

CURRICULUM VITAE

Dr. GOUTAM KUMAR PATRA

Professor, Dept. of Chemistry

Dean School of Physical Sciences (Since Dec. 2018)

Guru Ghasidas Vishwavidyalaya (A Central University)

Bilaspur, 495 009, C.G.

E-mail: patra29in@yahoo.co.in

Phone no.: 7587312992, 9433378801



➤ **DATE OF BIRTH** : 2nd October, 1971

➤ **PAST POSITIONS:**

- Head, Dept. of Chemistry, GGV, Bilaspur (Dec 2011-Feb 2017)
- Dean, School of Physical Sciences, GGV, Bilaspur (Dec 2012-Nov 2015)
- Professor (31/03/2012 to till date)
- Associate Prof., Dept. of Chemistry, GGV, Bilaspur, (Oct 2011- Mar 2012)
- Asst. Prof., Dept. of Chemistry, Vijoygarh Jyotish Ray College, Calcutta University, Kolkata 32 (Dec 2003 - Sept 2011)

➤ **ACADEMICS:**

- Postdoctoral researcher, Dept. of Chemistry, Max Planck Institute for Bioinorganic Chemistry, Mulheim An Der Ruhr, GERMANY (under the supervision of Prof. Karl Wieghardt, Director of Max Planck Institute for Bioinorganic Chemistry) 2006-2007
- Post-doctoral Fellow, Carnegie Mellon University, Pittsburgh, Pennsylvania, PA 15213, USA (under the supervision of Prof. Catalina Achim) Nov.2003-Dec.- 2004
- Post-doctoral Fellow, Tel-Aviv University, ISRAEL (under Prof. Israel Goldberg) Sept. 2000 – Oct. 2002.
- Ph.D., Dept. of Inorganic Chemistry, Indian Association for the Cultivation of Science, Jadavpur, Kolkata 32 (under the supervision of Prof. Dipankar Datta) 1996-2000. Title of Ph.D. Thesis, "Studies on some metal complexes of several new aza macrocycles and related ligands"
- M.Sc., Inorganic Chemistry as special paper, Visva-Bharati University, 1995. (Stood second)
- B.Sc. (Chemistry Honours), Burdwan University, 1991.
- Higher Secondary, WBCHSE, 1988
- Madhyamik, WBBSE, 1986

➤ **AWARDS/SCHOLARSHIP/FELLOWSHIP:**

- GATE (Conducted by IIT Kharagpur) 1994
- UGC-CSIR 1997 (CSIR Fellowship, All India rank 66)
- IACS Institute Fellowship
- Israel- America Bi-national Fellowship
- NSF Fellowship of USA
- BOYSCAST Fellowship, Department of Science of Technology, Govt. of India

- Summer Fellowship of Indian Academy of Sciences (Worked at Indian Institute of Science, Bangalore, May-July, 2009)
- Visiting Research Fellowship of Jawaharlal Neheru Centre for Advanced Scientific Research, Bangalore, 2010-11.
- INSA Award (2012) From Indian Academy of Science, Govt. of India
- National Scholarship, 1986

➤ **AREAS OF RESEARCH INTEREST:**

- Photophysics and Redox activity of coordination complexes
- Aza macrocyclic Chemistry
- Crystal Engineering
- Porphyrin and Supramolecular Chemistry
- Peptide Nucleic Acid (PNA) synthesis and incorporation of transition metal ions in PNA
- Free radical chemistry
- Anti bacterial/ anti leishmanian activity of coordination complexes
- Metal Organic Frameworks
- Fluorescent Colorimetric Chemosensors

➤ **UG/PG TEACHING EXPERIENCE:**

- Taught UG Chemistry in VJR College, Calcutta University (2003-2011)
- Taught Post-graduate Chemistry in Jadavpur University evening section (2009-2011)
- Taught Post-graduate Chemistry in A.P.C. College, West Bengal State University, Barasat (2008-2011)
- Taught Post-graduate Chemistry in Sri Chaitanya College, West Bengal State University, Barasat (2008-2011)
- Teaching UG and Post-graduate Chemistry in GGV, Bilaspur (2011- till date)

➤ **RESEARCH PUBLICATION:**

- International Journal: **90**
- Presented in International Conferences: **25**
- Presented in National Conferences: **37**

➤ **BOOK CHAPTER: 04** (Pan Stanford Publishing, Nova Publisher, Studium Press India Pvt. Ltd. and Bentham Science)

➤ **Edited Book: 01** (Bentham Science)

➤ **RESEARCH GUIDANCE:**

Masters level : **40**
 Doctoral level : **02**, Degree Awarded (From Calcutta University)
03, Degree Awarded (From Guru Ghasidas University)
 Total registered **02**

➤ **PROJECT ONGOING: 03**

1. DST SR/FST/CSI-264/2015(C) Amount **69 lacs**
2. DST EMR/2017/001789 Amount **29 lacs**
3. DST PDF/2017/001365 Amount **19 lacs**

- Member for evaluation of DST Extra Mural Research project Proposals in 2016.
- Member of evaluation committee of CFRI, Bilaspur (CSIR Institute) (2014 and 2016) for the selection of Project Assistants Level I,II and III

Evaluation of Ph.D. Thesis:

- Conducted Ph.D. Viva as external expert: 03 at Tripura University (2014 and 2016); **01** at APS University Rewa (2015) and another **02** at Calcutta University (2015), **01** at IEST, Shibpur, **02**(Pandit Ravishankar Shukla University Raipur).
- Examined Ph.D. Thesis: 06 (Calcutta University), **04** (Jadavpur University), **03** (Tripura University), **03** (Utkal University), **02** (APS University), **05** (L.N. Mithila University), **02** (Visva-Bharati University), **02** (Vidyasagar University), **03** (Pandit Ravishankar Shukla University Raipur), **01** (Kalyani University), **01** (North Eastern Hill University Shillong)

Co-coordinator in National Seminars/Workshop:

- National Seminar on "Recent Trends in Chemical research: Challenges Ahead", March 30-31, 2012
- Science Academies National level Lecture Workshop on "Supramolecular Chemistry, Synthesis and Application", August 22-23, 2015
- National Seminar on "Science sensitization", 27-28 March, 2015, Served as a chairperson of one Scientific Session
- Convenor of National Science Day Celebration 2019, 28th Feb. GGV Bilaspur
- Chairperson of Scientific Session National Seminar on Plant and Microbiology Product 2018, GGV Bilasur
- Chairperson of Scientific Session National Seminar on Plant and Microbiology Product 2018, GGV Bilasur
- Chairperson of Scientific Session National Seminar on Trends in Drug Discovery Development and delivery 2018, GGV Bilasur
- Chairperson of Scientific Session National Seminar on Traditional Medicine and modern drug research for better health 2019, GGV Bilaspur

Co-coordinator in Refresher Course/Short term Course:

- Refresher Course on "Chemistry and Chemical Technology", during 01/05/2015-21/05/2015
- Short Term Course on "Green Chemistry and Nano-Technology" during 23/11/2015-28/11/2015
- Refresher Course on "Research Methodology" during 18/11/2015-09/12/2015

Attended the Annual/Mid Year Meeting of Indian Academy of Sciences:

- Invited and attended the 77th Annual Meeting of Indian Academy of Sciences (November 2011) at Physics Research Laboratory, Ahmedabad
- Invited and attended the 26th Mid Year Meeting of Indian Academy of Sciences (July 2015) at Raman Research Institute, Bangalore.
- Invited and attend 82th Annual Meeting of Indian Academy of Sciences (November 2016) at IISER, Bhopal.

➤ MEMBERSHIP OF VARIOUS PROFESSIONAL SOCIETIES/ BODIES:

- Life member of The Indian Association for the Cultivation of Science
- Life member of Indian Chemical Society
- Life member of Indian Science Association Congress
- Life member of Chemical Research Society of India
- Member, board of studies in Chemistry, Sarguja University
- Member, board of studies in Chemistry, Pandit Sundarlal Sharma University
- Member, board of studies in Chemistry, Pt. Sundarlal Sharma Bilaspur, Raipur
- Member, board of studies in Chemistry, Govt. Nagarjuna Science College, Raipur

➤ LIST OF PUBLICATION:

- (1) R Chandra, M Sahu, AK Manna, K Rout, S Chowdhury, **GK Patra**, "Ether based flexible bis Schiff base fluorescent colorimetric chemosensors for selective and sensitive detection of HF_2^- ion" *Journal of Photochemistry and Photobiology A: Chemistry*, (Elsevier, **I. F. = 3.30**), **2019**, 112179.
- (2) R Chandra, AK Manna, M Sahu, K Rout, **GK Patra**, "Simple salicylaldimine-functionalized dipodal bis Schiff base chromogenic and fluorogenic chemosensors for selective and sensitive detection of Al^{3+} and Cr^{3+} ", *Inorg. Chimica Acta*, (Elsevier, **I. F. = 2.40**), **2019**, 496, 119192.
- (3) AK Manna, S Chowdhury, **GK Patra**, "Hydrazide based novel selective and sensitive optical chemosensor for the detection of Ni^{2+} : Applications in living cell imaging, molecular logic gate and smart phone", *Dalton Trans.*, (Royal Society Chemistry, **Impact Factor = 4.2**), **2019**, 42, 12336-12348.
- (4) R. Chandra, A. Dutta, A. K. Manna, K. Rout, J. Mondal and **G. K. Patra**, "Halide bridged novel ternary Copper(I) complexes with bis imino- quinolinyl ligand and triphenyl phosphine: Synthesis, Structure, Luminescence, Electrochemistry and theoretical studies", *Inorg. Chimica Acta*, (Elsevier, **I. F. = 2.40**), **2019**, 496, 119042.
- (5) AK Manna, K Rout, S Chowdhury, **GK Patra**, "A dual-mode highly selective and sensitive Schiff base chemosensor for fluorescent colorimetric detection of Ni^{2+} and colorimetric detection of Cu^{2+} ", *Photochemical & Photobiological Sciences*, (Royal Society Chemistry, **Impact Factor = 2.90**) **2019**, 18, 1512-1525.

- (6) K Rout, AK Manna, M Sahu, **GK Patra**, "A guanidine based bis Schiff base chemosensor for colorimetric detection of Hg (II) and fluorescent detection of Zn (II) ions", *Inorg. Chimica Acta*, (Elsevier, **I. F. = 2.40**), **2019**, 486, 733-741
- (7) J Mondal, AK Manna, K Rout, SK Singh, JP Naskar, **GK Patra**, "A simple Schiff base as selective and sensitive fluorescent-colorimetric hydrazine chemosensor" *International journal of environmental analytical chemistry* (Elsevier, **I. F. = 1.70**), **2018**, 98, 1160-1174
- (8) AK Manna, J Mondal, K Rout, **GK Patra**, "A new ICT based Schiff-base chemosensor for colorimetric selective detection of copper and its copper complex for both colorimetric and fluorometric detection of Cysteine", *Journal of Photochemistry and Photobiology A: Chemistry* (Elsevier, **I. F. = 2.90**), **2018**, 367, 74-82
- (9) AK Manna, J Mondal, K Rout, **GK Patra**, "A new ICT based Schiff-base chemosensor for colorimetric selective detection of copper and its copper complex for both colorimetric and fluorometric detection of Cysteine", *Journal of Photochemistry and Photobiology A: Chemistry* (Elsevier, **I. F. = 2.90**), **2018**, 367, 74-82
- (10) AK Manna, J Mondal, K Rout, **GK Patra**, "A benzohydrazide based two-in-one Ni²⁺/Cu²⁺ fluorescent colorimetric chemosensor and its applications in real sample analysis and molecular logic gate", *Sens. Actuator B. Chemical* (Elsevier, **I. F. = 5.70**), **2018**, 275, 350-358
- (11) J Mondal, AK Manna, **GK Patra**, "Highly selective hydrazone based reversible colorimetric chemosensors for expeditious detection of CN⁻ in aqueous media", *Inorg. Chimica Acta*, (Elsevier, **I. F. = 2.20**), **2018**, 474, 22-29
- (12) AK Manna, J Mondal, R Chandra, K Rout, **GK Patra**, "A thio-urea based chromogenic and fluorogenic chemosensor for expeditious detection of Cu²⁺, Hg²⁺ and Ag⁺ ions in aqueous medium", *Journal of Photochemistry and Photobiology A: Chemistry* (Elsevier, **I. F. = 2.90**), **2018**, 356, 477-488.
- (13) AK Manna, J Mondal, R Chandra, K Rout, **GK Patra**, "A fluorescent colorimetric azo dye based chemosensor for detection of S²⁻ in perfect aqueous solution and its application in real sample analysis and building a molecular logic gate," *Analytical Methods* (Royal Society Chemistry, **I. F. = 3.20**), **2018**, 10, 2317-2326.
- (14) R Chandra, AK Manna, K Rout, J Mondal, **GK Patra**, "A dipodal molecular probe for naked eye detection of trivalent cations (Al³⁺, Fe³⁺ and Cr³⁺) in aqueous medium and its applications in real sample analysis and molecular logic gates", *RSC Advances* (Royal Society Chemistry, **I. F. = 2.20**), **2018**, 8, 35946-35958.
- (15) A Ghorai, J Mondal, AK Manna, S Chowdhury, **GK Patra**, "A novel pyrene based highly selective reversible fluorescent-colorimetric sensor for the rapid detection of Cu²⁺ ions: application in bio-imaging", *Analytical Methods* (Royal Society Chemistry, **I. F. = 2.20**), **2018**, 10, 1063-1073.
- (14) R. Chandra. A. Ghorai and **G.K. Patra**, "A simple benzildihydrazone derived colorimetric and fluorescent 'on-off-on' sensor for sequential detection of copper(II) and cyanide ions in aqueous solution", *Sens. Actuator B. Chemical* (Elsevier, **I. F. = 5.70**), **2018**, 255, 701-711
- (15) J. Mondal, A. Mukherjee and **G.K. Patra**, "CuX (X= I, Br and Cl) based coordination polymers of azino-pyridyl ligand and PPh₃: Structural, spectral, electro-chemical, and DFT studies", *Inorg. Chimica Acta*, (Elsevier, **I. F. = 2.10**), **2017**, 463, 44-53.

- (16) J. Mondal, P.K. Pal, A. Mukherjee and **G.K. Patra**, "Synthesis, structural variation, photophysical, electrochemical and DFT studies of CuX (X= I, Br and Cl) mixed ligand complexes of an azino-pyridyl ligand and tripe.", *Inorg. Chimica Acta*, (Elsevier, **I. F. = 2.10**), **2017**, 466, 274-284.
- (17) **G. K. Patra**, R. Chandra, A. Ghorai and K. K. Shrivastava, "A highly selective benzildihydrazone based Schiff base chromogenic chemosensor for rapid detection of Cu²⁺ in aqueous solution", *Inorg. Chimica Acta*, (Elsevier, **I. F. = 2.10**), **2017**, 462, 315-322.
- (18) R. Chandra, A. Datta, A. Manna, R. Saha and **G. K. Patra**, "In situ reduction of Cu(II) forming a double stranded dinuclear copper(I) helicate of a bis azino-pyridyl ligand", *Inorg. Chimica Acta*, **2017**, 455, 235-240 (Elsevier, **I. F. = 2.10**).
- (19) A. Ghorai, S. S. Thakur and **G. K. Patra**, "The maiden report of a fluorescent-colorimetric sensor for expeditious detection of bifluoride ion in aqueous media", *RSC Advances*, **2016**, 6, 108717-108725 (Royal Society Chemistry, **I. F. = 3.85**).
- (20) A. Ghorai, J. Mondal, S. Chowdhury and **G.K. Patra**, "Solvent-dependent fluorescent-colorimetric probe for dual monitoring of Al³⁺ and Cu²⁺ in aqueous solution: An application to bio-imaging", *J. Chem. Soc. Dalton Trans.*, **2016**, 45, 11540-11553 (Royal Society Chemistry, **I. F. = 4.20**).
- (21) J. Mondal, A. Dutta, P.K. Pal, R. Saha, P. Maji and **G.K. Patra**, "Synthesis, structure, photo-physical properties and catalytic activities of Zn (II), Cd (II) and Hg (II) complexes of an azinopyridyl ligand", *Inorg. Chimica Acta*, **2016**, 448, 70-77 (Elsevier, **I. F. = 2.10**).
- (22) **G.K. Patra**, P. K. Pal, J. Mondal, A. Ghorai, A. Mukherjee, R. Saha and H.K. Fun, "Pre-designed Synthesis of Dinuclear to Unusual Hexanuclear to 1D Coordination Polymer of Cu(I)- halides and Their Photophysical Properties", *Inorg. Chimica Acta*, **2016**, 447, 77-86 (Elsevier, **I. F. = 2.10**).
- (23) K. Shrivastava, S. Sahu, **G. K. Patra**, N. K. Jaiswal and R. Shankar, "Localized surface plasmon resonance of silver nanoparticles for sensitive colorimetric detection of chromium in surface water, industrial waste water and vegetable sample", *Anal. Methods*, **2016**, 8, 2088-2096 (Royal Society Chemistry, **I. F. = 2.00**).
- (24) A. Ghorai, J. Mondal, S. Bhattacharya, R. Saha and **G. K. Patra**, "A highly sensitive reversible fluorescent-colorimetric azino bis-Schiff base sensor for rapid detection of Pb²⁺ in aqueous media", *Anal. Methods*, **2016**, 8, 2032-2040 (Royal Society Chemistry, **I. F. = 2.00**). (Top ten article of the year)
- (25) A. Ghorai, J. Mondal, S.K. Singh, R. Saha and **G. K. Patra**, "Synthesis Structure, Photophysical and Catalytic Properties of CuI-Iodide Complexes of di-imine ligands" *J. Mol. Str.*, **2016**, 108, 315-324, (Elsevier, **I. F. = 1.80**).
- (26) A. Ghorai, J. Mondal and **G.K. Patra**, "A new Schiff base and its metal complex as colorimetric and fluorescent-colorimetric sensors for rapid detection of arginine", *New. J. Chem. Soc.*, **2016**, 40, 7821-7830 (Royal Society Chemistry, **I.F. 3.40**).
- (27) A. Ghorai, J. Mondal, R. Chandra and **G. K. Patra**, "A reversible fluorescent-colorimetric chemosensor based on a novel Schiff base for visual detection of CO₃²⁻ in aqueous solution", *RSC Advances*, **2016**, 6, 72185-72192 (Royal Society Chemistry, **I. F. = 3.85**).

- (28) A. Ghorai, J. Mondal, S. Bhattacharya and **G. K. Patra**, "A 'chromogenic' and 'fluorogenic' bis-Schiff base sensor for rapid detection of hydrazine both in solution and vapour phases", *Anal. Methods*, **2015**, 7, 10385-10393 (Royal Society Chemistry, **I. F. = 2.00**).
- (29) A. Ghorai, J. Mondal, R. Chandra and **G. K. Patra**, "Exploitation of a simple Schiff base as a ratiometric and colorimetric chemosensor for glutamic acid", *Anal. Methods*, **2015**, 7, 8146-8151 (Royal Society Chemistry, **I. F. = 2.00**).
- (30) A. Ghorai, J. Mondal, R. Chandra and **G. K. Patra**, "A reversible fluorescent-colorimetric imino-pyridyl bis-Schiff base sensor for expeditious detection of Al^{3+} and HSO_3^- in aqueous media", *J. Chem. Soc. Dalton Trans.*, **2015**, 44, 13261-13271 (Royal Society Chemistry, **I. F. = 4.20**).
- (31) A. Ghorai, J. Mondal and **G. K. Patra**, "Photoluminescent mixed ligand complexes of CuX ($\text{X} = \text{Cl}, \text{Br}, \text{I}$) with PPh_3 and a polydentate imino-pyridyl ligand – Syntheses, Structural variations and catalytic property", *J. Mol. Str.*, **2015**, 1097, 52-60 (Elsevier, **I. F. = 1.80**).
- (32) P. K. Pal, A. Banerjee, R. Bhadra, A. D. Jana and **G. K. Patra**, "Synthesis, characterization, structural investigation and antimicrobial studies of mononuclear Zn(II) , Cd(II) and Ag(I) complexes of a novel tetradentate N_3O Schiff base ligand", *J. Coord. Chem.*, **2014**, 67, 3107-3120 (Elsevier, **I. F. = 2.00**).
- (33) P. K. Pal, A. Mukherjee, A. Ghosh and **G. K. Patra**, "A photoluminescent interpenetrating metal-organic framework based on Cu_4I_4 and novel azino-quinoline ligand", *J. Mol. Str.*, **2014**, 1059, 332-337 (Elsevier, **I. F. = 1.80**).
- (34) **G.K. Patra**, A. Mukherjee and A. D. Jana, "Coordination assemblies of Cu(I)/Ag(I) and novel azino-pyridine ligands: syntheses, crystal structures, thermal studies and photophysical properties", *Inorg. Chimica Acta*, **2013**, 404, 131-143 (Elsevier, **I. F. = 2.10**).
- (35) P.K. Pal, S. Mohapatra, A. Jana and **G. K. Patra**, "Substitution dependent dimensionality of Cadmium(II) Coordination polymers of Imino pyridyl ligands", *J. Mol. Str.*, **2012**, 1015, 156-161 (Elsevier **I. F. = 1.80**).
- (36) H. K. Fun, W.S.Loh, **G.K. Patra** and A. Mukherjee, "Catena-Poly[[[(triphenylphosphane) copper(I)]-di-I-iodido-[(triphenylphosphane)copper(I)]-I-[N,N-bis[1-(pyridin-4-yl)ethylidene]hydrazine]]", *Acta Cryst*, **2011**, E67, m1389 (Wiley, **I. F. = 0.50**).
- (37) **G.K. Patra**, A. Mukherjee P. Mitra and N. M. Adersh, "Structural diversity in Silver(I) azine complexes – effect of substituents and counter Anions", *J. Mol. Str.*, **2011**, 1000, 29 – 34 (Elsevier, **I. F. = 1.80**).
- (38) A. Mukherjee, R. Chakraborty and **G.K. Patra**, "The syntheses, characterization, x-ray crystal structures and properties of Cu(I) complexes of Bi-dentate Schiff base ligand", *Inorg. Chim. Acta*, **2010**, 363, 1707-1712 (Elsevier, **I. F. = 2.1**).
- (39) C. Milsman, **G.K. Patra**, E. Bill, T. Weyhermuller and K. Wieghardt, "Octahedral monodithiolone complexes of Iron: Characterization of S,S' Coordinated Dithiolate (1-) π radical monoanions. A spectroscopic and density functional theoretical investigation", *Inorg. Chem.*, **2009**, 48, 7430-7445 (American Chemical Society **I. F. = 4.90**).
- (40) K.S. Banu, T. Chattopadhyay, S. Bhattacharya, **G. K. Patra**, Ennio Zangrando and D. Das, "Mono- and dinuclear manganese(III) complexes showing efficient catechol

- oxidase activity: Synthesis, characterization and spectroscopic studies”, *J. Chem. Soc. Dalton Trans.*, **2009**, 8755-8764 (Royal Society Chemistry, **I.F. = 4.20**).
- (41) A. Mukherjee, R. Chakraborty and **G.K. Patra**, “Syntheses and Crystal Structures of 3-D interpenetrating Cu(I) coordination polymers of Polypyridyl ligands”, *Inorg. Chem. Commun.*, **2009**, 12, 1227-1230 (Elsevier, **I. F. = 1.90**).
- (42) **G.K. Patra**, A. Mukherjee, P. Mitra, S.W. Ng, “N,N-Bis(4-pyridylmethylene)octane-1,8-diamine”, *Acta Cryst.* **2009**, E65, o1728 (Wiley, **I. F. = 0.50**).
- (43) **G.K. Patra**, A. Mukherjee and S.W. Ng, “Benzil bis(ketazine)”, *Acta Cryst.*, **2009**, E65, o1745 (Wiley, **I. F. = 0.50**).
- (44) **G. K. Patra**, I. Goldberg, M. G. B. Drew, S. De, J. P. Naskar and D. Datta, “2,2-Dialkyl-2H-benzimidazoles, the high energy tautomers of corresponding 1,2-dialkyl-1H Benzimidazoles. Synthesis and their complexes with Cu(I) and Ag(I)”, *Indian J. Chem.* **2007**, 46A, 1758-1762, (**I.F. = 0.80**).
- (45) **G.K. Patra**, I. Goldberg, S. De and D. Datta, “Effect of the size of discrete anions on the nuclearity of a complex cation *Cryst. Eng. Comm.* **2007**, 9, 828-832 (Royal Society Chemistry, **I. F. = 3.86**).
- (46) R. Franzini, R.M.Watson, **G. K. Patra**, R.M. Breece, D.L. Tierney, M.P. Hendrich and C. Achim, “Metal binding to bipyridine modified PNA”, *Inorg. Chem.*, **2006**, 45, 9798-9811 (American Chemical Society, **I. F. = 4.90**).
- (47) R.M. Watson, Y.A. Sharik, **G.K. Patra** and C. Achim, “Sequence independent formation of ligand modified PNA duplexes by metal Co-ordination driven assembly”, *J. Am. Chem. Soc.*, **2005**, 127, 14628-14639 (American Chemical Society, **I. F. = 12.50**).
- (48) R. Franzini, R.M.Watson, **G. K. Patra**, D.L.Popescu and C. Achim, “Metal incorporation in modified peptide nucleic acids”, *Polymer Preprints*, **2004**, 45, 337-338 (American Chemical Society, **I. F. = 3.54**).
- (49) **G. K. Patra** and I. Goldberg, “Syntheses and characterization of New bis bi-dentate Schiff base ligands and their Supramolecular complexes with silver(I), copper(I) and zinc(II) d^{10} metal ions”, *New. J. Chem. Soc.*, **2003**, 27, 1124-1131 (Royal Society Chemistry, **I.F. 3.40**).
- (50) **G. K. Patra** and I. Goldberg, “Supramolecular design of coordination complexes of silver(i) with polyimine ligands. Syntheses, materials characterization and structures of new polymeric and oligomeric materials”, *Crystal Growth and Design*, **2003**, 3, 321-329 (American Chemical Society, **I.F. = 4.90**).
- (51) **G.K. Patra** and I. Goldberg, “Syntheses and crystal structures of copper and silver complexes with new imine ligands. Airstable photoluminescent $Cu^I N_4$ chromophores, *Eur. J. Inorg. Chem.*, **2003**, 969-977 (**I.F. = 3.00**).
- (52) **G.K.Patra**, I. Goldberg, A.Sarkar, S. Chowdhury and D.Datta, “Metal ion complexes of the optically active bis(phenyl-1,3-oxazoline) ligand. Synthesis, characterization and X-ray crystal structure”, *Inorg. Chim. Acta* **2003**, 344, 7-14 (Elsevier **I.F. = 2.10**).
- (53) **G. K. Patra** and I. Goldberg, “Syntheses and characterization of New bis bi-dentate Schiff base ligands and their Supramolecular complexes with silver(I), copper(I) and zinc(II) d^{10} metal ions”, *New. J. Chem. Soc.*, **2003**, 27, 1124-1131 (Royal Society Chemistry, **I.F. 3.40**).
- (54) Yael D. Posner, **G. K. Patra** and I. Goldberg”, Crystal engineering of metalloporphyrin assemblies. New supramolecular architecture mediated by bi-pyridyl ligands”, *J.*

Chem. Soc., Chem. Commun., **2002**, 1420 – 1421 (Royal Society Chemistry, **I. F. = 6.80**).

- (55) Yael D. Posner, **G. K. Patra** and I. Goldberg, "Hydrogen-bonded supramolecular lattice of the 1:3:4 complex between [5,10,15,20-meso-tetrakis(4-hydroxy phenyl)porphyrinato- K^4N]zinc(II), dibenzo-24-crown-8 and methanol", *Acta Cryst* **2002**, C58, m344-m346 (Wiley, **I. F. = 0.80**).
- (56) Yael D. Posner, **G. K. Patra** and I. Goldberg, "Supramolecular porphyrin-based materials. Assembly modes of [5,10,15,20-meso-tetrakis(4-hydroxy phenyl) porphyrinato] with bipyridyl ligands", *Cryst. Eng. Commun.* **2002**, 4, 296-301 (Royal Society Chemistry, **I. F. = 3.86**).
- (57) **G. K. Patra**, Y.D.Posner and I. Goldberg, " meso-(4-Nitrophenyl)dipyrromethane", *Acta Cryst* **2002**, E58, o530-o531 (**I. F. = 0.50**).
- (58) **G. K. Patra** and I. Goldberg, " N,N'-Bis[1-(4-pyridyl)ethylidene]-p-phenylenediamin", *Acta Cryst* **2002**, E58, o528-o529 (**I. F. = 0.50**).
- (59) **G. K. Patra** and I. Goldberg, "Coordination polymers of transition metal ions with polydentate imine ligands. Syntheses, materials characterization, and crystal structures of polymeric complexes of copper(I), silver(I) and zinc(II)", *J. Chem. Soc., Dalton Trans.*, **2002**, 1051- 1057 (Royal Society Chemistry, **I.F. = 4.20**).
- (60) **G.K.Patra** and I. Goldberg, " Mercury(II) – Dien complexes (Dien \equiv diethylene triamine). First example of dien bridged Hg(II) dimer. Syntheses, characterization and X-ray crystal structures", *Polyhedron*, **2002**, 21, 2195-2199 (Elsevier, **I. F. 2.24**)
- (61) **G. K. Patra** and I. Goldberg, "Tetrakis(4-acetylpyridine)diisothiocyanatocobalt(II)" *Acta Cryst* **2001**, E57, m483-m484 (**I. F. = 0.50**).
- (62) **G.K. Patra** and I. Goldberg, "N, N'-Bis(4-cyanopyridylidene)benzil dihydrazone", *Acta Cryst* **2001**, E57, o988-o989 (**I. F. = 0.50**).
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➤ **INVITED LECTURES/RESOURCE PERSON:**

- (1) Delivered invited lecture on "Coordination Compounds as Anti leishmanial agents" in UGC Sponsored *National Workshop*, held in Dept. of Zoology, Calcutta University, (Nov. 17, 2015).
- (2) Delivered invited talk on "An overview of Schiff Base Chemosensor" in the International Conference of *Modern Trends in Inorganic Chemistry – XVI*, Dec. 3-5 at Jadavpur University.
- (3) Delivered lecture on "Chemical aspects of Environment" as a resource person at the *Refresher Course on Environment, Forest and Disaster Management* on Feb. 2016 at GGV, Bilaspur.
- (4) Delivered two lectures on "Supramolecular Chemistry" and "Fluorogenic and Chromogenic Chemosensors" as a resource person at the *Refresher Course on Chemistry*, August, 2016 at Pt. R.S. Shukla University, Raipur.
- (5) Delivered invited talk on "Drug delivery by Supramolecules" in the UGC sponsored *National Seminar*, August 2016, at GNA PG College, Bhattapara.
- (6) Delivered invited talk on "Schiff base Chemosensors for Biological and Environmental monitoring", in the UGC sponsored National Seminar, November, 2016 at Prasanta Chandra Mahalanabis College, Calcutta University.
- (7) Delivered invited on "Pearson's Hard and Soft Acid Bases", December, 2016 in Govt. College Masturi.
- (8) Delivered invited on "Solvent Dependence and Biological relevance of Schiff base Chemosensors" in the International Conference on Biological Inorganic Chemistry, January, 2017 in IACS, Kolkata.
- (9) Delivered scientific invited talk on "Cyclic Voltammetry, Basic Instrumentation and Application" in the Skill Development Programme of School of Physical Sciences, GGV, Bilaspur, Feb. 16-17, 2017.
- (10) Delivered a scientific presentation on "Science in Nation Building" on 1st March, 2017 at the NSS camp of School of Physical Sciences at Tendubhata.
- (11) Delivered invited Lecture at St. Thomas College, Bhillai, C.G. on 27th April, 2017 in the topic, "Electrochemistry as an important tool for modern research".
- (12) Presented recent research results in 22nd CRSI National Symposium at P.R.S.U, Raipur during 2-4th February, 2018

- (13) Delivered invited lecture in National Seminar on Recent Developments in Chemical Sciences, in IGNTU, Amarkantak, during 23-24 February, 2018 in the topic "Benzohydrazides as fluorocent-colorometric chemosensor".
- (14) Delivered two invited lectures on "Metal Organic Framework" and "Optical sensors" as a resource person at the *Refresher Course on Chemistry*, September 18, 2018 at GGV, at Pt. R.S. Shukla University, Raipur.
- (15) Delivered invited lecture on "Biological and environmental aspects of Chemosensors" in the XX National Seminar on Ferroelectric and Dielectric during 14-16 December, 2018 at Dept. of Pure and Applied Physics, GGV Bilaspur
- (16) Delivered scientific invited talk on "Chemical Safety Management: Handling of hazardous chemicals" in the Skill Development Programme of School of Physical Sciences, GGV, Bilaspur, Feb. 16-17, 2019.
- (17) Delivered scientific talk in the 1st International Conference on "Crystal Engineering: From Molecule to Crystal during 30-31 March, 2019 in the topic Copper(I) Halide Based Mixed Ligand Coordination Architectures : Predesigned Synthesis of Dimer to 1D Polymer to 2D Polymer to Unusual Hexamer in NIT Raipur.
- (18) Delivered scientific invited talk at Human Resource Development Centre, GGV Bilaspur in the Refresher Course on Recent Advances in Emerging Areas of Engineering, Technical Education and Research on 06/07/2019 in the topic, "Chemical Practices towards Sustainable Development".
- (19) Delivered invited talk in the 56th Annual Convention of Chemists and International Conference of Recent Advances in Chemical Sciences on November 16th 2019 at PRSU Raipur on "Benzohydrazide Based Novel Dual-mode Fluorescent Colorimetric Chemosensors for Multiple ions and their Applications in Real Sample Analysis"
- (20) Delivered invited talk in the Refresher Course on Instrumentation and Experimental Techniques in Physical Sciences on 9th December, 2019 at HRDC, GGV Bilaspur in topic Chemosensing Techniques.

Place: Bilaspur

(Prof. G. K. Patra)