers on photoelastic particle fabrication and processing projects; will teach an introductory rheology lecture series (Fall 2027).

University of Cincinnati, Cincinnati, OH

2023 – 2024

Postdoctoral Fellow, Department of Chemical and Environmental Engineering, Pham Lab (Prof. Jonathan Pham)

- Investigated how small molecules contaminate soft block copolymer coatings and how the dynamics depend on the contaminant and the polymer film.
- Created a real-time confocal microscopy and image-analysis method to visualize rhodamine B dye penetrating PS-PDMS block copolymer coatings, and built a MATLAB kinetics model of the contamination mechanism (Macromolecular Rapid Communications, 2023).
- Collaborated with DTRA, the U.S. Naval Research Laboratory and Cornell University on functionalized block copolymer coatings; extended the work to grafted fluorinated alkyl segments and co-authored a study of fluorinated anti-penetration coatings (ACS Applied Materials & Interfaces, 2024).
- Helped build a tribology instrument for natural fibers integrating force measurement, optical imaging, image analysis and LabVIEW/MATLAB data acquisition.
- Studied adhesion, including capillary detachment of microparticles from liquid-liquid interfaces (Soft Matter, 2023) and pressure-sensitive adhesives (PSAs) measured with a texture analyzer.
- Contributed to a project relating time-dependent contact-angle dynamics of polymers to their mechanical properties, using optical imaging and rheometry.
- Trained graduate students in rheometry, confocal microscopy, optical profilometry, AFM and MATLAB programming.

University of Kentucky, Lexington, KY

2020 – 2023

Postdoctoral Scholar, Department of Chemical and Materials Engineering, Pham Lab (Prof. Jonathan Pham)

- Devised an AFM and profilometry method to measure the time-dependent height of the wetting ridge under a glycerol drop on a poly(n-butyl methacrylate) (PBMA) melt, and derived scaling laws linking melt rheology (Rouse and reptation dynamics) to ridge growth rate (Soft Matter, 2022).
- Co-authored collaborative publications on thermogelling hydrogels for spinal-cord therapy, electron-beam lithography of PMMA and oil-swollen polymer surfaces.
- Mentored an undergraduate researcher on droplet flow over vertical polymer melt surfaces at elevated temperatures.

CSIR-National Chemical Laboratory, Pune, India

2014 – 2020

Doctoral Researcher, Polymer Science and Engineering Division, Lele Lab (Prof. Ashish Lele)

- Designed a solvent-free melt-compounding route for disentangled UHMWPE/HDPE blends that matched the mechanical properties of solution blending without its solvent and environmental cost.

- Characterized shear, extensional, capillary and LAOS rheology of the blends to define processing windows for high-shear and free-surface commercial applications (Polymer Engineering & Science, 2019).
- Built a mathematical framework based on chain entanglement dynamics to quantify the extent of UHMWPE dissolution in blends (Journal of Rheology, 2020).
- Characterized disentangled UHMWPE synthesized by teammates (Macromolecules, 2018), as part of the team that won the 10th National Award for Technology Innovation (one of 4 winners from 273 nominations).

CSIR-National Chemical Laboratory, Pune, India

2013 – 2014

Project Fellow, Chemical Engineering Division, Doshi Lab (Dr. Pankaj Doshi)

- Simulated Janus spheres and anisotropic patchy particles at oil-water interfaces in MATLAB, delineating the zones of anisotropy and computing total surface energy at different immersion levels; generalized the algorithm to superellipsoids and other superquadrics.
- Built an image-processing classifier that reads optical images and classifies interfacial surface activity across the four anisotropic regions of a chemically anisotropic two-fluid system.

RESEARCH HIGHLIGHTS

Mercury-free photoelastic polyurethane particles

University of Colorado Boulder | 2024 – Present | funded by the Gordon and Betty Moore Foundation (experimental physics grant)

Challenge. Photoelastic particles let granular physicists see stress inside a particle packing, but the industry-standard polyurethane resin for them relies on a toxic organomercury catalyst.

Approach. Screened commercial resins and characterized them with shear rheology, DMA, DSC and optical microscopy; tuned the photoelastic response through microstructure by blending polyurethane with ethylene glycol fillers and examining crystalline domains.

Outcome. Identified a replacement resin with comparable rheological and stress-optical properties. Presented at the Society of Rheology 96th Annual Meeting (2025). Two undergraduate researchers are mentored on fabrication and processing.

Contaminant penetration through block copolymer coatings

University of Cincinnati | 2023 – 2024

Challenge. Soft block copolymer coatings can be contaminated by small molecules, and the dynamics depend on both the contaminant and the film.

Approach. Developed real-time confocal microscopy with image analysis to track rhodamine B dye penetrating PS-PDMS coatings, built a MATLAB kinetics model of the mechanism, and extended the work to coatings with grafted fluorinated alkyl segments with collaborators at DTRA, the U.S. Naval Research Laboratory and Cornell University.

Outcome. First-author paper in Macromolecular Rapid Communications (2023) and co-authored paper in ACS Applied Materials & Interfaces (2024); best poster, National Postdoc Appreciation Week, Cincinnati Children's Hospital (2023).

Soft wetting and rheology of polymer melts

University of Kentucky | 2020 – 2023

Challenge. A drop on a soft surface pulls up a wetting ridge whose growth depends on how the polymer flows; the goal was to tie ridge growth to bulk melt rheology.

Approach. Devised an AFM and profilometry method to track ridge height over time for a glycerol drop on a PBMA melt, and derived scaling laws connecting temperature-dependent dynamic rheology (Rouse and reptation dynamics) to the ridge growth rate.

Outcome. First-author paper in Soft Matter (2022); talk at the Illuminating Interfacial Mechanics Group, Purdue University (2021); follow-on collaborations on oil-swollen polymer surfaces.

Solvent-free blending of disentangled UHMWPE with HDPE

CSIR-National Chemical Laboratory | 2014 – 2020

Challenge. Disentangled ultra-high molecular weight polyethylene (UHMWPE) can be blended with HDPE by solution mixing, but at a large solvent and environmental cost.

Approach. Designed a melt-compounding route and used rheology to find the processing conditions that dissolve UHMWPE in the HDPE matrix; characterized shear, extensional, capillary and LAOS rheology of the blends; built a framework based on chain entanglement dynamics to quantify the extent of dissolution.

Outcome. Blends with mechanical properties comparable to solution-mixed blends, without the solvent cost; two first-author papers (Polym. Eng. Sci. 2019, J. Rheol. 2020); team award, 2021; best PhD research scholar in Engineering Sciences, CSIR-NCL, 2019.

SOFTWARE AND COMPUTATIONAL PROJECTS

rheolyzer: AI-driven rheometry-only polymer characterization | 2026 – Present

- Python package under development that reads small-amplitude oscillatory shear (SAOS) data and reports entanglement, flow behavior and model-free viscoelastic quantities, with stated uncertainties; molecular weight and polydispersity are reported only for samples declared linear. Combines physics-based forward models (tube, star, comb, network) with PyTorch models; 800+ automated tests and pre-registered benchmarks against published datasets. Not yet released; code not yet public.

visco-PEGS: machine learning for photoelastic granular particles | 2026 (research proposal)

- Research proposal with a literature review and interactive mockups for machine-learning inference of nonlinear viscoelastic photoelastic response and contact-force histories from images of photoelastic granular particles. Concept stage; no implementation or data yet.

PUBLICATIONS

12 peer-reviewed publications | 197 citations | h-index 7 (Google Scholar, Oct 2026). Full list: [Google Scholar](#). Author name in bold; DOIs link to the articles.

1. Hayes, B., **Chaudhuri, K.**, Hodgson, R., McMillan, B., Gans, R., Burke, H., McNamara, S., Chalklen, T., & Vriend, N. M. Rheological and photoelastic response of hydrated soft granular particles. *Soft Matter* 22(34), 5695–5706 (2026). [doi:10.1039/d6sm00562d](#)
2. Ko, K., **Chaudhuri, K.**, Park, J., Wooh, S., Yavitt, B. M., & Pham, J. T. Spreading of dynamically crosslinked polydimethylsiloxane drops. *Journal of Polymer Science* 63(2), 514–521 (2025). [doi:10.1002/pol.20240881](#)
3. Zhang, Z., **Chaudhuri, K.**, Käfer, F., Malanoski, A. P., Page, K. A., Smieska, L. M., Pham, J. T., & Ober, C. K. Controlling anti-penetration performance by post-grafting of fluorinated alkyl chains onto polystyrene-block-poly(vinyl methyl siloxane). *ACS Applied Materials & Interfaces* 16(15), 19594–19604 (2024). [doi:10.1021/acsami.4c01905](#)
Co-author; collaboration with DTRA, the U.S. Naval Research Laboratory and Cornell University.
4. Cai, Z., Badr, R. G. M., Hauer, L., **Chaudhuri, K.**, Skabeev, A., Schmid, F., & Pham, J. T. Phase separation dynamics in wetting ridges of polymer surfaces swollen with oils of different viscosities. *Soft Matter* 20(36), 7300–7312 (2024). [doi:10.1039/d4sm00576g](#)
5. **Chaudhuri, K.**, Medhi, R., Zhang, Z., Cai, Z., Ober, C. K., & Pham, J. T. Visualizing penetration of fluorescent dye through polymer coatings. *Macromolecular Rapid Communications* 44(20), 2300304 (2023). [doi:10.1002/marc.202300304](#)
First author. Real-time confocal imaging and kinetics model of dye penetration through PS-PDMS block copolymer coatings.
6. Rahat, S. A., **Chaudhuri, K.**, & Pham, J. T. Capillary detachment of a microparticle from a liquid–liquid interface. *Soft Matter* 19(33), 6247–6254 (2023). [doi:10.1039/d3sm00470h](#)
7. Kumar, D., **Chaudhuri, K.**, Brill, J. W., Pham, J. T., & Hastings, J. T. Effect of water vapor pressure on positive and negative tone electron-beam patterning of poly(methyl methacrylate). *Journal of Vacuum Science & Technology B* 41(1), 012604 (2023). [doi:10.1116/6.0002118](#)
8. **Chaudhuri, K.**, & Pham, J. T. Temperature-dependent soft wetting on amorphous, uncrosslinked polymer surfaces. *Soft Matter* 18(19), 3698–3704 (2022). [doi:10.1039/d2sm00301e](#)
First author. AFM and profilometry method for wetting-ridge growth on polymer melts; scaling laws linking melt rheology to ridge growth.
9. Patel, S. P., Michael, F. M., Arif Khan, M., Duggan, B., Wyse, S., Darby, D. R., **Chaudhuri, K.**, Pham, J. T., Gollihue, J., DeRouchey, J. E., Sullivan, P. G., Dziubla, T. D., & Rabchevsky, A. G. Erodible thermogelling hydrogels for localized

mitochondrial transplantation to the spinal cord. *Mitochondrion* 64, 145–155 (2022). doi:10.1016/j.mito.2022.04.002

10. Chaudhuri, K., & Lele, A. K. Rheological quantification of the extent of dissolution of ultrahigh molecular weight polyethylene in melt-compounded blends with high density polyethylene. *Journal of Rheology* 64(1), 1–12 (2020). doi:10.1122/1.5113705
First author. Framework based on chain entanglement dynamics to quantify the extent of UHMWPE dissolution in melt-compounded blends.
11. Chaudhuri, K., Poddar, S., Pol, H., Lele, A., Mathur, A., Srinivasa Rao, G. S., & Jasra, R. The effect of processing conditions on the rheological properties of blends of ultra high molecular weight polyethylene with high-density polyethylene. *Polymer Engineering & Science* 59(4), 821–829 (2019). doi:10.1002/pen.25016
First author. Shear, extensional, capillary and LAOS rheology to define processing windows for UHMWPE/HDPE blends.
12. Gote, R. P., Mandal, D., Patel, K., Chaudhuri, K., Vinod, C. P., Lele, A. K., & Chikkali, S. H. Judicious reduction of supported Ti catalyst enables access to disentangled ultrahigh molecular weight polyethylene. *Macromolecules* 51(12), 4541–4552 (2018). doi:10.1021/acs.macromol.8b00590
Co-author. Rheological characterization of the disentangled UHMWPE synthesized by teammates.

PRESENTATIONS

Talks and posters

- Granular Matter Gordon Research Seminar, Stonehill College, MA (2026). Presentation.
- *Photoelastic Particles*. Kavli Institute for Theoretical Physics (KITP) program 'Soft Earth Geophysics', University of California, Santa Barbara, CA (2026). Program seminar talk, 10 March 2026.
- *Designing mercury-free photoelastic particles*. Society of Rheology 96th Annual Meeting, Santa Fe, NM (2025). Oral presentation.
- *Penetration of fluorescent dye through polymer coatings*. AIChE Annual Meeting, Orlando, FL (2023). Meet the Faculty and Post-Doc Candidates session; poster and oral presentation.
- *Characterizing penetration of a contaminant into block copolymer coatings*. APS March Meeting, Las Vegas, NV (2023). Oral presentation and poster.
- *Temperature dependent soft wetting of polymer melts*. APS March Meeting, Chicago, IL (2022).
- *Droplets on polymer melts*. Illuminating Interfacial Mechanics Group, Purdue University (2021).
- *Rheology of blends of UHMWPE and HDPE*. Keerthi Sangoram Memorial Endowment Award presentation, CSIR-NCL, India (2020). Oral presentation.
- *Blends of disentangled UHMWPE and HDPE: oscillatory and extensional rheology, and optimized processing conditions for dissolution*. Society of Rheology Annual Meeting, Denver, CO (2017). Oral presentation.
- *Janus particles at an oil-water interface*. Mumbai-Pune Soft Matter Research Symposium, Bhabha Atomic Research Centre (BARC), India (2014). Poster.
- *Chemically anisotropic microspheres at the liquid-liquid interface*. SERB School and Symposium on Rheology of Complex Fluids: Advanced Computational Methods, IIT Delhi, India (2013). Poster.
- *Optimal design of shell and tube heat exchanger using evolutionary algorithms*. Students' Chemical Engineering Congress (SCHEMCON), BITS Pilani, India (2012).

TEACHING AND MENTORING

Instructor, Introductory Rheology lecture series

University of Colorado Boulder | Fall 2027 (upcoming)

Will give lectures on rheology and the associated concepts of fluid mechanics and non-Newtonian flow, with hands-on practical demonstrations.

Guest Lecturer, Polymer Physics and Chemical Engineering Thermodynamics

University of Cincinnati | Spring 2024

Lectured for Prof. Gregory Beaucage on polymer physics (non-Newtonian fluids, viscoelasticity and rheology) and for Prof. Jonathan Pham on chemical engineering thermodynamics (heat engines, refrigeration and liquefaction) for third-year undergraduates.

Visiting Professor, Introductory Calculus (MATH151)

FLAME University, India (Department of Physical and Natural Sciences, Applied Mathematics) | Spring 2020

Taught limits, continuity, differentiation and integration to first-year undergraduates and helped the department move to online instruction at the onset of the COVID-19 pandemic.

Mentoring. Formal mentor to 5 graduate students, 6 undergraduate students and 2 visiting scholars in the groups of Prof. Jonathan Pham (University of Kentucky and University of Cincinnati) and Prof. Nathalie Vriend (University of Colorado Boulder). Trained graduate students in rheometry, confocal microscopy, optical profilometry, AFM and MATLAB programming.

HONORS AND AWARDS

2025	Honorable Mention, Outstanding Postdoc of the Year, University of Colorado Boulder.
2023	Best Poster Award, National Postdoc Appreciation Week, Cincinnati Children's Hospital.
2021	Winner, 'Innovation in Polymeric Materials', 10th National Awards for Technology Innovation in Petrochemicals and Downstream Plastics Processing Industry, Ministry of Chemicals and Fertilizers, Government of India. Team award with CSIR-NCL colleagues; 1 of 4 winners from 273 nominations.
2019	Keerthi Sangoram Memorial Endowment Award for Best Research Scholar in Engineering Sciences, CSIR-National Chemical Laboratory.
2018	AWSAR Award for Science Writing, Department of Science and Technology, Government of India.
2017	Student Travel Grant, Society of Rheology.
2015 – 2019	Reliance Industries PhD Fellowship.
2012	First Prize, Chemistry, APOGEE Technical Fest, BITS Pilani.
2010	Second Prize, Material Sciences, APOGEE Technical Fest, BITS Pilani.

SERVICE, LEADERSHIP AND OUTREACH

Leadership and committees

- Seminar Coordinator, Institute of Arctic and Alpine Research (INSTAAR), University of Colorado Boulder (2026 – Present).
- Vice-President, Postdoctoral Association of Colorado Boulder (2025 – 2026).
- Executive Committee Member, Society of Postdoctoral Scholars, University of Kentucky (2020 – 2023); coordinator of its book club.
- Postdoctoral Affairs Officer and Liaison to the Graduate Student Congress, University of Kentucky (2021 – 2022).

Scientific community

- Discussion Leader for the keynote talk, Granular Matter Gordon Research Seminar, Stonehill College, MA (2026).
- Session Chair, Society of Rheology Annual Meeting, Santa Fe, NM (2025).
- Session Chair, 'Wetting, Adhesion, and Tribology of Soft Interfaces II', APS March Meeting, Chicago, IL (2022).
- Peer reviewer for Journal of Rheology, Nature Communications, Soft Matter and Langmuir.
- Member, Society of Rheology (2017 – Present); American Institute of Chemical Engineers, Education Division (2023 – Present); American Physical Society, Divisions of Soft Matter (DSOFT) and Polymer Physics (DPOLY), early-career member (2022 – Present).

Outreach and science communication

- STEM outreach events at STEM Launch Middle School, Thornton, CO and Southern Hills Middle School, Boulder, CO (2025).
- TechFest 2024, Sinclair Community College, Dayton, OH: experiments on paper chromatography and edible polymers for K-12 students.
- National Chemistry Week (2023): demonstrations on first-aid and hygiene at the Boonshoft Museum of Discovery, Dayton, OH, and on the benefits of UV protection at the Centerville Library, Centerville, OH.

Earlier activities

- Editor, Association for Computing Machinery (ACM) at BITS Pilani (2009 – 2013); editorial team, Cactus Flower, the BITS Pilani English literary magazine (2010 – 2013); member, Chemical Engineering Association, BITS Pilani (2009 – 2013).

ADDITIONAL INFORMATION

Languages: English and Bengali (native or bilingual proficiency); Hindi.

References: Available on request.