

DR. SANDIPAN SARKAR

Area of research: Design of chelating ligands (e.g. azo, N,S-donor sets etc); synthesis and characterisation of Cu(II) complexes and design of solid phase extractants for radioanalytical study, Design of new complex: Application towards the biology, Synthesis of new nano-material and application

Skills in Operating Instruments

- * UV-Vis-NIR, IR and Fluorescence Spectrophotometry.
- * Cyclic Voltammetry, GC, HPLC and AAS instrument.
- * Electron transfer reactivity study using UV/Vis spectrophotometer.
- * Isolation and separation of organic and inorganic compounds by TLC and column chromatography.

Teaching experience: (a) **Guest lecturer**(Five years)in PG course, VivekanandaMahavidhyalaya, Burdwan
(b)**Assistant Professor(from January, 2011)**, Department of Applied Science & Humanities, Durgapur Institute of Technology and Management, Rajbandh, Durgapur

Project Guided : One, M.Sc Project

Project: One UGC Minor Project as Co-investigator(PSW-175/11-12(ERO))

Award:National Scholarship scheme of the Govt. of India for securing 1st class(merit list serial no.17) in B.Sc(Hons.) examination

List of Publications

1. Nickel(II) complexes of tetradentate NSNO pyridylthioazophenol ligands: synthesis, characterization and crystal structure; P.K. Dhara, *S. Sarkar*,

M.G.B. Drew, M. Nethaji and P. Chattopadhyay, *Polyhedron*, 2008, **27**, 2447-2451.

2. Trichloro-mono- β -diketonatooxorhenium(V) complexes: synthesis, characterization and crystal structure; B. Das, *S. Sarkar*, A. Patra, M.G.B. Drew and P. Chattopadhyay, *J. Coord. Chem.*, 2008, **61**, 1689-1695.
3. Copper(II) complexes of tetradentate N₂S₂ donor sets: synthesis, characterization crystal structure and reactivity; *S. Sarkar*, A. Patra, M.G.B. Drew, E. Zangrando and P. Chattopadhyay, *Polyhedron*, 2009, **28**, 1-6.
4. Copper(II) complexes of tridentate SNO ligands: synthesis, spectral and structural characterization, *S. Sarkar*, P.K. Dhara, M. Nethaji and P. Chattopadhyay, *J. Coord. Chem.*, 2009, **62**, 817-824.
5. A new chelating polymer with 2-methoxy-1-imidazolylazobenzene for determination of lead(II) and iron(III), S. Pramanik, *S. Sarkar*, H. Paul and P. Chattopadhyay, *Indian J. Chem. Sec A*, 2009, **48A**, 30-37.
6. Separation of ⁹⁰Sr-⁹⁰Y pair over cerium(IV) iodotungstate cation exchanger; S. Dhara, *S. Sarkar*, S. Basu and P. Chattopadhyay, *Appl. Radiat. Isot.*, 2009, **67**, 530-534.
7. Synthesis and crystal structure characterization of iron(II), cobalt(II) and nickel(II) complexes with 1,3-bis(2-pyridylmethylthio)propane; A. Patra, *S. Sarkar*, M.G.B. Drew, E. Zangrando and P. Chattopadhyay, *Polyhedron*, 2009, **28**, 1261-1264.
8. Synthesis, crystal structure and reactivity of copper(II) complexes of tetradentate N₂S₂ donor ligands, *S. Sarkar*, H. Paul, M.G.B. Drew, E. Zangrando and P. Chattopadhyay, *J. Mol. Struct.*, 2009, **933**, 126-131.
9. A novel aluminium vanadate ion exchanger and its use for separation of ^{137m}Ba, ^{115m}In and ^{110m}Ag from ¹³⁷Cs, ¹¹⁵Cd and ¹⁹⁸Au respectively, S. Dhara, *S. Sarkar*, S. Basu and P. Chattopadhyay, *Appl. Radiat. Isot.*, 2009, **67**, 1764-1768.
10. C-S bond cleavage in pyridylmethylthioether systems promoted by oxorhenium(V) ion, B. Das, *S. Sarkar*, E. Zangrando and P. Chattopadhyay, *Inorg. Chem. Commun.* 2009, **12**, 1112-1115.

11. A new water-soluble copper(II) complex as a selective fluorescent sensor for azide ion, K. Dhara, U.C. Saha, A. Dan, M. Manassero, S. Sarkar and P. Chattopadhyay, *Chem. Commun.* 2010, 1754-1756.
12. Binary oxorhenium(V) complexes of dithiol systems and ternary oxorhenium(V) complexes of dithiols and bipyridine : synthesis, characterization and crystal structure, B. Das, S. Sarkar, E. Zangrando and P. Chattopadhyay, *J. Coord. Chem.*, 2010, **63**, 819-827.
13. Copper(II) complex with tridentate N donor ligand: synthesis, crystal structure, reactivity and DNA binding study, S. Dey, S. Sarkar, H. Paul, E. Zangrando and P. Chattopadhyay, *Polyhedron*, 2010, **29**, 1583-1587.
14. Coordination behavior of symmetrical hexadentate O₂N₂S₂-donor Schiff bases towards the zinc(II) ion : Synthesis, characterization and crystal structure, A. Patra, S. Sarkar, R. Chakraborty, M.G. B. Drew and P. Chattopadhyay, *J. Coord. Chem.*, 2010, **63** 1913–1920.
15. Coordination behavior of pyridylmethylthioether system with cupric chloride and cupric bromide: C-S bond cleavage and crystal structures, S. Sarkar, S. Dey, T. Mukherjee, E. Zangrando, M.G.B. Drew and P. Chattopadhyay, *J. Mol. Struct.*, 2010, **980**, 94–100.
16. Copper(II) complex of *in situ* formed 5-(2-pyridyl)-1,3,4-triazole through C-S bond cleavage in 1,2-bis(2-pyridylmethylthio)-bis-ethylsulphide: synthesis, structural characterization and DNA binding study, S. Sarkar, T. Mukherjee, S. Sen, E. Zangrando and P. Chattopadhyay, *J. Mol. Struct.*, 2010, **980**, 117–123.
17. Coordination behavior of 3,4-bis(2-pyridylmethylthio)toluene with copper(II) ions: C-S bond cleavage, structural characterization, reactivity and DNA binding study of a dinuclear copper(II) complex, S. Sarkar, S. Sen, E. Zangrando and P. Chattopadhyay, *polyhedron* 2010, **29**, 3157-3163.
18. 2-benzoylpyridine and copper(II) ion in basic medium: hydroxide nucleophilic addition stabilized by metal complexation, reactivity, crystal structure, DNA binding study and magnetic behavior, S. Dey, S. Sarkar, E. Zangrando, H.S. Evans, J.-P. Sutter and P. Chattopadhyay, *Inorg. chim. acta*, 2011, **367**, 1-8.

19. A highly selective zinc ion fluorescent chemosensor for zinc ion and imaging Application in living cells, U.C. Saha, B. Chattopadhyay, K. Dhara, S.K. Mandal, **S. Sarkar**, A.R. Khuda-Bukhsh, M. Mukherjee, M. Helliwell and P. Chattopadhyay, *Inorg. chem.* 2011,50, 1213-1219.
20. An oxamato bridged trinuclear copper(II) complex: Synthesis, crystal structure, reactivity, DNA binding study and magnetic properties, S. Dey, **S. Sarkar**, S. Sen, E. Zangrando, J.P. Sutter and P. Chattopadhyay, *Inorg. Chim. Acta*, 2011, 376, 129-135.
21. A selenium-bonded oxorhenium(V) complex: solvothermal synthesis, structural characterization, and electrochemical behavior, B. Das, R. Chakraborty, **S. Sarkar**, E. Zangrando and P. Chattopadhyay, *Transition Met Chem*, (2011) 36:663–667.
22. 5-Nitro-110-phenanthrolinebis(N,N-dimethylformamide- κ^{\prime} O)bis(perchlorato)copper(II) complex: synthesis, structural characterization and DNA binding study, S. Dey, T. Mukherjee, **S. Sarkar**, H.S. Evans and P. Chattopadhyay, *Trans. Met. Chem.*, 2011, 36, 631–636.
23. Preparation, Characterization, and Evaluation of an Inorganic Ion Exchanger in Separation of Carrier-Free ^{137}mBa from ^{137}Cs , R. Chakraborty, S. Dhara, **S. Sarkar**, S. Basu, and P. Chattopadhyay, *Radiokhimiya*, 2011, 53, 452–455.
24. Zinc(II) complexes of 1,3-bis(2-pyridylmethylthio)propane: Anion dependency, crystal structure and DNA binding study, A. Patra, **S. Sarkar**, E. Zangrando and P. Chattopadhyay, *polyhedron*, 2011, 30, 2783–2789.
25. Development of a highly selective cell-permeable radiometric fluorescent chemosensor for oxorhenium(V) ion, S. Sen, T. Mukherjee, **S. Sarkar**, S.K. Mukhopadhyay and P. Chattopadhyay, *Analyst*, 2011, 136, 4839.
26. Palladium(II) complexes of dithiocarbamic acids: synthesis, characterization, crystal structure and DNA binding study, T. Mukherjee, **S. Sarkar**, J. Marek, E. Zangrando and P. Chattopadhyay, *Trans. Met. Chem*, 2012, 37, 155.
27. A Radiometric Fluorescent Chemosensor for Iron: discrimination of Fe^{2+} and Fe^{3+} and living cell application, S. Sen, **S. Sarkar** and P. Chattopadhyay, *Analyst*, 2012, 137, 3335.

28. Separation of Amino Acids Based on Thin-Layer Chromatography by a Novel Quinazoline Based Anti-Microbial Agent, S. Sen, **S. Sarkar**, P. Kundu, S. Laskar and P. Chattopadhyay, *American Journal of Analytical Chemistry*, 2012, 3, 668-673.
29. Study of photo-induced interaction between CT-DNA and $H_2Ti_3O_7$ -nano tubes *Journal of Biomaterials and Nanobiotechnology*, 2012, 3, 462.
30. Syntheses, crystal structures, and DNA binding of some nickel(II) complexes of 1,3-bis(2-pyridylmethylthio)propane and pseudohalides, A. Patra, S. Sen, **S. Sarkar**, E. Zangrando, P. Chattopadhyay, *J. Coord. Chem.*, 2012, **65**, 4096–4107.
31. Nickel (II) complexes with 2-(pyridin-3-ylmethylsulfanyl) phenylamine and halide/pseudohalides: Synthesis, structural characterisation, interaction with CT-DNA and bovine serum albumin, and antibacterial activity A Patra, B Sen, **S Sarkar**, A Pandey, E Zangrando, P Chattopadhyay *Polyhedron* 2013, 51, 156-163.
32. A new chelating resin functionalized with 2-methyl mercapto-1-imidazolylazo benzene: synthesis, characterization and application in the determination of trace copper and cadmium, S. Pramanik, **S. Sarkar**, S. Dey and P. Chattopadhyay *International Journal of Pure and Applied Chemistry* 2013, 8, 137-145.
33. Synthesis, characterization of mono nuclear copper(II) complex of tetradentate N₂S₂ donor set and the study of DNA and BSA binding, S. Sarkar, B. Das, *complex met.* 2014, 1, 80-87.
34. Synthesis, reactivity and CT-DNA study of copper(II) complexes with 1,2-bis(3-pyridylmethylthio)ethane, S. Sarkar, B. Das, *International Journal of Pure and Applied Chemistry*, 2014, 9, 7-15.
35. Preparation, structural characterization, and evaluation of ion-exchange behavior of a new polyoxometalate, [Me₂NH₂]₃[Mo₁₂O₄₀S] in separation of carrier-free ⁹⁰Y from ⁹⁰Sr, R. Chakraborty, S. Sarkar, S. Pal, P. Chattopadhyay, *Applied Radiation and Isotopes*, 2016, 118, 297–301.

36. Synthesis, characterization, crystal structure and DNA-binding study of four cadmium(II) pyridine-carboxamide complexes, B. Mondal, B. Sen, S. Sarkar, E. Zangrudo, P. Chattopadhyay, *J. Chem. Sci.* 2017, 129, 45-55

B. Conference/Symposium/Seminar/Workshop attended

1. *Oral presentation* on “Synthesis, characterization, crystal structure and magnetism of nickel(II) complexes of tetradentate NSNO pyridylthioazophenol ligands”, **S. Sarkar**, P.K. Dhara P. Chattopadhyay, UGC sponsored national seminar, Department of Chemistry, The University of Burdwan, April 25-27, **2008**.
2. *Oral presentation* on “Anion dependent coordination behavior of tetradentate 1,2-bis(2-pyridylmethylthio)ethane towards copper(II) ions”, S. Dey, **S. Sarkar**, P. Chattopadhyay, 2nd UGC sponsored national seminar, Department of Chemistry, The University of Burdwan, February 20-22, **2009**.
3. *Poster presentation* on “Synthesis, crystal structure and reactivity of copper(II) complexes of tetradentate N2S2 donor ligands”, **S. Sarkar**, M. G. B. Drew, P. Chattopadhyay, National conference, Faculty council of science, Jadavpur University, March 20-21, **2009**.
4. *Poster presentation* on Copper(II) complexes derived from copper(II) chloride-mediated C-S bond cleavage of pyridylmethylthioether systems, **S. Sarkar**, S. Dey, P. Chattopadhyay, Modern trends in inorganic chemistry (MTIC-XIII), IISc, Bangalore, December 8-10, **2009**.
5. *Participation* in National Seminar on Chemistry Today, Department of Chemistry, The University of Burdwan, March, 18-20, **2010**.
6. *Oral presentation* on A new silicate based polyoxometalate as ion exchanger: synthesis, characterization and application in separation of ⁹⁰Y from ⁹⁰Sr, R. Chakraborty, **S. Sarkar**, P. Chattopadhyay, National seminar on International year of Chemistry, Department of Chemistry, The University of Burdwan, March 15-17, **2011**.

7. *Poster presentation* on Studies of radioanalytical separation and size-dependent ion exchange property of micelle-directed titanium phosphate nanocomposites, R. chakraborty, **S. Sarkar**, P. Chattopadhyay, : International conference on Frontiers in energy, environment, health, and materials research (EEMR-13), CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT), August 12th-13th, **2013**.