Curriculum Vitae

Amisha Kushwaha Ph.D.
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WORK EXPERIENCE:

Visiting Researcher: School of Biochemical Engineering, IIT BHU Varanasi. (August 2024 onwards)
Research Associate, Biotechnology: Gujarat Biotechnology Research Centre. (Jan 2023- Aug 2023)
Apprentice, Biotechnology: Gujarat Biotechnology Research Centre. (Nov 2022- Jan 2023)

EDUCATION:

Ph.D. Nano Sciences (05/2022), Central University of Gujarat, Gandhinagar, Gujarat, India
M.Phil. Nano Sciences (75%) (07/2016), Central University of Gujarat, Gandhinagar, Gujarat, India
B.Sc. (53%)/ **M.Sc. Biotechnology** (74%) (2005-2010), V.B.S. Purvanchal University & H.N.B. Garhwal University, India

Projects during Education:

Visiting Researcher: "Design and Validation of Field Deployable Miniaturized Nano biosensing System for Detection of the Parasitic Liver Fluke *Fasciola gigantica*" (ICMR)
RA Project: Title " Mutation Profiling of Hemoglobinopathies in Gujarat" (DST)
Ph.D. Project: Title "Advanced Nanostructures for Sensing Applications of Neurotransmitters/Inhibitor"
M.Phil. Project: Title "Synthesis of MgO Nanoparticles and Interaction with Fatty Acids"
M.Sc. Project: Title "Identification and characterization of the oil-degrading gene in *pseudomonas* & wild type micro-organism; Cloning of Oil degrading gene into *E.Coli*"

AWARDS AND HONORS:

- Common Eligibility Test (CET) Ph.D. (2012) Dr Ram Manohar Lohia Avadh University, Faizabad
- University Grant Commission (UGC) of India fellowship for MPhil/Ph.D. scholar (2014)
- CSIR NET Life Sciences JRF fellowship (2019)
- CSIR NET life Sciences SRF fellowship (2022)

RESEARCH EXPERIENCE:

- 3D Printing, Microfluidic system, and electrode fabrication
- Molecular Biology techniques, Lateral flow detection, and Polymerase Chain reaction (PCR).
- Electrochemical, Fluorescence, and Colorimetric Biosensors.
- Nanomaterial Synthesis: Optimization, Doping, Capping, and Stabilization.
- Nano fluid formation and their Physio-chemical parameter study
- Antibacterial and Antifungal effect of nanoparticles.
- Isolation and Purification of DNA, RNA, protein and gel electrophoresis, SDS-PAGE analysis
- Handling of Albino mice for hypersensitive test and identification of Immune system organs.
- Gene cloning, transformation, and transfection, using genomic and plasmid DNA in E. coli. bacteria

TRAINING:

- Two-week 40th National Training Program in Electron Microscopy for Scientific Investigators (18-30 Nov 2024) SAIF AIIMs New Delhi
- One-month International workshop on Data Science with Python and Bioinformatics for Drug Discovery (Jan to Feb 2023) (May to June 2023)

EXTRA-CURRICULAR ACTIVITIES:

- Reviewer of "Thin Film Nanomaterials: Synthesis, Properties and Innovative Energy Applications, Bentham Science Publisher (2023)
- Reviewer of an Article from the Journal of Environmental Chemical Engineering (2023)
- Teaching Botany to Pre-Medical Aspirants in a private organization. (2011-13)
- Selected for the interview: Government of India Staff Selection Commission (SSC) for the post of Assistant Central Intelligence Officer Gr.-I (Tech), (May 2012)
- Six Months Yoga Certificate course at the University.
- Best Commander and Discipline Award, Grading 'A' for certificate A, Rank CADET SERGEANT, during schooling at 28 UP Girls Bn NCC BHU, Varanasi India (2001)

CONFERENCES (Oral/Poster Presentations/ Attended):

- Workshop on "Micro-fabrication and Biosensors: Advances in Diagnostics" (18th-19th Jan, 2025) at IIT Jammu.
- Oral presentation "3rd International conference on Electrochemical Science and Technology"(ICONEST-24) held at CSIR-NPL, New Delhi, India (20 Sep. 2024)
- Oral presentation "International Web Conference on Recent Advances In Nanoscience & Nanotechnology for High-end Applications (IWCRANHA-2020)" at Department of Applied Science and Humanities, Assam University, Silchar, India (07/2020)
- Poster presented "International Conference on Smart Materials and Nanotechnology (ICSMN2020)" at SKN Sinhgad College of Engineering, Korti Pandharpur, Maharashtra, India (01/2020)
- Poster presented "Nano-material for Energy Conservation and Storage Applications" (NECSA2018) at PDPU Raisan, Gandhinagar, Gujarat, India (01/2018)
- Poster presented "Nanotechnology: Ideas, Innovations, and Initiatives (ICN: 3I-2017)" at IIT Roorkee, India. (12/ 2017)
- Poster presented in "RSC West India Meet". at Gujarat Forensic Science University, Gandhinagar India (03/2016)
- Two days National Conference entitled "Nanotechnology in Agriculture, Energy, and Medicine". At the Central University of Gujarat, Gandhinagar. India (03/2016)
- Two days" workshop entitled "Characterization Techniques for Materials" at S.P. University, Vidyanagar, India (02/2016)
- Poster presented "Future Theme of Neo Complementary Nano Lungs" at the National conference on "The Frontiers of Chemical Science and Potential Interfaces" and "at the Central University of Gujarat, Gandhinagar India (04/2015)
- Participated in two-day National Conference Entitled "Advances in Environmental Science" at Central University of Gujarat, Gandhinagar, India (02/2015)
- Participated in a Seminar on "Intellectual Property and Innovation Management in Knowledge Era" organized by the Corporation in Collaboration with Uttarakhand, State Council for Science and Technology (UCOST), Rishikesh, India. (02/2009)
- Participated in Entrepreneurship Awareness Camp, Sponsored by NSTEDB, Department of Science and Technology, Government of India (10/ 2007)

PUBLICATIONS:

Conference Proceedings: A. Kushwaha, T. Bagchi, MgO NPs synthesis, capping and enhanced free radical effect on the bacteria and its cell morphology, AIP Conf. Proc., American Institute of Physics Inc., (2018) 030010. https://doi.org/10.1063/1.5035212

Research Articles:

[1] A. Kushwaha, G. Singh, M. Sharma, Colorimetric sensing of chlorpyrifos through negative feedback inhibition of the catalytic activity of silver phosphate oxygenase nanozymes, RSC Adv. 10 (2020) 13050–13065. https://doi.org/10.1039/c9ra10719c.

[2] A. Kushwaha, G. Singh, M. Sharma Designing of cerium phosphate nanorods decorated reduced graphene oxide nanostructures as modified electrode: An effective mode of dopamine sensing, *Microchem. J.*, 166 (2021) 106224. https://doi.org/10.1016/j.microc.2021.106224.

[3] A. Kushwaha, G. Singh, M. Sharma Highly sensitive and selective electrochemical detection of caffeine, theophylline and guaiacol in green tea, green coffee, coffee, and tea extracts using SnS_2 nanoflakes modified electrode. Materials Advances, (2024) https://doi.org/10.1039/D3MA00561E.

[4] A. Kushwaha, G. Singh, M. Sharma, Enzyme free Electrochemistry of novel MnOOH-W_3O_{10} nanostructures for ultra-trace detection of histamine in peanuts. *New J. Chem.*, 47 (2023) 3276-3289 https://doi.org/10.1039/D2NJ05255E

[5] A. Kushwaha, G. Singh, M. Sharma, Electrocatalytic activity of gelatine quantum dots interacted silver phosphate nanomaterial for detection of Serotonin and Melatonin in commercially available tablets. *(Under communication).*

[6] A. Kushwaha, G. Singh, M. Sharma, Colorimetric Detection of Benfuracarb in Agricultural Soil of Colocasia Tuber Using γ-MnOOH Nanorods with Oxidase-Mimicking Properties (Under communication ACS Biomaterials Science & Engineering, Manuscript ID: ab-2025-00459v)

[7] G. Singh, A. Kushwaha, M. Sharma, Intriguing peroxidase-mimic for H_2O_2 and glucose sensing: A synergistic $Ce_2(MoO_4)_3$/rGO nanocomposites, J. Alloys Compd. 825 (2020) 154134. https://doi.org/10.1016/j.jallcom.2020.154134.

[8] G. Singh, A. Kushwaha, M. Sharma, Persistent peroxidase mimics of graphene oxide anchored cerium molybdate sensor: An effective colorimetric detection of S^{2-} and Sn^{2+} ions, Microchem. J. 153 (2019) 104290. https://doi.org/10.1016/j.microc.2019.104290.

[9] S. Gajendar, K. Amisha, S. Manu Mildly acidic pH and room temperature triggered peroxidase-mimics of rGO–$Cu_3(OH)_2(MoO_4)_2$ cuboidal nanostructures: an effective colorimetric detection of the neurotransmitter dopamine in blood serum and urine samples, CrystEngComm. 23 (2021) 599-616. https://doi.org/10.1039/d0ce01423k.

[10] G. Singh, A. Kushwaha, M. Sharma, Electrochemistry of rGO-$Cu_3H_2Mo_2O_{10}$ cuboidal nanostructures: An effective detection of the neurotransmitter dopamine in blood serum sample, J. Electro anal. Chem. 880 (2020) 114889. https://doi.org/10.1016/j.jelechem.2020.114889 .

[11] G. Singh, A. Kushwaha, M. Sharma Highly sensitive and selective detection of serotonin and dopamine with stable oxidation potentials using novel Dy_2MoO_6 nanosheets, Materials Chemistry and Physics, 279 (2022) 125782 https://doi.org/10.1016/j.matchemphys.2022.125782

[12] G. Singh, A. Kushwaha, M. Sharma, Electrochemistry of $Gd2(MoO_4)_3$-rGO nanocomposite for highly sensitive and selective detection of hazardous hydroquinone and chloramphenicol, Journal of Environmental Chemical Engineering 9 (6), (2022) 106713 https://doi.org/10.1016/j.jece.2021.106713

[13] K. Harikrishnan, G. Singh, A. Kushwaha, V Singh, UK Gaur, M. Sharma, 2D/2D heterojunction of graphitic carbon nitride and hexagonal boron nitride nanosheets mediated electrochemical detection of hazardous hydroquinone with high selectivity and sensitivity, Journal of Environmental Chemical Engineering 10 (6), (2022) 108717 https://doi.org/10.1016/j.jece.2022.108717

[14] G Singh, A Ghosh, P Pandey, A Kushwaha, UK Gaur, M Sharma Persistent peroxidase-mimic of Ce-$MoSe_2$ nanosheets: A colorimetric approach for glucose detection in serum samples, Materials Letters. 317 (2022) 132084 https://doi.org/10.1016/j.matlet.2022.132084

[15] G Singh, A Kushwaha, M Sharma, Ultra-trace detection of caffeine and theophylline with high sensitivity and selectivity using $Gd_2(MoO_4)_3$ nanosheets, Materials Today Communications. 31 (2022) 103390 https://doi.org/10.1016/j.mtcomm.2022.103390

Book Chapters

[16] A. Kushwaha, G. Singh, M. Sharma, "Graphene-based electrodes for Electrochemical Sensors" (Bentham Science). eISBN 978-981-5136-05-0

[17] A. Kushwaha, G. Singh, M. Sharma, "Stability and fate of nanoparticles in food" (CRC Press Taylor & Francis Group). eISBN no. 9781003305408 https://doi.org/10.1201/9781003305408

REFERENCES:

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