# Faculty CV

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MOUMITA

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Profile photo ( 1 photo upto 10 MB)

Moumita_Sahara...

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Links of Personal webpage/Google scholar/LinkedIn etc.

https://scholar.google.com/citations?user=plnN8WAAAAAJ&hl=en&oi=ao

Broad areas of research (only keywords)

Computational Biology; Computational Approach to Produce Smart Materials from Spider Silk Protein; Production of BioFuel from Biomass using Microbial Enzymes and Nanomaterials

Professional Experience

Assistant Professor, Department of Systems and Computational Biology, School of Life Sciences, University of Hyderabad, India, 2020-Present;

UGC-Assistant Professor, Department of Physics, University College of Science, Osmania University, Hyderabad, India, 2014-2020;

DST-SERB Young Scientist, Center for Modeling Simulation and Design (CMSD), University of Hyderabad, India, 2013-2014;

Postdoctoral Research Associate, Department of Chemistry, Michigan State University (MSU), USA, 2011-2013;

Postdoctoral Research Associate, Center for Molecular Biophysics, Oak Ridge National Laboratory, USA, 2007-2010

## Education/Training

Ph.D. (Physical Sciences): Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, India. Thesis title : “Computer Simulation Studies of Supercritical Carbon Dioxide”;

M. Sc. (Physics): Science College, Calcutta University, Calcutta, India;

B. Sc. (Physics): St. Xavier’s College, Calcutta University, Calcutta, India, 1999

## Detailed research interests (Upto 2 paragraphs or 10 bullet points)

(1) Biofuel Production: Studying microbial enzymes for efficient degradation of cellulosic biomass and its conversion into sustainable biofuels

(2) Smart Materials: Developing spider silk-based hydrogels for biomedical applications, leveraging their behavior in aqueous environments

(3) Biomimetic Materials: Designing self-healing materials like $CaCO_3$, inspired by natural processes

Selected publications (upto 5)

1. Nanoscale self-assembly and water retention properties of silk fibroin–riboflavin hydrogel
Aarti Kumari, Ganiya Shirin K P, M. Saharay∗
J. Chem. Phys., 162, 024901
(2025) Impact Factor 4.0
it Subject area: Computational Biology

2. Immobilization of Cellulase Enzymes on Single-Walled Carbon Nanotubes for Recycling of Enzymes and Better Yield of Bioethanol Using Computer Simulations
Shubhashree Barik, Akarsh Kumar Dash, M. Saharay∗
Journal of Chemical Information and Modeling, 63, 5192-5203 (2023) Impact factor 6.2
Subject area: Computational Biology

3. Biomolecular interaction of purified recombinant Arabidopsis thaliana's alternative oxidase 1A with TCA cycle metabolites: Biophysical and molecular docking studies
Tadiboina Veera Sankar, M. Saharay, Dharawath Santhosh, Saji Menon, Sreejith Raran-Kurussi, Kollipara Padmasree
International Journal of Biological Macromolecules, 258, 128814 (2023) Impact factor 8.025
Subject area: Experimental Biology

4. CelS-catalyzed Processive Cellulose Degradation and Cellobiose Extraction for Production of Bioethanol
Sree Kavya Penneru, M. Saharay∗ , Marimuthu Krishnan
Journal of Chemical Information and Modeling,
DOI: (https://doi.org/10.1021/acs.jcim.2c00239) (2022) Impact factor 6.2
Subject area: Computational Biology

5. Formation of Amorphous Precursor Phase in the Biomineralization of Calcium Carbonate Mediated by Avian Egg-shell Protein
R. Sandya Rani, M. Saharay
RSC Advances, 9, 1653-1663 (2019) Impact factor 3.12
Subject area: Computational biology

## Selected projects (upto 5)

Principal investigator (PI) for the project entitled ”Computational Approach to Produce Smart Materials from Spider Silk Protein”
Amount : Rs. 26,00,000
Sponsor : CSIR, India
Duration : 2025-2028

Principal investigator (PI) for the project entitled ”Production of BioFuel from Biomass using Microbial Enzymes and Nanomaterials: A Computational Study”
Amount : Rs. 22,00,000
Sponsor : Institute of Eminence (IoE), Govt. of India
Duration : 2022-2024

## Selected patents (a paragraph or upto 5 bullet points)

None

## Current PhD scholars and broad research topics

1. Shubhashree Barik is working on 'Production of BioFuel from Biomass using Microbial Enzymes and Nanomaterials'

2. Aarti Kumari is working on `Computational Approach to Produce Smart Materials from Spider Silk Protein'