Curriculum Vitae

Dr. Raj Kumar Joshi

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Professional experiences **19 Years (Teaching and research, after PhD)**

Dec. 2023 to till date	Associate Professor, MNIT Jaipur, JLN Marg, Jaipur, Rajasthan, India
July 2012 to Dec. 2023	Assistant Professor, MNIT Jaipur, JLN Marg, Jaipur, Rajasthan, India
July 2011 to July 2012	DST Fast Track Young Scientist *at* Department of Chemistry, IIT Bombay, Powai, Mumbai
April 2011 to June 20011	Research Scientist, Department of Chemistry, IIT Bombay, Powai, Mumbai, India
April 2008 to March 2011	CSIR *Research Associate at* Department of Chemistry, IIT Bombay, Powai, Mumbai, India
July 2007 to March, 2008	Research Scientist, Department of Chemistry, IIT Bombay, Powai, Mumbai, India

Educational qualifications

2003 - 2007	***Ph. D.*** *(Chemistry)* **Organometallic Chemistry** Title: "Synthesis and characterization of antimicrobial organotin (IV) derivatives" From Jamia Millia Islamia (Central University), New Delhi, India
2000-2002	***M. Sc****. (Chemistry), Inorganic Chemistry, from* Jamia Millia Islamia (Central University), New Delhi, India
1997-2000	***B. Sc****. (Chemistry hons)***,** Rajrishi college, Alwar, University of Rajasthan, Rajasthan, India

Research interests

Organometallics: Design and synthesis of novel organometallic chalcogen based pincer ligands and their 3d and 4d transition metal complexes.

N-heterocyclic Carbene Chemistry: Synthesis of novel chalcogen functionalised NHC-pincer ligands and their complexation with various transition metals for certain coupling, C-H activations, and hydrogenation reactions.

Catalysis: Reactivity and catalytic applications of metal carbonyls towards the terminal and internal acetylenes for unusual organic transformations and for range of other coupling, cyclo-addition, carbonylation and formylation reactions etc.

Cluster chemistry: Synthesis of chalcogen based organometallic clusters, mixed metal clusters, mixed chalcogen metal clusters on the framework of metalcarbonyls complexes.

PhD Supervised (Thesis awarded=10)

Munsaf Ali	*January, 2020*
Avinash Kumar Srivastava	*December 2020*
Naveen Satrawala	*August 2021*
Charu Sharma	June 2023
Himanshu Khandaka	*February 2024*
Sangeeta Kumari	*October 2024*
Aditi Soni	December 2024
Vijesh Tomar	June 2025 (Joint Supervision with Dr. Meena Nemiwal)
Deepak Sharma	October 2025
Manisha	Submitted (February 2026)

PhD Guidance at present (05)

Lalit Negi	*2021-Present*
Akta Soni	*2022-Present (Joint Supervision with Dr. Meena Nemiwal)*
Akanksha Soni	*2024-Present*
Aarti Peshwani	*2024-Present*
Ankita Yadav	*2025-Present*

Post Doctoral Fellow

Dr. Kamal Nayan Sharma, *2014-2018*

Dr. Yachana Upadhyay, *2020-2022*

M.Sc. Students supervised (30)

1. Gouri Koshar Parvin, 2012-2013 *(Supervisor)-Graduated in 2013*

2. Sangeeta Jonwal, 2012-2013 *(Supervisor)-Graduated in 2013*
3. Kulveer Singh, 2012-2013*(Supervisor)-Graduated in 2013*
4. Nitesh Trivedi, 2012-2013*(Supervisor)-Graduated in 2013*
5. Arpita Jain, 2012-2014*(Supervisor)-Graduated in 2014*
6. Ruchi Sharma, 2013-2015*(supervisor)-Graduated in 2015*
7. Tanmeet Sahny, 2013-2015*(Supervisor)-Graduated in 2015*
8. Guneet Kaur, 2014-2016*(Supervisor)-Graduated in 2016*
9. Kuldeep Meena, 2014-2016*(Supervisor)-Graduated in 2036*
10. Aditi Singh, 2015-2017*(Supervisor)-Graduated in 2017*
11. Deepika Yadav, 2016-2018 *(Supervisor)-Graduated in 2018*
12. Aakash Malviya, 2016-2018 *(Supervisor)-Graduated in 2018*
13. Pushpa, 2017- 2019 *((Supervisor)-Graduated in 2019*
14. Anuj Mourya, 2017-2019 *(Supervisor)-Graduated in 2019*
15. Gaurav Bhaker, 2017-2019 *(Supervisor)-Graduated in 2019*
16. Rooplai Jain, 2018- 2020 *(Supervisor)-Graduated in 2020*
17. Rohit Kumar, 2018- 2020 *(Supervisor)-Graduated in 2020*
18. Sagrika Rajput 2019-2021 *(Supervisor) - Graduated in 2021*
19. Kavita Rani -2020-2022 (*Supervisor) - Graduated in 2022*
20. Meenakshi Devi -2020- *2022(Supervisor) - Graduated in 2022*
21. Shristi Gupta -2020-2022*(Supervisor) - Graduated in 2022*
22. Tanvi Jain – 2021 -2023 *(Supervisor) - Graduated in 2023*
23. Swati Grover- 2021-2023 *(Supervisor) - Graduated in 2023*
24. Vishakha Bhardwaj- 2021-2023 *(Supervisor) - Graduated in 2023*
25. *Aditya Choudhary*- 2022-2024 *(Supervisor) - Graduated in 2024*
26. *Anuska P Kochar*- 2022-2024 *(Supervisor) - Graduated in 2024*
27. *Nikita Soni*- 2022-2024 *(Supervisor) - Graduated in 2024*
28. *Vidi-2023-2025 (Supervisor)- Graduated in 2024*
29. *Sanjeet Yadav-2023-2025 (Supervisor)- Graduated in 2024*
30. *Ananya Singh-2023-2025 (Supervisor)- Graduated in 2024*
31. *Aryan Sharma-2024-2026 (Supervisor)- Ongoing 2025*
32. *Abhishek Jakhar-2024-2026 (Supervisor)- Graduated in 2025*

Details of Research Publications

79. Water-Assisted $Fe(CO)_5$ Catalyzed Transfer Hydrodesulfurization of Thioamides Manisha Manisha, Deepali Ahluwalia, Lalit Negi, Akansha Soni, Raj K. Joshi, ***Advance synthesis and Catalysis***, 2026 (**Manuscript accepted**)

78. Ru(II)-Catalyzed Sulfur-Directed ortho-C–H Functionalization: Divergent Reactivity and C–Se Bond Cleavage with Maleimides, Lalit Negi, Manisha Manisha, Aarti Peswani, Akansha Soni, Raj K. Joshi, ***Chemistry-An Asian Journal***, 2026, 7, e70729

77. E-Selective partial transfer hydrogenation of internal acetylenes enabled by water-promoted $Fe(CO)_5$ catalysis. Manisha, Lalit Negi, Deepali Ahluwalia, Akansha Soni, Aarti Peswani and Raj K. Joshi, ***Catalysis Science & Technology,*** 2025, **15**, 7414 - 7421

76. Synthesis of Ferrocenyl/Phenyl Isothiazole-3-thione and Isoselenazole-3-selenone a New Heterocycle, Deepak Sharma, Vijesh Tomar and Raj K. Joshi, ***Chem. Commun.,*** 2025, **61**, 13964-13967.

75. Ferrocene-Modified Nickel MOF: A Robust Heterogeneous Catalyst for Deamination-Driven CO Cross-Coupling, Akta Soni, Praveen Kumar, Vijesh Tomar, Raj K Joshi, Meena Nemiwal, ***Journal of Organometallic Chemistry***, 2025, 123747

74. Design and Sustainable Construction of Ferrocene-Functionalized Cu (I)-based Metal-Organic framework as high performance heterogeneous catalyst for CN Cross-Coupling reactions. Akta Soni, Raj K. Joshi, Meena Nemiwal, ***Inorganic Chemistry Communications***, 2025, 114864

73. Ru(II)-Catalyzed ortho-Vinylation of Benzoic Acids in Water, Lalit Negi, Aditi Soni, Deepak Sharma, Manisha Manisha, Raj K. Joshi, ***The Journal of Organic Chemistry***, 2025, 90, 2567-2576

72. Iron-Assisted & Cu-Mediated Direct Aminocarbonylation of Nitroarene with Boronic acid, Deepak Sharma, Charu Sharma, Sangeeta Kumari, Raj K. Joshi, ***The Journal of Organic Chemistry***, **2025**, 90, 1784-1793.

71. Anticancer potential of ferrocene-containing derivatives: Current and future prospective Vijesh Tomar, Parveen Kumar, Deepak Sharma, Meena Nemiwal, Raj K. Joshi, ***Journal of Molecular Structure***, **2025**, 1319, 139589

70. Oxidative Amidation of Ferrocenyl aldehydes with Amines Catalyzed by Chalcogenised $Fe_3Se_2(CO)_9$ Cluster: Direct Transformation of Aldehyde to Amides

Deepak Sharma, Aditya Choudhary, Vijesh Tomar, Raj K. Joshi, ***Chemistry; An Asian Journal***, 2025, 20, e202400996

69. Oxidative coupling of primary benzamide with alkenes via ortho-CH activation mediated by Cu(II)/ Ru(II), Aditi Soni, Lalit Negi, Charu Sharma, Avinash K. Srivastava, Raj K. Joshi, ***The Journal of Organic Chemistry***, **2024**, 89, 17752-17760

68. Ru-mediated and sulfur-directed *ortho*-C-H activation of benzyl thioethers with internal alkynes and selective hydro-thiolation of acetylene dicarboxylates, Sangeeta Kumari, Vijesh Tomar, Aditi Soni, Manisha Manisha, Charu Sharma, Raj K. Joshi, ***Synthesis***, **2024**, 56, 3575-3586.

67. Iron-Catalyzed Synthesis of Ferrocenyl-thioether Conjugates via C-S Cross Coupling of Thioethers and Vinylic Chlorides: Construction, Anticancer and Computational Studies Vijesh Tomar, Deepak Sharma, Parveen Kumar, Deepika Sharma, Tejveer Singh, Meena Nemiwal, Raj K Joshi, ***Organometallics***, 2024, 43, 2882-2894.

66. Electrocyclization of α,β,γ,δ-unsaturated ferrocenyl aldehydes: Synthesis of novel ferrocenyl phenyl decorated pyridines, Aditi Soni, Swati Grover, Lalit Negi, Raj. K. Joshi, ***Journal of Organometallic Chemistry***, **2024**, 1021, 123353

65. Iron-Catalyzed Chemo-Selective Transfer Hydrogenation of α, β-Unsaturated Ketones using H2O as a Surrogate of Hydrogen, Manisha Manisha, Sangeeta Kumari, Deepak Sharma, Lalit Negi, Raj K. Joshi, *The Journal of Organic Chemistry*, 2024**, 89, 11983-11993**

64. Novel Ferrocenyl-azole Derivatives: Synthesis, DFT Calculation and Unlocking the Anticancer Potential, Vijesh Tomar, Parveen Kumar, Deepak Sharma, Tejveer Singh, Meena Nemiwal, Raj K. Joshi, ***European Journal of Organic Chemistry*, 202**4, 27, e202400053

63. Ru-Catalyzed and Selenium directed Selective Formations of ortho- and di- Alkenylated selanes, Mixed-Organo-Selenoethers and Iso-Selenochromenes, Sangeeta Kumari, Deepak Sharma, Charu Sharma, Lalit Negi, and Raj K. Joshi, ***Organic Letters*, 2024,** 26, 1758-1763.

62. Selenated NHC-Pd (II) Pincer Complex Catalyzed, Temperature-Dependent Selective Hydroamination and Oxidative Amination of Olefins: Formation of Enamine Esters and β-Amino Esters under Solvent-Free and Aerobic Conditions, Charu Sharma, Sangeeta Kumari, Deepak Sharma, Avinash K Srivastava, Raj K Joshi ***Journal of Organic Chemistry***, **2024**, 89, 701-709

61. Facile Synthesis of Anthracene-based Derivatives via a Magnetically Retrievable Fe_3O_4@SiO_2 Immobilized Selenoether functionalised NHC-Pd(II) heterogenous Catalyst: Photophysical, Electrochemical and DFT Studies of Novel 9,10-Anthracene based derivatives, Himanshu Khandaka, Raj K. Joshi, ***Inorganica Chimica Acta,* 2024**, 565, 121840
60. Facile Photochemical/Thermal Assisted Hydration of Alkynes Catalysed under Aqueous Media by a Chalcogen Stabilized, Robust, Economical, and Reusable Fe3Se2(CO … Munsaf Ali, Avinash K Srivastava, NS Upadhyay, Naveen Satrawala, Raj K Joshi, ***Organics* 2023**, 4 (2), 251-264
59. Review on the catalytic significance of 3-dTransition Metal carbonyl complexes for General and selective organic Transformations, Vijesh Tomar, Parveen Kumar, Meena Nemiwal, Raj K Joshi, ***Inorganic Chemistry communications***, **2023**, 111488
58. A decade of synthesis of N-heterocyclic derivatives via magnetically retrievable Fe3O4@SiO2@Cu(II) nanocatalysts: A review (2023-present), Akta Soni, Parveen Kumar Vijesh Tomar, Raj K Joshi, Meena Nemiwal, ***Synthetic Communications* 2023**, 53, 1469-1505.
57. Fe (CO) 5-catalyzed oxidative photolytic cyclization of ferrocenated en-yne-aldehydes: Synthesis of ferrocene appended furans, Manisha Manisha, Tanvi Jain, Sangeeta Kumari, Lalit Negi, Syes Q Raza, Raj K Joshi, ***Journal of Organometallic Chemistry***, **2023**, 1001, 122886
56. 3D Porous MoS2-Decorated Reduced Graphene Oxide Aerogel as a Heterogeneous Catalyst for Reductive Transformation Reactions, Jaidev Kaushik, Charu Sharma, Nicky K. Lamba, Pursotam Sharma, Gouri S. Das, Kumud M. Tripathi, Raj K. Joshi, Sumit K. Sonkar, ***Langmuir,* 2023**, 39(36), 12865.
55. Water Mediated NHC-Pd (II) Catalyzed Oxidative Coupling of Benzoic Acid and Vinylarenes; Selective Synthesis of Five/Six member Isocoumarins, Lalit Negi, Aditi Soni, Charu Sharma, Raj K. Joshi, ***Journal of Organometallic Chemistry***., 2023, 122847.
54. Facile Photochemical/Thermal Assisted Hydration of Alkynes Catalysed under Aqueous Media by a Chalcogen Stabilized, Robust, Economical, and Reusable $Fe_3Se_2(CO)_9$, Munsaf Ali, Avinash K. Srivastava, N.S. Upadhyay, Naveen Satrawala, Raj K. Joshi, ***Organics* 2023**, 4 (2), 251-264
53. Atomically precise gold and silver nanoclusters: Synthesis and applications, R. Nakum, Raj K. Joshi, Suban K. Sahoo, ***Gold and Silver Nanoparticles***, **2023**, 137-164

52. A decade of synthesis of N-heterocyclic derivatives via magnetically retrievable Fe3O4@SiO2@Cu(II) nanocatalysts: A review (2013-present), Aditi Soni, Parveen Kumar, Vijesh Tomar, Raj K. Joshi, Meena Nemiwal, ***Synthetic Communications***, **2023**, 53 (18), 1469-1505

51. Waste-Derived Iron Nanoparticles for Solvent-Free Single-Step Reductive Acetylation of Nitroarenes, Jaidev Kaushik, Charu Sharma, Twinkle Saluja, Nicky K. Lamba, Ravindra Singh, Naveen Satrawala, Raj K. Joshi and Sumit K. Sonkar, ***ACS Sustainable Chemistry & Engineering*, 2023,** 11, 24.

50. A facile synthesis of ferrocene functionalized vinyl ethers and their application as optical sensors for Cu^{2+} ions detection. Aditi Soni, Yachana Upadhyay, Avinash K Srivastava, Charu Sharma, Raj K. Joshi, ***Inorganica Chimica Acta*, 2023,** 548, 121371.

49. CN doped Cobalt oxide composite: An economic and reusable catalyst with multitasking catalytic capability for alkyne, nitrile hydrations and nitro reductions. Avinash K Srivastava, Himanshu Khandaka, Raj K. Joshi, ***SynOpen*, 2023,** 07(01), 121-129.

48. Gold and Silver Nanoparticles: Synthesis and Applications: Suban Sahoo and M. Reza Hormozi-Nezhad: CH5 Atomically precise gold and silver nanoclusters: Synthesis and applications. Rajanee Nakum, Raj K. Joshi, Suban K. Sahoo, ***Micro and Nano Technologies*, 2023,** 137-164.

47. NHC-Pd (II) full pincer catalyzed Mizoroki-Heck Type Cross-Coupling of Vinyl Chloride and Alkenes: Synthesis of Novel Ferrocenylated Conjugated Dienes. Aditi Soni, Charu Sharma, Lalit Negi, Raj K. Joshi, ***Journal of Organometallic Chemistry*, 2022,** 983, 122550.

46. Nano-sized Ce-substituted hexagonal Co2–Y ferrite; a valuable catalyst for heterogeneous reduction of toxic nitro-organic pollutants. Mukesh Suthar, Avinash K Srivastava, Charu Sharma, Raj K. Joshi, Pradeep K. Roy, ***Ceramics International*, 2022,** 48, 24, 37370-37382.

45. Fe_3O_4@ SiO_2 Supported Pd (II)-selenoether N-heterocyclic carbene: A highly active and reusable heterogeneous catalyst for CO cross-coupling of alcohols and chloroarenes. Himanshu Khandaka, Raj K. Joshi, ***Tetrahedron Letters*, 2022,** 111, 154163.

44. Regioselective, Greener Protocol for the Synthesis of N-Heterocyclic Compounds Catalyzed by Recyclable CuO NPs Coated with Ionic Liquid ($CuO[HN_{222}][Al_2Cl_7]$.

Parveen Kumar, Vijesh Tomar, Raj K. Joshi, Meena Nemiwal, ***Asian Journal of Organic Chemistry*****, 2022**, (DOI: org/10.1002/ajoc.202200563).

43. Evaluation of anticancer activity of ferrocene based benzothiazole and β-keto oxothioacetal. Archana Ranjan, Deepu Sharma, Avinash K Srivastava, Ajit Varma, Magani SK Jayadev, Raj K. Joshi, ***Journal of Organometallic Chemistry*****, 2022,** 979, 122500.

42. Direct amidation of ferrocenyl/phenyl β-chlorocinnamaldehyde assisted by chalcogenide metal carbonyl cluster. Deepak Sharma, Vijesh Tomar, Charu Sharma, Meena Nemiwal, Raj K. Joshi, ***Tetrahedron*****, 2022,** 124, 133014.

41. CN cross-coupling organic transformations catalyzed via copper oxide nanoparticles: A review (2016-present). Prensha Arora, Parveen Kumar, Vijesh Tomar, Mika Sillanpää, Raj K. Joshi, Meena Nemiwal, ***Inorganic Chemistry Communications*****, 2022**, 145, 109982.

40. Photochemical assisted novel formation of δ-lactone utilizing trimethylsilylacetylene, isopropanol and ironpentacarbonyl. Archana Ranjan, Ajit Varma, Raj K. Joshi**, *Journal of Organometallic Chemistry*****, 2022,** 975, 122437.

39. Recent advances in copper oxide nanocatalyzed Csingle bondC cross-coupling transformations.Akta Soni, Parveen Kumar, Vijesh Tomar,Raj K.Joshi, Meena Nemiwal, ***Results in Chemistry*****, 2022,** 4, 100513.

38. Selenium Directed Ortho C-H activation of Benzyl Selenide by a Selenated NHC-Half Pincer Ruthenium (II) Complex" Sangeeta Kumari, Charu Sharma, Naveen Satrawala, Avinash K. Srivastava, Kamal N. Sharma, Raj K. Joshi, ***Organometallics*****, 2022,** 41, 11, 1403–1411.

37. Cu/Mn catalyzed C-N cross coupling reaction of aryl chlorides and amines promoted by PAMAM dendrimer, Archana Ranjan, Ajit Varma, Sangeeta Kumari, Raj K. Joshi, ***SynLett***, **2022**, 33(11), 1065-1070.

36. Iron and Copper based bifunctional catalysts for base & solvent free CN coupling of amines and aryl/benzyl chlorides under aerobic conditions, Charu Sharma, Avinash K. Srivastava, Deepak Sharma, Raj K. Joshi, ***New Journal of Chemistry*****, 2022**, 46, 8551-8556.

35. Nanocatalyzed synthetic approach for quinazoline and quinazolinone derivatives: A review (2015–present), Parveen Kumar, Vijesh Tomar, Raj K. Joshi and Meena Nemiwal. ***Synthetic Communications***, **2022**, 795-826.

34. Magnetically active iron oxide nanoparticles for catalysis of organic transformations: A Review. P. Kumar, V. Tomar, D. Kumar, Raj K. Joshi, M. Nemiwal., ***Tetrahedron***. **2022,** 107-107, 13264.
33. Synthesis of novel ferrocenated enynes via the Sonogashira Coupling of Ferrocenated vinyllic chlorides and alkynes in the catalytic presence of Selenated NHC-Pd(II) full Pincer complex. V. Tomar, C. Sharma, M. Nemiwal, Raj K. Joshi., ***Journal of Organometallic Chemistry,*** **2021**, 956, 122095.
32. Half-Sandwich (η^6-Benzene)Ru(II) Complex of Picolyl Functionalized N-Heterocyclic Carbene as an Efficient Catalyst for Thioether Directed C-H Alkenylation of Arenes. Sangeeta Kumari, Charu Sharma, Avinash K. Srivastava, Naveen Satrawala, Kamal N. Sharma, Raj K. Joshi, ***European Journal of Inorganic Chemistry***, **2021,** 35, 3638-3653.
31. Selenated NHC-Pd(II) catalyzed Suzuki-Miyaura coupling of ferrocene substituted b-chloro-cinnamaldehydes, acrylonitriles and malononitriles for the synthesis of novel ferrocene derivatives and their solvatochromic studies. Vijesh Tomar, Yachana Upadhayay, Avinash K Srivastava, Meena Nemiwal, Raj K. Joshi, Pradeep Mathur, ***Journal of Organomet. Chem.,*** **2021**, 940, 121752.
30. Aerobic Cu and Amine Free Sonogashira and Stille Couplings of Arylbromides/ Chlorides with a Magnetically Recoverable Fe3O4@SiO2 Immobilized Pd(II)-Thioether Containing NHC. Himanshu Khandaka, Kamal N. Sharma, Raj K. Joshi, ***Tetrahedron Letters,*** **2021**, 67C, 152844.
29. Cp*Co(III) and Cu(OAc)2 Bimetallic Catalyst for Buchwald type C-N cross Coupling of Arylchlorides and Amines under Base, Inert gas & Solvent free conditions. Avinash K. Srivastava, Charu Sharma, Raj K. Joshi, ***Green Chemistry***, **2020**, 22, 8248 - 8253.
28. CO-free, Aqueous Mediated, Instant and Selective Reduction of Nitrobenzene via Robustly Stable Chalcogen Stablised Ironcarbonyl Clusters (Fe3(E2(CO)9, E= S, Se, Te). Charu Sharma, Avinash K. Srivastava, Aditi Soni, Sangeeta Kumari, Raj K. Joshi, ***RSC Advance,*** **2020**, 10, 32516 – 32521.
27. Nanocrystalline cerium-doped Y-type barium hexaferrite; a useful catalyst for selective oxidation of styrene" Mukesh Suthar, Avinash K. Srivastava, Raj K Joshi, Pradip Kumar Roy, ***Journal of Materials Science: Materials in Electronics***, 2020, 1-3
26. Iodine catalysed unprecedented synthesis of ferrocenated thiols and bis-dithianes: Chemoselectivity and smart phone based metal sensing application, *Avinash K.*

Srivastava, Yachana Upadhyay, Munsaf Ali, Suban K. Sahoo, Raj K. Joshi***, Journal of Organometallic Chemistry,* 2020**, 920, 121318.

25. Half-Sandwich (η^5-Cp*) Rh (III) Complex of Pyrazolated Organo-Sulfur/Selenium/ Tellurium Ligands: Efficient Catalysts for Base/Solvent Free C− N Coupling of Chloroarenes under Aerobic Conditions, Charu Sharma, Avinash K Srivastava, Kamal N Sharma, Raj K. Joshi, ***Organic & Biomolecular Chemistry***, **2020**, 18, 3599-3606.

24. Sustainable feasibility of waste printer ink to magnetically separable iron oxideedoped nanocarbons for styrene oxidation Deepika Saini, Ruchi Aggarwal, Satyesh R Anand, Naveen Satrawala, Raj K. Joshi, Sumit K. Sonkar, ***Materials Today Chemistry***, **2020**, 16, 100256.

23. Multitasking FeOCN Composite as an Economic, Heterogeneous Catalyst for 1-Octene Hydroformylation and Hydration Reactions.Avinash K. Srivastava, Munsaf Ali, Shephered Siangwata, Naveen Satrawala, Gregory S Smith, Raj K. Joshi, ***Asian Journal of Organic Chemistry***, **2020**, 9, 377-384.

22. Oxidative mono-and di-vinylation of 1-phenylpyrazole: Aqueous Rh (III)-catalyzed cross dehydrogenative coupling reactions. Naveen Satrawala, Cody Williams, Avinash K Srivastava, Kamal N Sharma, Gregory S Smith, Raj K Joshi, ***Catalysis Communications***, **2019**, 129, 105727.

21.First Cp* Co (III)-catalyzed Mizoroki-Heck coupling reactions of alkenes and aryl bromide/iodide, Avinash K Srivastava, Naveen Satrawala, Munsaf Ali, Charu Sharma, Raj K. Joshi, ***Tetrahedron Letters***, **2019**, 60, 151283.

20. Palladium (ii) ligated with a selenated (Se, C NHC, N−)-type pincer ligand: an efficient catalyst for Mizoroki–Heck and Suzuki–Miyaura coupling in water, Kamal N Sharma, Naveen Satrawala, Avinash K Srivastava, Munsaf Ali, Raj K. Joshi, ***Organic & Biomolecular Chemistry***, **2019**, 17, 8969-8976.

19. (η^6-Benzene)Ru(II) half-sandwich complexes of pyrazolated chalcogenoethers for Catalytic activation of aldehydes to amides transformation. Kamal N. Sharma, Munsaf Ali, Avinash K. Srivastava, Raj K. Joshi, ***Journal of Organometallic Chemistry.,* 2019,** 879, 67-77.

18. Photoinduced alkyne hydration reactions mediated by a water soluble, reusable rhodium (1) catalyst". Munsaf Ali, Avinash K. Srivastava, Shepherd Singwanta, Gregory S. Smith, Raj K. Joshi, ***Catalyst Communication***, **2018**, 115, 78-81.
17. Metal-free, PTSA catalyzed facile synthesis of b-ketoacetal from b-chlorocinnamaldehyde. Avinash K Srivastava, Munsaf Ali, Kamal N. Sharma, Raj K. Joshi, ***Tetrahedron Letters***, **2018**, 59, 3188-3193.
16. Metal/Catalyst/Reagent free hydration of alkynes up to gram scale under temperature and pressure controlled condition. Munsaf Ali, Avinash K. Srivastava, Raj K. Joshi, ***Tetrahedron Letters***, **2018**, 59, 2075-2078.
15. Thioether-NHC Ligated Pd (II) Complex in Crafting of Filtration-Free Magnetically Retrievable Catalyst for Suzuki-Miyaura Coupling in Water. Kamal N. Sharma, Naveen Satrawala, Raj K. Joshi, ***European Journal of Inorganic Chemistry***, **2018**, 16, 1743-1751.
14. One pot synthesis of important retinoid synthon by the catalytic regioselective bi-functionalization of acetylenes, alcohol and carbon monoxide. Raj K Joshi, Naveen Satrawala, ***Tetrahedron Letters*** 58**, 2017**, 2931–2935
13. Base-catalyzed cross coupling of secondary alcohols and aryl-aldehydes with concomitant oxidation of alcohols to ketones: An alternative route for synthesis of the Claisen-Schmidt condensation product. Naveen Satrawala, Kamal N. Sharma, Leah C. Matsinha, Latisa Maqeda, Shepherd Siangwata, Gregory S. Smith, Raj K. Joshi, ***Tetrahedron Letters*** 58, **2017**, 2761–2764.
12. A photochemical route to ferrocenyl substituted ferrapyrrolinone complexes. Badrinath Jha, Abhinav Raghuvanshi, Raj K. Joshi, Shaikh M. Pradeep Mathur, ***Applied Organometallic Chemistry,*** **2017,** 11, 3805.
11. First example of a metallacarborane complex with the cyclobutenylidene ligand" D. I. D´yachihin, F. M. Dolgushin, I. A. Godovikov, N. K. Satrawala, R. K. Joshi, and I. T. Chizhevskya. ***Russian Chem. Bull. Int. Edit***. 65, **2016**, 844-846.
10. Synthesis of novel allene stabilised, phosphido bridged Ru_2Pt clusters involving enyne to allene transformation. Pradeep Mathur, Dhirendra K Rai, Raj K. Joshi, Badrinath Jha, Shaikh M Mobin. ***Organometallics*** **33**, **2014**, 3857-3866.
9. Synthesis, structural and redox property of first 1,23-triselenole. Pradeep Mathur, Dhirendra K Rai, Mohd. Tauqeer, Raj K. Joshi, Goutam K. Lahiri, Shaikh M. Mobin. ***Journal of Organometallic Chemistry***., 721, 2012, 144-147.

8. Iron-catalyzed (2+2+1) co-clyclization of alkyne, isocyanate and CO for the rapid synthesis of maleimide and hydantoin. Pradeep Mathur, Raj K. Joshi, Dhirendra K. Rai, Badrinath Jha and Shaikh M. Mobin. ***Daltan Transactions*** *41*, **2012,** 5045-5054.
7. Photolytic Reaction of substituted (ethynyl)benzaldehyde and Fe(CO)5: Formation of indenone and chelated iron complexes. Pradeep Mathur, Badrinath Jha, Abhinav Raghuvanshi, Raj K. Joshi, and Shaikh M. Mobin. ***Journal of Organometallic Chemistry***., 712, **2012,** 7-14.
6. Towards the catalytic formation of α,β-vinylesters and alkoxy substituted γ-lactones. P. Mathur, Raj K. Joshi, Badrinath Jha, Amrendra K. Singh, Shaikh M. Mobin. ***Journal of Organometallic Chemistry,*** 695, 2010**,** 2687-2694.
5. Antimicrobial studies of newly synthesized organotin(IV) complexes of mercaptothia-zolinyl)borate " Raj K. Joshi, Nauhad Ahmed, Salman Ahmed, Athar A. Hashmi. ***J. Coord. Chem***. 63, **2010**, 209-215.
4. Synthesis and *in vitro* antibacterial activity of new steroidal thiosemicarbazone derivatives. Salman A. Khan, Parveen Kumar, Raj K. Joshi, Prince F. Iqbal, Kishwar Saleem, ***European Journal of Medicinal Chemistry***. 43, **2008**, 2029-2034.
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1. Synthesis, spectral and biological studies of organotin(IV) complexes of heteroscorpionates. Raj K. Joshi, G. S. Sharma, V. Kumar, Athar A. Hashmi, S. Kumar, R. Achila, Mohd E. Hussain. ***Applied Organometallic Chemistry***. 20, **2006,** 740-746

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1. Highly economical & sustainable one-pot method for direct c-n bond formation by the reaction of nitro compounds with boronic acid
   Indian Patent (Patent No. 570317), Granted in 2025

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1. Development of economical one-pot method for the synthesis of novel ferrocenyl-thioethers, Meena Nemiwal, Raj Kumar Joshi, Vijesh Tomar, Deepak Sharma (Published, App. No. 202411042653).
2. Direct method for the synthesis of novel ferrocenyl-isothiazole-3-thiones and isoselenazoles-3-selenones, Raj Kumar Joshi, Deepak Sharma, Vijesh Tomar (Published, App. No. 202411097403).
3. Method for iron and water promoted reduction of alkynes to alkenes. Dr. Raj Kumar Joshi, Manisha and Lalit Negi (Published, Application No. 202511117786).

Book Chapter Published

1. Chapter Name; Palladium Containing polymer-supported Catalyst, Book name, Palladium Containing polymer-supported Catalyst, CRC press, 2024
   Yachana Upadhayay, Raj Kumar Joshi
2. Chapter Name Ruthenium and Iridium Containing Polymer-supported Catalyst, Book name, Palladium Containing polymer-supported Catalyst, CRC press, 2024
   Avinash Kumar Srivastava, Yachana Upadhayay, Raj Kumar Joshi
3. Atomically precise gold and silver nanoclusters: Synthesis and applications Book Name Gold and Silver Nanoparticles, Elsevier, 2023.
   R. Nukam, Raj Kumar Joshi, Suban K Sahoo
4. Sensing and biosensing with silicon quantum dots, Book Name Sensing and Biosensing with Optically Active Nanomaterials, Elsevier 2022.
   Yachana Upadhayay, Raj Kumar Joshi, Suban K Sahoo

On-going Research Project

1. Development of high-performance self-biased deep UV Photodetectors based on novel 4H-SiC/h-BN heterostructures (ISRO-RACS-MNIT)
   Funded by ISRO-RACS-MNIT Jaipur
   Duration: 2025-2027

Completed Projects

1. Title: Synthesis of metalcarbonyl based organometallic clusters (especially Fe-containing) and their catalytic applications in organic transformations.
   Funded by Department of Science and Technology (DST), New Delhi
   During 2011 - 2015

2. Title: Strategically Development of metalsilylene complexes: Potential catalyst for unique organic transformation and silylene transfer reactions.
   Funded by Council Of Scientific and Industrial Research (CSIR) New Delhi.
   During 2013-1016,
3. Title: New Perspectives to Advance Green Medicinal Chemistry
   Funded by Department of Science and Technology (DST), Republic of India and National Research Foundation (NRF), Republic of South Africa.
   Duration 2014 to 2017.
4. Title: Design and Study of Potential Metallacarborane Catalysts for General and Selective Organic Reactions.
   Funded by Department of Science and Technology (DST), Russian Foundations of Basic Research (RFBR)
   Duration 2015-2018
5. Title: Iron group metalcarbonyl complexes of chalcogen functionalized N-Heterocyclic carbenes: Synthesis, characterization, mechanistic investigation and bio-inspired catalysis
   Funded by Council of Scientific and Industrial Research (CSIR) New Delhi.
   During 2019-2023