

Nishant Mishra

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PUBLICATIONS

- ***Vancomycin functionalized WO_3 thin film-based impedance sensor for efficient capture and highly selective detection of Gram-positive bacteria***

[Biosensors and Bioelectronics 136 \(2019\): 23-30](#)

- ***MoS₂/TiO₂ Hybrid Nanostructure- Based Field- Effect Transistor for Highly Sensitive, Selective, and Rapid Detection of Gram- Positive Bacteria***

[Advanced Materials Technologies \(2019\): 1900615](#)

- ***Reconstituted Fe-Azurin based device for resistive memory switching***

Submitted to the International Workshop on the Physics of Semiconductor Devices, 2017

SKILLS

Cleanroom Fabrication

- **Basic Mask designing** using ProjeCAD, IntelliCAD, and CleWin for metalization and microchannel etching
- **Process flow Design** for semiconductor processing
- **Photolithography of Si and Glass substrates** including wafer cleaning, priming, spin-coating, development, wet etching and optical inspection
- **Physical Vapour Deposition** using Varian 3117 Thermal evaporator
- **XeF₂ Vapour phase etching** using Xactix E1 Gas phase etcher

Analysis and characterization

- **Semiconductor characterization** using Keithley 4200 and 4200A parameter analyzers. Experience with Keithley 2636B, Keithley 2400 SMUs
- **Impact Electrochemistry Measurements** including Chronoamperometry and Cyclic Voltammetry using Variable Gain Sub Femto Ampere Amplifier DDP-CA-300
- **Electrochemical Impedance Spectroscopy** using BioLogic SP-150 Potentiostat
- **Data analysis and plotting** using MATLAB and Origin2019
- **Infrared Spectrum analysis** using Thermo Scientific Nicolet iN10MX infrared imaging microscope
- **UV-Vis Spectrum analysis** using Eppendorf Biospectrometer

Chemical lab

- **Basic Wet lab skills** familiarity with micropipettes, balances, centrifuges and basic wet lab equipment
- **PDMS Casting** for microfluidics
- **Silver Nanoparticle Synthesis** using chemical methods

Other

- **Finite Element Method Simulations** using COMSOL
- **Basic microcontroller based automation** using Arduino uno

EXPERIENCE

Twente Pathway College, Enschede (The Netherlands) - *Physics Teacher*

Sept 2021–Present

- Seminar instruction
- Remedial physics instruction
- Project and academic writing supervision
- Development of course materials

ECSens, Enschede (The Netherlands) - *Research Intern*

Jul 2020–Dec 2020

- Mask Design using CleWin5
- Amperometric measurements
- Data analysis of the electrical measurements

Student Union, University of Twente, Enschede (The Netherlands) - *Secretary* *Buddy September 2020 edition*

Jul 2020–Present

- Responsible for data management and correspondence with the Buddy program

Indian Institute of Technology Delhi, New Delhi (India) - *Research*

Intern Dec 2017–Sep 2019, Jun 2017– Aug 2017

- Characterized a BioFET and Bioimpedance sensors for bacteria detection
- Fabricated and characterized a Protein and Polysaccharide-based Resistive memory device on a flexible substrate

Electronics Club IEEE GTBIT, New Delhi (India) - *Member*

Aug 2015–Dec 2017

- Conducted an academic-industry workshop on Renewable Energy Resources
- Conducted a two-day Hardware Hackathon
- Taught a Special Interest Group on the Basics of C

EDUCATION

University of Twente, Enschede (The Netherlands) - *University teaching qualification (BKO)*

Dec 2021–present

- Designing a lesson and course ([Certificate](#))

University of Twente, Enschede (The Netherlands) - *Master of Science in Electrical Engineering (EQF level 7)*

Sep 2019 – 30 Aug 2021

Specialization: *Lab on a chip Systems for Biomedical and Environmental Applications*

Master Research Honours program: *Additional 15 EC of general academic training for students in the top 10% of their cohort*

Thesis: [*Design and fabrication of an ultrafast expanding microbubble valve array for use in a microreactor to measure sub millisecond reaction kinetics*](#) - 7.3

Guru Tegh Bahadur Institute of Technology, New Delhi (India) - *Bachelor of Technology in Electrical and Electronics Engineering (EQF level 6)*

Aug 2014–May 2018

Affiliated with **Guru Gobind Singh Indraprastha University First Division**

Delhi Public School, R. K. Puram, New Delhi (India) - *All India Senior School Certificate Examination (EQF level 4)*

2013-2014

Mathematics, Physics, Chemistry, Computer Science, English

PROFESSIONAL DEVELOPMENT

Dutch B1 ([Certificate](#))

University of Twente, Enschede (Netherlands)

How to Teach in an International Classroom ([Certificate](#))

University of Twente, Enschede (Netherlands)

Suicide prevention training ([Certificate](#))

113 Zelfmoordpreventie, Amsterdam (Netherlands)

Nanotechnology for Health ([Certificate](#))

University of Twente (FutureLearn), Enschede (Netherlands)

Device Characterization with the Keithley 4200-SCS (Audit)

Keithley Instruments, Inc (Nanohub), Cleveland (United States)

Micro & Nano fabrication (MEMS) ([Certificate](#))

École Polytechnique Fédérale de Lausanne (EdX), Lausanne (Switzerland)

Primer on Semiconductor Fundamentals (Audit)

Purdue University (EdX), West Lafayette (United States)

Circuits and Electronics 1: Basic Circuit Analysis ([Certificate](#))

Massachusetts Institute of Technology (EdX), Cambridge (United States)

The Arduino Platform & C Programming ([Certificate](#))

University of California, Irvine (Coursera), Irvine (United States)