

Curriculum Vitae

Dr. LATA RANA

Assistant Professor
Department of Chemistry
S. V. National Institute of Technology Surat
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EDUCATION

2012–2017	Ph.D. Chemistry (Entitled “Synthesis, Reactivity and Catalytic Activity of Molybdenum and Tungsten Complexes”) Indian Institute of Technology Roorkee, India Thesis Supervisor: Prof. M.R. Maurya
2008–2010	Master of Science, Specialization in Organic chemistry J.D.B. Girls College, University of Kota, Kota
2005–2008	Bachelor of Science (Chemistry, Botany, Zoology) J.D.B. Girls College, University of Kota, Kota

POST Ph.D. EXPERIENCE

October 2023–December 2023	Visiting Scientist Indian Institute of Technology Roorkee
August 2019– April 2021	Assistant Professor (Ad-hoc) Miranda House, University of Delhi, Delhi
June 2019 – August 2019	Senior Project Scientist Indian Institute of Technology Delhi, Delhi
March 2019–April 2019	Assistant Professor (Guest) Kirori Mal College, University of Delhi, Delhi
May 2018–December 2018	Research Associate Shiv Nadar University, Greater Noida, India Mentor: Dr. G. P. Roy (Currently: IIT Tirupati)

CURRENT POSITION

Working as an Assistant Professor at Sardar Vallabhbhai National Institute of Technology, Surat, since April 2021.

ENVIRONMENTAL ISSUES

The integration of novel catalysts into environmental solutions offers a dynamic and forward-thinking approach to addressing the multifaceted challenges our planet faces. As research and

development continue, these catalysts hold the potential to revolutionize how we tackle air and water pollution, greenhouse gas emissions, and the transition to renewable energy sources. Embracing these innovative catalysts is a crucial step toward a more sustainable and resilient future.

RESEARCH INTEREST

1. Synthesis, Characterization, and catalytic as well as biomimetic/bio-relevant properties of Transition metal complexes (Homogeneous and supported compounds)
2. Design and synthesis of polymer-supported transition metal catalysts for organic transformations under ecologically acceptable reaction conditions.
3. Ditholene-based molybdenum and tungsten complexes and their Structural and functional modeling, and oxygen atom transfer reactions.
4. Catalytic Conversion of Hazardous Compounds into Valuable Commodities through Supported Metallic Complexes.
5. Synthesis and Application of Metal-Organic Frameworks for Gas Adsorption, Catalytic Processes, and Transformation of Environmental Pollutants into Valuable Products.

ACHIEVEMENTS

1. INSA Visiting Scientist Program 2023-24.
2. Qualified Graduate Aptitude Test Examination (GATE) conducted by Ministry of Human Resources and Development, Govt. of India, 2012.
3. Selected for CSIR-JRF (Junior Research Fellowship) conducted by Joint CSIR-UGC in 2011.
4. Selected for Lectureship (NET) in 2010.

RESEARCH PUBLICATIONS IN INTERNATIONAL JOURNALS

1. **Lata Rana***, Rughani Kashyap Mahendrabhai, Dheeraj, Meghal A. Desai and Geeta Hundal “A comparative investigation: evaluating the epoxidation of styrene with binuclear molybdenum (VI) complexes under conventional heating and microwave-assisted conditions” *J. Mol. Struct.*, 1298 (2024) 137103.
2. **Lata Rana***, Dheeraj and Geeta Hundal, “New bis [cis-{MoO₂}] complexes with dihydrazone ligands: synthesis, characterization, theoretical investigation and their peroxidase mimicking activity, *Dalton Trans.*, 52 (2023) 5616-5631.
3. Dheeraj, **Lata Rana***, and Geeta Hundal, “New bis [MoO₂] and [MoO (O₂)] compounds: An artificial enzyme with peroxidase activity against o-phenylenediamine and dopamine, *J. Inorg. Biochem.*, 244 (2023) 112231.
4. **Lata Rana***, “Heterogenization of molybdenum complexes: techniques and catalytic applications” *Appl. Catal A: Gen.*, 661 (2023) 119227.
5. Dheeraj and **Lata Rana*** “Synthesis, characterization, and spectroscopic analysis of binuclear tungsten (VI) complexes with peroxidase-like activity” *Polyhedron*, 245 (2023) 116657.
6. **Lata Rana**, Mannar R. Maurya, and Fernando Avecilla, “Catalytic oxidation of internal and terminal alkenes by oxidoperoxidomolybdenum(VI) and dioxidomolybdenum(VI) complexes”, *Inorg. Chim. Acta*, 429 (2015) 138–147.

7. **Lata Rana**, Mannar R. Maurya, and Fernando Avecilla, "Oxidoperoxido-tungsten(VI) and dioxidotungsten(VI) complexes catalyzed oxidative bromination of thymol in presence of $\text{H}_2\text{O}_2\text{-KBr-HClO}_4$ ", *Inorg. Chim. Acta*, 440 (2016) 172–180.
8. **Lata Rana**, Mannar R. Maurya, and Fernando Avecilla, "Molybdenum complexes with $\mu\text{-O}\{\text{MoO}_2\}_2$ core: Synthesis, crystal structure and application as catalyst for the oxidation of bicyclic alcohols using N-based additives", *New J. Chem.*, 41 (2017) 724–734.
9. **Lata Rana**, Mannar R. Maurya, and Fernando Avecilla, "Phloroglucinol and resorcinol based mononuclear dioxidomolybdenum(VI) complexes: Synthesis, structural characterization and catalytic epoxidation", *Polyhedron*, 126 (2017) 60–71.
10. **Lata Rana**, Mannar R. Maurya, Nancy Jangra and Fernando Avecilla, "Bis{*cis*-[MoO₂]} complexes of 4,6-diacetyl resorcinol bis(hydrazone) and their catalytic application for the three components dynamic covalent assembly via hantzsch reaction", *Chemistry Select*, 2 (2017) 6767–6777.
11. Mannar R. Maurya, Reshu Tomar, **Lata Rana** and Fernando Avecilla, "Trinuclear Dioxidomolybdenum(VI) Complexes of Tritopic Phloroglucinol based ligands and their Catalytic Applications for the Selective Epoxidation of Olefins", *Eur. J. Inorg. Chem.*, 25 (2018) 2952–2964.

NATIONAL/INTERNATIONAL CONFERENCES/ WORKSHOP/ WEBINAR ATTENDED

1. Mannar R. Maurya, **Lata Rana** and Fernando Avecilla, "Synthesis, Spectral and Structural Characterization of Oxidoperoxidomolybdenum (VI) Complexes", 50th Annual Convention of Chemists, Punjab University, December 04–07, 2013. (Poster)
2. Mannar R. Maurya, **Lata Rana** and Fernando Avecilla, "Catalytic oxidation of internal and terminal alkenes by oxidoperoxidomolybdenum(VI) and dioxidomolybdenum(VI) complexes", Recent Advancements in Chemical Sciences (RAICS–2015), Malaviya National Institute of Technology (MNIT), Jaipur, August 21–23, 2015. (Poster)
3. Mannar R. Maurya, **Lata Rana** and Fernando Avecilla, "Oxidoperoxido tungsten(VI) and dioxidotungsten(VI) complexes catalysed oxidative bromination of thymol in presence of $\text{H}_2\text{O}_2\text{-KBr-HClO}_4$ ", 10th RSC-CRSI Symposium, Punjab University, February 4–7, 2016. (Poster)
4. **Lata Rana**, National Webinar on Scintillating Chemistry, Association of Chemistry Teachers, TIFR, Mumbai, India on June 8, 2020.
5. **Lata Rana**, Online training workshop on *Computational Density Functional Theory*, Thanthai Periyar Government polytechnic College, Vellore, Tamilnadu, July 4th–5th, 2020.

6. **Lata Rana**, Indo-USA webinar on SARS-CoV-2 Transport and shipping, SARS-CoV-2 Laboratory Emergency Response, *SARS-CoV-2 and COVID-19 Risk Communication*, by Punjab University, Chandigarh, India, July 11, 2020.
7. **Lata Rana**, *TEQIP-III, Transforming Pedagogy in India*, by NIT Jamshedpur, August 1-3, 2020.
8. **Lata Rana**, The Bilateral Indo-Us Webinar on *COVID Biology*, by IISER Kolkata, India in collaboration with IISC Bangalore, India, University of Pennsylvania, and the University of Colorado, School of Medicine USA, August 16–19, 2020
9. **Lata Rana**, A webinar on *The SHE of Science World* by Department of Chemistry, Pandit Deendayal Energy University, Gandhinagar, Gujarat, India, March 8, 2021.
10. **Lata Rana**, Two day International Webinar on *Waste to Best: Sustainable Environment Remediation* by Department of Chemistry, Pandit Deendayal Energy University, Gandhinagar, Gujarat, India, April 12th–13th, 2021.
11. **Lata Rana**, Five day program, “Pedagogy and research methodology” by S.V. National Institute of Technology Surat, Gujarat, India, June 21-25, 2021.
12. **Lata Rana**, Three days Indian Academy of Sciences Lecture Workshop and Journal of Chemical Sciences-Outreach Program, Department of Chemistry, IIT Roorkee, India, November 16-18, 2023.

ORGANISED CONFERENCE/ WORKSHOP/WEBINAR

1. **Lata Rana**, An organizing Committee member in the National Workshop on *Nano Road Show-2020*, Miranda House, University of Delhi, February 1st, 2020.
2. **Lata Rana**, An organizing Committee member in the International webinar on *Empowering Diversity in Science* by Department of Chemistry, Miranda House, University of Delhi, Delhi, India, February 12, 2021.
3. **Lata Rana**, An organizing Committee member in the International conference on *Chemistry –the catalyst for change* by Department of Chemistry, Miranda House, University of Delhi, Delhi, India, February 19–20, 2021.

Project Details

SVNIT Seed Grant (10 Lakhs), Project No.: 2021-22/seed money/18, Role: Principal Investigator, Duration: 2022-2024, Status: Ongoing

SERB (42 Lakhs), Project No.: EEQ/2023/000317, Role: Principal Investigator, Duration:2024-2027, Status: Ongoing

INSTRUMENTATION AND SOFTWARE SKILLS

1. FT-IR (*Thermo Nicolet 2200*)

2. UV-Vis (*Shimadzu 1601*)
3. NMR(*Bruker Avance III*)
4. Gas chromatography (*Shimadzu 2010 plus*)
5. Gas chromatography mass spectrometry (GC/MS) (*Perkin-Elmer, model Clarus 500*).
6. Origin for UV-Vis analysis and Jeol softwares/Mnova for NMR Plots.
7. Mass Spectrometer

Research Guidance

1. M.Sc. Dissertation entitled "Synthesis, characterization, and structures of dioxo-molybdenum(VI) complexes" completed by Mr. Amarjeet Kumar under the guidance of Dr. Lata Rana in 2022.
2. M.Sc. Dissertation entitled "Synthesis and characterization of a chlorodioxo molybdenum(VI) complexes" completed by Ms. Ruchi Patel under the guidance of Dr. Lata Rana in 2022.
3. M.Sc. Dissertation entitled "Catalytic aspects of dioxidotungsten and oxidoperoido tungsten complexes" completed by Mr. Aditya Aman under the guidance of Dr. Lata Rana in 2023.
4. M.Sc. Dissertation entitled "Design of magnetic nanoparticles supported molybdenum(VI) complexes" completed by Mr. Shantanu Saurabh under the guidance of Dr. Lata Rana in 2023.
5. M.Sc. Dissertation entitled "Fabrication of graphene oxide supported molybdenum(VI) complexes" completed by Mr. Vaibhav Gaur under the guidance of Dr. Lata Rana in 2023.

COURSES TAUGHT

1. B.Sc.(H) Chemistry: Physical Chemistry -III, Phase Equilibria and Electrochemical Cells.
2. B.Sc.(H) Chemistry: Physical Chemistry- I, States of Matter & Ionic Equilibrium.
3. B.Sc. Life Science: Chemical Energetics, Equilibria and Functional Group Organic Chemistry-I.
4. B.Sc. (H) Zoology, GE: Molecules of Life.
5. B.Sc. Life Science: Solutions, Phase Equilibrium, Conductance, Electrochemistry and Functional Group Organic Chemistry-II.
6. B.Sc. (H) Zoology, GE: Chemistry of d-block elements, quantum chemistry & Spectroscopy.
7. Btech I: Applied Chemistry
8. M.Sc. I : Atomic structure and Chemical bonding

PERSONAL DETAILS

Nationality: Indian

LANGUAGE PROFICIENCY

English and Hindi

REFERENCES

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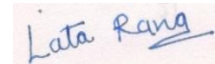
Dr. C. N. Ramachandran, Assistant Professor
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DECLARATION

I do hereby declare that the information furnished above is true and complete to the best of my knowledge and belief.

Date: 24-01-2024

Place: Surat



Lata Rana