

Dr. Deepika G. Karmalkar

Assistant Professor,
School of Chemical Sciences,
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Career Objective: To acquire a position that will enable me to use my skills, educational background and ability to work well with the people, to learn and improve my skills and to contribute to the growth of the organization with loyalty and dedication.

Professional Experience

- 2023 – Current Assistant Professor, School of Chemical Sciences, Goa University, Taleigao-Plateau, Goa, India.
- 2022 – 2023: Assistant Professor, Department of Chemistry, Government College, Khandola Goa, India.
- 2021 – 2022: Post-Doctoral Fellow (Guide: Prof. Wonwoo Nam) Ewha Womans University, South Korea.

Education:

- 2016 – 2021: Ph.D. (Guide: Prof. Wonwoo Nam) Ewha Womans University, South Korea.
- 2013 – 2015: M. Sc. (Inorganic Chemistry) Grade “O”, Goa University, India.
- 2010 – 2013: B. Sc. (Chemistry) “Distinction”, Goa University, India.

Degree	Specialization Subject	Year of Passing	Name of Institution/Board	Percentage
Ph.D.	Inorganic Chemistry	2021	Ewha Womans University, Seoul South Korea.	-
M.Sc.	Inorganic Chemistry	2015	Goa University, Taleigao Goa.	74.5
B.Sc.	Chemistry	2013	Smt. Parvatibai Chowgule College Goa University.	87.4
HSSC	Science	2009	Goa Board of Secondary & Higher Secondary Education.	76.1
SSC	-	2007	J.N.V. Goa Central Board of Secondary Education.	85.8

M. Sc. Project: (Dissertation Guide: **Prof. V. M. S. Verenkar**, Goa University)

Synthesis and Characterization of $\text{Co}_{0.5}\text{Ni}_{0.5}\text{Fe}_2\text{O}_4$ by Precursor-Combustion Method and to Study the Effect of Sintering Temperature on its Solid-State Properties.

Ph.D. Thesis: (Guide: **Prof. Wonwoo Nam**, Ewha Womans University)

Mononuclear Nonheme High-Valent Manganese-Oxygen Complexes: Synthesis, Characterization and Reactivity Studies.

Publications:

1. Preparation and Characterization of a Formally Ni^{IV} -Oxo Complex with a Triplet Ground State and Application in Oxidation Reactions. **Karmalkar, D. G.**; Larson, V. A.; Malik, D. D.; Lee, Y.-M.; Seo, M. S.; Kim, J.; Vasiliauskas, D.; Shearer, J.; Lehnert, N.; Nam, W. *J. Am. Chem. Soc.* **2022**, *144*, 22698. (IF = **16.38**)
2. Deeper Understanding of Mononuclear Manganese(IV)-Oxo Binding Brønsted and Lewis Acids and the Manganese(IV)-Hydroxide Complex. **Karmalkar, D. G.**; Seo, M. S.; Lee, Y.-M.; Kim, Y.; Lee, E.; Sarangi, R.; Fukuzumi, S.; Nam, W. *Inorg. Chem.* **2021**, *60*, 16996. (IF = **5.436**)
3. A High-Valent Manganese(IV)-Oxo-Cerium(IV) Complex and Its Enhanced Oxidizing Reactivity. **Karmalkar, D. G.**; Sankaralingam, M.; Seo, M. S.; Ezhov, R.; Lee, Y.-M.; Pushkar, Y. N.; Kim, W.-S.; Fukuzumi, S.; Nam, W. *Angew. Chem. Int. Ed.* **2019**, *58*, 16124. (IF = **15.34**)
4. Redox Reactivity of a Mononuclear Manganese-Oxo Complex Binding Calcium Ion and Other Redox-Inactive Metal Ions. Sankaralingam, M.; Lee, Y.-M.; Pineda-Galvan Y.; **Karmalkar, D. G.**; Seo, M. S.; Jeon, S. H.; Pushkar, Y.; Fukuzumi, S.; Nam, W. *J. Am. Chem. Soc.* **2019**, *141*, 1324. (IF = **16.38**)
5. A Manganese(V)-Oxo Tetraamido Macrocyclic Ligand (TAML) Cation Radical Complex: Synthesis, Characterization, and Reactivity Studies. **Karmalkar, D. G.**; Li, X.-X.; Seo, M. S.; Sankaralingam, M.; Ohta, T.; Sarangi, R.; Hong, S.; Nam, W. *Chem. Eur. J.* **2018**, *24*, 17927. (IF = **5.02**)
6. A Mononuclear Non-heme Manganese(III)-Aqua Complex as a New Active Oxidant in Hydrogen Atom Transfer Reactions. Sankaralingam, M.; Lee, Y.-M.; **Karmalkar, D. G.**; Nam, W.; Fukuzumi, S. *J. Am. Chem. Soc.* **2018**, *140*, 12695. (IF = **16.38**)
7. A Mononuclear Nonheme $\{\text{FeNO}\}^6$ Complex: Synthesis and Structural and Spectroscopic Characterization. Hong, S.; Yan, J. J.; **Karmalkar, D. G.**; Sutherlin, K. D.; Kim, J.; Lee, Y.-M.; Goo, Y.; Mascharak, P. K.; Hedman, B.; Hodgson, K. O.; Karlin, K. D.; Solomon, E. I.; Nam, W. *Chem. Sci.*, **2018**, *9*, 6952. (IF = **9.969**)

Conferences:

1. 127th General Meeting of Korean Chemical Society, 2021. (Poster presentation)
2. JBNU International On-Line Symposium: Bioinorganic Frontiers for Catalysis and Medicine, 2021.
3. International Online Bioinorganic Symposium, Seoul, Korea, 2020.
4. International Symposium on Materials Science and Innovation for Sustainable Society, 2020. (Webinar)
5. The International Conference on Bioinspired Small Molecule Activation & The 2019 Summer Bioinorganic Chemistry Symposium. (Poster presentation)
6. Inorganic Chemistry Symposium, Busan, Korea, 2018.
7. Korea-Taiwan-Japan Bioinorganic Chemistry Symposium, KAIST, Daejeon, Korea, 2018.
8. Ewha Bioinorganic Chemistry Symposium, Seoul, Korea, 2017.
9. The 8th International ChemComm Symposium, Seoul, Korea, 2016.

Skills and Techniques:

- Well trained in using the software for trapping of intermediates (metal-oxygen), kinetic data collection (k_{obs} , k_2 and KIE) and reactivity studies using UV-vis spectrophotometer and stopped-flow spectrophotometer.
- Generation and characterization of intermediates at low temperatures using liq. N₂.
- Trained in isotope labelling experiments using H₂¹⁸O, H₂¹⁸O₂, K¹⁸O₂.
- Experience in growing crystals of unstable intermediates at low temperatures.
- Trained in using glove box and Schlenk line apparatus for air sensitive compounds.
- Well trained in handling NO gas and synthesis of Metal-NO complexes.
- Gained experience in synthesis of non-heme ligands and their metal complexes.
- Hands on experience on EPR (5K Bruker and 77K Jeol), NMR spectrometer, CSI-MS, ESI-MS, rRaman spectrometer, cyclic voltammetry, spectroelectrochemistry, solid IR and time-dependent solution IR for characterization of intermediates.
- Experience using GC, GC-MS, LC-MS (ESI-MS), HPLC for product analysis.
- Experience in writing scientific papers.
- Co-guided students.
- Mentored student of T.Y.BSc. (Chemistry) and M.Sc. Part I (Inorganic Chemistry).

Post-doctoral Experience: Six months post-doctoral experience on the research topic "Dioxygen Chemistry: Dioxygen Formation-Activation-Catalysis" affiliated with Prof. Wonwoo Nam, Department of Nanobio-Energy Materials Center, Ewha Womans University, Seoul, South Korea.

Teaching Experience: One year teaching experience as Assistant Professor (undergraduate (UG) and post-graduate (PG) level), at Government College of Arts, Science and Commerce, Khandola, Marcel Goa.

Subjects Taught:

- Fundamentals of Inorganic Chemistry: Atomic structure, molecular structure and bonding, Coordination and Organometallic Chemistry, Basic Bioinorganic Chemistry, Environmental Chemistry (M.Sc. Sem I)
- Concepts in Molecular Symmetry and Spectroscopy: Spectroscopy (M.Sc. Sem II)
- Practical Course in Inorganic Chemistry-I (M.Sc. Sem II)
- Chemistry of Halogens (T.Y.BSc.)
- Inorganic Solid-State Chemistry (T.Y.BSc.)
- Inorganic Chemistry (Theory) (S.Y.BSc.)
- Inorganic Chemistry (Practical) (S.Y.BSc., F.Y.BSc.)

Dissertation (1 student)

- Synthesis of Novel Edible Bioplastic.

Personal and Professional Strengths:

- Hardworking and dedication towards my work
- Ability to work individually as well as in a team
- Keen learner
- Strong belief in continuous learning and self-improvement
- Punctuality
- Self-belief and positive attitude

Research Interests:

- Bioinorganic Chemistry
- Metal-Oxygen Intermediates
- Water Oxidation Catalysts
- Nitric Oxide Chemistry

Major Courses:

- Bioinorganic Chemistry
- Coordination Chemistry
- Organometallic Chemistry
- Group Theory and Spectroscopy
- Solid State and Catalysis
- Analytical Chemistry
- Nanospectroscopy
- Introduction to Magnetic Resonance Spectroscopy

Computer Literacy and Supplementary Courses:

- Diploma in Hardware and Networking and Diploma in Desktop Publishing (DTP).
- Participated in the Laboratory Analysis of Water Samples Undertaken under the TERI-Govt. of Goa project “Assessing the Impacts of Mining on the Water Resources in Goa”.
- Certificate course in “Introduction to Pharmaceuticals, Data Handling and Instrumentation”.
- The Chowgule College Honours Programme” entitled “Fundamentals of Chemical Analysis (Chemical Analysis and Quality Management).
- Business English Certificate Course: Preliminary.
- Fluent use of MS-office, origin, sigma-plot, MATLAB (Easy spin) for EPR simulation, Chem draw, OLEX2, ORTEP for X-ray crystallography.

Scholarships:

- Government Merit Scholarship for F.Y.BSc., S.Y.BSc., T.Y.BSc.
- Adv. Jaywant Ghanashyam Sinai Malkarnekar Memorial Prize (B.Sc.)
- Shri Raghunath Baburao Nagwekar Memorial Prize (Chemistry)
- Mrs. Muriel Faleiro Memorial Prize (B.Sc.)
- Carmo Rebello Memorial Prize
- ISS TQ2 Scholarship, Ewha Womans University (2016, 2017).
- Brain Korea 21 (2017, 2018, 2019).

Interests:

Interacting with people and making friends, reading, playing volleyball and table-tennis, swimming, drama, singing, travelling.

Personal Information:

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| 1. Name | : Dr. Deepika Gajanan Karmalkar |
| 2. Permanent Resident Address | : H.No.79/1, Madant, Nadora, Bardez, Goa |
| 3. Nationality | : Indian |
| 4. Gender | : Female |
| 5. Date of Birth | : 05.08.1992 |
| 6. Age | : 31 years |
| 7. Category | : General |
| 8. Marital Status | : Married |
| 9. Husband's Name and Occupation | : Dr. Prajyot P. Naik
(General Surgeon, Goa Medical College) |
| 10. Language Known | : English, Hindi, Marathi and Konkani |

Declaration: I hereby declare that the above furnished details are true with proven records.