



Dr. Khemchand Dewangan
Professor

Centre/School/Special Centre: Physical Science

Department: Chemistry

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WEB OF SCIENCE



ORCID ID

Qualifications

Ph.D. (2012) - Physical Chemistry,
Indian Institute of Technology Kanpur

Thesis Title: Synthesis and Characterization of Nanostructured V₂O₅, VN, α-MoO₃, and γ-Mo₂N: Their Lithium-Ion Intercalation/ De-Intercalation and Field Electron Emission Properties

Research Interest: Physical chemistry with an emphasis on nanoscience and nanotechnology, in particular, the development of specific shapes and sizes of pure/hybrid functional nanomaterials for various important applications in the fields of energy storages, environmental remediation, nanocatalysts, and co-related areas.

M.Sc. (2000) - Chemistry, Specialization: Physical Chemistry
Pt. Ravishankar Shukla University, Raipur (Chhattisgarh)

B.Sc. (1998) - Physics, Chemistry, and Mathematics
Guru Ghasidas University, Bilaspur (Chhattisgarh)

Awards & Honors

- Qualified for joint **CSIR-UGC National Eligibility Test (NET)** was awarded Junior Research Fellowship (JRF) by University Grant Commission, New Delhi, India (June' 2003).
- Qualified **Graduate Aptitude Test in Engineering (GATE-2004)** Exam in Chemical Science, All India Rank – 95, *conducted by Ministry of Human Resource Development (MHRD)*, India.
- **Summer Research Fellowship 2018**, Indian Academy of Science, Bengaluru, India.
- **Summer Research Fellowship 2019**, Indian Academy of Science, Bengaluru, India.
- **Attended 30th-Mid Year Meeting Jun 28 and 29, 2019**, Indian Academy of Science Bengaluru.
- **Attended 88th Annual Meeting (Nov 4-6, 2022)**, Indian Academy of Science Bengaluru.

Experience

- **Professor** **11-August 2023 – Continue**
Department of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur, Chhattisgarh
- **Assistant Professor** **04-Sept 2012 – 10-August 2023**
Department of Chemistry
Indira Gandhi National Tribal University
Amarkantak, M.P.
- **Assistant Professor (Contractual)** **August 2011 – August 2012**
Department of Chemistry
Indira Gandhi National Tribal University
Amarkantak, M.P.

Research Projects

Title: Nanostructured Oxides and Nitrides of Early Transition Metals: Preparation, Characterization and Application in Energy Storage Devices - Funding Agency : UGC – Completed.

Research Guidance

- **Ph.D.: 01**
- **M.Sc.: 13**

International and National Collaborations

- International: Prof. Indra Bahadur (Department of Chemistry, Faculty of Natural and Agricultural Sciences, North-West University (Mafikeng Campus), Private Bag X2046, Mmabatho, 2735, South Africa South Africa); Prof. F. Mohammed (Department of Chemistry, College of Science, King Saud University, P.O. Box 2455, Riyadh, 11451, Saudi Arabia); Prof. A. A. Soleiman (Department of Chemistry, Southern University and A&M College, Baton Rouge, LA, 70813, USA).
- National Collaboration: IIT Kanpur, IISc Bangalore, IISER Bhopal, BHU Varanasi, Central University of Rajasthan, and Pt. Ravishankar Shukla University Raipur.

Best Peer Review Publications (Up-to 10)

- [1] Graphene-silver nano-ink for inkjet printing of paper electrode for electrochemical sensing of 4-nitrophenol: Monisha, Tushar Kant, Tikeshwari, Kamlesh Shrivastava, Antresh Kumar, **Khemchand Dewangan**, *Mater. Chem. Phys.* **2023**, 307, 128161. **(Impact Factor: 4.6)**
- [2] Nitridation of Cr-urea complex into nanocrystalline CrN and its antiferromagnetic magnetostructural transition study: Dadan Singh, Saumya Tamrakar, Kamlesh Shrivastava, and **Khemchand Dewangan**, *New J. Chem.* **2022**, 46, 20879–20885. **(Impact Factor: 3.3)**
- [3] Design and development of conductive nanomaterials for electrochemical sensors: a modern approach: T. Kant, K. Shrivastava, **Khemchand Dewangan**, A. Kumar, N. K. Jaiswal, M. K. Deb, S. Pervez, *Mater. Today Chem.* **2022**, 24, 100769. **(Impact Factor: 7.3)**
- [4] Hydrothermally Grown α -MoO₃ Microfibers for Photocatalytic Degradation of Methylene Blue Dye: **Khemchand Dewangan**, Dadan Singh, Nilesh Satpute, Ritika Singh, Adhish Jaiswal, Kamlesh Shrivastava, Indra Bahadur, *J. Mol. Liq.* **2022**, 349, 118202. **(Impact Factor: 6.0)**
- [5] Recent development in nanomaterials fabricated paper-based colorimetric and fluorescent sensors: A review: Sanyukta Patel, Reena Jamunkar, Deepak Sinha, Monisha, Tarun Kumar Patle, Tushar Kant, **Khemchand Dewangan**, Kamlesh Shrivastava, *Trends Environ. Anal. Chem.* **2021**, 31, e00136. **(Impact Factor: 11.2)**
- [6] Experimental and Theoretical Investigations for Selective Colorimetric Recognition and Determination of Arginine and Histidine in Vegetable and Fruit Samples using Bare-AgNPs: Kamlesh Shrivastava, Woomika Naik, Deepak Kumar, Dadan Singh, **Khemchand Dewangan**, Tushar Kant, Sanjay Yadav, Tikeshwari and Nitin Kumar, *Microchem. J.* **2021**, 160, 105597. **(Impact Factor: 4.8)**
- [7] Gold nanoparticles as a localized surface plasmon resonance based chemical sensor for on-site colorimetric detection of arsenic in water samples, Kamlesh Shrivastava, Ravi Shankar, **Khemchand Dewangan** *Sensors and Actuators B* **2015**, 220, 1376-1383. **(Impact Factor: 8.4)**
- [8] Synthesis and Room Temperature d^0 Ferromagnetic Properties of α -MoO₃ Nanofibers, S. K. S. Patel, **Khemchand Dewangan**, Simant Shrivastava, N. S. Gajbhiye, *J. Mater. Sci. Tech.* **2015**, 31, 453–457. **(Impact Factor: 10.9)**
- [9] Synthesis and Characterization of Self-Assembled Nanofiber-Bundles of V₂O₅: Their Electrochemical and Field Emission Properties, **Khemchand Dewangan**, N. N.

Sinha, P. G. Padmakar, P. K. Sharma, A. C. Pandey, M. A. More, D. S. Joag, N. Munichandraiah, N. S. Gajbhiye, *Nanoscale* **2012**, 4, 645-651. **(Impact Factor: 6.7)**

- [10] Topotactical Nitridation of α -MoO₃ Fibers to γ -Mo₂N Fibers and Its Field Emission Properties, **Khemchand Dewangan**, S. S. Patil, D. S. Joag, M. A. More and N. S. Gajbhiye, *J. Phys. Chem. C* **2010**, 114, 14710-14715. **(Impact Factor: 3.7)**

Recent Book/Book Chapters

- [1] Chapter 17 - Chintamani Nagesa Ramachandra Rao: A Living Legend in Indian Science, **Khemchand Dewangan**, in Book *Descendents of Kanad: Life Sketches of Some Indian Scientists* (Eds.: S. P. M. Tripathi, N. K. Sharma, V. Paramanik, V. P. Singh), Scientific Publishers, Jodhpur, India, **2023**, p. 220. (978-81-962465-1-8)
- [2] Chapter-18: Smart Nanosensors for Pesticides and Heavy Metals Detection, Nilesh Satpute, Kamlesh Shrivastava, and **Khemchand Dewangan**, in Book *Nanorobotics and Nanodiagnosics in Integrative Biology and Biomedicine*, Edited by K.-T. Lim and K. A. Abd-El Salam, Springer International Publishing, Cham, **2023**, pp. 433-452. (ISBN: 978-3-031-16084-4)
- [3] Chapter-6: Carbon dots in separation science, Ashima Sharma, Kamlesh Shrivastava, Kavita Tapadia, Tusar Kant, **Khemchand Dewangan**, and Nitin Kumar Jaiswal in Book *Carbon Dots in Analytical Chemistry*, Edited by Suresh Kumar Kailasa and C. M. Hussain, Elsevier, **2023**, pp. 67-75. (ISBN: 978-0-323-98350-1)
- [4] Contributed additional content and problems with solutions for the development of three chapters (Chapter 6: Energy and Chemical Change, Chapter 18: Thermodynamics, and Chapter 19: Electrochemistry) in Book *Chemistry: The Molecular Nature of Matter*, 8th Edition by Neil D. Jespersen, Alison Hyslop (ISBN: 9781119820642), WILEY INDIA Pvt. Ltd., **2022**.
- [5] Chapter-2: Portable Nanomaterials Impregnated Paper-Based Sensors for Detection of Chemical Substances, **Khemchand Dewangan** and Kamlesh Shrivastava in Book *Miniaturized Analytical Devices*, Edited by Suresh Kumar Kailasa and Chaudhery Mustansar Hussain, WILEY-VCH GmbH & Co. KGaA., **2022**, ISBN: 9783527347582.
- [6] Chapter-18: Metal Nanocomposites Based Sensors for Environmental Pollutions, Nilesh Satpute, Ritika Singh, Kamlesh Shrivastava, and **Khemchand Dewangan** in Book *Metal Nanocomposites for Energy and Environmental Applications*, Edited by Swatantra P. Singh, Avinash Kumar Agarwal, Kamlesh Kumar, Simant Kumar Srivastava, Springer, **2022**, ISBN: 978-981-16-8598-9.
- [7] Chapter-30: Copper nanoparticle-based sensors for environmental pollutions, **Khemchand Dewangan**, Tusar Kant, and Kamlesh Shrivastava in Book *Copper*

Nanostructures: Next-Generation of Agrochemicals for Sustainable Agroecosystems
Edited by Kamel A. Abd-Elsalam, Elsevier, **2022**, ISBN: 978-0-12-823833-2.

- [8] Chapter-9: Hybrid nanomaterials as chemical sensors: **Khemchand Dewangan**, Kamlesh Shrivastava, and Ramsingh Kurrey in Book *Multifunctional Hybrid Nanomaterials for Sustainable Agri-food and Ecosystems* Edited by Kamel A. Abd-Elsalam, Elsevier, **2020**, ISBN: 978-0-12-821354-4.

Recourse Person/Invited Lectures

- ❖ **Invited Talk:** UGC-SAP (DRS-II) 2nd National Conference on Advances in Environmental & Chemical Sciences from **March 22-23, 2018** organised by Pt. Ravishankar Shukla University Raipur, Chhattisgarh. Topic: Nanostructured Based Rechargeable Lithium Ion Battery.
- ❖ **Invited Talk:** UGC-SAP (DRS-II) 3rd National Conference on Advances in Environmental & Chemical Sciences from **March 27-28, 2019** organised by Pt. Ravishankar Shukla University Raipur, Chhattisgarh. Topic: Fabrication of dispersed VN nanoparticles from amorphous vanadium oxide (VO_x) and its Electrochemical Studies.
- ❖ **Invited Lecture:** Delivered a talk on the topic of “Quantum Mechanics: A Chemist’s Perspective” in the webinar on “**Postulates of Quantum Chemistry**” organized by the Department of Chemistry, SPCA College, Nawapara Rajim, Chhattisgarh on July 11, 2020.
- ❖ **Invited Lecture:** Delivered a talk on the topic of “Hybrid Nanomaterials” in the One Day National Webinar on “**Emerging Trends and Application of Nano Materials in Chemistry**” organized by the Department of Chemistry, Government Lahiri PG College, Chirmiri, Chhattisgarh on July 18, 2020.
- ❖ **Resource Person:** IBRO-APRC Associate School on “Biophysical to Molecular Techniques: An interface in Neurobiology Research (**August 23-27, 2021**)” Organized by Indira Gandhi National Tribal University, Amarkantak-484886, MP, India. Topic: X-ray Diffraction-Applications in Neuroscience Research.
- ❖ **Invited Talk:** National Conference in Advances in Chemical and Environmental Sciences (**Dec 9-10, 2022**) organized by Pt. Ravishankar Shukla University, Raipur, Chhattisgarh, Topic: Fundamentals and Applications of Density Functional Theory
- ❖ **Resource Person:** DST-STUTI Sponsored Training Program on Biomedical Research Tools and Techniques (**Feb 06-12, 2023**) organized by Indira Gandhi National Tribal University, Amarkantak-484886, MP, India. Topic: Principles and Applications of X-ray Diffraction.

- ❖ **Invited Talk:** DST-SERB Sponsored Workshop under Scientific Social Responsibility Scheme of CRG (**Mar 03 and 04, 2023**) organized by Indira Gandhi National Tribal University, Amarkantak-484886, MP, India. Topic: Linear Free Energy Relationships
- ❖ **Resource Person:** National Seminar on Recent Trends in Chemical Sciences (**Mar 14, 2023**) organized by Govt. T.C.L. Post Graduate College, Janjgir, CG, India. Topic: Pure and Hybrid Nanomaterials and Their Applications.

Administrative Responsibilities

Administrative Responsibilities of GGV, Bilaspur

- Swavalambi-Chhattisgarh GGV: Departmental Co-Ordinator
- GGV Shravan Line: Member

Some Important Administrative Responsibilities of IGNTU, Amarkantak

- Head of Department: In-charge
- Board of Studies: Chairman
- NAAC: Represented as Departmental Head
- Departmental Research Committee (DRC): Member
- Ekalavya Kindergarten School Committee: Member
- University Entrance Exam: Deputy Center Superintendent
- Admission Committee: Member
- Transport and Bus Committee: Member

Organizing Seminars/Conferences

- **National Symposium: Co-Chairman** in a national symposium on the topic of The Nobel Prize in Chemistry 2023: Discovery and Synthesis of Quantum Dots (**Nov 21-22, 2023**), organized by Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh, INDIA.
- **International Seminar: Secretary** in An International Webinar on Recent Trends in Chemical Sciences at the Biointerface (**Oct 26-27, 2021**), Department of Chemistry, Indira Gandhi National Tribal University Amarkantak, MP-484887, INDIA.
- **National Seminar: Joint-Organizing Secretary** in A National Seminar on Recent Developments in Chemical Sciences (**Feb 23-24, 2018**), Department of Chemistry, Indira Gandhi National Tribal University Amarkantak, MP-484887, INDIA.