Nikita Sahu

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Education

University of California San Diego — San Diego, USA
PhD in Nanoengineering — *Sept. 2024 – Present*

Université Grenoble Alpes (Bionanotechnology Track) — Grenoble, France
Erasmus Masters in Nanoscience and Nanotechnology (Phase 2) — *Sept. 2023 – Aug. 2024*
Cum Laude

Katholieke Universiteit Leuven — Leuven, Belgium
Erasmus Masters in Nanoscience and Nanotechnology (Phase 1) — *Sept. 2022 – Aug. 2023*
Cum Laude

Birla Institute of Technology and Science, Pilani — Goa, India
Bachelor of Engineering in Chemical Engineering — *Aug. 2018 – Dec. 2021*
CGPA: 8.96/10; Rank: 6/72 — *(Graduated one semester early)*

Research Projects

BioHybrid architectures based nanopatterning for the electronic nose — *Feb. – Jul. 2024*
Guided by Prof. Pierre-Henri Elchinger, French Alternative Energies and Atomic Energy Commission (CEA)

The objective of this internship is to develop original nano-architected materials based on protein self-assembly to improve the sensitivity and selectivity of optoelectronic noses. These electronic noses, under investigation at the SyMMES/CREAB laboratory, are integral to the analysis of volatile organic compounds (VOCs), with profound implications for environmental monitoring (such as air quality control) and security (including explosive detection).

Synthesis and characterization of Cyclometalated Iridium Complexes — *Jul. – Aug. 2023*
Guided by Prof. Shin Aoki, Tokyo University of Science — *(Certificate)*

The summer internship included hands-on training on basic organic synthesis protocols including extraction and separation of mixtures, recrystallisation, and melting point analysis. The research focus of this internship was based on interdisciplinary research on iridium (III) complexes based on post-complexation functionalisation and aimed to understand the ferromagnetic behaviour of iridium complex containing nitronyl nitroxide.

Microfluidic electrochemistry in a Urine Biosensor — *Feb. – May 2023*
Guided by Jinane Elias and Anita Ahmadi, OnePlanet Research Center (iMEC Netherlands)

The aim of this research internship was to understand and optimise the factors influencing the performance of microfluidic biosensors using COMSOL modelling strategies. In order to fulfill this objective, in-silico 2D and 3D simulations were performed to optimize the microfluidic biosensor parameters including geometry, fluid velocity and reading time for the detection of Human Serum Albumin (HSA) in water.

Metabolomics study on therapeutic biomarkers — *Jan. – Aug. 2022*
Guided by Prof. Pramod Wangikar, IIT Bombay

During the internship, gained training on analysing metabolomic profiles based on LCMS data to identifiy diagnostic markers at Clarity Bio Systems India Pvt. Ltd. Also worked on bibliographic analysis of several metabolic markers for different application and redesigned the company's website.

Graphene based drug delivery systems — *Aug. – Dec. 2021*
Guided by Prof. Sutapa Roy Ramanan, BITS Pilani K K Birla Goa Campus

The bachelor thesis aimed on exploring graphene for drug delivery, focusing on designing a system for targeted and sustained release of doxycycline. Synthesis protocols for GO-Chitosan and GO-HAp are developed along with their characterization, with the potential for drug delivery through hydrogel bead encapsulation.

Teaching Experience

Undergraduate Teaching Assistant, BITS Goa

- Kinetics and Reactor Design (Fall 2021)
- Material Science and Engineering (Spring 2021)
- Chemical Engineering Thermodynamics (Fall 2020)

Relevant Coursework and Skills

Cleanroom Training: A practical cleanroom training session with hands-on experience with basic protocols, deposition methods, electrical and physical characterisation techniques as part of the Spring Workshop 2023 at NaMLab, TU Dresden.

Lab Courses: Calorimetry, Electrochemical Biosensing, Cell-micropatterning, DNA microarray, Confocal Microscopy, Heat Transfer, Engineering Chemistry, Separation Processes, CFD, Fluid Mechanics, Biology, Chemistry, Physics

Programming Languages: Python, C, MATLAB

Software: ASPENPlus, AutoCad, COMSOLMultiPhysics, MS-DIAL, GROMACS, SimaPro, ImageJ

Seminars and Workshops: Computational Structure based Screening and Explicit Molecular Dynamics

Specialisations (Online): Fundamentals of Immunology (Rice University); Cancer Biology (John Hopkins University); Drug Development Product Management (UCSD)

MOOC: Introduction to Molecular Spectroscopy (University of Manchester); Nanotechnology: A Maker's Course Materials Data Sciences and Informatics (Georgia Institute of Technology); Psychological First Aid (John Hopkins University) Python for Everybody - Basics, Data Structures, Accessing Web Data (University of Michigan)

Scholarship and Volunteering

- **Erasmus Mundus Category A Scholarship** (2022-2024)
  Full funding for Masters studies including contribution to student participation costs, travel, installation and monthly allowance
- **Hindustan Times Scholarship** (2014)
  One of the 150 students chosen from over 27,000 applicants and 250+ schools across Mumbai, Pune and Chandigarh to be rewarded with a scholarship.
- **Jaganath Cancer Aid Foundation** (June-July '19)
  Engaged in the cancer awareness campaign and educated the family members of the patient at the shelter homes
- **Mentor in the Peer Mentorship Program** (August '19 - August '20)
  Guided seven freshers through academic and extra curricular in their first year at BITS Pilani

Leadership and Extracurricular Activities

BEST Soft Skills Track (BSST), *Board of European Students of Technology (BEST)* March 2023
Participated in the "Become the BEST version" workshop track of BSST 2023 *(Certificate)*

Research and Collaboration Head, *Alumni Relations Cell* May 2020-July 2021
Led a team of 70+ students, Member of BITS Echo editorial team, Content head

Event Manager, Organising Committee, *BITSAA Global Meet* January 17-19 2020
Managed the event with 1000+ dignitaries and 60+ events

Performer, *Mime Club* August 2018- August 2019
Performed in front of 3000 people during college fests