

Samyuktha S Kolluru

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Education

2022-present **Doctoral Student in Material Science and Engineering**

Washington University in St. Louis, St Louis, Missouri

Cumulative GPA: 3.8

2018-2022 **B.E. Chemical Engineering**

Birla Institute of Science and Technology, Hyderabad, India

Cumulative GPA: 7.9

Research and Professional Experience

2022 **Synthesizing and characterizing advanced biomaterials for application as a C-section scar scaffold and as a platform to study pregnancy** *PhD Graduate Student*

Washington University in St Louis, Missouri

Advisor: Michelle Oyen, Ph.D., Biomedical Engineering Department

Studying vascular remodelling of the placenta in Fetal Growth Restriction pregnancies and developing models to predict microvascular changes from low resolution ultrasound imaging.

Gained experience in:

Nanoindentation • Tensile testing • Confocal microscopy • Image Analysis • Electrospinning • Bacterial Culture • Dynamic Light Scattering • Zeta Potential Analyzer • Scanning Electron Microscopy (SEM) • UV-vis spectroscopy • Raman Spectroscopy

2021-2022 **Copper nanomaterial-based antimicrobial coatings**

Undergraduate Researcher

Birla Institute of Science, Hyderabad, India

Advisor: Debirupa Mitra, Ph.D, Department of Chemical Engineering

- Exploring the fabrication of copper nanomaterial-based antimicrobial coatings with long-lasting antimicrobial activity and evaluating the coating performance.
- Developing a polymer layer as a "glue" between the copper nanoparticles and the substrate.

2021 **Study of catalytic and enzymatic behavior of noble metal nanoparticles and their use in treatment and drug delivery**

Undergraduate Research Assistant

Indian Institute of Science, Bangalore, India

Advisor: Ashok M. Raichur, Ph.D, Department of Material Science and Engineering

- Performed hands-on experiments to study the enzymatic behavior of Silver, Gold, and Platinum nanoparticles using TMB as an initial substrate.
- Applied nano enzymes to carry out starvation therapy in cancer cells and other healthcare applications nanoparticles and the substrate.
- Authored undergraduate thesis on Peroxidase-like activity of nanoparticles and effect of charge on catalytic activity.

2021 **Techno-economic evaluation of two alternative processes for production of green diesel from Karanja oil**

Undergraduate Researcher

Birla Institute of Science, Hyderabad, India

Advisor: Pankaj Kumar, Ph.D ; Arnab Dutta, Ph.D, Department of Chemical Engineering

- Successfully modelled the entire process of green diesel production by Hydrodeoxygenation using Aspen HYSYS modelling software.
- Analyzed the Techno economic to compare green diesel to biodiesel production by transesterification.

2020 **Developmental Trends in Process and Engineering Aspects of Heavy metal removal by Nanomaterials**
Undergraduate Researcher
Birla Institute of Science, Hyderabad, India
Advisor: Sreedhar Inkollu, Ph.D, Head of Department of Chemical Engineering

- Performed extensive research and summarized the development trends covering all the different methods of synthesis, types of nanomaterials, kinetics, process optimization, modelling and future developments.
- Research findings include the method of synthesis and recommendation for the material that has highest efficiency.
- Co-authored a review paper currently published at Journal of Process Safety and Environmental Protection.

2020 **Grasim Industries**
Intern

- Performed comparisons of theoretical and actual values of Energy Conservation in the Auxiliary Section of the Viscose Staple Fiber production process by reducing water intake using energy balance equations.
- Successfully predicted a reduction in water and 30% improvement in process.

2012 **President's Education Awards by President of the USA**

Society Membership

2022- Present **Materials Research Society**

Leadership and Service

2023- Present **Global Health Student Advisory Committee, Vice Chair, Washington University**

2020- 2021 **Nirmaan, NGO, Head of Public Relations, India**

2020- 2021 **National Service Scheme, NGO, Committee Member, India**

2017- 2018 **Grace Cancer Foundation, Head Volunteer, India**

- Organized and sang in two musical fundraisers (2017 and 2018)
- Successfully raised around 1.5 million rupees to provide free cancer screening camps for people in rural villages (Kuchipudi, etc).

Publications

Kolluru, Samyuktha S., et al. "Heavy Metal Removal from Wastewater Using Nanomaterials- Process and Engineering Aspects.", 22 Apr. 2021. (First Author) *Process Safety and Environmental Protection, Elsevier.*

Teaching Experience

2022 **Cardiovascular Research Summer Program, Bench Mentor, St Louis, Missouri**
Bench mentor to undergraduate research intern from Texas A&M University in the Biomedical Engineering Department at Washington University.

2020 **National Service Scheme, Mentor, Hyderabad, India**
Tutored underprivileged elementary school students and developed a curriculum for an afterschool program to increase interest in science.

2013 **Ignite, Nirmaan, Event Coordinator, Hyderabad, India**
Coordinated a three-day event for orphanages from rural India to stay in the university and experience an interdisciplinary learning of math, science, technology and language.