



EDUCATION AND RELEVANT COURSEWORK

Northeastern University, Boston, USA

(Expected graduation date – May 2021)

- Master of science in **Mechanical Engineering**, Concentration in **Materials Science**. GPA – 3.4 / 4.0
Design of Implants, Structure and Characterization of Polymers, Advanced Biomaterials, Tissue Engineering, Soft Matter

Indian Institute of Technology (IIT), Kanpur, INDIA

- Bachelor of Technology in **Materials Science and Engineering**
Thermodynamics, Rate processes, Mechanics of Solids, Finite element method, Manufacturing processes

TECHNICAL SKILLS

- Analytical and material characterization:** SAXS and WAXS, DSC, DLS, NMR, SEM, TEM AFM, FTIR, Raman Spectroscopy
- Biological:** Loop mediated Isothermal DNA Amplification (LAMP), Polymerase Chain Reaction (PCR), Plasmid extraction, Gel-electrophoresis
- Programming, Modelling and Data Analysis:** R, ORIGIN, MATLAB, SolidWorks, ANSYS, ProEngineer, GD&T practices, GrantaEdupack
- Manufacturing:** Turning, Milling, CNC, Selective Laser melting, Metal and polymer injection molding and nanofabrication
- Management:** DFX principles, DFMEA and PFMEA risk management,

WORK EXPERIENCE AND PROJECTS

Graduate Teaching Assistant

- Graduate course (BIOE 5850) on design of implants, Department of Bioengineering, Northeastern University** Jan-May, 2021
 - Providing guidance to students in the class with respect to the course material
 - Collaborating with the professor to arrange guest lectures and decide course content

Developed a novel medical device/implant

- Graduate course (BIOE 5850) on design of implants, Department of Bioengineering, Northeastern University** Aug-Dec, 2020
 - Designed and developed 3D CAD model of a novel hip implant that uses commercially pure Titanium as opposed to its alloys
 - Sketched out an *in vitro* and *in vivo* testing plan for the developed implant

Project on Targeted Cancer therapy

- Graduate course (BIOE 5820) on Biomaterials, Department of Bioengineering, Northeastern University** Jan-May, 2021
 - Developed a novel cancer therapy protocol using Si-Au nanostructures that are injected intravenously and are excited using NIR lasers
 - Developed comprehensive testes and a 3-5 year research plan for NSF research funding application

Research Associate

- Technical University of Liberec, The Institute for Nanomaterials and advanced technology, Liberec, Czech Republic** Apr – Jul, 2018
 - Appointed by HOD, Dr. Miroslav Cernik and Dr. Vinod Padil as Research associate for two research projects in nanotechnology
 - Evaluated the electrospinning of cellulose acetate into nano-fibres for biocompatible applications and bio-sensing. Successful biocompatible and high tensile strength materials were developed as a result
 - Coordinated a study of the oxidation mechanism and catalysis of organic pollutants using Peroxymonosulfate and Sulfidized nanostructured zerovalent iron (SnZVI) and successfully reported reaction kinetics and spectroscopic analysis of a previously unknown oxidation mechanism

INTERNSHIPS AND TRAINING

Centre for Cellular and Molecular Biology (CCMB), Hyderabad, India

Nov 2018- Apr, 2019

- Executed experiments and undertook training from Dr. Sashi Singh in order to develop scaffolds for efficient biomimicking of human bone using Hydroxyapatite and PGA. As a result, learnt *invitro* biocompatibility testing techniques and successfully completed the assigned project and training

Defense Research and Development Organization, (DRDO), Hyderabad, India

Sep – Nov, 2018

- Executed the testing of high hardness Nickel and Tungsten based superalloy materials at DMRL testing facility for effective use in armor piercing high kinetic energy projectiles and armor applications. As a result, learnt various manufacturing and characterization techniques unique to super alloys like powder-based development of high hardness gamma prime phases, hot isostatic pressing and nanoindentation

Art House, Under CEO & Founder Mr. Md. Anas through AIESEC, Suez, Egypt

May-July, 2014

- Was appointed as Director of Marketing at a startup called Art House. Spearheaded the newly formed marketing division of the enterprise and utilized email and social media marketing strategies to drive sales and auctions of art pieces. As a result of my B2B online sales drive, sales increased by approximately 50%
- Established partnership with local art galleries and set up e-commerce sales model on a website and through various e-commerce platforms further pushing sales

Bhabha Atomic Research Centre (BARC), Government of India, Mumbai, India

Dec 2012

- Researched the formation and corrosion of martensitic stainless steel and subjected it to compression hardening using laser shot peening process and tested the Rockwell hardness and microstructure of resulting material. Designed and presented a poster at the BARC departmental conference

Jacob Engineering Private Limited, Mumbai, India

May-July, 2011

- Appointed as a freshman intern at the HPLC diesel Hydro treatment unit in Mumbai, worked with fulltime engineers under the supervision of Mr. Jagdish Jadhao (Plant Supervisor) and learnt the industrial purification and plant design engineering aspects of an oil refinery
- Executed simulations based on mathematical models developed using Bernoulli and Navier-Stokes principles of fluid flow. After completion of my training, was awarded the best incoming intern among my peers based my final report

LEADERSHIP AND AWARDS

- Founded a frugally developed and Investor driven school for the poor, Angelica International School, Kurha, Amravati, India. In 2015
- Spearheaded a Tuberculosis eradication drive as a part of an NGO called Maharashtra Multipurpose society in India. Developed a project to test and catalogue around 100,000 potential patients that showed symptoms. TB positive patients were effectively identified, catalogued and treated with free TB- DOTS treatment