Dr. Amit Rajput
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Professional Appointments

J.C. Bose University of Science & Technology, YMCA — Faridabad, Haryana
Assistant Professor — 6th April, 2021 to present

G. D. Goenka University — Gurugram, Haryana
Assistant Professor — 16th August, 2017 to 5th April, 2021

Education

Texas Tech University — Lubbock, Texas
Postdoctoral Associate — 2015 to 2017
Photoswitchable ligands for light harvesting by transition metal complexes
Research Supervisor: Dr. Anthony F. Cozzolino

Indian Institute of Technology — Kanpur, India
Doctor of Philosophy – Inorganic Chemistry — 2015
Thesis: Metal Coordinated Ligand Radical Species
Research Supervisor: Dr. R. N. Mukherjee/ Dr. M. K. Ghorai

Awards and Affiliations

Senior Research Fellowship (SRF-chemical sciences) by UGC in July 2011.
Qualified National Eligibility Test in Chemical Sciences (CSIR-UGC-JRF) in December-2008 (Conducted by Council of Scientific & Industrial Research, Human Resource Development Group, New Delhi)
Qualified GATE 2009 in Chemistry.
Got Ist Prize for the Best Poster Award Presentation in ACCC-4 (Asian Coordination Chemistry Conference-4) held at Jeju, Soth Korea in November 2013.
Got Global Scholarship for 21st Century for Postdoc by Texas Tech University, Lubbock, Texas, USA-79409.

Funding

1. Development of spiropyran based metal complexes as potent drug candidate for effective photodynamic and photothermal cancer therapy, [**Dr. Amit Rajput (Co-PI),** SERB Power Grant, approx. 23 Lakh Rupee, June-2023 to June-2026]

2. Development of Non-innocent (Redox-active) *o*-aminophenolate metal complexes as potent antiviral agents for SARS-CoV-2 **[Dr. Amit Rajput (PI),** SERB-SURE Grant, approx. 26 Lakh Rupee, January-2024 to January-2026]

3. Metal Coordinated Ligand Radical Species, [**Dr. Amit Rajput (PI),** University Seed grant 2 Lakh Rupee**, August-2023 to August -2025]**

Patent Granted

$[(L_2)V^{IV}O](CLO_4)$ FOR CATALYTIC ORGANIC TRANSFORMATIONS AND SYNTHESIS THERE OF [Patent No. 567364, /Name of Inventor(s) Dr. Rohan D. Erande, Dr. Akhilesh Kumar, Mr. Ghanshyam Mali, Dr. Himanshu Arora, Dr. Amit Rajput

Publications

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1. Coordination chemistry with pyridine/pyrazine amide ligands. Some noteworthy results. Amit Rajput, R. Mukherjee. (Coordination Chemistry Review 2013, 257, 350-368)

2. Valence tautomerism and delocalization in transition metal complexes of *o*-aminophenolates and other redox-active ligands. Some recent results. Amit Rajput, Anuj K. Sharma, Suman K. Barman, Anannya Saha and R. Mukherjee (Coordination Chemistry Review 2020, 414, 213240)

3. Low-Spin Iron(III) Complexes in Neutral, Monocation, and Monoanion Forms Stabilized by Azo-Appended Tridentate *o*-Amidophenolate(2-) and *o*-Iminobenzosemiquinonate(1-) π Radical. Amit Rajput, Anuj K. Sharma, Suman K. Barman, Debasis Koley, Markus Steinert and Rabindranth Mukherjee. (Inorganic Chemistry, 2014, 53, 36-48)

4. Monocation of $[Cu^{II}\{(L^{ISQ})^{\cdot-}\}2]$ (H_2L: thioether-appended o-aminophenol ligand) triggers change in donor site from N_2O_2 to $N_2O_{(2)}S$ and valence-tautomerism. Amit Rajput, Anannya Saha, Suman K. Barman, Francesc Lloret and Rabindranath Mukherjee (Dalton Transaction, 2019, 48, 1795–1813)

5. Six-coordinate $[Co^{III}(L)_2]z$ (z = 1−, 0, 1+) complexes of an azo-appended o-aminophenolate in amidate(2−) and iminosemiquinonate π-radical (1−) redox-levels: the existence of valence-tautomerism Amit Rajput, Anuj K. Sharma, Suman K. Barman, Francesc Lloret and Rabindranth Mukherjee. (Dalton Transaction, 2018, 47, 17086–17101).

6. Azo-containing Pyridine/Pyrazine Carboxamide Ligands: Series of Six Coordinated $Fe^{III/II}$ and $Co^{III/II}$Complexes: Structures, Properties and Trend of $E_{1/2}$ Values For M^{III}/M^{II} Redox Process. Arunava Sengupta, Amit Rajput, Suman K. Barman, and R. N. Mukherjee (Dalton Transaction Journal, 2017, 46, 11291-11305)

7. Copper (II) dimers stabilized by bis(phenol) amine ligands: Theoretical and Experimental Insights. Amit Rajput, Akhilesh Yadav, Arunava Sengupta, Priyanka Tyagi, Himanshu Arora (New Journal of Chemistry, 2018, 42, 12621-12631)

8. Syntheses, Crystal Structures and Conducting Properties of New Homoleptic Copper (II) Dithiocarbamate Complexes. Ajit N. Gupta, Vikram Singh, Vinod Kumar, Amit Rajput, Michael G. B. Drew, and Nanhai Singh (Inorganica Chimica Acta, 2013, 408, 145–151).

9. Modulation of the carboxamidine redox potential through photoinduced spiropyran or fulgimide isomerisation. Miranda C. Andrews, Ping Peng, Amit Rajput, Anthony F. Cozzolino (Photochemical & Photobiological Sciences, 2018, 17, 432–441)

10. Synthesis, Characterization, Electrochemical Properties and Theoretical Calculations of (BIAN) Iron Complexes Francis S. Wekesa, Patrick J. Larson, Arpita Singh, Cecilia R. Smith, Amit Rajput, Gregory P. McGovern, Daniel K. Unruh, Anthony F. Cozzolino and Michael Findlater (Polyhedron, 2019, 159, 365-374).

11. Influence of Functionalities on the Structure and Luminescent Properties of Organotin(IV) Dithiocarbamate Complexes. Ajit N. Gupta, Vinod Kumar, Vikram Singh, Amit Rajput, Lal Bahadur Prasad, Michael. G. B. Drew and Nanhai Singh. (Journal of Organometallic Chemistry, 2015, 787, 65-72).

12. Probing the electronic structure of $[Ru(L^1)_2]^Z$ (z = 0, 1+ and 2+) (H_2L^1: a tridentate 2-aminophenol derivative) complexes in three ligand redox levels. Anannya Saha, Amit Rajput, Puneet Gupta and Rabindranath Mukherjee (Dalton Transaction Journal, 2020, 49, 15355-15375)

13. Reversible inter-conversion of copper (II) dimers bearing phenolate-based ligands into their monomers: Theoretical and Experimental Viewpoints. P. Agarwal, A. Kumar, Richa, I. Verma, R. Erande, Julia Klak, Antonio J. Mota, H. Arora* and Amit Rajput* (New Journal of Chemistry, 2021, 45, 1203-1215)

14. Richa, M. Rathnam, A. Kumar, I. Verma, J. Kłak, J. Cano, A. J. Mota, Amit Rajput*, H. Arora*. Discrete unusual mixed-bridged trinuclear $Co^{III}_2Co^{II}$ and pentanuclear Ni^{II} coordination complexes supported by phenolate-based ligand: theoretical and experimental magneto-structural study (New Journal of Chemistry 2021, 45, 6053-6066).

15. Richaa, A. Kumar, I. Verma, M. Gautamd, R. D. Erandee, J. Kłak, D. Choquesillo-Lazarte, Antonio J. Mota, Amit Rajput*, Himanshu Arora*. Structural and magnetic characterization of mixed-valence vanadium (IV/V) complex with $\{(VO)_2(\mu\text{–}O)\}^{3+}$ core: Theoretical and experimental insights (Journal of molecular structure 2022, 1269, 133805)

16. Utilization of diamagnetic Zn (II) ion to boost the anisotropic nature of Ln (III) ion in heterodinuclear Zn (II)-Ln (III) SMMs. Soumalya Roy, Pooja Shukla, Raman Kumar, Subash Chandra Sahoo, Tapan K. Pal, Amit Rajput, Julia Klak, Masahiko Hada, Kuduva R. Vignesh, Sourav Das (Applied organometallic chemistry 2022, 36, e6914)

17. Experimental and theoretical magnetostructural studies on discrete heterometallic cyanide-bridged dinuclear $Fe^{III}Mn^{II}$ and tetranuclear Fe^{III}_2 Cu^{II}_2 complexes bearing tripodal pyrazolyl borate and tetradentate phenolate-based ligands. Akhilesh Kumar, Amit Rajput, Pawanjeet Kaur, Indresh Verma, Rohan D. Erande, Saleem Javed, Julia Kłak, Shefa, F. Alrebei, Antonio J. Mota, Enrique Colacio and Himanshu Arora (Dalton Transaction Journal, 2023, 52, 7225–7238)

18. Magnetic properties and pH-controlled reversible interconversion of μ-oxido into μ-hydroxido in oxo-carboxylato bridged iron(III) dimers: Theoretical and experimental insights. Richa, Akhilesh Kumar, Indresh Verma, Pankaj Garg, Rohan D. Erande, Saleem Javed, Amit Rajput*, Carlos J. Gomez Garcia, Antonio J. Mota, Himanshu Arora* (Journal of Molecular Structure 1285 (2023) 135426)

19. Design, Synthesis, and Applications of a Vanadium Complex: An Effective Catalyst for the Direct Conversion of Alcohols and Aldehydes to Esters. Ghanshyam Mali, Indresh Verma, Himanshu Arora, Amit Rajput, Akhilesh Kumar, and Rohan D. Erande. (J. Org. Chem. 2023, 88, 9, 5696–5703)

20. Vanadium (IV)oxo catalyzed One-Pot transformation of cinnamate to aromatic ester and its mechanistic aspects. G. Mali, I. Verma, H. Arora, A. Rajput, M. V. Mane, A. Kumar, R. D. Erande (Tetrahedron Letters 2024 144 (144), 155133)

21. Effect of diamagnetic Zn(II) ions on the SMM properties of a series of trinuclear $ZnDy_2$ and tetranuclear Zn_2Dy_2 (Ln^{III} = Dy, Tb, Gd) complexes: combined experimental and theoretical studies. P. Shukla, I. Tarannum, S. Roy, A. Rajput, P. Lama, S. K. Singh, J. Kłak, J. Lee, S. Das, (Dalton Trans., 2024,53, 7053-7066).

22. Synthesis, crystal structure, quantum computational, biological study, molecular docking and molecular dynamic simulations investigations on 2, 2′ -((1, 4-phenylenebis (methylene)) bis (sulfanediyl)) dianiline. Sangeeta, A. Kumar, A Fatima, M. Shahid, I. Verma, P. Sharma, H. Arora, S. Javed, D. Sharma, B. Uttam, A. Rajput* (Journal of Molecular Structure 2024, 1319, 139300).

23. Metal-Coordinated Ligand Radical Species With Non-innocent Ortho-aminophenol Functionalities: Reactivity and Catalysis, A Ali, H. Arora, A. Rajput*, A. Kumar*, ChemistrySelect 2024, 9, e202404096

Teaching Experience

1. Assisted UG and MSc (Master of Science) laboratory courses as tutor for one and half year at IIT Kanpur.
2. Teaching B. Sc.(H) Chemistry and M. Sc.(Chemistry) from 16th August, 2017 to till now.

Invited Lectures:

1. Electronic Structure and Electron Transfer in Transition Metal Complexes with Non-innocent (Redox-active) Ligands [27th ISCB International Conference-22 from 16th – 19th November, 2022 held at BIT Mesra, Ranchi].

2. Low-Spin Iron(III) Complexes in Neutral, Monocation, and Monoanion Forms Stabilized by Azo-Appended Tridentate *o*-Amidophenolate(2-) and o-Iminobenzosemiquinonate(1-) π Radical [2nd International Conference on Recent Trends in Materials Science & Devices 2023 organized by Research Plateau

Publishers & Sat Kabir Institute of Technology & Management Bahadurgarh, Haryana, India held in Online Mode from 29-31 December 2023].

3. Modulation of the carboxamidine redox potential through photoinduced spiropyran or fulgimide isomerisation [International Conference on Frontiers in Catalysis (FIC-24) from 4 -5th Janauary, 2024 held at Central University of Rajasthan, Rajasthan, India]
4. Neutral, and monocationic forms of copper complex stabilized by redox-active thioether-appended tridentate *o*-aminophenol ligand [30th ISCB International Conference-25 from 27th to 29th of January, 2025 held at University of Lucknow, U.P., India].

Conference Attended

1. Attended and presented the poster in 3rd Asian Conference on Coordination Chemistry, In New Delhi, India (October 17-20, 2011).
2. Attended and deliver an oral presentation in CHEMFEST 2011 in IIT Kanpur, India.
3. Attended and presented the poster in CHEMFEST 2012 in IIT Kanpur, India.
4. Attended and presented the poster in 4th Asian Conference on Coordination Chemistry, In Jeju, South Korea (November 4-7, 2013) and got Ist Prize for the Best Poster Award Presentation.
5. Attended and presented the poster in Modern Trends in Inorganic Chemistry-XV (MTIC) Conference held on IIT Roorkee, India (December 13-16, 2013).
6. Attended and deliver an oral presentation in 252nd ACS Conference held in Penysylvania, Philadelphia, USA (August 21-25, 2016).
7. Attended and deliver an oral presentation in 253rd ACS Conference held in San francisco, California, USA (April 2-6, 2017).
8. Attended and presented the poster in 21st CRSI National Symposium held at IICT Hyderabad, India (July 14-16, 2017).
9. Attended and deliver an oral presentation in 4th REDSET International Conference held at G. D. Goenka University, Gurugram, Haryana, India (October 13-14, 2017).
10. Attended and presented the poster in ETCS (Emerging Trends in Chemical Science) International Conference held at Dibrugarh University, Assam, India (February 26-28th, 2018)
11. Attended and presented the poster in 23rd CRSI National Symposium held at IISER Bhopal, India (July 13-15, 2018).
12. Attended and deliver an oral presentation in 25th ISCB International Conference held at Lucknow, India (January 12-14, 2019).
13. Attended and presented the poster in 24th CRSI National Symposium held at CLRI, Chennai, India (February 8-10, 2019).
14. Attended and presented the poster in 25th CRSI National Symposium held at IIT, Kanpur, India (July 19-21, 2019).

References

1. Dr. Anthony Cozzolino (Associate Professor)
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2. Dr. R. N. Mukherjee (Professor)
   Emeritus Fellow, Department of Chemistry,
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