Curriculum Vitae

Name	Dr. Nishu Devi
Qualifications	Ph.D. in Chemistry, M.Tech. & B.Tech. in Chemical Engineering
Gender	Female
Nationality	Indian
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Web Links:

Google Scholar Research Gate LinkedIn

Profile:

A Doctorate degree in Chemistry from University of Johannesburg, Auckland Park Kingsway Campus, Johannesburg, South Africa in the Department of Chemical Sciences (Formerly Department of Chemistry) and Masters (M.Tech.) & Bachelors (B.Tech.) in Chemical Engineering from DCR University of Science and Technology Murthal, India, currently working as a Postdoctoral researcher in the Department of Chemical Sciences at University of Johannesburg, South Africa. Innovative thinker who enjoys new challenges, results from oriented R&D chemist and chemical engineer, with academic and research experience. An expert in designing and executing multi-step synthesis, high vacuum air sensitive reactions, in-situ polymerizations, purification, characterization, scale-up, and optimizing chemical processes of synthetic methods for both nano and macromolecules. Skilled in managing analytical instruments day-to-day activities conducted in the laboratory for method development, sample analysis, data collection and validation.

My research interests include material science, electrochemistry, surface chemistry of electrodes, nanomaterials synthesis and electrochemical energy storage including fuel cell, supercapacitor and battery applications.

Presently working as a postdoctoral researcher at university of Johannesburg and visiting researcher at CSIR Pretoria, South Africa.

Education:

Degree	Duration	University	Major	Marks
Ph.D.	March 2017-October 2019	University of Johannesburg, Johannesburg, South Africa	Chemistry	NA
Thesis Title: *Performance of Bismuth based Materials for Electrochemical Energy Storage Devices (Degree conferred on 20th April 2020)*				
M.Tech.	July 2013-June 2015	D. C. R University of Science & Technology, Murthal, Haryana, India	Chemical Engineering	85.59%
Dissertation Title: *Combined process for transesterification and selective hydrogenation for biodiesel production from non-edible vegetable oils*				
B.Tech.	July 2009-June 2013	D. C. R University of Science & Technology, Murthal, Haryana, India a	Chemical Engineering	79.99%
Dissertation Title: *Analysis of various samples of water and study of their purification techniques*				
Sr. Sec.	June, 2008	Swami Nitanand Senior Secondary School, Rohtak, Haryana, India	Physics, Chemistry, Mathematics	84.00%

Teaching and Research Guidance Experience:

Duration	Position, Place	Teaching, Lab assistance and Research guidance
March 2017-November 2019	Research Scholar, University of Johannesburg, Johannesburg, South Africa-2006 (Staff Number: 217092291)	• Teaching assistance to Professor • Invigilation and evaluation • Laboratory assistance for graduation students (Physical Chemistry, Material Science and Polymer Science)
September 2016-December 2016	Visiting Faculty, D. C. R University of Science & Technology, Murthal, Haryana, India-131039	• Equipment Design, Optimization of Chemical Processes • Invigilation and evaluation • Preparing Lectures, Presentations,

		• Laboratory assistance for B.Tech. students
July 2015-August 2016	Project Fellow at CSIR-Indian Institute of Petroleum, Dehradun-248005, India	• Synthesis of catalyst for fixed bed sweetening process • Performance evaluation of the synthesized catalysts with varying solubility • Screening of the potential catalyst formation based on pilot plant evaluation with industrial feedstock • Generation of necessary data for kinetic and process development studies

Area of Research Interest:

Overall, I am interested in investigating the fabrication and development of nanostructured carbon-metal-polymer composites. My previous research work has focused on the nanotechnology towards the development of multifunctional smart materials for various applications in the field of material science. My previous research work includes:

- Design, synthesis and then characterization of catalysts for trans-esterification and hydrogenation reactions
- Development of material-based additives for lubrication applications
- Explore the friction-reducing, antiwear, viscosity index and pour point depressant of material-based additives to diesel
- Development of catalysts for sweetening of kerosene and fixed bed reactor
- Independent handling of Batch Reactor, Continuous Flow Reactor, Fixed Bed Reactor and Titration Unit
- Design, synthesis and then characterization of materials for Electrochemical Energy Storage Devices i.e. Fuel Cell, Supercapacitor and Battery
- Synthesis of materials for Biosensors and characterization using Potentiostat

Distinguished Achievements, Awards and Scholarships:

- Global Excellence and Stature Fellowship for 3 years (GES, March 2017 -December 2019) to pursue Doctoral Degree at University of Johannesburg.
- Received Gold Medal for achieving first place in M.Tech. Degree (2015).
- Graduate Aptitude Test in Engineering (GATE) qualified (2014).
- Got Merit-cum-mean Indian Institute of Chemical Engineering (IIChE) Scholarship (2014).
- Received Silver Medal for achieving second place in B.Tech. Degree (2013).
- Coordinator of MANTHAN society in Techno-Rhythm (2012).
- Organizer of seminar on "Clean Energy Sources" on National Science Day (2012).

- Participated and got first prize in "Chemical Quiz" organized by IIChE, December 06, 2011.
- Rashtrapati Guide of Bharat Scouts and Guides at National level (2006).

Hot Articles: Essential Science Indicators (Thomson Reuters)

- 1 Article in ACS Omega (I.F. 2.87) 2020
- 1 Article in Chemistry Select (I.F. 1.811) 2019
- 1 Article in Applied Surface Science (I.F. 5.27) 2019

Highly Cited Articles: Essential Science Indicators (Thomson Reuters)

- 1 Article in Journal of Alloys and Compounds (I.F. 4.65), 2017
- 1 Article in International Journal of Hydrogen Energy (I.F. 4.939) 2017
- 1 Article in Polymers (I.F. 3.426) (2020)

List of Publications and Conferences:

A) Research Papers in International Journal

1. **Nishu Devi**, Suprakas Sinha Ray, "Performance of bismuth-based materials for supercapacitor applications: A review" **Mater. Today Commun.**, 2020, 25, 101691. Impact factor: 1.97
2. **Nishu Devi**, Sarit K. Ghosh, Venkata K. Perla, and K. Mallick, "Organic–Inorganic Complexation Chemistry-Mediated Synthesis of Bismuth–Manganese Bimetallic Oxide for Energy Storage Application" **ACS Omega**, 2020, 30, 18693–18699. Impact factor: 2.87
3. Samarjeet Singh Siwal, Qibo Zhang, **Nishu Devi,** Vijay Kumar Thakur, "Carbon-Based Polymer Nanocomposite for High-Performance Energy Storage Applications" **Polymers**, 2020, 12, 505. Impact factor: 3.426
4. **Nishu Devi**, S. Ghosh, V.K. Perla, T. Pal and K. Mallick, "Laboratory based synthesis of the pure form of gananite (BiF3) nanoparticles: a potential material for electrochemical supercapacitor application" ***New J. Chem.*** 2019 doi:10.1039/C9NJ04573B. Impact factor: 3.288
5. **Nishu Devi**, S. Ghosh and K. Mallick, "Supercapacitive performance of highly dispersed bismuth sulfide nanoparticles in organic matrix: The role of sulphur source" ***Inorg. Chem. Commun.,*** 2019, 103, 93-99. Impact factor: 1.79
6. R. Barik, **Nishu Devi,** V.K. Perla, S.K. Ghosh and K. Mallick, "Stannous sulfide nanoparticles for supercapacitor application", ***App. Surf. Sci.,*** 2019, 472, 112-117. Impact factor: 5.27
7. S. Siwal, **Nishu Devi,** V.K. Perla, S.K. Ghosh and K. Mallick, "Promotional role of gold in electrochemical methanol oxidation". ***Catalysis, Structure & Reactivity,*** 2019, 5, 1-9.
8. **Nishu Devi,** S. Ghosh, S.C. Ray and K. Mallick, "Organic Matrix Stabilized Ultra-Fine Bismuth Oxide Particles for Electrochemical Energy Storage Application" ***ChemistrySelect*****,** 2018, 3, 12057-12064. Impact factor: 1.811
9. S. Siwal, **Nishu Devi,** V. Perla, R. Barik, S. Ghosh and K. Mallick, "The influencing role

of oxophilicity and surface area of the catalyst for electrochemical methanol oxidation reaction: a case study" ***Mater. Res. Innovations,*** 2018, 23, 440-447. Impact factor: 1.14

10. D. Nandi, R.U. Islam, **Nishu Devi,** S. Siwal and K. Mallick "Palladium nanoparticle-catalyzed aryl–amine coupling reaction: high performance of aryl and pyridyl chlorides as the coupling partner" ***New J. Chem.*****,** 2018, 42, 812-816. Impact factor: 3.288.
11. R. Barik, **Nishu Devi,** D. Nandi, S. Siwal, S.K. Ghosh and K. Mallick, "Multifunctional performance of nanocrystalline tin oxide", ***J. alloys Compd*****.,** 2017, 723, 201-207. Impact factor: 4.65
12. S. Siwal, S. Ghosh, D. Nandi, **Nishu Devi,** V.K. Perla, R. Barik and K. Mallick, "Synergistic effect of graphene oxide on the methanol oxidation for fuel cell application", ***Mater. Res. Express*****,** 2017, 4, 095306. Impact factor: 1.41
13. S. Siwal, S. Matseke, S. Mpelane, **Nishu Hooda,** D. Nandi, and K. Mallick, "Palladium-polymer polymer nanocomposite: An anode catalyst for the electrochemical oxidation of methanol". ***Int. J. Hydrogen Energy*****,** 2017, 42, 23599-23605. Impact factor: 4.939

B) Proceedings of Conference/Seminar/Symposia

1. **Nishu Devi**, S. Siwal and K. Mallick, "Carbon nitride supported palladium nanoparticles: A homemade anode electrode catalyst for direct methanol fuel cell application" International Symposium on Functional Materials (ISFM-2018): Energy and Biomedical Applications, Chandigarh-India, April 13-15, 2018.
2. **Nishu Devi**, S. Siwal and K. Mallick, "Synthesis, characterizations and role of gold-graphitic carbon nitride as a promoter for electro-oxidation of methanol" Inrernational conference on Nanotechnology: Ideas, Innovations and Initiatives-2017 IIT Roorkee, December 06-08, 2017.
3. **Nishu Devi**, S. Siwal, R. Barik, SK Ghosh and K. Mallick, " Affirmative role of ZnO towards the electro-oxidation of methanol" ANM 2017: 9th International Conference on Advanced Nanomaterials. University of Aveiro, Portugal, July 19-21, 2017.
4. R. Barik, **Nishu Devi**, S. Siwal, SK Ghosh and K. Mallick, "Citrate stabilized solvothermal synthesis of stannous sulfide for supercapacitor application" ANM 2017: 9th International Conference on Advanced Nanomaterials. University of Aveiro, Portugal, July 19-21, 2017.

C) Manuscript under Review and Preparation

1. Synthesis and performance evaluation of Bismuth nanoparticles as an electrode material for electrochemical energy storage. *(Manuscript under preparation)*
2. A brief Review on carbon polymer nanocomposites for EMI Shielding applications (Under preparation)

Professional Training Received:

- Six Weeks B. Tech. Training on "Study of Separation Processes of Acetic Acid and

Water" at Terminal Ballistic Research Laboratory, DRDO, Chandigarh, India (11th Jun 2012 to 20 July 2012).

- Six months M.Tech. Training at CSIR-Indian Institute of Petroleum, Dehradun (Jan2015-June2015).
- One day training at "Biologic Science Instruments" Johannesburg, South Africa (2017)
- One Day Workshop at University of the Witwatersrand, Johannesburg organized by Biologic Science Instruments (2017)

Instrumental Skills:

- Proficient in using advanced spectroscopy, spectrometry, chromatography and thermal analysis instruments such as Gas Chromatography (GC), High-performance liquid chromatography (HPLC), Thermo gravimetric Analysis (TGA), FTIR-spectroscopy, UV-vis spectroscopy, Potentiostat, Spectro fluorophotometer, Transmission Electron Microscope (TEM), Scanning Electron Microscope (SEM), Differential Scanning Calorimetry (DSC), X-ray Powder Diffraction (XRD) and Particle Analyzer, etc.

Software/ IT skill:

- MS Office: Word, PowerPoint, Excel
- Data analysis and graphics: Origin, Chemcad, X'Pert High Score
- Literature review and referencing: Endnote, Mendeley

Research/Academic Assistant:

- Conducted literature reviews, surveys, laboratory experiments and other research for use in scholarly publication.
- Compiled research results and assisted in analysis of results and preparation of journal articles or papers.
- Managed and supervised undergraduate Physical Chemistry laboratory courses (CEM 2A10, CEM 3A20 and CEM1B01) for two groups of 80 first year University students.
- Prepared, administered and graded examinations, laboratory assignments, reports and term papers.
- Three-year teaching experience (as tutor) at Department of Chemistry University of Johannesburg, South Africa for the courses Physical Chemistry, Material Science and Polymer Science at the undergraduate level (Staff Number: 217092291).
- One year teaching experience and lab assistant during M.Tech for B.Tech students, class strength of 60 students under TEQIP scheme at DCR University of Science and Technology, Murthal, Haryana, India.

References:

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Declaration

I hereby declare that all the information furnished above is true to the best of my knowledge & belief; documentary evidences can be presented as and when required.

Date: 9th March, 2021
Place: Pretoria, South Africa **(Nishu Devi)**