

Department of Chemistry

DEPARTMENT FACULTIES

PROF. R. N. DUTTA PURKAYASTHA



Name:	Prof. R. N. Dutta Purkayastha
Phone number's :	+91-9402137040 ,7005732055
E-mail's :	rndp@tripurauniv.ac.in , rndp09@gmail.com
Academic Qualifications :	M.Sc., Ph.D.
Present Designation/position :	Professor
Topics Taught :	" Chemical bonding, Chemistry of Non-transition and Transition elements, Coordination chemistry, Electronic spectra of Coordination compounds, Magneto chemistry, Reaction mechanism in inorganic reactions, Organometallics of sigma and pi bonded transition metal compounds, Inorganic photochemistry, Inorganic polymers, Bio-Inorganic Chemistry, Nuclear and Radiation Chemistry, Theory and applications of Infrared , Raman Spectroscopic methods to Inorganic systems, Mass Spectrometry of inorganic Systems, Solution properties of polymer, Application of rubber products in automobile, aviation, medical, petrochemicals etc.

All Education Research Publication Award Seminar

PUBLICATIONS (YEAR WISE) :

1. Synthesis and Structural Assessment of Ammonium and Cesium Difluorodioxoperoxuranates(VI), $A_2[UO_2(O_2)F_2] \cdot H_2O$ (A= NH_4 or Cs) and Alkali-Metal.Difluorodioxoperoxuranates(VI), Monohydrates, $A_2[UO_2(O_2)F_2] \cdot H_2O$ (A= K or Rb), M. N. Bhattacharjee, M. K. Chaudhuri and R. N. Dutta Purkayastha, **J. Chem. Soc. Dalton Trans., 1985, 409.**
2. Direct Synthesis of Potassium Tris(Oxalato)Manganate(III) and First Synthesis of Alkali-Metal and Ammonium Trifluoro(oxalato) Manganates(III), M. N. Bhattacharjee, M. K. Chaudhuri and R. N. Dutta Purkayastha, **Inorg. Chem., 1985, 24, 447.**

3. First Synthesis and Structural Assessment of Alkali-Metal Carbonatodioxoperoxourantes (VI) Monohydrates, $A_2[UO_2(O_2)CO_3].H_2O$ and Carbonatodioxoperoxovanadates(V) Trihydrates, $A_2[VO_2(O_2)(CO_3)].3H_2O$, J. K. Basumatary, M. K. Chaudhuri, R. N. Dutta Purkayastha and Z. Hiese, **J. Chem. Soc. Dalton Trans.**, **1986**, **709**.
4. Complex Peroxouranates. Synthesis and Structural Assessment of Alkali-Metal and Ammonium Dioxoperoxy (Sulfato) aquouranates (VI), $A_2[UO_2(O_2)CO_3].H_2O$ (A= NH_4 , Na) and Alkali-Metal and Ammonium Dioxoperoxy (oxalato) Uranates(VI) Hydrates, $A_2[UO_2(O_2)C_2O_4].H_2O$, M. Bhattacharjee, M. K. Chaudhuri and R. N. Dutta Purkayastha, **Inorg. Chem.**, **1986**, **25**, **2354**.
5. Mass Spectroscopy of Metal Compounds (IV). Electron Ionisation Mass Spectra of Bis(acetyiacetanato)dioxouranium(VI), $UO_2(C_5H_7O_2)_2$ and comparison with those of Bis(acetylacetonato) complexes of First Row Transition Metals, $M(C_5H_7O_2)_2$ (M= Mn, Fe, Co, Ni or Cu), M. N. Bhattacharjee, M. K. Chaudhuri, M. Devi, Z. Hiese and R. N. Dutta Purkayastha, **Int J. Mass Spectrom. Ion Process.**, **1986**, **71**, **109**.
6. New methods of Synthesis of Ammonium, Sodium and Potassium Triacetatodioxouranates (VI) and Diacetatodioxouranates(VI) Dihydrate, M. K. Chaudhuri and R. N. Dutta Purkayastha, **Ind. J. Chem.**, **1986**, **25A**, **1048**.
7. New Hetero-Ligand Peroxothorates(IV) of the type $A_2[Th(O_2)F_2(OH)_2].nH_2O$ (A= NH_4 , N=3, A=Na or K, N=1) and Molecular Peroxothorium(IV) complexes of the type $[Th_2(O_2)_3L(H_2O)_4].5H_2O$ (L= C_2O_4 or SO_4), C. R. Bhattacharjee, M. K. Chaudhuri and R. N. Dutta Purkayastha, **Inorg. Chemica. Acta.**, **1989**, **160**, **147**.
8. On Fluoride Assisted Stabilisation of Manganese(III) in Aqueous Medium. A General Approach to the Synthesis of Mixed-Fluoro Complexes of Manganese(III) M. N. Bhattacharjee, M. K. Chaudhuri and R. N. Dutta Purkayastha, **Inorg. Chem.**, **1989**, **28**, **3747**.
9. Synthesis, Characterisation and Some Properties of Molecular Mixed-Ligand Peroxo complexes of Uranium(VI) Containing Amines or Aminocarboxylic Acids as Co-Ligands M. Bhattacharjee, M. K. Chaudhuri and R. N. Dutta Purkayastha, **J. Chem. Soc., Dalton Trans**, **1989**, **1990**.
10. Synthesis and Structural Assessment of Mixed-Ligand Fluoro complexes of Manganese(III) containing Amino acid as Co-Ligands, R. N. Dutta Purkayastha, **Ind. J. Chem.**, **1998**, **37A**, **158**.

11. Synthesis and Characterisation of some new Mixed-Ligand complexes of Zinc with Amino Acids as Co-Ligands, R. N. Dutta Purkayastha, **Chem. Environ. Res.** **13 (3&4), 247-252, 2004.**
12. Synthesis, Spectral Characterization and Reactivity Study of New Schiff base Complexes of Divalent Manganese, Copper and Zinc, A. K. De, D. Deb, K. R. Nath Bhowmik and R. N. Dutta Purkayastha, **J. Ind. Chem. Soc., 2009, 86,76.**
13. "Structure of aqua bis (2,2' bipyridyl-N,N') (bithiosulfato-O) manganese(I) monohydrate", S. Roy, P. Paul, D. Dey, R. N. Dutta Purkayastha, K. R. Nath Bhowmik, Louise Male **Cambridge Structural database (1078), 2010.**
14. Structure of bis(2-chlorobenzoato-kO) bis(1,10-phenanthroline-k2 N,N')manganese(II) heptahydrate, S. Roy, P. Paul, D. Dey, R. N. Dutta Purkayastha, K. R. Nath Bhowmik, Louise Male. **Cambridge Structural database (1078), 2010.**
15. Fluoride Assisted Stabilization of Manganese(III) in Aqueous Medium. Synthesis and Spectral Characterization of New Mixed-Ligand Fluoromanganate(III), Containing Hydroxy-Carboxylic Acids as ancillary Ligands, Arjun kr.De, Kanti Ranjan Nath Bhowmik, Pranajit Paul, Subhadip Roy and R.N.Dutta Purkayastha . **J. Ind. Chem .Soc, 2011, 88(9), 1423-1427.**
16. Syntheses Characterization and crystal structures of two zinc (II) carboxylates containing pyridine, D. Dey, S. Roy, R. Pallepogu, L. Male, and V. McKee and R. N. Dutta Purkayastha, **J. Coord, Chem . 2011, 64,1165.**
17. Stabilization of Manganese (III) in aqueous medium . Synthesis, and Spectral Characterization of New mixed–ligand fluomanganate(III) containing Dicarboxylic and hydroxy–carboxylic acids as co-ligands, Kanti Ranjan Nath Bhowmik, Arjun Kr. Dey and R. N. Dutta Purkayastha **J. Ind. Chem. Soc, 2012, 89, 117.**
18. Zinc carboxylates containing diimine: synthesis, characterization, crystal structure, and luminescence, Dipankar Dey, Subhadip Ray, R. N. Dutta Purkayastha, R. Pallepogu, P. Mc. Ardle, **J. Mol. Structure , 1053,127-133, 2013.**
19. Syntheses, Characterization and structures of Polynuclear Tartrato and Malato Complexes of Bivalent Manganese, K. R. N, Bhowmik, P. Paul, S. Roy, A. De, D. Deb and R. N. D. Purkayastha, **Synth. Rect. Inorg. Metal-Org. and Nano met. Chem., 2014,.44, 634**
20. Syntheses, spectral characterization and antimicrobial properties of zinc carboxylates containing nitrogen donor as ancillary ligand. Dipankar Dey, R.N.Dutta Purkayastha and S. Sil, **J. Ind. Chem. Soc, 2014, 91, 1221.**
21. Synthesis, structure and some properties of a manganese(II)benzoate containing diamine,

- P. Paul, S. Roy, S. Sarkar, S. Chowdhury, R. N. Dutta Purkayastha, P. Raghavaiah, P. McArdle, L. Deb, S. I. Devi, **J. Molecular Structure (Elsevier)**, **2015**, **153-160**, **1102**.
22. Inorganic Materials – R.N.Dutta Purkayastha – “ Exploring Chemistry – Interface with Human Welfare.”, page 4-21, **2017**, **EBH Publishers (India)**, **Guwahati 781001**.
23. Syntheses, Structural Characterization, Reactivity and Theoretical Studies on Some Heteroligand Oxoperoxotungstate(VI), Nandita Das, S. Chowdhury, R. N. Dutta Purkayastha, **Journal of Chinese Chemical society**, **2017**, **4-21**.
24. Reductive synthesis, Characterisation and Crystal structure of aqua bis (2,2' bipyridine N,N') (bis thiosulphato-O-) manganese (I) monohydrate $\{Mn(C_{10}H_8N_2)_2(S_2O_3H)(H_2O)\}H_2O$, S. Roy, R. N. Dutta Purkayastha, **Proceedings of the Symposium on Recent Trends in Chemical Sciences (RTCS)**, **2017**, **52-58**.
25. Synthesis, structural features, antibacterial behaviour and theoretical investigation of two new manganese (III) Schiff base complexes, Pranajit Paul, Kanti R. N. Bhowmik, Subhadip Roy, Dibakar Deb, Nandita Das, Maitri Bhattacharjee, R. N. Dutta Purkayastha, Louise Male, Vickie Mckee, Raghavaiah Pallepogu, Debasis Maiti, Antonio Bauza, Antonio Frontera, Alexander M Kirillov, **Polyhedron**, **151**, **2018**, **407-416**.
26. Peroxo–tungstate(VI) complexes: syntheses, characterization, reactivity, and DFT studies, Nandita Das, S. Chowdhury, R. N. Dutta Purkayastha, **Monatsh .für.Chemie - Chemical Monthly**, **150**, **2019**, **1255-1266**.
27. Fluoro-metallates: Syntheses, Spectral Characterization of New Mixed-Ligand FluoroManganate(III), Manganate(II) and Fluorozincate(II) Complexes Containing biogenic Co-ligands, Kanti R. N. Bhowmik, Pranajit Paul, Dipankar Dey, Maitri Bhattacharjee, Nandita Das, Baptu Saha, Smriti Rekha Boruah and R. N. Dutta Purkayastha, **J. Ind. Chem. Soc.**, **97**, **2020**, **829-838**.
28. Synthesis, characterization, DNA binding ability, in vitro cytotoxicity, electrochemical properties and theoretical studies of copper(II) carboxylate complexes, Maitri Bhattacharjee, Smriti R. Boruah, R. N. Dutta Purkayastha, Rakesh Ganguly, Debasish Maiti, Antonio Franconetti, Antonio Frontera, Alexander M. Kirillov, Shubhamoy Chowdhury, Subhadip Roy, Priyatosh Nath, **Inorg. Chim.Acta.** **518**, **2021**, **120235**.
29. Some contribution to W(VI)-Peroxo-chemistry: Synthesis, spectroscopic characterization, reactivity and DFT studies, N. Das, M. Bhattacharjee, S. R. Boruah, S. Chowdhury, R. N. Dutta Purkayastha, **Journal of the Indian Chemical Society**, **2022**, **99**, **100327**.

30. Synthesis, structural characterization, DNA interaction, dye adsorption properties and theoretical studies of copper (II) carboxylates, B. Saha, M. Bhattacharjee, S. R. Boruah, R. N. Dutta Purkayastha, R. M. Gomila, S. Chowdhury, A. Mandal, A. Frontera, **J. Mol. Struct**, **1272**, **2023**, **134104**.
31. Insights into Synthesis, Crystal Structure, Bioactivity and Computational Studies of Cu(II) and Zn(II) Carboxylates Containing Aminopyridine Cu(II) and Zn(II) Carboxylates Containing Aminopyridine, S. R. Boruah, M. Bhattacharjee, R. N. D. Purkayastha, S. Modak, T. Aktar, D. Maiti, L. Sieroń, W. Maniukiewicz, R. M. Gomila, A. Frontera, **Chemistry Select**, **2023**, DOI: **10.1002/slct. 202204937**.
32. X-ray structures, density functional theory study, DNA binding ability and micellization behaviour of decavanadates anions containing cationic organic moieties S. D. Baishnab, R.N. D. Purkayastha, W. Maniukiewicz, R. M. Gomila, A. Frontera, **Inorganica Chimica Acta**, **559 (2024) 121770**.
33. Synthesis, structural characterization, DNA binding ability and luminescent sensing of nitroaromatics by a mononuclear zinc(II) carboxylate complex, S. R. Boruah, R.N. D. Purkayastha, S. Chowdhury, P. Das, R. M. Gomila, A. Frontera, **Inorganica Chimica Acta**, **572 (2024) 122247**.
34. Synthesis, characterization, structure elucidation, DNA interaction, antimicrobial activity and DFT studies on new copper (II) complexes with hydrazone-based Schiff base ligands, M. Bhattacharjee, S.R. Boruah, R. N. D. Purkayastha, W. Maniukiewicz, S. Chowdhury, T. Aktar, D. Maiti, **Chinese Journal of Inorganic Chemistry 2024**, in
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SEMINAR/CONFERENCE/WORKSHOP/REFRESHER/ORIENTATIONS ETC. PARTICIPATED:

1. Attended 2nd mid year symposium of Chemical Research Society of India at IIT Guwahati in July 2007. (Presented paper)
2. Presented paper in XX Annual conference of The physiological Society of India at Tripura University in Dec 2008.
3. Participated in the Regional Seminar on Recent Trends in Chemistry, organized by Govt. degree college, Dharmanagar in September, 2009.
4. Participated in the Frontier Lecture Series organized by Jawaharlal Nehru centre for Advanced Scientific Research Bangalore in collaboration with Tezpur University at Tezpur University during November 2009.
5. Acted as resource person for Training programme on 'Environmental Pollution and their Control Measures' for heads of the institute of govt-degree colleges and higher secondary schools of Tripura, organized by State Institute of Public Administration and Rural Development (SIPARD) Govt of Tripura, on 31st July 2010.
6. Participated as Resource Person (Invited Speaker) in the National Seminar on Global Trends in Modern Chemistry organized by St. Anthony's college,

Shillong on 7-8 December 2010.

7. Participated as Resource Person (Invited Speaker) in the National Seminar on Recent trends in Natural Products and other Frontiers in Chemistry In the Chemistry Department of Manipur University, Canchipur, Imphal , March 15-16 , 2011.
8. Participated as invited speaker in the National Seminar In Don Bosco College , Tura , Meghalaya. 2014.
9. Participated as invited speaker in National Conference in Assam University, Silchar ,2015.
10. Participated as invited speaker in National seminar " Exploring chemistry - Interface with human welfare", in Shillong College, Shillong, Meghalaya. 2016
11. Presented paper in Symposium on Recent Trends in Chemical Sciences (RTCS), at NIT Meghalaya, October 12-13, 2017
12. Resource Person in FDC programme, Tripura University, 2017, 2018, 2019.
13. Plenary talk in National Conference on Advanced Research in Chemical Sciences, at Assam University, Silchar, 21-22 December, 2023.

MEMBERSHIP/POSITIONS IN LEARNED ACADEMIC BODIES/ORGANIZATIONS:

1. Life member of Meghalaya Science Society, Shillong.
2. Life member of Tripura Chemical Society, Agartala.
3. Life Member Indian chemical Society (Fellow of the society).
4. Vice – President Indian Chemical society, N-E Chapter.

RESEARCH PROJECTS:

A Major Research Project entitled “Synthesis, Structural Assessment and Reactivity Studies of Some Schiff base and Mixed- ligand Complexes of Manganese (III)” sanctioned by UGC, New Delhi (vide Sanction No- F.No.34-331/2008 (SR) dt 26.12.2008)

RESEARCH SUPERVISIONS (SCHOLAR'S NAME, TOPIC AND STATUS):

NAME OF SCHOLARS UNDER SUPERVISION, RESEARCH TOPICS AND THEIR STATUS

Sl. No	Name	Topics	Status
1.	Kanti Ranjan Nath Bhowmik	Synthesis, Structural Assessment and Reactivity Studies on some Schiff base and Mixed-Ligand-Fluoro complexes of Manganese(III)	Ph.D. Awarded, June - 2013
2.	Dipankar Dey	Synthesis, Structural Assessment and Physico-Chemical Studies on Some complexes of Zinc	Ph.D. Awarded in Feb, 2017
3.	Pranajit Paul	Synthesis, Structural Assessment and Reactivity Studies on Some Schiff base and Mixed-Ligand complexes of Manganese	Ph.D. Awarded in March, 2017
4.	Nandita Das	Synthesis, Characterization, Structure and Reactivity Studies on Hetero-ligand Peroxotungsten(VI) Complexes	Ph.D. Awarded in Sept, 2020
5.	Baptu Saha	Combined Experimental and Density Functional Theory Study On Copper and Rhenium Complexes With N and O Donor Ligands.	Ph.D. Awarded in March, 2022
6.	Maitri Bhattacharjee	Synthesis, structure, Reactivity and Theoretical Investigations on Nitrogen, Oxygen Donor Complexes of Copper	Ph.D. Degree awarded in March 2024
7.	Susanta Das Baishnab	Synthesis, Structural Elucidation and Reactivity Studies on Vanadium (IV) and Vanadium (V) Complexes with Nitrogen and Oxygen donor ligands.	RET qualified (part-time)
8.	Smriti Rekha Boruah	Some contribution to the chemistry of zinc(II) and tungsten(VI) compounds containing nitrogen, oxygen donor ligands	RET qualified (full time)

SCHOLARSHIP/AWARD/RECOGNITIONS:

1. JRF: (Department of Atomic Energy, DAE, Govt. Of India, 1982-1985)
2. SRF: CSIR, New Delhi (Ind) 1985-1987
3. Research Associate: CSIR, New Delhi, 1987
4. Selected for Summer fellowship programme of Indian Academy of Science, Bangalore, 2003.