

CURRICULUM VITAE

Name: Dr. Mrs Manjuri Kumar

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Date of Birth: December 26, 1964

Nationality: Indian

Current occupation: Associate Professor in the Department of Chemical Engineering.
BITS-Pilani K.K. Birla Goa Campus, Goa

Educational Qualification:

1986 B.Sc. (Chemistry Hons.) St Xaviers College, Kolkata, WestBengal, India.

1990 B.Tech. (Chemical Technology), Calcutta University, WestBengal, India.

1992 M.Tech (Ceramic Engineering), Calcutta University, WestBengal, India.

2004 Ph.D. BITS-Pilani, Rajasthan, India

Thesis title: "Synthesis, Characterization and kinetic studies of some novel Cr(IV) and Cr(V) Compounds".

Supervisor: Prof. S. C. Sivasubramanian (Chemistry Department), BITS-Pilani, Pilani campus.

Experience:

2022- till date Associate Professor, Chemical Engineering Department, BITS-Pilani, K.K. Birla Goa Campus.

2006-2022 Assistant Professor, Chemical Engineering Department, BITS-Pilani, K.K. Birla Goa Campus.

2004-2006 Lecturer, Chemical Engineering Department BITS-Pilani, K.K. Birla Goa Campus. Goa.

2000-2004 Lecturer, Chemical Engineering Department, BITS-Pilani, Pilani Campus, Rajasthan.

1998-2000 Assistant Lecturer, Chemical Engineering Department, BITS-Pilani, Pilani Campus, Rajasthan.

1992-1994 Research Fellow, Electroceramics Division, C.G.C.R.I, Calcutta.

Courses taught:

Inorganic Chemistry
Structure and properties of materials
Measurement Techniques (I)
Measurement Techniques (II)
Chemical Process Calculations
Selected Chemical Engineering Operations
Chemical Process Technology
Corrosion Engineering
Polymer Technology (ME programme)
Engineering Chemistry
Separation Processes II
Engineering Measurements

Research Interest :

- Design, synthesis and characterization of novel copper and zinc complexes using different chelating ligands.
- Biological studies: DNA binding, DNA cleavage studies using metal complexes.
- Protein interaction and molecular docking using Human serum albumin.
- Cytotoxicity studies and anticancer activity of copper and zinc complexes on cancerous and noncancerous cell lines.
- Antibacterial activity of copper and zinc complexes.
- Catalytic activity: investigation of catalytic activities of metal complexes such as catecholase activity

Collaborations outside BITS-Pilani (Goa Campus)

IIT Madras
NCCS (Pune)
CLRI (Chennai)
CDRI (Lucknow)
BITS-Pilani (Hyderabad)

Membership

Member of American Chemical Society (ACS)
Member of the Society of Biological Inorganic Chemistry (SBIC)
Member of the Society of Biological Chemists(SBC)
Member of Indian Institute of Chemical Engineers (IChE)

Research Project

1. SERB DST Extra Mural Research Funding Individual Centric (EMR/2017/001562) as PI

Status: completed

Start date: 06/11/2018

Date of completion: 05/05/2022

Title : Synthesis of mononuclear as well as homo and hetero dinuclear complexes of Cu(II) and Zn(II) with hard-soft donor ligands and evaluation of their anticancer activities.

2. SERB Core Research Grant 2022 (CRG/2022/002146) as Co-PI

Status: submitted on 16-4-2022, we have been asked to submit in SERB POWER Research Grant.

Title: Spectroscopic insight, molecular docking, molecular kinetics, thermodynamic properties and structural evolution during interaction of Human Serum Albumin (HSA) with mixed ligand Cu(II) complexes of N,O/S donor Schiff base having the potential to serve as anticancer agents.

3. Expressed interest in Antimicrobial Resistance (AMR) as PI

Title: Reviving Antibiotics: Harnessing Cu(II) and Zn(II) Metal Complexes with Versatile Ligands to Combat Antimicrobial Resistance

Ph.D students

1. Ms. Sidhali Uday Parsekar joined on 20-1-2017 as PhD student under Institute fellowship and she has successfully completed her PhD in March 2022. Thesis title: "Synthesis, DNA/HSA interactions, cytotoxicity and anticancer activity of some Cu(II)/Zn(II) complexes with chelating ligands"

2. Ms Priyanka Velankanni joined as junior research fellow in SERB DST-EMR funded project and worked from 31-12-2018 to 7-3-2020. Project title: "Synthesis of mononuclear as well as homo and hetero dinuclear complexes of Cu(II) and Zn(II) with hard-soft donor ligands and evaluation of their anticancer activities".

3. Ms. Kumudini Paliwal. joined as junior project fellow in SERB DST-EMR funded project on 1st Oct 2020, and she is currently doing PhD. (Proposed Thesis title: "Studies on DNA/Protein interactions and antiproliferative activity of some Cu (II) complexes containing hard-soft donor ligands")

Publications

1. Manjuri Kumar, Sanchita P. Ghosh, Aditya P. Koley, Manik C. Ghosh. Reduction of carboxylato-bound chromium(IV) by hydrazine. Journal of Chemical Research, Science Reviews Ltd. **2000**; 2000: 448-449.

2. Manjuri Kumar, Sanchita P. Ghosh, Aditya P.Koley, , Manik C.Ghosh. Reduction of carboxylato-bound chromium(IV) by hydroxylamine. Indian Journal of Chemistry, Scientific Publishers of India. **2001**; 40A: 827-830.

3. Sanchita P. Ghosh, Manjuri Kumar, Aditya P.Koley, Manik C.Ghosh. First direct detection of chromium(IV) as a long lived intermediate in the oxidation of methanol by chromium(VI). Journal of Chemical Research, Science Reviews Ltd. **2003**; 6: 346-347.

4. Manjuri K. Koley, S.C. Sivasubramanian, B. Varghese, P.T. Manoharan, A.P. Koley. Synthesis and characterization of two stable paramagnetic octahedral Chromium (IV) complexes with dianionic tridentate SNO donor ligands and of a chromium(III) complex with a ONO donor ligand. *Inorganica Chimica Acta*, Elsevier. **2008**; 361: 1485-1495.
5. Manjuri K. Koley, P.T. Manoharan, A.P. Koley. Synthesis and characterization of a stable paramagnetic hexacoordinated oxochromium(IV) complex with dianionic tetradentate Schiff base ligand salen. *Inorganica Chimica Acta*, Elsevier. **2010**; 363: 3798-3802.
6. Manjuri K. Koley, Seshadri C. Sivasubramanian, Sumit Biswas, Periakaruppan T. Manoharan and Aditya P. Koley. Dioxygen binding and activation by a highly reactive Cr(II) compound containing S,N-donors derived from o-aminothiophenol. *Journal of Coordination Chemistry*, Taylor & Francis. **2012**; 65: 3329–3351.
7. Manjuri K. Koley, Seshadri C. Sivasubramanian, Babu Varghese, Periakaruppan T. Manoharan, and Aditya P. Koley. A paramagnetic octahedral trans-dihydroxy chromium(IV) complex with dianionic tetradentate Schiff base ligand salophen, and crystal structure of its transdiisothiocyanato analogue. *Journal of Coordination Chemistry*, Taylor & Francis. **2012**; 65: 3623–3640.
8. Manjuri K. Koley, Amrita Chatterjee, Anjan Chattopadhyay, Periakaruppan T. Manoharan, and Aditya P. Koley: Spectroscopic studies for the changes of a Cr(II) compound in solution triggered by the deprotonation of an aqua ligand. *Journal of Coordination Chemistry*, Taylor & Francis, **2015**; 68: 2065–2095.
9. **Manjuri K. Koley***, Om Prakash Chouhan, Sumit Biswas, Joseph Fernandes, Arnab Banerjee, Anjan Chattopadhyay, Babu Varghese, Periakaruppan T. Manoharan and Aditya P. Koley. Spectroscopic, electrochemical and DNA binding studies of some monomeric copper(II) complexes containing N₂S(thiolate)Cu core and N₄S(disulfide)Cu core. *Inorganica Chimica Acta*, Elsevier, **2017**; 456: 179-198.
10. **Manjuri K. Koley***, Natarajan Duraipandy, Manikantan Syamala Kiran, Babu Varghese, Periakaruppan T. Manoharan and Aditya P. Koley: DNA binding and cytotoxicity of some Cu(II)/Zn(II) complexes containing a carbohydrazone Schiff base ligand along with 1,10-phenanthroline as a coligand. *Inorganica Chimica Acta*, Elsevier. **2017**; 466: 538-550.
11. **Manjuri K. Koley***, Sidhali Uday Parsekar, Natarajan Duraipandy, Manikantan Syamala Kiran, Babu Varghese, Periakaruppan T. Manoharan and Aditya P. Koley. DNA binding and cytotoxicity of two Cu(II) complexes containing a Schiff base ligand along with 1,10-phenanthroline or imidazole as a coligand. *Inorganica Chimica Acta*, Elsevier, **2018**; 478: 211-221.
12. Sidhali U. Parsekar, Joseph Fernandes, Arnab Banerjee, Om Prakash Chouhan, Sumit Biswas, Manohar Singh, Durga P. Mishra and **Manjuri Kumar***. DNA binding, cleavage and cytotoxicity studies of three mononuclear Cu(II) chloro-complexes containing N–S donor Schiff base ligands. *Journal of Biological Inorganic Chemistry*, Springer. **2018**; 23: 1331–1349.
13. **Manjuri Kumar***, Sidhali Uday Parsekar, Natarajan Duraipandy, Manikantan Syamala Kiran, Aditya P. Koley. Synthesis, DNA binding and in vitro cytotoxicity studies of a mononuclear copper(II) complex containing N₂S(thiolate)Cu core and 1,10-phenanthroline as a coligand. *Inorganica Chimica Acta*, Elsevier. **2019**; 484: 219–226.
14. Sidhali U. Parsekar, Manohar Singh, Durga P. Mishra, P. K. Sudhadevi Antharjanam, **Manjuri Kumar***, and Aditya P. Koley: Efficient hydrolytic cleavage of DNA and antiproliferative effect on human cancer cells by two dinuclear Cu(II) complexes containing a carbohydrazone Schiff base ligand and 1,10-phenanthroline as a coligand. *Journal of Biological Inorganic Chemistry*, Springer. **2019**; 24: 343–363.
15. Sidhali U. Parsekar, Priyanka Velankanni, Shruti Sridhar, Paramita Haldar, Nayan A. Mate, Arnab Banerjee, P. K. Sudhadevi Antharjanam, Aditya P. Koley and **Manjuri Kumar***. Protein binding studies with human serum albumin,

molecular docking and *in vitro* cytotoxicity studies using HeLa cervical carcinoma cells of Cu(II)/Zn(II) complexes containing carbohydrazone ligand. Dalton Transactions, Royal Society of Chemistry. **2020**; 49: 2947-2965.

16. Sidhali U. Parsekar, Paramita Haldar, P.K. Sudhadevi Antharjanam, **Manjuri Kumar***, Aditya P. Koley: Synthesis, characterization, crystal structure, DNA and human serum albumin interactions, as well as antiproliferative activity of a Cu(II) complex containing a Schiff base ligand formed in situ from the Cu(II)-induced cyclization of 1,5-bis(salicylidene)thiocarbohydrazone. Applied Organometallic Chemistry, John Wiley & Sons, Ltd. **2021**; e6152 DOI: 10.1002/aoc.6152.

17. Sidhali U. Parsekar, Kumudini Paliwal, Paramita Haldar, P.K. Sudhadevi Antharjanam, **Manjuri Kumar***. Synthesis, Characterization, Crystal Structure, DNA and HSA Interactions, and Anticancer Activity of a Mononuclear Cu (II) Complex with a Schiff Base Ligand Containing a Thiadiazoline Moiety. ACS Omega, American Chemical Society. **2022**; 7:2881-2896.

18. Kumudini Paliwal, Paramita Haldar, P. K. Sudhadevi Antharjanam, and **Manjuri Kumar***: Mixed Ligand Mononuclear Copper(II) Complex as a Promising Anticancer Agent: Interaction Studies with DNA/HSA, Molecular Docking, and In Vitro Cytotoxicity Studies. ACS Omega, American Chemical Society. **2022**; 7: 21961-21977.

19. Kumudini Paliwal, Paramita Haldar, P. K. Sudhadevi Antharjanam, and **Manjuri Kumar***. Synthesis, Characterization, DNA/HSA Interaction and Cytotoxic Activity of a Copper(II) Thiolate Schiff Base Complex and Its Corresponding Water Soluble Stable Sulfinato-O Complex Containing Imidazole as a Co-ligand. ACS Omega, American Chemical Society. **2023**; 8: 21948–21968.

20. Sidhali U. Parsekar, Kumudini Paliwal, Paramita Haldar, Aditya P. Koley and **Manjuri Kumar***. DNA binding, cleavage and anticancer activity of a Zn(II)-Cu(II) hetero-dinuclear carbohydrazone complex containing the secondary ligand 1,10-phenanthroline. Results in Chemistry, Elsevier. **2023**; 6: 101109.

Conferences and Workshops

1. Manjuri Kumar, S. C.Sivasubramanian, A.P.Koley: Synthesis and characterization of novel paramagnetic chromium compounds. **10th Symposium on Modern Trends in Inorganic chemistry (MTIC-X), IIT-Bombay**, Mumbai, December 15-17, **2003**.

2. Manjuri K. Koley, Omprakash Chouhan, Sumit Biswas, Aditya P. Koley: DNA binding studies of some monomeric mixed ligand Cu(II) complexes containing N2S(thiolate)Cu core and heterocyclic aromatic base adducts. **International conference on Nascent Developments in Chemical Sciences: Opportunities for Academia-Industry Collaboration (NDCS-2015), BITS Pilani** October 16-18, **2015**.

3. Manjuri Kumar, Om Prakash Chouhan, Sumit Biswas, Joseph Fernandes, Arnab Banerjee, Angshuman Sarkar, Aditya P. Koley. Mixed ligand Cu(II)/Zn(II) complexes containing heterocyclic bases show enhanced DNA binding activity and cytotoxicity. **Indo-UK International Workshop on Advanced Materials and their applications in nanotechnology**, (AMAN 2016), **BITS-Pilani, K.K. Birla Goa Campus**, January 11-12, **2016**.

4. Manjuri Kumar, participated in two-day **workshop on Environmental Management System**. BITS-Pilani in collaboration with Goa State Pollution Control Board. **BITS-Pilani, K.K. Birla Goa Campus** October 20-21, **2016**.

5. Manjuri Kumar: Catechol Oxidase Activity of some mononuclear Cu(II) Complexes containing N-S Donor ligands. **Fourth International Conference on Advanced Oxidation Processes (AOP-2016) BITS-Pilani, K.K. Birla Goa Campus**, Dec 17-20, **2016**.

6. Manjuri Kumar. Invited Speech entitled: Study of DNA Binding and Catechol Oxidase Activity of Some Copper (II) Complexes Containing N-S Donor Ligand Using Spectroscopic Techniques. *Molecular Spectroscopy and Dynamics & Advanced Vibrational Spectroscopy and Applications at 5th International Conference of AnalytiX-2017* (AnalytiX-2017), **Fukuoka, Japan**, March 22-24, **2017**.
7. Parsekar Sidhali Uday, Joseph Fernandes, Arnab Banerjee, Manjuri K. Koley*. ROS-Mediated Cytotoxicity of Cu(II) complexes against Human Cervical Cancer HeLa Cell line. **International Conference on Reproductive Physiology and Comparative Endocrinology (ICRPCE) and 36th Annual Meeting of the Society for Reproductive Biology and Comparative Endocrinology (SRBCE-XXXVI)**. January 20-22, **2018**.
8. Sidhali Uday Parsekar and Manjuri Kumar* DNA binding and *in vitro* cytotoxicity studies of a mixed-ligand mononuclear copper(II) complex. Biological Engineering Society India. **Annual Meeting and Conference BESCON, IIT Bombay**, October 26-27, **2018**.
9. Manjuri K. Koley, Sidhali U. Parsekar, Joseph Fernandes and Arnab Banerjee: Synthesis, *in vitro* cytotoxicity and anticancer activity of some Cu(II) complexes containing N₂S (thiolate) and N₄S (disulfide) cores. **9th Asian Biological Inorganic Chemistry Conference (AsBIC 9)** Stephen Riady Centre, **National University of Singapore** December 9-14, **2018**.
10. Manjuri Kumar, Sidhali U. Parsekar, Priyanka Velankanni. Three-day **workshop on DNA binding and DNA cleavage studies using chemical compounds** supported by MERCK organized by BITS BIRAC BIONEST of **BITS-Pilani, K.K. Birla Goa Campus**, October 11-13, **2019**.
11. Manjuri Kumar, Sidhali U. Parsekar, Priyanka Velankanni and Aditya P. Koley. Design and development of Cu(II)/Zn(II) complexes containing carbohydrazone ligand to study DNA and protein interaction as well as *in vitro* anticancer activity. **Gordon Research Conference *frontiers of science*, Metals in Medicine. Andover, NH United States**, June 28 - July 3, **2020**. Conference was cancelled due to Corona Pandemic.
12. Kumudini Paliwal, Paramita Haldar, Manjuri Kumar. Design and development of Cu(II) complexes with Schiff base ligand containing thiadiazoline moiety to study DNA and protein interactions as well as anticancer activity. **National Symposium on Convergence of Chemistry and Materials (CCM 2023), BITS-Pilani Hyderabad campus**, January 6-7, **2023**.
13. Manjuri Kumar, Kumudini Paliwal, Paramita Haldar, Aditya P. Koley, P.K. Sudhadevi Antharjanam. Design and development of Cu(II)-Schiff base complexes containing thiadiazoline moiety to study DNA/HSA interactions and anticancer activity. **20th International Conference on Biological Inorganic Chemistry (ICBIC 20)**, Adelaide, **Australia**, July 16-21, **2023**.
14. Manjuri Kumar. Member of organizing committee, Incharge of registration in ChEmference- 2023 the 10th Chapter, **BITS Pilani K.K. Birla Goa Campus**, September 30th – October 2nd, **2023**.

Divisional Work in BITS:

- 1998- May 2004 Attached to the educational Hardware Division of BITS-Pilani, Pilani Campus and I looked after the purchase of chemicals and glassware.
- July2004-2007 Incharge of purchase concerning consumable and non-consumable articles in BITS-Goa Campus.
Convenor/Member of the committee for finalizing the contract for shopping complex, printing and stationary in the newly started BITS-Goa Campus.
- 2008-till date Nucleus member in the ID and ARC division of BITS-Pilani, K.K. Birla Goa Campus. I am associated with the making of time table, test scheduling, class room allotment for exams, seating arrangement, assignment of invigilation duty, student registration related work, course allotment for ACB candidates.

Other activities at BITS:

Mentor to ACB students in BITS campus. (Guiding weak students) .

Associated with the woman empowerment program of NIRMAN (an organization to who helps the less privileged people of India).

Active participation in organising Durga puja at BITS Pilani K.K. Birla Goa Campus.

Executive Committee Member of BITS Socio Cultural Association.

Member of contract Committee of BITS Pilani K.K. Birla Goa Campus.