

Saroj Upreti

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3317 W 4th St, Hattiesburg, MS 39402

EDUCATION

The University of Southern Mississippi

Ph.D. Candidate, Polymer Science & Engineering

Hattiesburg, MS

August 2022 - Present

William Carey University

B.S., Mathematics and Chemistry

Hattiesburg, MS

August 2017 - Feb 2021

RESEARCH EXPERIENCE

Lawrence Berkeley National Laboratory

Doctoral Fellow

Berkeley, CA

April 2026 - Present

- Developed data-driven high throughput approach for battery electrolyte material design.
- Engineered self-driving lab integrating copolymer material processing robots with AI assisted property optimization.

The University of Southern Mississippi

Graduate Assistant

Hattiesburg, MS

August 2022 - Present

- Investigated morphological properties of block copolymers using automated, high-throughput X-ray scattering pipeline.
- Collaborated on deployment of self-driving lab developing polymer processing robots with AI optimization models.

William Carey University

Research Assistant

Hattiesburg, MS

August 2018 - Feb 2021

- Designed an Artificial Neural Network to predict atomization energy of inorganic compounds.
- Modeled hybrid local/random network designs for improved connectivity advantages.

HONORS & AWARDS

- Best Poster Award, ACS Spring Meeting, Atlanta, GA (March 2026)
- ALS Doctoral Fellowship (April 2026 - April 2027)
- William Carey University Scholar Award (August 2017- Feb 2021)

SELECTED PUBLICATIONS

Full list of publications: [google scholar](#)

- 1) **Upreti, S.**; Xu, L.; Moniruzzaman, M.; et al. A Robotic High-Throughput Grid-Search Platform for Mapping Phase Behavior in Triblock Copolymer–Homopolymer Blends. *ACS Nano* **2026**.
- 2) Lamb, B.; **Upreti, S. (co-first author)**; Wang, Y.; et al. Machine Learning Framework for Characterizing Processing–Structure Relationship in Block Copolymer Thin Films. *Macromolecules* **2026**.
- 3) Wang, Y.; Struble, D.; **Upreti, S.**; et al. Automated and High-Throughput Phase Separation Control for Supramolecular Polymer Blends Enabled by Machine Learning. *JACS Au* **2026**.
- 4) Aryan, M.; Struble, D.; Campbell, F.; **Upreti, S.**; et al. Convergence of high throughput experimentation and machine learning to rapidly advance application-specific polymer development. *RSC Applied Polymers* **2026**.

- 5) Wang, Y.; Sriramoju, R.; **Upreti, S.**; et al. Autonomous Optimization of Block Copolymer Blend Morphology via Synchrotron X-ray Scattering. *ChemRxiv* **2026**.
- 6) Tang, K.; Shaw, A.; **Upreti, S.**; et al. Impact of sequential chemical doping on the thin film mechanical properties of conjugated polymers. *Chemistry of Materials* **2025**.
- 7) Luo, S.; Ding, Y.; Lu, J.; **Upreti, S.**; et al. Tunable Segmental Motion of PEDOT: PSS Films under Hydration and Ion Intercalation for Efficient Ionic–Electronic Transport. *ACS Applied Polymer Materials* **2025**.
- 8) Huang, S. H.; Uva, A.; **Upreti, S.**; et al. Reactive Strand Extension to Improve Stretchability in Semiconducting Polymers. *Chemistry of Materials* **2025**.

LEADERSHIP & ENGAGEMENT

Poster Presentation: Data driven high-throughput approach for morphology optimization of block copolymer (BCP) films. **ACS Spring Meeting 2026**, Atlanta, GA, March 2026.

Oral Presentation: Data driven approach to optimize the morphology of block copolymer (BCP) films. **MRS Spring Meeting & Exhibit 2025**, Seattle, WA, April 2025.

Organizing Team: **Gulf Coast Polymer Conference 2024**, University of Southern Mississippi.

Organizations' Presidency: International Students' Organization (WCU, 2019 – 2021)
Nepalese Student Association (USM, 2023 – 2024)

SYNCHROTRON USER FACILITIES (SUCCESSFUL PROPOSALS & BEAMTIMES)

Advanced Light Source (SAXS/WAXS, 7.3.3 Beamline)

Autonomous experimentation commission at SAXS/WAXS

40+ shifts beamtime: April 2024, Oct 2024, May 2025, Sep 2025, Oct 2025

National Synchrotron Light Source II (11- BM, Complex Materials Scattering Beamline)

Data-driven approach to optimize the processing of copolymer-based membrane morphology (*6 shifts*)

25+ shifts beamtime: July 2024, Nov 2024, March 2025, June 2025, Nov 2025

SCIENTIFIC SKILLS

Scattering (SAXS/WAXS, RSoXS)

Microscopy (AFM, Nano IR-AFM)

Machine Learning (CNN, RNN, RL, PCA, gpCAM, TensorFlow, PyTorch)

Robotics (UR5, Opentrons, Sciprios, Nova)

Data Pipeline (Bluesky, Tiled)

Spectroscopy (UV-VIS, FTIR)

Thermal Analysis (DSC, DMA, TGA)

Mechanical Analysis (UTM, Ultra-thin Film Tensile Test)