Dr. M. R. Maurya

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Academic Profile

- Ph.D. – Kurukshetra University, Kurukshetra, 1987
- M.Sc. – Bundelkhand University, Jhansi, 1981
- B.Sc. – Gorakhpur University, 1979

Post Doctoral Experience

- Post-doctoral Fellow, Loyola University of Chicago, USA during September 87 – August 89.
- Post-doctoral Fellow, Iowa State University, Ames, Iowa, USA during September 89 – August 91.

Research Interests

- Structural and functional models of vanadate-dependent haloperoxidases.
- Molybdenum and tungsten complexes and their catalytic stydy.
- Coordination polymers and their catalytic study.
- Metal complexes encapsulated in zeolite cages and their catalytic study.
- Polymer-anchored metal complexes and their catalytic study.
- Medicinal aspects of coordination compounds: Antiamoebic activitiy.

Research Projects

- **Projects in hand:**

1. Heterogenization of vanadium complexes and their catalytic activities, CSIR, New Delhi, 16.76 lacs.
2. Synthesis, reactivity, structural investigation and catalytic aspects of vanadium complexes, DST, New Delhi, 40.0 Lacs.

- **Projects carried out:**

1. Ligand controlled synthesis of tungsten complexes, their reactivity and catalytic studies, CSIR, New Delhi, 3.5 Lacs.
2. Oxoperoxo and dioxovanadium(V) complexes of polydentate ligands, their reactivity and catalytic activities, CSIR, New Delhi, 4.6 lacs.
3. Coordination chemistry of vanadium as related to its biological functions, DST, New Delhi, 11.0 Lacs.
4. Towards the modeling of Vanadate dependent haloperoxidases: Synthesis, characterization and reactivity of oxo- and dioxovanadium(V) complexes, CSIR, New Delhi, 4.64 lacs.
5. Synthesis, reactivity and structural aspects of vanadium complexes, DST, New Delhi, 17.88 Lacs.
6. Coordination chemistry of vanadium: Synthesis, reactivity and catalytic aspects of vanadium complexes, CSIR, New Delhi, 8.98 Lacs.

Research Collaborations

- **Prof. Dr. D. Rehder**, University of Hamburg on model vanadium(V) complexes relevant to biological systems.

- **Prof. Dr. J. Costa Pessoa,** Centro Química Estrutural, Instituto Superior Técnico-TU Lisbon, Av. Rovisco Pais 1049-001, Lisboa, Portugal, on model vanadium(V) complexes relevant to biological systems.

- **Dr. A. Azam**, Jamia Millia Islamia on the antiamoebic activities of metal complexes.

- **Prof. S. Chand**, Chemical Engineering Department, IIT Roorkee on catalytic activity studies of various metal complexes encapsulated in zeolite-Y.

Honors

- Star performer (Good researcher) for the year 2003-04, 2004-05 & 2005-06 of IIT Roorkee (as recognized by the institute).
- 7 Best paper awards in Conferences/ Symposia.

Affiliation to scientific society

- Life member, Indian Chemical Society, India.
- Life member, Institution of Chemists, India.
- Life member, Indian Council of Chemists, India.
- Life member, Indian Science Congress.
- Life member, Catalysis Society of India.
- Life member, Chemical Research Society of India.
- Former member, American Chemical Society, U.S.A.

Ph. D. theses supervised

- **Ms. Shilpa Khurana** (2002) Studies of oxo-, dioxo- and oxoperoxo vanadium(V) complexes of polydentate ligands.
- **Mr. Salam Titinchi** (2004) Synthesis and catalytic activities of zeolite encapsulated metal complexes.
- **Mr. Saha Raj Ali** (2004) Role of metal cyanogens complexes as prebiotic catalyst.
- **Mr. Amit Kumar** (2006) Studies on the coordination chemistry of vanadium relevant to biological systems.
- **Ms. Shalu Agarwal** (2006) Vanadium complexes, their therapeutic and catalytic potentiality.
- **Ms. Sweta** (2007) Catalytic activities of polymer-anchored metal complexes.
- **Mr. Umesh Kumar** (2007) Immobilized vanadium complexes and their catalytic role in oxidation reactions.
- **Mr. Anil Kumar Chandraker** (2007) Catalytic activities of metal complexes immobilized in zeolite-Y.
- Mr. **Maneesh Kumar** (2008) Polymer-anchored metal complexes as catalyst for some oxidation reactions.
- **Ms. Aarti** (2009) Catalytic aspects of immobilized metal complexes.
- **Mr. Aftab A. Khan** (2010) Synthesis, characterization and potential application of vanadium complexes.
- **Ms. Manisha Bisht** (2011) Synthesis, reactivity, structural and catalytic aspects of vanadium complexes.
- **Ms. Priyanka Saini** (2012) Catalytic activities of vanadium, manganese and copper complexes immobilized in zeolite-Y.
- **Mr. Chanchal Haldar** (2012) Synthesis, reactivity and catalytic activity of metal complexes.
- **Mr. Maninder Singh** (2013) Strength characteristics of modified bitumen with various Aggregates.

Invited talks

National

(i) 19th Indian Council of Chemists, Kuvempu University, Shimoga, Karnataka, December 2000.
(ii) Chemical Sciences Section of Indian Science Congress, Ahmedabad, January, 2005.
(iii) 21st Indian Council of Chemists, R.D. University, Jabalpur, 2002.
(iv) 40th Annual Convention of Chemists, Bundelkhand University, Jhansi, 2003.
(v) 23rd Conference of Indian Council of Chemists, K.C. College, Mumbai, 2004.
(vi) Modern Trends in Inorganic Chemistry XI, IIT Delhi, December 2005.
(vii) National Symposium, Kurukshetra University, October 2006.
(viii) National Symposium, Nagpur University, February 2007.
(ix) 26th Indian Council of Chemists, Sagar University, February 2008.
(x) Thaper University, Patiala, May 2008.
(xi) Modern Trends in Inorganic Chemistry XIII, IISC, Bangalore, December 2009.
(xii) Asian Conference in Coordination Chemistry, New Delhi, November 2011.
(xiii) National conference on emerging trends in chemistry-biology interface, Kumaun Universiry, Nainital November 2011.
(xiv) 48th Convention of Chemists, Univiversity of Allahabad, December 2011.
(xv) International Conference on Global Trends in Pure and Applied Chemical Sciences, Udaipur, March, 2012
(xvi) National Symposium on Global Challenges: New Frontiers in Chemical Sciences, Kurukshetra University, September 2012.
(xvii) National Conference on Advances in Chemical Sciences, M.D. University, Rohtak, March 2013.

International

(i) Fifth International Vanadium symposium, Francisco, U.S.A., September 10 – 14 2006.
(ii) Sixth International Vanadium Symposium, Lisbon, Portugal, July 2008.
(iii) Seventh International Vanadium Symposium, Toyoma, Japan, October 2010.
(iv) Eighth International Vanadium Symposium, Washington DC, USA, August 15-18, 2012.

Activities within institute

- Vice Chairman, P.G. (M. Sc., M. Tech. and Ph.D.) Admission for the sessions 2010 and 2011.
- Chairman, Academic Programme Committee of the Chemistry Department (January 2009-December 2011).
- Member, Board of Studies, IIT Roorkee (January 2009 – December 2011).
- Member, Academic Programme Committee, IIT Roorkee (January 2012 – December 2012).
- Manager, School Management Committee, ABN Senior Secondary School, IIT Roorkee (July 2012 – June 2015).
- Associate Manager and member, School Management Committee, ABN Senior Secondary School, IIT Roorkee (July 2009 – June 20012).
- Treasurer and Member, School Management Committee, ABN Senior Secondary School, IIT Roorkee (July 2006 – June 2009).
- Dy. Chief Sport Advisor (January 2008 – December 2010.).
- Member Senate (2006 – contd.), IITR
- Staff Advisor Kho-Kho (1997 – 2005).
- Adl. Staff Advisor Athlete (2005 during Inter IIT meet).
- O.C. of C & D Staff (2001 – 2010).

- Organized two days DST Group monitoring workshop" on 8th and 9th August, 2005.
- Conveners of "Prize distribution" and "Valedictory function" committees of Inter IIT sport meet 2005.

Research Publications (From 2001 onwards)

1. **M.R. Maurya**, S. Khurana, C. Schulzke and D. Rehder, Dioxo and oxovanadium(V) complexes of biomimetic hydrazone ONO donor ligands Synthesis, characterisation and reactivity, *Eur. J. Inorg. Chem.*, 779(2001).

2. **M.R. Maurya**, S. J. J. Titinchi and S. Chand, Spectroscopic and catalytic activity study of N,N′-bis(salicylidene)propane-1,3-diamine copper(II) encapsulated in zeolite-Y, *Appl. Catal. A, Gen.*, **228**, 177(2002).

3. **M. R. Maurya**, S. Khurana, W. Zhang and D. Rehder, Vanadium(IV/V) complexes having $[VO]^{2+}$, $[VO]^{3+}$, $[VO_2]^{+}$ and $[VO(O_2)]^{+}$ cores with ligands derived from 2-acetylpyridine and S-benzyl- or S-methyldithiocarbazate, *Eur. J. Inorg. Chem.*, 1749(2002).

4. **M. R. Maurya**, S. Khurana, W. Zhang and D. Rehder, Biomimetic oxo-, dioxo- and oxo-peroxo-hydrazonato-vanadium(IV/V) complexes, *J. Chem. Soc., Dalton Trans.*, 3015 (2002).

5. N. Bharati, **M.R. Maurya**, F. Naqvi and A. Azam, Synthesis, characterization and antiamoebic activity of benzimidazole derivatives and their vanadium and molybdenum complexes, *Bioorg. Med. Chem. Lett.*, **12**, 869(2002).

6. N. Bharti, Shailendra, S.J. Coles, M.B. Hursthouse, T.A. Mayer, M.T. G. Garza, D.E. Cruz-Vega, B.D. Mata-Cardenas, F. Naqvi, **M.R. Maurya** and A. Azam, Synthesis, crystal structure, and enhancement of the efficacy of metrinidazole against entamoeba histolytica by complexation with palladium(II) platinum(II) or copper(II), *Helv. Chim. Acta*, **85**, 2704(2002).

7. **M.R. Maurya**, S. Khurana, Shailendra, A. Azam, W. Zhang and D. Rehder, Synthesis, characterisation and antiamoebic studies of Dioxovanadium(V) complexes containing ONS donor ligands derived from S-benzyldithiocarbazate, *Eur. J. Inorg. Chem.*, 1966(2003).

8. **M.R. Maurya**, S. J. J. Titinchi and S. Chand, Oxidation of phenol with H_2O_2 catalysed by Cr(III), Fe(III) or Bi(III) N, N′-bis-(salicylidene)diethylenetriamine (H_2saldien) complexes encapsulated in Zeolite-Y, *J. Mol. Catal. A: Chem.*, **193**, 165(2003).

9. **M.R. Maurya,** S.J.J. Titinchi and S. Chand, Oxidation of phenol with H_2O_2 catalysed by Cu(II), Ni(II) and Zn(II) complexes of N, N′-bis-(salicylidene)diethylenetriamine (H_2saldien) encapsulated in Y-zeolite, *J. Mol. Catal. A: Chem.*, **201**, 119(2003).

10. **M.R. Maurya**, I. Jain and S.J.J. Titinchi, Coordination polymers based on bridging methylene group as catalysts for the liquid phase hydroxylation of phenol, *Appl. Catal. A: Gen.*, **249**, 139(2003).

11. **M.R. Maurya**, S. Khurana and D. Rehder, ix-coordinated oxovanadium(V) complexes of reduced Schiff bases derived from amino acids: Synthesis, reactivity and redox studies, *Trans. Met. Chem.*, **28**, 511(2003).

12. **M.R. Maurya**, S.J.J. Titinchi and S. Chand, Liquid phase catalytic hydroxylation of phenol using Cu(II), Ni(II) and Zn(II) complexes of amidate ligand encapsulated in zeolite-Y as catalysts, *Catal. Lett*., **89**, 219(2003).

13. **M. R. Maurya**, S. J. J. Titinchi and S. Chand, Catalytic activity of chromium(III), iron(III) and bismuth(III) complexes of 1,2-bis(2-hydroxybenzamido)ethane (H_2hybe) encapsulated in zeolite-Y for liquid phase hydroxylation of phenol, *J. Mol. Catal. A: Chem.l*, **214**, 257(2004).

14. **M.R. Maurya**, H. Saklani, A. Kumar and S. Chand, Dioxovanadium(V) complexes of dibasic tridentate ligands encapsulated in zeolite-Y for the liquid phase catalytic hydroxylation of phenol using H_2O_2 as oxidant, *Catal. Lett*., **93**, 121(2004).

15. **M.R. Maurya**, H. Saklani and S. Agarwal, Oxidative bromination of salicylaldehyde by potassium bromide / H_2O_2 catalysed by dioxovanadium(V) complexes encapsulated in zeolite-Y: A functional model of haloperoxidases, *Catal. Commun*., **5**, 563 (2004).

16. **M. R. Maurya**, A. Kumar, P. Manikandan, S. Chand, Synthesis, characterisation and catalytic potential of oxovanadium(IV) based coordination polymers having a bridging methylene group, *Appl. Catal. A: Gen*., **277**, 45(2004).

17. N. Bharti, F. Athar, **M.R. Maurya** and A. Azam, Synthesis, characterization and in vitro anti-amoebic activity of new paladium(II) complexes with 5-nitrothiophene-2-carboxaldehyde N(4)-substituted thiosemicarbazones, *Bioorg. Med. Chem*., **12**, 4679(2004).

18. **M. R. Maurya**, S. Agarwal, C. Bader and D. Rehder, Dioxovanadium(V) complexes of ONO donor ligands derived from pyridoxal and hydrazides: Models of vanadate-dependent haloperoxidases. *Eur. J. Inorg. Chem*., 147 (2005).

19. **M. R. Maurya**, S. Agarwal, C. Bader, M. Ebel and D. Rehder, Synthesis, characterisation and catalytic potential of hydrazonato-vanadium(V) model complexes with $[VO]^{3+}$ and $[VO_2]^{+}$ cores, *Dalton Trans*., 537 (2005).

20. **M.R. Maurya**, S. Sikarwar, T. Joseph, P. Manikandan and S,B. Halligudi, Synthesis, characterization and catalytic potential of polymer-anchored copper(II), oxovanadium(IV) and dioxomolybdenum(VI) complexes of 2-(α-hydroxymethyl)benzimidazole, *React. Funct. Polym*., **63**, 71 (2005).

21. **M.R. Maurya**, S. Sikarwar and S,B. Halligudi, Bis(2-[α-hydroxyethyl] benzimidazolato)copper(II) anchored onto chloromethylated polystyrene for the biomimetic oxidative coupling of 2-aminophenol to 2-aminophenoxazine-3-one, *J. Mol. Catal. A: Chem*., **236**, 132 (2005).

22. **M.R. Maurya** and L.K. Woo, Metalloporphyrin as a ligand in organometallic complexes: Synthesis and characterization of a nickel(II) prophyrin complex of 1,5-cyclooctadienedichlororuthenium(II), *J. Organomet. Chem*., **690**, 4978 (2005).

23. S. Sharma, F. Athar, **M.R. Maurya**, F. Naqvi and A. Azam, Novel bidentate complexes of

Cu(II) derived from 5-nitrofuran-2-carboxaldehyde thiosemicarbazones with antiamoebic activity against E. histolytica, *Eur. J. Med. Chem*., **40**, 557 (2005).

24. **M.R. Maurya**, A. Kumar, M. Abid, A. Azam, C. Bader and D. Rehder, Dioxo- and oxovanadium(V) complexes of thiohydrazone ONS donor ligands: Synthesis, characterization, reactivity and antiamoebic activity, *Inorg. Chem*., **45**, 1260 (2006).

25. **M. R. Maurya**, S. Agarwal, C. Bader, M. Ebel and D. Rehder, Synthesis, characterization, reactivity and in vitro antiamoebic activity of hydrazone based oxovanadium(IV), oxovanadium(V) and μ–oxobis{oxovanadium(V)} complexes, *Dalton Trans*., 937 (2006).

26. **M.R. Maurya**, A. Kumar, M. Abid and A. Azam, Dioxovanadium(V) and μ-oxo bis[oxovanadium(V)] complexes containing thiosemicarbazone based ONS donor set and their antiamoebic activity, *Inorg. Chim. Acta*, **359**, 2439(2006).

27. **M.R. Maurya**, A. Kumar, Oxovanadium (IV) based coordination polymers and their catalytic potentials for the oxidation of styrene, cyclohexene and *trans*-stilbene, *J. Mol. Catal. A: Chem*., **250**, 190 (2006).

28. **M.R. Maurya**, M. Kumar and S. Sikarwar, Polymer-anchored oxoperoxo complexes of vanadium(V), molybdenum(VI) and tungsten(VI) as catalyst for the oxidation of phenol and styrene using hydrogen peroxide as oxidant, *React. Funct. Polym*., **66**, 808 (2006).

29. **M. R. Maurya**, S. Sikarwar and P Manikandan, Oxovanadium(IV) complex of 2-(α-hydroxyethyl)benzimidazole covalently bonded to chloromethylated polystyrene for oxidation of benzoin, *Appl. Catal. A: Gen*., **315**, 74 (2006).

30. **M.R. Maurya**, U. Kumar and P. Manikandan, Polymer supported vanadium and molybdenum complexes as potential catalysts for the oxidation and oxidative bromination of organic substrates, *Dalton. Trans*, 3561(2006).

31. **M.R. Maurya**, Structural models of vanadate-dependent haloperoxidases and their reactivity, *J. Chem. Sci*.,**118**, 503 (2006).

32. **M.R. Maurya**, A. Kumar, M. Ebel and D. Rehder, Synthesis, characterization, reactivity and catalytic potential of model vanadium (IV & V) complexes with benzimidazole derived ONN donor ligands, *Inorg. Chem*., **45**, 5924 (2006).

33. **M. R. Maurya** and S. Sikarwar, Oxidation of phenol and hydroquinone catalysed by copper(II) and oxovanadium(IV) complexes of N,N′-bis(salicyledene) diethylenetriamine (H_2saldien) covalently bonded to chloromethylated polystyrene, *J. Mol. Catal. A: Chem*., **263**, 175 (2007).

34. **M. R. Maurya**, A. K. Chandrakar and S. Chand, Oxidation of phenol, styrene and methyl phenyl sulfide with H_2O_2 catalysed by dioxovanadium(V) and Copper(II) complexes of 2-aminomethylbenzimidazole based ligand encapsulated in zeolite-Y, *J. Mol. Catal. A: Chem*., **263**, 227 (2007).

35. **M. R. Maurya**, A. K. Chandrakar and S. Chand, Oxovanadium (IV) and copper(II) complexes of 1, 2-diaminocyclohexane based ligand encapsulated in zeolite-Y for the catalytic oxidation of styrene, cyclohexene and cyclohexane, *J. Mol. Catal. A: Chem.*, **270**, 225 (2007).

36. **M. R. Maurya**, U. Kumar and P. Manikandan, Synthesis and characterisation of polymer-anchored oxovanadium(IV) complexes and their use for the oxidation of styrene and cumene, *Eur. J. Inorg. Chem*., 2303-2314 (2007).

37. **M. R. Maurya** and S. Sikarwar, Oxovanadium(IV) complex of β-alanine derived ligand immobilized on polystyrene for the oxidation of various organic substrates, *Catal. Commun*., **8**, 2017-2024 (2007).

38. **M.R. Maurya**, M. Kumar and U. Kumar, Polymer-anchored vanadium, molybdenum and copper complexes of bidantate ligand as catalyst for the liquid phase oxidation of organic substance, *J. Mol. Catal. A: Chem.*, **273**, 133-143 (2007).

39. **M.R. Maurya**, A. K. Chandrakar, S. Chand, Zeolite-Y encapsulated metal complexes of oxovanadium(VI), copper(II) and nickel(II) as catalyst for the oxidation of styrene, cyclohexane and methyl phenyl sulfide, *J. Mol. Catal. A: Chem.*, **274**, 192-201 (2007).

40. **M.R. Maurya**, A. K. Chandrakar, S. Chand, Oxidation of methyl phenyl sulfide, diphenyl sulfide and styrene by oxovanadium(IV) and copper(II) complexes of NS donor ligand encapsulated in zeolite-Y, *J. Mol. Catal. A: Chem.*, **278**, 12 (2007).

41. **M. R. Maurya**, B. Singh, P. Adão, F. Avecilla and J. Costa Pessoa, Zeolite encapsulated copper (II) complexes of pyridoxal based tetradentate ligands for the oxidation of styrene, cyclohexene and methyl phenyl sulfide, *Eur. J. Inorg. Chem*., 5720 - 5734 (2007).

42. **M. R. Maurya**, U. Kumar, I. Correia, P. Adão and J. Costa Pessoa, Polymer bound oxidovanadium(IV) complex of L-cysteine derived ligand for the oxidative amination of styrene, *Eur. J. Inorg. Chem*., 577 - 587 (2008).

43. **M. R. Maurya**, Kumar, A. Kumar, and J. Costa Pessoa, Oxidation of *p*-chlorotoluene and cyclohexene catalysed by polymer-anchored oxovanadium(IV) and copper(II) complexes of amino acid derived tridentate ligands, *Dalton Trans*., 4220 – 4232 (2008).

44. **M. R. Maurya**, M. Kumar and A. Arya, Model dioxovanadium(V) complexes through direct immobilization on polymer support, their characterization and catalytic activities, *Catal Commun*., **10**, 197 – 191 (2008),

45. **M. R. Maurya**, A. Arya, P. Adão and J. Costa Pessoa, Immobilization of oxovanadium(IV), dioxomolybdenum(VI) and copper(II) complexes of polymer for the liquid phase oxidation of styrene, cyclohexene and ethylbenzene, , *Appl. Catal. A: Gen*., **351**, 239 – 252 (2008).

46. **M. R. Maurya**, A. Arya, A. Kumar and J. Costa Pessoa, Polystyrene bound oxidovanadium(IV) and dioxidovanadium(V) complexes of histamine derived ligand for the oxidation of methyl phenyl sulfide, diphenyl sulfide and benzoin, *Dalton Trans*., 2195 - 2195(2009).

47. P. Adão, **M.R. Maurya**, U. Kumar, F. Avecilla, R.T. Henriques, M.L. Kusnetsov, J. Costa Pessoa and I. Correia, Vanadium-salen and -salan complexes: characterization and application in oxygentransfer reactions, *Pure Appl. Chem.*, **81**, 1279–1296, (2009).

48. P. Adao, J. Costa Pessoa, R.T. Henriques, M.L. Kuznetsov, F. Avecilla, **M.R. Maurya**, U. Kumar and I. Correia, Synthesis, characterization, and application of vanadium-salan complexes in oxygen transfer reactions, *Inorg. Chem.*, **48**, 3542-3561 (2009).

49. **M. R. Maurya**, A. Arya, U. Kumar, F. Avecilla, A. Kumar and J. Costa Pessoa, Polymer-bound oxidovanadium(IV) and dioxidovanadium(V) complexes: synthesis, characterization and catalytic application for the hydroamination of styrene and vinyl pyridine, *Dalton Trans.*, 9555–9566 (2009).

50. **M.R. Maurya**, A.A. Khan, A. Azam, A. Kumar, S. Ranjan, N. Mondal and J. Costa Pessoa, Dinuclear oxidovanadium(IV) and dioxidovanadium(V) complexes of 5,5'-methylenebis(dibasic tridentate) ligands: Synthesis, spectral characterisation, reactivity, and catalytic and antiamoebic activities, Eur. J. Inorg. Chem., 5377–5390 (2009).

51. **M.R. Maurya**, A.A. Khan, A. Azam, A. Kumar, S. Ranjan, N. Mondal, F. Avecilla and J. Costa Pessoa, Vanadium complexes having $[V^{IV}O]^{2+}$ and $[V^{V}O_2]^{+}$ cores with binucleating dibasic tetradentate ligands: Synthesis, characterization, catalytic and antiamoebic activities, *Dalton Trans.*, **39**, 1345–1360 (2010).

52. **M. R. Maurya**, A. Arya, , A. Kumar, M.L. Kuznetsov, F. Avecilla and J. Costa Pessoa, Polymer-bound oxidovanadium(IV) and dioxidovanadium(V) complexes as catalysts for the oxidative desulfurization of model fuel diesel, *Inorg. Chem.*, **49**, 6586–6600 (2010).

53. **M.R. Maurya** and J. Costa Pessoa, Polymer-bound metal complexes as catalysts: Synthesis, characterization, reactivity and catalytic activity in EeH bond activation, *J. Organomet. Chem*., **696**, 244–254 (2011).

54. **M. R. Maurya**, A. Kumar and J. Costa Pessoa, Vanadium complexes immobilized on solid supports and their use as catalysts for oxidation and functionalization of alkanes and alkenes, *Coord. Chem. Rev*., **255**, 2315– 2344 (2011).

55. **M. R. Maurya**, M. Bisht, A. Kumar, M.L. Kuznetsov, F. Avecilla and J. Costa Pessoa, Synthesis, characterization, reactivity and catalytic activity of oxidovanadium(IV), oxidovanadium(V) and dioxidovanadium(V) complexes of benzimidazole modified ligands, *Dalton Trans.*, **40**, 6968–6983 (2011).

56. **M. R. Maurya**, P. Saini, A. Kumar and J. Costa Pessoa, Oxidovanadium(IV) complexes of tetradentate ligands encapsulated in zeolite-Y as catalysts for the oxidation of styrene, cyclohexene and methyl phenyl sulfide, *Eur. J. Inorg. Chem.*, 4846–4861 (2011).

57. **M. R. Maurya**, M. Bisht and F. Avecilla, Synthesis, characterisation and catalytic activities of vanadium complexes containing ONN donor ligand (E)-4-[(2-(dimethylamino)ethylimino]methyl-5-(hydroxymethyl)-2-methylpyridin-3-ol, *Indian J. Chem*., **50A**, 1492-1503 (2011).

58. **M.R. Maurya**, Structural models of vanadate-dependent haloperoxidases, their reactivity, immobilization on polymer support and catalytic activities, *J. Chem. Sci.*, **123**, 215–228 (2011).

59. **M. R. Maurya**, M. Bisht and F. Avecilla, Synthesis, characterization and catalytic activities of

vanadium complexes containing ONN donor ligand derived from 2-aminoethylpyridine, *J. Mol. Catal. A: Chem*., **344**, 18–27 (2011).

60. M. R. Maurya, C. Haldar, S. Behl, N. Kamatham and F. Avecilla, Copper(II) complex of monobasic tridentate ONN donor ligand: Synthesis, encapsulation in zeolite-Y, characterization, and catalytic activity, *J. Coord. Chem*., **64**, 2995–3011 (2011).

61. **M.R. Maurya**, Catalytic applications of polymer-supported molybdenum complexes in organic transformations, *Curr. Org. Chem.,* **16**, 73–88 (2012).

62. **M. R. Maurya**, P. Saini, C. Haldar and F. Avecilla, Synthesis, characterisation and catalytic activities of manganese(III) complexes of pyridoxal-based ONNO donor tetradenatate ligands, *Polyhedron*, **31**, 710–720 (2012).

63. **M.R. Maurya**, C. Haldar, A.A. Khan, A. Azam, A. Salahuddin, A. Kumar and J. Costa Pessoa, Synthesis, characterization, catalytic and antiamoebic activity of vanadium complexes of binucleating bis(dibasic tridentate ONS donor) ligand systems, *Eur. J. Inorg. Chem.*, 2560–2577 (2012).

64. **M.R. Maurya**, P. Saini, C. Haldar, F. Avecilla, Synthesis, characterisation and catalytic activities of manganese(III) complexes of pyridoxal-based ONNO donor tetradenatate ligands, *Polyhedron*, **31**, 710–720 (2012).

65. **M.R. Maurya**, Structural and functional models of vanadate-dependent haloperoxidases (VHPO), *Asian J. Chem.,* **24**, 5441 – 5446 (2012).

66. **M.R. Maurya**, P. Saini, C. Haldar, A.K. Chandrakar and S. Chand Oxidation of styrene and cyclohexene with TBHP catalyzed by Zeolite-Y encapsulated copper(II) complex, *J. Coord. Chem.*, **65**, 2903 – 2918 (2012).

67. **M.R. Maurya**, P. Saini, C. Haldar and F. Avecilla, Mn (III) complexes of monoprotic tridentate ONN donor 2-[2-(1H-(benzo[d]imidazol-2-yl)ethylimino)methyl]phenol as functional mimic of haloperoxidase, *Polyhedron*, **46**, 33 – 40 (2012).

68. **M.R. Maurya**, M. Bisht, N. Chaudhary, A. Kumar, F. Avecilla and J. Costa Pessoa, Spectroscopic and structural characterization of non-innocent oxidovanadium(V) mixed ligand complexes, *Eur. J. Inorg. Chem*., 4846 – 4855 (2012).

69. **M.R. Maurya**, M. Bisht, N. Chaudhary, F. Avecilla, U. Kumar, H.-F. Hsu, Synthesis, structural characterization, encapsulation in zeolite Y and catalytic activity of an oxidovanadium(V) complex with a tribasic pentadentate ligand, *Polyhedron*, **54**, 180 – 188 (2013).

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