

RISHABH TENNANKORE, Ph.D.

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PROFESSIONAL SUMMARY

- Materials Scientist with deep expertise in polymer science and characterization evaluate structure-property relationships and support failure analyses, root-cause investigations, and reliability assessment across industrial separations, biomedical and consumer applications
- Proven track record in leading end-to-end R&D programs in both early-stage R&D environments and large industrial organizations from material selection, test method development and design of experiment (DOE) through process optimization and performance evaluation
- Experienced technical consultant and communicator, with peer-reviewed publications, demonstrated leadership in cross-functional teams, and ability to convey clear technical directions and conclusions to diverse audiences

EDUCATION

Doctor of Philosophy (Ph.D.), Materials Science and Engineering	Aug 2020 – Aug 2025
– University of Colorado Boulder; GPA: 3.88 / 4.00	
Master of Science (M.S.), Macromolecular Science and Engineering	Sep 2017 – Dec 2018
– University of Michigan, Ann Arbor; GPA: 3.96 / 4.00	

WORK EXPERIENCE

Founder & Consultant

<i>Baseline Materials Consulting LLC</i> , Boulder, CO	Dec 2025 – Dec 2026
– Advising on materials selection, processing routes, and characterization strategies for polymers and coatings technologies	

- Conducting preliminary modeling and literature-driven benchmarking to inform R&D decision-making

Membrane Development Scientist

<i>OsmoPure Technologies Inc.</i> , Boulder, CO	Oct 2025 – Dec 2025
– Established a membrane R&D program for pressure-driven distillation membranes targeting industrial and semiconductor wastewater streams	

- Developed and optimized silicone- and sol-gel coating formulations via DOE-guided experimentation and quantitative data analysis

- Correlated morphology and surface properties with permselectivity using SEM, profilometry, and contact angle analysis

- Evaluated processing strategies against application-relevant criteria to inform iterative development and scale-up priorities

R&D Engineer Intern

<i>BASF</i> , Wyandotte, MI	Jan 2018 – Dec 2018
– Led a multidisciplinary engineering team to design and validate test methods quantifying shear- and temperature-dependent cleaning efficiency in automated washing systems	

- Designed test apparatus and executed experiments to link non-ionic surfactant molecular structure to oil removal efficiency on glass substrates

- Applied computational fluid dynamics (CFD) modeling to validate parameter-performance correlations, informing downstream product development decisions

SKILLS AND TECHNIQUES

Polymer and Nanoparticle Synthesis

- Living radical polymerization, Step-growth polymerization, Photopolymerization, Thiol-Ene Click chemistry, Silicone hydrosilylation, sol-gel processing for nanoparticles and networks

Materials and Membrane Characterization

- Optical microscopy (including Polarized), SEM, X-Ray Scattering (Grazing incidence, Transmission)
- Differential Scanning Calorimetry (DSC), Isothermal Titration Calorimetry (ITC), Texture Analyzer, X-Ray Scattering (Transmission and Grazing-Incidence)

Electrochemical Characterization

- Potentiostat techniques including Cyclic Voltammetry (CV) and Electrochemical Impedance Spectroscopy (EIS)

Fabrication and Processing

- Blade Coating, Spin Coating, Chemical vapor deposition (CVD), E-beam deposition, Maskless Photolithography, Laser Cutting, 3D Printing (SLA)

Modeling & Software

- MATLAB, LabVIEW, Python (basic), MS Excel, Fusion 360, COMSOL Multiphysics, ImageJ

RESEARCH EXPERIENCE

Graduate Research Assistant

University of Colorado Boulder Aug 2020 – Aug 2025

- Designed and built fluid-based micro-actuators, integrating numerical modeling, polymer synthesis, characterization, and stimulus-responsive application testing
- Developed high-permeance ion-selective hydrogel membranes using controlled polymerization and post-functionalization strategies
- Discovered scaling laws for the electrochemical flow behavior of liquid metals
- Applied hypothesis-driven experimentation and modeling-guided analysis to interpret structure–property–performance relationships and guide device design

Research Assistant

University of Michigan, Ann Arbor Sep 2017 – Aug 2020

- Developed hydrogel and coating formulations for biomedical applications and industrial separations
- Designed and implemented studies to evaluate structure–property relationships using gravimetric analysis, image processing, and surface wettability characterization
- Demonstrated functionality of developed prototypes in applied contexts (e.g., expandable catheters, freeze concentrators), informing feasibility for real-world use

SELECTED PUBLICATIONS (2 out of 6 total)

- **Rishabh Tennankore**, Ryan C. Hayward. A Reversible Photoresponsive Forward-Osmosis based Actuator, *Submitted, 2025 (ACS Applied Polymer Materials)*
- Hantao Zhou, **Rishabh Tennankore**, Wenwen Xu, Matthew Ticknor, Ryan C. Hayward. Temperature Dependent Photoisomerization Kinetics of a Semicrystalline Poly(Azobenzene). *Macromolecules* 2024, 57, 24, 11331–11338