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Niharika Rawat

Passport: Y1404908 **Nationality:** Indian **Date of birth:** 04/09/1992

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ABOUT ME

I am an early career researcher with a PhD in Nanosciences with a strong interdisciplinary background in biotechnology, biomaterials, and biomedical engineering. My research focuses on nanostructured surfaces for antibacterial and cell-responsive applications, particularly in the context of biomedical devices. I am driven by a passion for innovation and scientific discovery and am currently seeking opportunities to contribute to cutting-edge research and collaborative projects at the interface of nanotechnology and life sciences.

EDUCATION AND TRAINING

PhD

University of Ljubljana [06/11/2019 – 30/10/2024]

City: Ljubljana | **Country:** Slovenia | **Field(s) of study:** Nanoscience | **Level in EQF:** EQF level 8 | **Thesis:** Novel approaches for fabrication of titanium based nanostructured surfaces for biomedical applications

Developed novel titanium-based nanostructures using advanced surface modification techniques, including plasma-induced electrochemical anodization and hydrothermal synthesis. The research focused on creating unique nanoscale morphologies to enhance antibacterial properties and tailor cell responses. Emphasis was placed on environmentally friendly processes, comprehensive surface characterization, and evaluation of biological interactions for potential biomedical applications.

B.Tech+M.Tech (Dual Degree)

Amity University

City: Noida, UP | **Country:** India | **Field(s) of study:** Nanotechnology | **Level in EQF:** EQF level 7 | **Thesis:** Fabrication and Electrochemical characterization of Graphene on SiC

- Studied core subjects in nanotechnology, bioengineering and material sciences
- Fabricated graphene on SiC using sublimation epitaxial growth and evaluated its electrochemical behavior through cyclic voltammetry. 6H-SiC exhibited superior electrochemical performance due to bilayer graphene. Raman spectroscopy confirmed graphene stacking. The study demonstrated the potential of graphitized SiC for high-performance devices such as biofuel cells.

PUBLICATIONS

[2025]

Surface Modification of Stainless Steel for Enhanced Antibacterial Activity

Authors: Benčina, M.; Rawat, N.; Paul, D.; Kovač, J.; Iglič, A.; Junkar, I | **Journal Name**: ACS Omega | **Volume, Issue and Pages**: Vol. 10, Issue 13, 13361–13369

[2024]

Method for coating a medical device, especially for fabrication of antithrombogenic and antibacterial titanium materials and their alloys

Authors: Ita JunkarMetka Bencina, Niharika RAWAT, Gaja MARKOVIC, Jan STANIC, Veronika KRALJ-IGLIC, Ales IGLIC | **Journal Name**: European Patent Office | **Volume, Issue and Pages**: EP4467167A1

[2024]

Enhanced Hemocompatibility and Cytocompatibility of Stainless Steel

Authors: Metka Benčina*, Niharika Rawat, Domen Paul, Janez Kovač, Katja Lakota, Polona Žigon, Veronika Kralj-Iglič, Aleš Iglič and Ita Junkar | **Journal Name**: ACS Omega | **Volume, Issue and Pages**: Vol. 9, Issue 17

[2024]

Titanium Dioxide Substrates as Sensors for Detection of Platelets and Extracellular Particles from Blood Plasma

Authors: Niharika Rawat, Ita Junkar, Metka Benčina, Veronika Kralj-Iglič, Ales Iglič | **Journal Name**: Proceedings of Socratic Lectures. 2024 | **Volume, Issue and Pages**: 1Vol. 1, p.92-101

[2023]

Interaction of cells with different types of TiO2 nanostructured surfaces

Authors: Niharika Rawat, Ita Junkar, Aleš Iglič, Veronika Kralj-Iglič, Mukta Kulkarni-Sambhare, Ekaterina Gongadze, Metka Benčina | **Journal Name**: Advances in Biomembranes and Lipid Self-Assembly | **Volume, Issue and Pages**: Vol. 37, p. 29-59

Fine-Tuning the Nanostructured Titanium Oxide Surface for Selective Biological Response

Authors: Niharika Rawat, Metka Benčina, Domen Paul, Janez Kovač, Katja Lakota, Polona Žigon, Veronika Kralj-Iglič, Hsin-Chia Ho, Marija Vukomanović, Aleš Iglič, Ita Junkar | **Journal Name**: ACS Applied Bio Materials | **Volume, Issue and Pages**: Vol. 6, Issue 12, p.5481-5492

[2022]

Fabrication of Antibacterial TiO2 Nanostructured Surfaces Using the Hydrothermal Method

Authors: Niharika Rawat, Metka Bencina, Ekaterina Gongadze, Ita Junkar, Ales Iglic | **Journal Name**: ACS Omega | **Volume, Issue and Pages**: Vol. 7, Issue 50, p.47070-47077

[2021]

Bio-performance of hydrothermally and plasma-treated titanium: the new generation of vascular stents

Authors: Metka Benčina, Niharika Rawat, Katja Lakota, Snežna Sodin-Šemrl, Aleš Iglič, Ita Junkar | **Journal Name**: International journal of molecular sciences | **Volume, Issue and Pages**: Vol. 22, Issue 21, p.1858

CONFERENCES AND SEMINARS

[27/10/2023 – 29/10/2023] New Delhi, India

International Conference on Materials for Energy and Sustainable Development (MESD-2023), held at Jawaharlal Nehru University

Oral presentation titled "TiO_2 based Nanostructures for Selective Biological Response"

[10/05/2023 – 12/05/2023] Gozd Martuljek, Slovenia

29th International Scientific Meeting on Vacuum Science and Technique (29 ISMVST) held at Gozd Martuljek

Oral presentation titled "Antibacterial TiO_2 Nanostructured Surfaces Using the Hydrothermal Method"

[13/10/2022 – 16/10/2022] Mumbai, India

International Conference on Smart Materials for Sustainable Technology-II (SMST-2022) held at IIT Bombay

Oral presentation titled "TiO_2 based Nanostructures for Selective Biological Response"

[04/09/2022 – 08/09/2022] Bordeaux, France

32nd Annual Conference of the European Society for Biomaterials (ESB 2022)

Poster presentation titled "Hydrothermally and plasma treated Ti_6Al_4V for antibacterial surfaces"

[07/05/2021] Ljubljana, Slovenia

4th International Symposium on Biomaterials organized by IMT

Oral presentation titled "Surface modification of medical grade stainless steel"

SKILLS

Microsoft Word / Microsoft Excel / Microsoft Powerpoint / Data Analysis / Surface & Material Characterization Tools / Document & Presentation Tools / Scientific Writing & Reporting / Virtual Collaboration Tools / Lab Management & Safety Compliance / Organizational and planning skills / Analytical skills / Team-work oriented