Dr. MANOJ, E.

Associate Professor

Department of Applied Chemistry

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Research area

Bioactive transition metal complexes

Metallosupramolecular chemistry

Metal Organic Frameworks

Teaching

Coordination chemistry, Main group elements,

Supramolecular chemistry, Two Dimensional materials,

Molecular Symmetry and Group Theory

Qualitative and quantitative inorganic analysis

Work Experience

- Associate Professor, Dept. of Applied Chemistry, CUSAT, Kochi (August 2022 onwards).
- Assistant Professor, Dept. of Applied Chemistry, CUSAT, Kochi (June 2019 August 2022).
- Assistant Professor, Dept. of Chemistry, Sree Krishna College, Guruvayur, Thrissur (August 2010 to June 2019).
- UGC Dr DS Kothari Post-Doctoral Fellow (Under Prof. P.S. Mukherjee) Inorganic and Physical Chemistry, Indian Institute of Science (IISc) Bangalore (July 2009 to August 2010).
- Lecturer in Chemistry (on contract), Dept. of Applied Chemistry, CUSAT, Kochi (January 2008 to June 2009).
- PhD (Under Prof. M.R.P. Kurup), Dept. of Applied Chemistry, CUSAT, Kochi (2004 to 2008).

Academic Memberships

- Member of Board of Studies in Applied Chemistry, CUSAT
- Member of Board of Studies in PG Chemistry, Bharathiar University, Coimbatore
- Member of Board of Studies in Physics & Chemistry, Sahrdaya College of Advanced Studies (Autonomous), Thrissur (affiliated to University of Calicut)

Awards/Honours

- Dr DS Kothari Post-Doctoral Fellowship, UGC, 2009
- UGC-JRF/Lectureship in Chemistry, UGC-CSIR, 2004
- KSCSTE-JRF in Chemistry, KSCSTE, Kerala, 2003
- MSc Vth rank, University of Kerala, 2003

List of Publications

1. Novel Zn(II), Ni(II), and Cd(II) complexes via In Situ One-Pot Method: Probing Biomolecular Interactions with DNA and Antibacterial potentials, Ansa Santu, E. Manoj, Inorganic Chimica Acta, 587 (2025) 122795.
2. Fluorometric Detection of Sodium Ion Using Bis(2,4 dihydroxyphenylmethylene) Thiocarbohydrazone; Crystal Structure, DFT studies, Anti-cancer Assay, ADMET Study and Molecular Docking, Lakshmi V. Menon, E. Manoj, Journal of Fluorescence, (2025) s10895-025-04363-2.
3. Synthesis, Characterization and Theoretical Studies of Three Similar Nickel (II) Complexes: Biological and Photocatalytic Applications, Amrutha Mohan, Lakshmi V. Menon, K. K. Mohammed Hashim, E. Manoj, Polyhedron 274(2025) 117499.
4. Self-Assembled Nickel (II) Centered Metal-Organic Square Grid Complexes for CO_2 sensing, M. Sooraj, R. Jayakrishnan and E. Manoj, Dalton Transactions, 54(2025) 6922-6934.
5. Coumarin based Schiff base proligands as promising antioxidant, antibacterial and anticancer agents: DFT and molecular docking correlations, A. Santu, E. Manoj, Journal of Molecular Structure 1333 (2025) 141650.
6. Structural, spectral and theoretical features of mono and di-substituted novel hydrazones: In vitro antibacterial and anticancer implications, M. Sooraj, E. Manoj, Journal of Molecular Structure 1332 (2025) 141664.
7. Nickel(II) complexes of benzoylpyridine diaminoguanidinedihydrazone via *in situ* one-pot method: Structural, spectral and catalytic studies, K.K.M. Hashim, L. Nishana, M.R.P. Kurup, A. Sakthivel, E. Manoj, Applied Organometallic Chemistry, 39 (2025) e70055.

8. Three Novel Schiff Bases Based on Ninhydrin: Synthesis, Characterization, DFT, Anticancer, Antibacterial and Molecular Docking Studies, Lakshmi V. Menon, E. Manoj, Journal of Molecular Structure 1330 (2025) 141497.
9. Photophysical properties, DFT calculations and DNA binding studies of a series of deep blue emitting cerium(III) complexes, T.M. Anjana, E. Manoj, C.M. Naseera, F.M. Liyakhath, A. Thayyullathil, S. Naduparambath, S.R. Sheeja, M.R.P. Kurup, Journal of Molecular Structure 1327 (2025) 141186.
10. Synthesis, characterization, band gap calculation, DFT study and biological implication of two nitrogen-rich proligands: Polymorphic crystal structures and Hirshfeld surface analyses of a thiocarbohydrazone, M. Sooraj, M.J. Krishnapriya, E. Manoj, Journal of Molecular Structure 1321 (2025) 139857 (Invited Article)
11. Multi-faceted investigation of copper(II) chelates based on ONS donor thiosemicarbazone: Crystal structures, spectral aspects, DNA binding, cytotoxicity and computational studies, J.M. Jacob, N. Mohan, Sreejith S.S., M. Sithambaresan, E. Manoj, M.R.P. Kurup, Journal of Molecular Structure 1319 (2025) 139463.
12. Bromo substituted aroylhydrazones: Synthesis, crystal structures, Hirshfeld surface analysis, 3D energy frameworks, DNA/BSA binding, antimicrobial activity, P. K. Maniyampara, M. Bhagiyalakshmi, M.R.P. Kurup, E. Manoj, K.K. Damodaran, Journal of Molecular Structure 1318 (2024) 139214.
13. Exploring anticancer and antibacterial activities of two self-assembling units: Band gap calculations, DFT studies, and polymorphism of a carbohydrazone ligand, M. Sooraj, K.K. Damodaran, E. Manoj, Journal of Molecular Structure 1316 (2024) 138930 (Invited Article)
14. Aroylhydrazone-based Nickel(II) Complexes: Synthesis and Their Structural, DFT, Biological and Catalytic Studies, L. Nishana, A. Sakthivel, M.R.P. Kurup, E. Manoj, A. Kulandaisamy, B.M. Murugan, M. Gnanadesigan, Applied Organometallic Chemistry, 38 (2024) e7579.
15. Aminoguanidine-Based Bioactive Proligand as AIEE Probe for Anticancer and Anticovid studies, K.K.M. Hashim, E. Manoj, RSC Advances 14 (2024) 13654-13668.
16. Mononuclear and binuclear dioxidomolybdenum(VI) chelates derived from a tridentate ONO donor aroylhydrazone: Spectral, structural, DFT and in silico biological investigations, A.A. Aravindakshan, N. Mohan, M.R.P. Kurup, S. Erkan, S. Kaya, E. Manoj, Polyhedron 256 (2024) 116998.
17. Copper perchlorate catalyzed oxidative cyclisation of a novel bishydrazone ligand, formation of an unusual copper complex and in vitro biological implications, Lakshmi V. Menon, E. Manoj, Journal of Inorganic Biochemistry (2024) 112538.
18. An All-rounder Aminoguanidine based Ligand, Its Unusual Anionic Zinc(II) and Cadmium(II) Coordination Complexes and Their Biological Implications, A. Santu, K. K. M. Hashim, E. Manoj, New Journal of Chemistry, 48 (2024) 4496-4506.

19. Crystal Structure of 1-(E)- [(5-bromo-2-hydroxybenzylidene amino) pyrrolidin-2-one]: Design, synthesis and computational evaluation of a novel racetam congener for Epilepsy, N. Aiswarya, C.N. Rahul, Gugan Kothandan, M.R. Prathapachandra Kurup, E. Manoj, P. Chandrasekaran, Jeyakanthan Jeyaraman, Kanagaraj Sekar, Journal of Molecular Structure, 1300 (2024) 137219.
20. Spectral, Band Gap and DFT Studies of Novel Cobalt (II) Complexes of N(4)-Cyclohexylthiosemicarbazones: Molecular Docking with DNA and SARS-CoV-2 M^{pro}, T. M. Kavya, L.V. Menon, K. K. M. Hashim, E. Manoj, Journal of Molecular Structure, 1295 (2024) 136802.
21. Synthesis, crystal structure, Hirshfeld surface analysis, DFT, molecular docking and *in vitro* antitumor studies of (2E)-2-[4-(diethylamino)benzylidene]-N-ethylhydrazinecarbothioamide, K. Preetha, E.B. Seena, P.K. Maniyampara, E. Manoj, M.R.P. Kurup, Journal of Molecular Structure, 1295 (2024) 136700.
22. DNA and BSA Binding Studies of New Pd(II) Bisthiocarbohydrazone Complexes: From Anticancer Drug Analogue to Anticovid Candidates, K.K. Mohammed Hashim, E. Manoj, Inorganic Chemistry Communications, 157 (2023) 111326.
23. Solvothermal Self-Assembly of a Novel Metal-Organic Square Grid Complex Using a Biscarbohydrazone Ligand Building Block: Crystal Structures, Hirshfeld and Void Surface Analyses, Band Gap Calculations and DFT Studies, M. Sooraj, E. Manoj, M.R.P. Kurup, Polyhedron, 244 (2023) 116583.
24. Monomeric and dimeric cadmium(II) complexes of N4-phenyl semicarbazones: Spectral features, thermogravimetric analysis, DFT study and crystal structure of a bromido bridged complex, M. Sithambaresan, E. Manoj, M.R.P. Kurup, Polyhedron, 242 (2023), 116506.
25. Novel cobalt complexes of pyridine-based NNS donor thiosemicarbazones: Synthesis, X-ray characterization, DFT calculations, Hirshfeld surface analysis, and molecular docking study, P. K. Maniyampara, L. K. Suresh, K. Jayakumar, E. Manoj, M.R.P. Kurup, Journal of Molecular Structure, 1275 (2023) 134680.
26. Bis(thio)carbohydrazone Luminogens with AIEE and ACQ Features and Their *In Silico* Investigations with SARS-CoV-2, K.K. Mohammed Hashim, E. Manoj, M.R.P. Kurup, Chemistry Select, 7 (2022) e20220122.
27. A novel manganese(II) bisthiocarbohydrazone complex: Crystal structures, Hirshfeld surface analysis, DFT and molecular docking study with SARS-CoV-2, K.K.M. Hashim, E. Manoj, M.R.P. Kurup, Journal of Molecular Structure, 1246 (2021) 131125.
28. Nickel(II) complexes of N(4)-substituted thiosemicarbazones derived from pyridine-2-carbaldehyde: Crystal structures, spectral aspects and Hirshfeld surface analysis, P.F. Rapheal, E. Manoj, M.R.P. Kurup, H.-K. Fun, Journal of Molecular Structure, 1237 (2021) 130362.

29. Zinc(II) complexes of N(4)-monosubstituted thiosemicarbazones derived from pyridine-2-carbaldehyde: Structural and spectroscopic studies, P.F. Rapheal, E. Manoj, M.R.P. Kurup, P. Venugopalan, ,Chemical Data Collections 33 (2021) 100681
30. Molecular trail for the anticancer behavior of a novel copper carbohydrazone complex in BRCA1 mutated breast cancer, R.S. Nair, E. Manoj, R. Thankappan, S.K. Chandrika, M.R.P. Kurup, P. Srinivas, Molecular Carcinogenesis 56 (2017) 1501.
31. Crystal structure of aqua[(E)-N′-(5-bromo-2-oxidobenzyl-idene-κO) benzohydrazidato-κ^2O,N′]dioxidomolybdenum(VI) dimethylformamide monosolvate, R. Sudheer, M. Sithambaresan, N.R. Sajitha, E. Manoj, M.R.P. Kurup, Acta Cryst. E71 (2015) 702.
32. Formation of an unusual copper(II) complex from the degradation of a novel tricopper(II) carbohydrazone complex, E. Manoj, M.R.P. Kurup, R.P. John, M. Nethaji, A. Punnoose, Inorganic Chemistry Communications, 12 (2009) 952.
33. Preparation, magnetic and EPR spectral studies of copper(II) complexes of an anticancer drug analogue, E. Manoj, M.R.P. Kurup, A. Punnoose, Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 72 (2009) 474.
34. Structural and spectral studies of nickel(II) complexes with N(4),N(4)-(butane-1,4-diyl) thiosemicarbazones, E. Manoj, M.R.P. Kurup, Polyhedron, 27 (2008) 275.
35. Synthesis and spectral studies of bisthiocarbohydrazone and biscarbohydrazone of quinoline-2-carbaldehyde: Crystal structure of bis(quinoline-2-aldehyde) thiocarbohydrazone, E. Manoj, M.R.P. Kurup, E. Suresh, J. Chem. Cryst., 38 (2008) 157.
36. Self-assembled macrocyclic molecular squares of Ni(II) derived from carbohydrazones and thiocarbohydrazones: Structural and magnetic studies, E. Manoj, M.R.P. Kurup, H.-K. Fun, A. Punnoose, Polyhedron, 26 (2007) 4451.
37. Macrocyclic molecular square complex of zinc(II) self-assembled with a carbohydrazone ligand, E. Manoj, M.R.P. Kurup, H.-K. Fun, Inorganic Chemistry Communications, 10 (2007) 324.
38. Synthesis and EPR spectral studies of manganese (II) complexes derived from pyridine 2-carbaldehyde based N(4)-substituted thiosemicarbazones: Crystal structure of one complex, P.F. Rapheal, E. Manoj, M.R.P. Kurup, Polyhedron, 26 (2007) 5088.
39. Synthesis and spectral characterization of zinc(II) complexes of N(4)-substituted thiosemicarbazone derived from salicylaldehyde: Structural study of a novel -OH free Zn(II) complex, L. Latheef, E. Manoj, M.R.P. Kurup, Polyhedron, 26 (2007) 4107.
40. Copper(II) complexes of N(4)-substituted thiosemicarbazones derived from pyridine-2-carbaldehyde: Crystal structure of a binuclear complex, P. F. Rapheal, E. Manoj, M.R.P. Kurup, Polyhedron, 26 (2007) 818.
41. Structural and spectral studies of novel Co(III) complexes of N(4)-substituted thiosemicarbazones derived from pyridine-2-carbaldehyde, P.F. Rapheal, E. Manoj, M.R.P. Kurup, E. Suresh, Polyhedron, 26 (2007) 607.

42. 2-Hydroxyacetophenone 4-phenylthiosemicarbazone, E.B. Seena, E. Manoj, M.R. Prathapachandra Kurup, Acta Cryst. Cryst. Struc. Commun. C62 (2006) o486.
43. Salicylaldehyde N(4)-hexamethyleneiminyl thiosemicarbazone, L. Latheef, E. Manoj, M.R.P. Kurup, Acta.Cryst, Cryst. Struc. Commun. C62 (2006) o16.
44. N''-N'''-bis[di(2-pyridinyl)methylene]carbonic dihydrazide, E. Manoj, M.R.P. Kurup, H.-K. Fun, S. Chantrapromma, Acta.Cryst. E61 (2005) o4110.
45. [Di-2-pyridyl ketone N^4, N^4-(butane-1,4-diyl)thiosemicarbazonato-k^3 N, N', S] dioxovanadium(V), V. Philip, E. Manoj, M.R.P. Kurup, M. Nethaji, Acta Cryst, Cryst. Struc. Commun. C61 (2005) m488.
46. N-(Pyridin-2-yl)hydrazinecarbothioamide, P.F. Rapheal, E. Manoj, M.R.P. Kurup, E. Suresh, Acta Cryst. E61 (2005) o2243.

Seminar Presentations/Invited Talks

1. Synthesis, Crystal structure and Hirshfeld surface analysis of carbohydrazone based Zn(II) and Cu(II) Metal-organic square grid complexes, M. Sooraj, E. Manoj, 4th international conference on advanced functional materials (ICAFM) 2025, Dept. of material science, Central University of Tamil Nadu, Thiruvarur, 21 and 22 March 2025.
2. Crystal Structures, DFT, Biological and Photocatalytic Studies of a Thiosemicarbazone Ligand and it's Cadmium(II) Complex, Amrutha Mohan, E. Manoj, National Conference on Recent Advances in Chemistry Explorations for Sustainability (RACES2025) organized by Dept. of Chemistry (Supported by DST-FIST & UGC-SAP), Periyar University, 13-02-2025 & 14-02-2025 at Periyar University, Salem, Tamil Nadu. **(Secured the best oral presentation award)**
3. Structural Studies and Band Gap Calculation of a Novel Carbohydrazone based Ni(II) Metal-Organic Square Complex, M. Sooraj & E. Manoj, National Conference on Recent Advances in Chemistry Explorations for Sustainability (RACES2025) organized by Dept. of Chemistry (Supported by DST-FIST & UGC-SAP), Periyar University, 13-02-2025 & 14-02-2025 at Periyar University, Salem, Tamil Nadu
4. Developing Metal Organic-Square Complex Based CO_2 Sensor, M. Sooraj & E. Manoj, 37th Kerala Science Congress organized by Kerala State Council for Science, Technology and Environment, 07-02-2025 to 10-02-2025 at Kerala Agricultural University, Thrissur
5. Synthesis, characterization and antibacterial investigations of N4-Phenyl substituted semicarbazone based ligand and its trinuclear Zinc(II) complex, Krishnapriya M. J., Manoj E., National Seminar on Frontiers in Chemical Sciences (FCS 2025) organized by the Department of Chemistry in association with CRSI, University of Calicut, Kerala. February 3–5, 2025.

6. A trinuclear Zinc(II) complex with a tetradentate Schiff base ligand containing phenolate donor group, Ansa Santu, E. Manoj, National Seminar on Frontiers in Chemical Sciences (FCS 2025) organized by the Department of Chemistry in association with CRSI, University of Calicut, Kerala. February 3–5, 2025. **(Secured the best oral presentation award)**
7. Crystal structures, Band Gap Analysis and Anti-cancer Study of a Novel Quinoline-based Dihydrazone and its Self-assembled Double-stranded Helical Nickel(II) Complex, Lakshmi V. Menon & E. Manoj, National Conference on Emerging Frontiers in Chemical Sciences (EFCS 2024) during December 2-3, Department of Chemistry, Farook College (Autonomous), Calicut.
8. Synthesis, Structural Characterization and DFT studies of a Novel Ni (II) complex: Antibacterial, Antioxidant and Molecular Docking investigations, Ansa Santu & E. Manoj, National Conference on Emerging Frontiers in Chemical Sciences (EFCS 2024) during December 2-3, Department of Chemistry, Farook College (Autonomous), Calicut.
9. Crystal Structures, DFT and Biological Studies of a Novel Thiosemicarbazone and it's Cadmium Complex, Amrutha Mohan & E. Manoj, National Conference on Emerging Frontiers in Chemical Sciences (EFCS 2024) on Emerging Frontiers in Chemical Sciences (EFCS 2024) during December 2-3, Department of Chemistry, Farook College (Autonomous), Calicut.
10. Fluorometric Detection of Sodium Ion Using Bis(2,4-dihydroxyphenylmethylene) Thiocarbonyldihydrazone, L.V. Menon & E. Manoj, Symposium on emerging nanotechnologies for sensors-organization and recognition systems 2024 (SENSORS 2024) during November 27-30 organized by IIUCSI and Dept of Chemistry, University of Kerala, Kariavattom.
11. Synthesis, Structural Characterization and DFT Studies of Novel Zn(II) and Cd(II) Complexes: DNA binding, antibacterial, antioxidant and molecular docking investigations. Ansa Santu & E. Manoj, Prof. K.V. Thomas Endowment National seminar, Frontiers in Material Science during 27, 28 November 2024 organized by Sacred Heart College, Thevara, Kochi.
12. Nickel(II) Complexes of Benzoylpyridine Diaminoguanidinedihydrazone and their Biological Implications, K.K.M. Hashim, S. Dinesh, E. Manoj, International Seminar on Advances in Applied and Chemical Science 2024 (AACS 2024) during October 24-25, 2024, Organized by Department of Chemistry (Aided & SF) St. Paul's college, Kalamassery in association with College Development Council Mahatma Gandhi University, Kottayam, Kalamassery, Kochi.
13. Biological Implication of Novel Mono and Disubstituted Hydrazones, M. Sooraj & E. Manoj, International conference on Biopolymers and green composites (BPGC-2024)

during October 18-19, 2024 Organized by Central Institute of Petrochemical Engineering and Technology-Kochi (CIPET), Kochi.

14. Antibacterial, Anticancer and Antioxidant evaluation of Coumarin Based Schiff Base Ligands: Crystal structure, Molecular Docking and DFT Studies, A. Santu & E. Manoj, International Conference on Nanoscience and Nanotechnology for Sustainability: Energy and Health care' (ICoNNS 2024) during July 4-5, 2024, Organized by the Dept of Basic Science and Humanities, SCMS, School of Engineering and Technology, Karukutty, Ernakulam.
15. Crystal Structures, Hirshfeld Surface Analyses And DFT Study Of A Novel Anticancer Proligand Butane-2,3-diylidene bis(4-hydroxybenzohydrazide), M. Sooraj & E. Manoj, 13th National Seminar on Frontiers in Chemical Sciences (FCS 2024) during February 13–15, 2024, Organized by the Department of Chemistry, University of Calicut, Kerala.
16. Crystal Structures, DFT and Photocatalytic Studies of Two Novel Thiosemicarbazone Based Proligands, A. Mohan & E. Manoj, 13th National Seminar on Frontiers in Chemical Sciences (FCS 2024) during February 13–15, 2024, Organized by the Department of Chemistry, University of Calicut, Kerala.
17. A novel aggregation-induced emissive bioprobe for anticancer and anticovid studies", K.K.M. Hashim & E. Manoj, 36th Kerala Science Congress at Government College Kasaragod during February 8-11, 2024 conducted by KSCSTE.
18. Anticancer and antibacterial studies of nitrogen rich proligands and polymorphism, M. Sooraj, M.J. Krishnapriya, E. Manoj, 36th Kerala Science Congress at Government College Kasaragod during February 8-11, 2024 conducted by KSCSTE.
19. "Value of Research and Communication of Results in High Impact Journals" @ SCMS School of Engineering & Technology, Karukutty, Ernakulam on 12-01-2024 (**Invited Talk**).
20. An All-rounder Aminoguanidine based ligand and its Unusual Anionic Zinc and Cadmium Coordination Complexes: Crystal structures and Theoretical studies, A. Santu, K.K.M. Hashim, E. Manoj, International conference on Modern Trends in Inorganic Chemistry (MTIC-XX 2023) Inorganic and Physical Chemistry, IISc Bengaluru, December 2023.
21. Self-assembled Double-stranded Homotopic Helical Nickel(II) and Zinc(II) Complexes of a novel hexadentate Dihydrazone ligand: Crystal structures and band gap studies, L.V. Menon, E. Manoj, International conference on Modern Trends in Inorganic Chemistry (MTIC-XX 2023) Inorganic and Physical Chemistry, IISc Bengaluru, December 2023.
22. Exploring anticancer and antibacterial activities of two new self-assembling units: Band gap calculations, DFT studies, and polymorphism of a carbohydrazone ligand, M. Sooraj & E. Manoj, International conference on Advanced Materials and

Nanotechnology for green and sustainable future (ICAGS 2023) 2023, Post graduate and Research Department of Chemistry, Maharaja's College, Ernakulam, Kerala.

23. *In Vitro* And *In Silico* DNA And BSA Binding Studies Of New Bioactive Pd(II) Complexes", K. K. Mohammed Hashim & E. Manoj, National Seminar on Frontiers in Chemical Sciences (FCS 2023), University of Calicut, Kerala 2023. **(Secured the best poster award)**
24. Synthesis, Spectral Features, Photocatalytic and DFT Studies of Novel Nickel(II) Complexes of Quinoline-2-carbaldehyde-N(4)-Cyclohexylthiosemicarbazone, A. Mohan & E. Manoj, National Seminar on Frontiers in Chemical Sciences (FCS 2023), University of Calicut, Kerala 2023.
25. Crystal Structure and Surface Area Calculation of a Stable Self-Assembled Ni(II) Metallosupramolecular Square Grid Complex, M. Sooraj & E. Manoj, International Conference on Materials for the Millennium (MatCon-2023), CUSAT January 2023.
26. A Novel Coumarin Based Carbohydrazone as Highly Efficient Antibacterial and Antioxidant Agent", A. Santu & E. Manoj, International Conference on Materials for the Millennium (MatCon-2023), CUSAT January 2023.
27. A Novel Double-stranded Homotopic Helical Cobalt (III) Complex as a Highly Selective Fluorescent Sensor for Nanomolar Detection of Explosive Picric Acid, L. V. Menon & E. Manoj, International Conference on Materials for the Millennium (MatCon-2023), CUSAT January 2023.
28. Crystal structures, Spectral aspects, DFT studies and Molecular docking of Copper(II) chelates based on an ONS Donor Thiosemicarbazone ligand, J.M. Jacob, E. Manoj, M.R.P. Kurup, International Conference on Materials for the Millennium (MatCon-2023), CUSAT January 2023.
29. Synthesis And Spectral Studies of Novel Cobalt Complexes of Quinoline-2-carbaldehyde N(4)-cyclohexylthiosemicarbazone and their *in silico* Molecular Docking with Duplex DNA", T.M. Kavya, Lakshmi V. Menon, K.K.M. Hashim, E. Manoj, International Seminar on "Current Trends in Chemistry, CTriC 2022" CUSAT 2022.
30. Crystal Structures and Band Gap Calculations of a Novel Self Assembled [2×2] Metallosupramolecular Grid and its Biscarbohydrazone Ligand Building Block, M. Sooraj, E. Manoj, International Seminar on "Current Trends in Chemistry, CTriC 2022" CUSAT 2022.
31. A Turn-on Fluorescent Sensor for the Detection of Zn (II) and Cd (II) Ions based on Thiocarbohydrazide derived Schiff-Base, Lakshmi V. Menon, E. Manoj, International Seminar on "Current Trends in Chemistry, CTriC 2022" CUSAT 2022.
32. Novel Cobalt Complexes of Pyridine-Based Heterocyclic Thiosemicarbazone: Synthesis, Characterization and Computational Studies, Pramod Kumar M, E. Manoj,

M.R.P. Kurup, International Seminar on "Current Trends in Chemistry, CTriC 2022" CUSAT 2022.

33. Synthesis, characterization and theoretical studies on Pd(II) thiocarbohydrazone complexes and their biological implications using in silico molecular docking, K.K. Mohammed Hashim & E. Manoj, virtual conference 'Medchem-2021' on "Emerging infectious diseases and therapeutic strategies" Indian Institute of Technology Madras, Chennai 2021.
34. Structural, spectral and theoretical investigations on bis(thio)carbohydrazones of 3,5-diiodosalicylaldehyde and their biological *in silico* studies, K.K.M. Hashim, E. Manoj, M.R.P. Kurup, National Webinar on Recent Advances in Solid State Chemistry and Allied Sciences, School of Physical Sciences, Central University of Kerala 2021. **(Secured the best oral presentation award)**
35. Structural aspects of manganese(II) thiocarbohydrazone complexes, K.K.M. Hashim, E. Manoj, M.R.P. Kurup, International Conference on Materials for the Millennium (MatCon-2021), CUSAT 2021
36. EPR spectral Study of Self-assembled manganese(II) coordination frameworks, E. Manoj, M.R.P. Kurup, Advances in Applied Physics and Applications, Sree Krishna college, Guruvayur, 2018.
37. Magnetic properties of materials, UGC sponsored national seminar on "Chemical Applications of Spectroscopic Techniques" (NSCAST-2015) 12 &13 February 2015 @ Sree Narayana College, Punalur (**Invited Talk**).
38. Magnetic Properties of Chemical Substances, UGC sponsored national seminar on 'Characterization Techniques in Chemistry' 16&17 December 2014 @ KKTM Government college, Kodungallur (**Invited Talk**).
39. Self-assembled square grid complexes of Zn(II) and Cd(II): MALDI MS spectral study, E. Manoj, M.R.P. Kurup, Modern Trends in Inorganic Chemistry, MTIC-2007, IIT Chennai.
40. Self-assembled molecular square grid complexes of carbohydrazone ligands, E. Manoj, M.R.P. Kurup, A. Punnoose, International Conference on Materials for the Millenium, MatCon-2007, CUSAT, Kochi.
41. Structural and Spectral studies of novel Co(III) complexes of N(4)-Substituted thiosemicarbazones derived from pyridine-2-carbaldehyde, P.F. Rapheal, E. Manoj, M.R.P. Kurup, H.-K. Fun, National conference on the role of Analytical Chemistry in Materials Science and Technology, ACIMSAT-2006, Munnar.
42. Self-assembly of a macrocyclic molecular square: Structural and magnetic studies, E. Manoj, M.R.P. Kurup, H.-K. Fun, A. Punnoose, National seminar on Frontiers in Chemistry, FIC-06, CUSAT, Kochi.
43. Structural and spectroscopic studies of a novel ligand pyridine-2-carbaldehyde-N(4)-p-methoxyphenyl thiosemicarbazone (HL) and it's Zinc(II) complexes, P.F.

Rapheal, E. Manoj, M.R.P. Kurup, P.Venugopalan, National seminar on Frontiers in Chemistry, FIC-06, CUSAT, Kochi.

Patent

- Antifungal transition metal coordination complex and process for preparation thereof, E. Manoj, E. K. Radhakrishnan, K. K. Mohammed Hashim, K. Sreekanth, Indian Patent Application No. 202441104623 filed on 30-12-2024.
- A metal complex and a process thereof, P. Srinivas, M.R.P. Kurup, E. Manoj, R.S. Nair, Indian Pat. No. 286230 dt 10-08-2017.

Research Guidance

- Ph.D— 1 (completed), 5 (ongoing) , M.Phil -1 (completed)
- PhD Thesis "Nitrogen-rich Ligands and their Metal Complexes: AIE Bioprobe, Anticovid and other Biological Applications", K.K. Mohammed Hashim (Reg. No. 6215)

Projects

- Probing Cobalt Complexes based Hole Transporting Materials for Photovoltaic Applications- ongoing (25.03 Lakhs, RUSA-MHRD for CUSAT-Govt of India, 2023-2025).
- Structural and biological investigations of transition metal complexes of Schiff based ligands bearing heterocyclic systems- completed (2.75 Lakhs, CUSAT/PL(UGC), 2021-2023).
- Probing self-assembled novel magnetic materials: - Structural and spectral investigations- completed (2 Lakhs, UGC MRP, 2014-2016).

Sd/-