

CURRICULAM VITAE

Name : **Dr. S. P. Rath** *FNA, FASc, FNASc & J C Bose National Fellow*

Nationality : Indian

Present Address : Department of Chemistry
Indian Institute of Technology Kanpur
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Present Position : *Professor (HAG) and Umang Gupta Chair Professor*

Education:

- Ph. D.: Department of Inorganic Chemistry, Indian Association for the Cultivation of Science, Jadavpur (1999) (Supervisor: Prof. Animesh Chakravorty)
- M.Sc.: Calcutta University (Inorganic Chemistry) (1994)
- B.Sc. (Hons. in Chemistry): Calcutta University (1992) (College: Ramakrishna Mission Vidyamandira, Belur Math)

Work Experience:

- *Umang Gupta Chair Professor*, Department of Chemistry
Indian Institute of Technology Kanpur, 2025- 2028
- *Lalit Mohan Kapoor Chair Professor*, Department of Chemistry
Indian Institute of Technology Kanpur, 2022- 2025
- *Professor (HAG)*, Department of Chemistry,
Indian Institute of Technology Kanpur, 2021-
- *J. N. Gupta & M. Gupta Chair Professor*, Department of Chemistry,
Indian Institute of Technology Kanpur, 2017- 2020
- *Professor*, Department of Chemistry,
Indian Institute of Technology Kanpur, 2014-21
- *Associate Professor*, Department of Chemistry
Indian Institute of Technology Kanpur, May 2009-May 2014

- *Assistant Professor*, Department of Chemistry
Indian Institute of Technology Kanpur, Dec. 2004-April 2009
- *NIH Post-doctoral Research Associate*
Department of Chemistry, University of California, Davis, USA (2001-2004)
- *Research Associate*
Department of Inorganic Chemistry, IACS, Jadavpur (1999-2000)

Awards and/or other recognition received:

- (a) *Umang Gupta Chair Professor*, IIT Kanpur (2025-2028)
- (b) *J. C. Bose National Fellow* (2025)
- (c) *Silver Medal* from Chemical Research Society of India (CRSI)- 2025
- (d) *Elected Fellow*, Indian National Science Academy, New Delhi, 2024
- (e) **'Excellence-in-Teaching'** Award, IIT Kanpur, 2021.
- (f) *Lalit Mohan Kapoor Chair Professor*, IIT Kanpur (2022-2025)
- (g) *HAG Professor*, IIT Kanpur, 2021-
- (h) SERB - Science and Technology Award for Research (**SERB-STAR**), 2020.
- (i) *Visiting Professor*, Technion-Israel Institute of Technology, Israel (Dec 2022-to-January 2023)
- (j) *Visiting Professor*, Kyushu University, Japan (May-July, 2022)
- (k) *Visiting Professor*, IIT Bombay (2021-2023)
- (l) *Visiting Professor*, Heidelberg University, Germany (May 2015-to-July 2015)
- (m) *Fellow*, Royal Society of Chemistry (FRSC), 2021
- (n) *Elected Fellow*, Indian Academy of Sciences, Bangalore, 2020
- (o) *J. N. Gupta & M. Gupta Chair Professor*, IIT Kanpur (2017-2020)
- (p) *JSPS Invitational Fellowship*, Kyushu University, Japan, 2020
- (q) *Professor R S Varma Memorial Award* by Indian Chemical Society, 2020
- (r) *C. N. R. Rao National Prize* in Chemical Sciences, 2018
- (s) *Elected Fellow*, National Academy of Sciences, 2017
- (t) *Bronze Medal* from Chemical Research Society of India (CRSI)- 2015
- (u) *Elected Fellow*, West Bengal Academy of Science & Technology, 2017
- (v) Institute Foundation Day Lecture, NIT Patna on January 27, 2017
- (w) *Member*, Editorial Board, Chirality, 2019-
- (x) *Alexander von Humboldt Research Fellowship* for Experienced Researcher in 2012
- (y) *P. K. Kelkar Faculty Research Fellowship* from IIT Kanpur (2009-2012)
- (z) Received *Commendations* from the **Director, IIT Kanpur** for *Excellence in Teaching* almost every semester continuously.

Membership in Professional Society

- Life member, Chemical Research Society of India (CRSI)
- Member, Royal Society of Chemistry (RSC)
- Member, Society of Biological Inorganic Chemistry (SBIC)
- Member, American Chemical Society (ACS)
- Member, Society of Porphyrins and Phthalocyanines (SPP)
- Life member, Indian Association for the Cultivation of Science (IACS)

Academy Fellowship

- (a) Elected Fellow, Indian National Science Academy, New Delhi (**FNA**), 2024
- (b) Elected Fellow, Indian Academy of Sciences (**FASc**), 2020
- (c) Elected Fellow, National Academy of Sciences (**FNASc**), 2017
- (d) Fellow, Royal Society of Chemistry (**FRSC**), 2021
- (e) Fellow, West Bengal Academy of Science & Technology (**FWBAST**), 2017

Research Fellowship/Chair from India/Foreign Country

- (a) *J C Bose National Fellow*, 2025
- (b) Umang Gupta Chair Professor, IIT Kanpur (2025-2028)
- (c) Lalit Mohan Kapoor Chair Professor, IIT Kanpur (2022-2025)
- (d) *JSPS Invitational Fellowship*, Japan, 2020
- (e) *SERB - Science and Technology Award for Research (SERB-STAR)*, India, 2020
- (f) J. N. Gupta & M. Gupta Chair Professor, IIT Kanpur (2017-2020)
- (g) *Alexander von Humboldt Research Fellowship* for Experienced Researcher, Germany, 2012
- (h) *P. K. Kelkar Young Faculty Research Fellowship*, IIT Kanpur (2009-2012)

Teaching:

Has taught a variety of under-graduate (UG) and post-graduate (PG) core/elective courses at the Department of Chemistry, IIT Kanpur.

- | | |
|------------------|---|
| • CHM 101N | Introductory Chemistry Lab (UG) |
| • CHM 201N | General Chemistry (UG) |
| • CHM201R | General Chemistry (UG) |
| • CHM341 | Basic Inorganic Chemistry (UG) |
| • CHM442/CHM342A | Inorganic Chemistry-2 (UG) |
| • CHM443/CHM343A | Inorganic Chemistry Lab (UG) |
| • CHM 646 | Bio-inorganic Chemistry (UG & PG) |
| • CHM 651 | Crystal and Molecular Structure Determination (UG & PG) |
| • CHM631 | Applications of Modern Instrumental Methods (UG & PG) |

- CHM 649 Principles of Inorganic Chemistry (PG)
- CHM 691 Frontiers in Inorganic Chemistry (UG & PG)
- CSO 203A Inorganic Molecules, Materials & Medicine (UG)

Received Commendations as “*Outstanding Instructor*” almost in every semester from the Director, IIT Kanpur for excellence in teaching, the Course Numbers (obtained >3.5 out of 4.0) listed below are from 2010 only:

- CHM649 2025-26 (Semester-I)
- CHM342 2024-25 (Semester-II)
- CHM646 2024-25 (Semester-I)
- CHM442 2023-24 (Semester-II)
- CHM646 2023-24 (Semester-I)
- CHM442 2022-23 (Semester-II)
- CHM646 2022-23 (Semester-I)
- CHM101N 2021-22 (Semester-II)
- CSO203 2021-22 (Semester-II)
- CHM631 2021-22 (Semester-I)
- CHM646 2020-21 (Semester-II)
- CHM691 2020-21 (Semester-I)
- CHM646 2019-20 (Semester-I)
- CSO203 2018-19 (Semester-II)
- CHM646 2017-18 (Semester-II)
- CHM646 2016-17 (Semester-I)
- CHM443 2015-16 (Semester-II)
- CHM646 2015-16 (Semester-I)
- CHM646 2013-14 (Semester-II)
- CHM646 2010-11 (Semester-I)

• **New Course Designed for UG Students of IIT Kanpur:**

CSO-203: Inorganic Molecules, Materials & Medicine

- **SWAYAM & NPTEL** (the National Programme on Technology Enhanced Learning, MHRD) Massive Open Online Course (**MOOC**) on **Bioinorganic Chemistry** (Introduced in August 2019). This is also an AICTE approved FDP course. **So far, the course has been re-run seven times.**

Intended Audience: Senior UG, PG students and Faculty of Chemistry

For a brief introduction, please see the video: <https://youtu.be/FziKko-ZQww>

For the video lectures, please click the link below: <https://nptel.ac.in/courses/104104109>

- Coordinator of Global Initiative of Academic Networks (**GIAN**) course “Crystal Structure Determination: Principle and Application” conducted at IIT-K during Nov 29 to Dec 9, 2017

Have received '**Excellence-in-Teaching**' Award, IIT Kanpur, 2021.

Other (Selected) Academic Contributions:

- External Expert, Board of Studies, Harcourt Butler Technical University (HBTU), Kanpur, 2025-
- Expert member, JEE (Advanced) Syllabus Revision Committee-2026
- Member, Sectional Committee, Indian Academy of Sciences, 2025-
- Expert member, EMR Research Grants, CSIR-HRDG, 2025-
- **PAC Member**, ARG (ANRF, DST), 2025-2028
- **PAC Member**, International Division, Chemical Sciences, DST, 2024-2027
- *Convener*, Inorganic Chemistry Group, Department of Chemistry, IIT Kanpur, 2021-
- **Member, Undergraduate Academic Review Committee (UGARC)**, 2018-21, *conducted once in every ten years*), IIT Kanpur
- *Member*, Core Organizing Committee for Natural and artificial metalloenzymes: **Faraday Discussion**, Royal Society of Chemistry, organized at IIT Kanpur (2022)
- **PAC Member**, Young Scientist Expert Committee-Chemical Sciences, Science & Engineering Research Board (SERB, DST), 2015-2018
- *Member*, Screening Committee, SERB-SUPRA (Scientific and Useful Profound Research Advancement)
- **Chairman**, Senate Election Committee, IIT Kanpur, 2024-26
- *Member*, Departmental Faculty Affairs Committee (DFAC) (2018-20, 2024-26)
- *Convener*, Workshop on Chemistry in Health, Energy, Materials and Environment at Department of Chemistry, IIT Kanpur, on Nov 18, 2023
- *Convener*, Symposium on "Recent Advances in Inorganic Molecules to Materials (RAIMM-2023)", a at IIT Kanpur on November 4, 2023
- *Convener*, ACS-on-Campus program of American Chemical Society (ACS), 2017
- *Member*, NPTEL (the National Programme on Technology Enhanced Learning, MHRD) Senate, 2019-
- *External Expert*, National High Magnetic Field Laboratory, FL, USA, 2017-
- *External Expert*, REPRISE, Italian Ministry of Education, Universities and Research (MIUR), 2018-
- *External Expert*, The National Science Centre, Poland, 2015-
- *Member*, National Organizing Committee (NOC), Modern Trends in Inorganic Chemistry (MTIC)
- *Member*, International Advisory Committee of the FIRST Asian Conference on Porphyrins, Phthalocyanines and Related Materials (ACPP-1), Beijing, China, 2019
- *Member*, Interview Committee, KVPY, IISc Bangalore for several years
- *Member*, Selection Committee of several universities, NIT, IIT etc
- *Member* of Advisory Committees of several National and International Conferences in India and abroad
- Delivered **Plenary**, **Keynote** and **Invited** lectures in a large number of the National and International conferences in India and abroad

- Delivered invited lectures in a large number of **INSPIRE** (Innovation in Science Pursuit for Inspired Research), **Faculty Development Program** and Science Camps
- Chaired several sessions in National and International Conferences in India and abroad
- Reviewed various projects of the funding agencies such as DST/SERB (India), CSIR (India), NSC (Poland), MIUR (Italy), NIH (US) and NSF (US).

Research Areas of Interest:

In the fields of Physical–Inorganic and Bioinorganic Chemistry with special emphasis on the structure-function correlation utilizing a wide variety of spectroscopic techniques combined with DFT calculations. Current research interests are:

- Bio-inorganic Chemistry
- Multiheme Proteins and Enzymes
- Bioinspired cooperative catalysis
- Chemical Biology
- Medicinal Inorganic Chemistry
- Supramolecular Chirogenesis
- NMR Spectroscopy of Paramagnetic Molecules

Thesis Supervision as PI only at IIT Kanpur (no Co-PI involved):

- PhD already awarded: **27**
- Post-doctoral Research Associate: **22**
- Master's thesis supervision: **40**
- Summer project students: **~50** including academy and INSPIRE students
- PhD students working at present: **15**

PhD Thesis Supervision at IIT Kanpur, No Co-guide Involved:

(1) Dr. Chandrani Pal (2026)

Thesis title: From Conformational Dynamics to Supramolecular Interactions: Structure-Function Correlation in Zn(II)porphyrin Dimer/Trimers

Current Position: FARE (Fellowship for Academic and Research Excellence) Fellow, IIT Kanpur

(2) Dr. Subhadip Pramanik (2025)

Thesis title: Modulation of Electronic Structure in Iron(III) Porphyrins and Its Implications for Hemoprotein Functionality

Current Position: FARE (Fellowship for Academic and Research Excellence) Fellow, IIT Kanpur

(3) Dr. Paulami Chakraborty (2025)

Thesis title: Spin Fluctuations in Dihemes: Structure-Function Correlation and Effect of Heme-Heme Interaction

Current Position: *Post-Doctoral Fellow, Institute of Science Molecular de Marseille (iSM2), France*

(4) Dr. Deepannita Samanta (2025)

Thesis title: Probing bis-Fe(IV) MauG: From Electronic Structure to Reactivity

Current Position: *Post-Doctoral Fellow, University of Oxford, UK*

(5) Anindya Sarkar (2025)

Thesis title: Metallophilic Interactions in Hg(II) and Ag(III) Porphyrin Dimers: Structure-Function Correlation

Current Position: *Senior Research Associate at Enveda Biosciences, Hyderabad, India*

(6) Dr. Dolly Chandel (2024)

Thesis title: Modulation of Chirality in Nano-Size Zn(II)Porphyrin Dimers/Trimers

Current Position: *Post-Doctoral Fellow, Hiroshima University, Japan.*

(7) Dr. Syed Jehanger Shah (2024)

Thesis title: Dipyrrole Bridged Metalloporphyrin Dimers: Structure, Reactivity and Electronic Communication via Bridge

Current Position: *Post-Doctoral Fellow, The University of Arizona, USA*

(8) Dr. Sayantani Banerjee (2024)

Thesis title: Spin Coupling in Homo and Hetero-bimetallic Porphyrin Dimer upon Stepwise Oxidations: A Spectroscopic and Theoretical Investigations

Current Position: *Senior Scientific Analyst at Molecular Connections, Bangalore, India*

(9) Dr. Sabyasachi Sarkar (2023)

Thesis title: Diiron(III) Porphyrin Dimer as Model of Diheme Enzyme MauG: From Electronic Communication to Reactivity

Current Position: *Post-Doctoral Fellow, University of California, Berkeley, USA*

(10) Dr. Sarnali Sanfui (2023)

Thesis title: Molecular and Electronic Structure of Dicobalt Porphyrin Dimers: Effect of Axial Ligation, Chemical and Electrochemical Oxidation, and Theoretical Investigation

Current Position: Post-Doctoral Fellow, MIT, Massachusetts, USA | Texas A&M University, USA

(11) Dr. Bapan Saha (2021)

Thesis title: Modulation of Supramolecular Chirogenesis in Chiral Zn(II) Porphyrin Dimer with Bidentate Substrates

Current Position: Post-Doctoral Fellow, Southern Illinois University, Carbondale, USA

(12) Dr. Anjani Kumar Pandey (2020)

Thesis title: Molecular and Electronic Structure of Metalloporphyrin Dimers: Effects of Metal, Axial Ligand and Noncovalent Interactions

Post-Doc: University of Padova, Italy | University of Innsbruck, Austria

Current Position: Assistant Professor, Manipal University, Jaipur, India

(13) Dr. Akhil Kumar Singh (2020)

Thesis title: Oxidation Triggers Intermacrocyclic Interactions in Metalloporphyrin Dimers: Metal versus Ring Oxidation

Current Position: Post-Doctoral Fellow, Texas A&M University, USA | University of Alabama, Birmingham, USA | Karlsruhe Institute of Technology, Germany

(14) Dr. Younis Ahmad Pandit (2020)

Thesis title: Pyrrole/Dipyrrole Bridged Metalloporphyrin Dimers: Structure-Reactivity Correlation and Long Range Electronic Communication

Current Position: Lecturer, Higher Education Department, J & K, India

(15) Dr. Amit Kumar (2019)

Thesis title: Homo and Heterobimetallic Porphyrin Dimers: Effect of Chemical Oxidation over Intermacrocyclic Interaction and Electronic Communication

Current Position: Post-Doctoral Fellow, University of Goettingen, Germany | Technion-Israel Institute of Technology, Technion, Haifa, Israel

(16) Dr. Firoz Shah Tuglak Khan (2019)

Thesis title: Diiron Porphyrin Dimers as Model of Diheme Cytochromes: Structure-Function Correlation and Effect of Heme-Heme Interaction

Current Position: Post-Doctoral Fellow, The Ohio State University| UNC-Greensboro, USA

(17) Dr. Avinash Dhamija (2018)

Thesis title: Supramolecular Chirogenesis in Host-guest Systems Containing Metalloporphyrin Dimers/Trimers

Current Position: Marie Sklodowska Curie Action Post-Doctoral Fellow, University of Strasbourg, France | Institute of Basic Science, South Korea

(18) Dr. Pritam Mondal (2017)

Thesis title: Flexible Cyclic Bisporphyrins: Versatile Molecular Containers for Recognition, Switching and Catalysis

Post-Doc: University of Alabama at Birmingham, AL, USA | Institut de Chimie Moléculaire de l'Université de Bourgogne, Dijon, France

Current Position: Assistant Professor, Dept. of Chemical Sciences, IISER Mohali, India

(19) Dr. Debangsu Sil (2016)

Thesis title: Fe(III)/Mn(III) Bisporphyrins as Model for Diheme Proteins: Effects of Inter-macrocyclic Interaction and Electronic Communication

Post-Doc: Penn State University, USA | Texas A&M University, USA

Current Position: Assistant Professor, Dept. of Chemistry, IISER Pune, India

(20) Dr. Dipankar Sahoo (2016)

Thesis title: Electronic Structure and Modulation of Spin State of Iron in Nonplanar Hemes: Implication for the Hemoproteins

Post-Doc: Indiana University, Bloomington, USA | KAIST, Republic of Korea

Current Position: Senior Research Associate, Virginia Tech, Blacksburg, USA

(21) Dr. Soumyajit Dey (2015)

Thesis title: Chemistry of Co(II)/Zn(II)bisporphyrins: Axial Ligation, Chemical and Electrochemical Oxidations and Effects of Inter-macrocyclic Interactions

Post-Doc: University of Pennsylvania, Philadelphia, USA | Temple University, Philadelphia, USA

Current Position: Senior Manager, Troikaa Pharmaceuticals Limited, Ahmedabad, India

(22) Dr. Sk. Asif Ikbal (2015)

Thesis title: Supramolecular Chirogenesis in the Zn(II)/Mg(II)bisporphyrin Based System upon Interactions with Bidentate Guest Ligands

Post-Doc: Institut de recherches sur la catalyse et l'environnement de Lyon (IRCELYON-CNRS), Université Claude Bernard Lyon 1, France

Current Position: Associate Professor, WPI Nano Life Science Institute, Kanazawa University, Japan

(23) Dr. Sanfaori Brahma (2013)

Thesis title: Induction, Origin and Control of Supramolecular Chirality in the Zn(II)/Mg(II)bisporphyrin Host upon Interactions with Bidentate Guest Ligands

Current Position: Associate Professor, Guwahati University

(24) Dr. Susovan Bhowmik (2013)

Thesis title: Control of spins in Axially Ligated Diiron(III)bisporphyrin and Studies on Fe(III) and Mn(III) μ -hydroxo Complexes

Post-Doc: Bielefeld University, Germany | IIT-Technion, Israel

Current Position: Associate Professor, Bankura Sammilani College, Bankura, India

(25) Dr. Arvind Chaudhary (2012)

Thesis title: Porphyrin/Bisporphyrin Based Donor-Acceptor Systems For Efficient Energy/Electron Transfer: Models For Photosynthetic Reaction Center

Post-Doc: NISER-Bhubaneswar, India

Current Position: Scientist E, Anusandhan National Research Foundation, New Delhi, India

(26) Dr. Ranjan Patra (2011)

Thesis title: Electronic Structure and Geometrical Consequences of Nonplanar and Electron Deficient Hemes: Implications for the Hemoproteins

Post-Doc: Commissariat à l'énergie atomique et aux énergies alternatives (CEA), France |The Johns Hopkins University, USA|Tel-aviv University, Israel

Current Position: Associate Professor, Amity Institute of Click Chemistry Research and Studies, Amity University, Noida, India

(27) Dr. Sudip Kr. Ghosh (2010)

Thesis title: Synthesis, Structure, and Properties of Ethane- and Ethene-Bridged Bisiron(III) Porphyrins and Hexacoordinated Vanadyl Porphyrins: Effect of Nonplanar Distortion

Post-Doc: Yonsei University, Seoul, South Korea

Current Position: Associate Professor, Techno India University, West Bengal, India

Funding from External Agencies: List of R&D projects as PI ONLY:

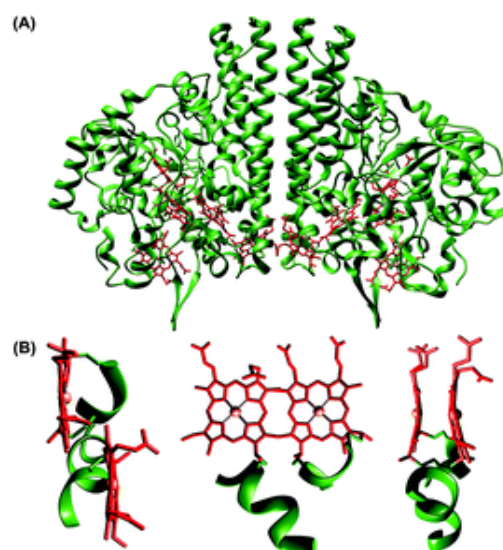
No	Period	Sponsoring Organization	Title of Project
20	2025-2031	J C Bose Grand	Diheme Enzymes: Understanding Nature's Design for Cooperative Catalysis and Sustainable Development
19	2025-2026	ANRF, DST (Under VAJRA Faculty Scheme)	Transition Metal-based Molecular Spintronics
18	2022- 2025	SERB	Probing Bis-Fe ^{IV} MauG: Reactivity, Spin Coupling and Isolation of Highly Reactive Intermediates
17	2021-2023	INDIAN ISRAELI JOINT RESEARCH COOPERATION, DST	Mono- and Bimetallic Complexes for Energy-Relevant Photocatalysis
16	2020-2024	SERB-STAR	Understanding Nature's Design towards Developing Novel Therapeutic Metallo drug for Sulfite Oxidase Deficiency
15	2021-2024	CSIR	Induction, Control, and Rationalization of Supramolecular Chirogenesis in Metalloporphyrin Trimer using Exciton Coupled Circular Dichroism
14	2018- 2021	SERB	Modeling Diheme Enzyme MauG: Understanding Nature's Design, Structure-Function Correlation and Application
13	2017- 2020	CSIR	Probing Molecular Chirality by dimeric metalloporphyrin hosts: Transfer, Control and Rationalization using Exciton Coupled Circular Dichroism
12	2017-2019	MHRD	Crystal Structure Determination: Principle and Application
11	2017- 2019	SERB	Probing Bis-Fe (Iv) Maug Analog: Structure - Function Correlation and Catalytic Application
10	2017-2019	SERB	Functional Model of the Cytochrome-c-oxidase Active Sites: Effects of Metal Ions, Ligand Environment and Mechanistic Investigation
9	2014-2017	SERB	Porphyrin Dimers as Model of Di-heme Proteins: Inorganic and Bioinorganic Perspectives and Consequences of Heme-Heme Interactions
8	2013-2016	CSIR	Supramolecular Chirogenesis in the Bisporphyrin-Based systems upon Interactions with Bidentate Ligands: Origin, Control, and Application
7	2009-2012	DST	Models for the Photosynthetic Reaction Center: Synthesis, Structure, Reactivity and Photophysical Properties of Porphyrin Dimers and Rationalization of Supramolecular Chirality
6	2009-2013	CSIR	Nonplanar Metallo-porphyrins and Implications for the Hemoproteins
5	2009-2010	CARE	Establishment of a CD-Spectrometer Facility
4	2008-2011	REACH	Fabrication of solar cells with biomimetic design of chlorophyll pairs present in green leaves
3	2006-2009	DST	Synthesis, Solid and Solution Phase Structure and Reactivity of New Model Intermediates in the Heme-Degradation Process Catalyzed by Heme-Oxygenase
2	2006-2009	CSIR	Synthesis, Structure and Reactivity of Vanadium-Oxophlorins and Related Species: Implications for Heme Protein Intermediates
1	2006-08	IIT Kanpur	Biomimetic Study on the Heme Degradation Process Catalyzed by Heme-oxygenase Enzyme

A Brief Statement Regarding the Most Innovative Contribution:

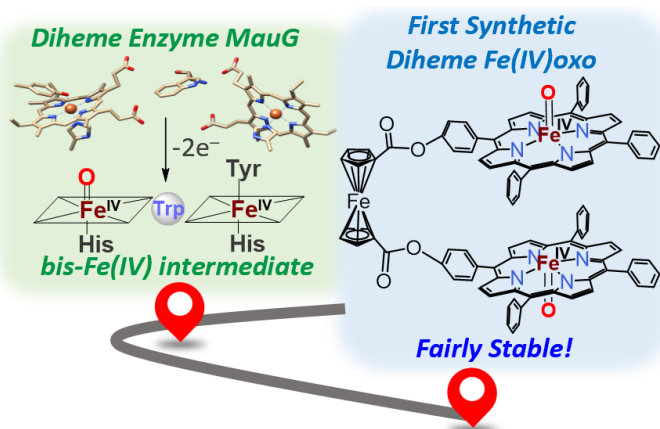
Interaction between heme centers has been smartly implemented by Nature to regulate a wide variety of functions of the *multiheme proteins and enzymes*. Rath's group is pioneer in the structure-activity correlation study of this new class of proteins and contributed significantly to unfold mysteries of Nature's sophisticated design for sustainable development and applications.

Highlights of the Major Scientific Contributions

The family of *multiheme proteins and enzymes* constitutes one of the most fascinating molecular machineries designed by Nature to execute a large variety of functions which awaits an eventual blossom for its potential application towards sustainable development. Recent discoveries of newer proteins in large numbers and their involvement in various biological processes have raised two immediate questions: what are the selective advantages of containing so many redox co-factors in a single polypeptide chain, and why did the spatial distribution of the co-factors evolve to be the way it is? However, the presence of large number of heme centers and efficient coupling between them hinder detailed analysis. Although, mono heme protein/enzyme and their model compounds have already been studied extensively, however, only a few in vivo studies are reported with multiheme. Interaction between heme centers has been smartly implemented to perform a wide variety of functions in



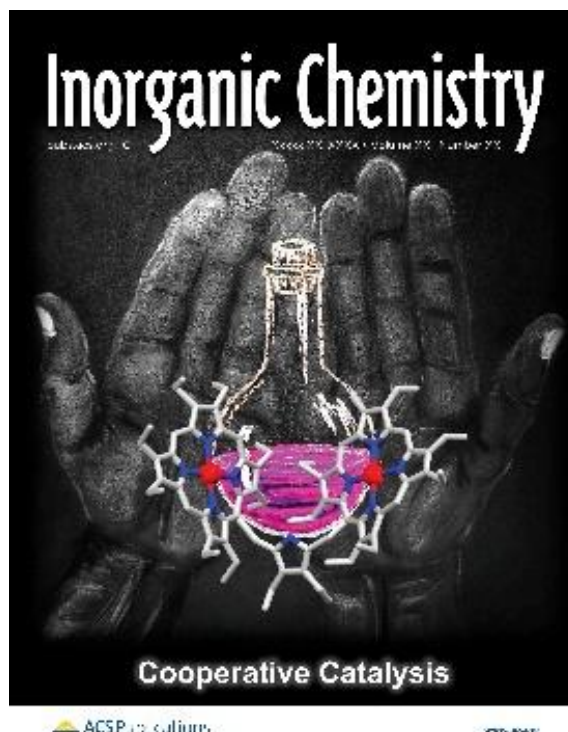
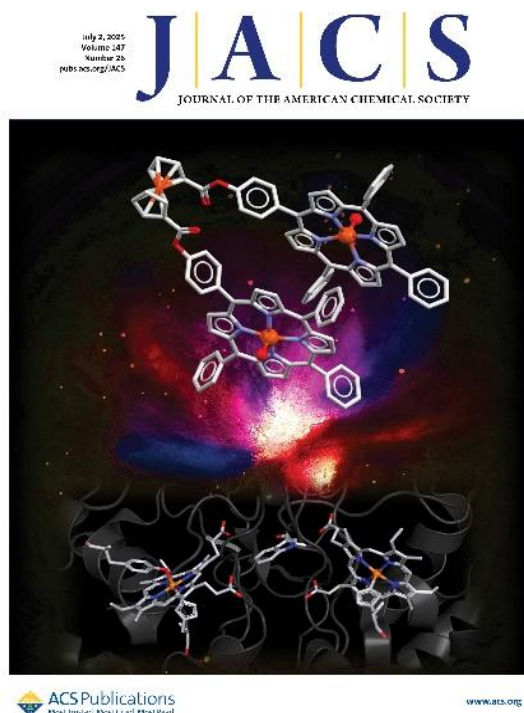
Structure of cytochrome *c* nitrite reductase (PDB code 1QDB). (B) Different views of the di-heme motifs therein



biology. Rath's group is pioneer

in the world to unfold mysteries of Nature's sophisticated design and implementation of the knowledge for our sustainable future developments. The investigation also highlights excellent

cooperativity between various biological units of enzyme for its extraordinary functions. Such investigations have also paved the way for new important discoveries that includes unusual stabilization of high-valent $M(IV)=O$ species, easy modulation of spin and oxidation states, heme-heme interactions as a powerful tool for controlling electronic structure and reactivity, highly efficient biocatalyst for sustainable development, hitherto unknown metallophilic $Ag(III)\cdots Ag(III)$ interaction and so on.



Rath's group has recently reported the first-ever unusually stable synthetic *bis*- $Fe(IV)=O$ intermediate that closely mimics similar intermediate generated in the catalytic cycle of the native diheme enzymes and display similar stability at room temperature and, thereby, shedding light into the unexplored world of diheme enzymes.

Supramolecular chirogenesis is one of the most important interdisciplinary fields of science today and is directly relevant to the functioning of living organisms and many aspects of human life. Rath's group has been at the forefront in understanding the origin and underpinning mechanism of chirality induction and control at the molecular level using multi-metallporphyrin helices.

List of Plenary/Keynote/Invited lectures delivered (Selected only):

- **Plenary Lecture** at the 4th Asian Conference on Molecular Magnetism (ACMM 2026), held at Dalian University of Technology, Dalian, China during October 11 to 15, 2026.
- **Silver Madel Lecture** at Chemical Research Society of India (CRSI) held on July 2-4, 2026 at IACS, Kolkata
- 14th International Conference on Porphyrins and Phthalocyanines (ICPP-14) held on Kyoto, Japan during June 28-July 3, 2026.
- Department of Chemistry, Nihon University, Tokyo (Japan) on June 26, 2026
- Department of Chemistry, Institute of Science Tokyo (Japan) on June 25, 2026
- Department of Chemistry, NIMS (Japan) on June 24, 2026
- Department of Chemistry, University of Tokyo (Japan) on June 23, 2026
- Department of Chemistry, Tsukuba University (Japan) on June 17, 2026
- **National Science Day Lecture** at IIT (ISM) Dhanbad on 28th February 2026
- **Plenary Speaker** at the International Conference "CHEMFRONT-2025" as a part of the 100th year of Contai P. K. College on January 29-30, 2026
- **Keynote lecture** in the 22nd International Conference on Modern Trends in Inorganic Chemistry (MTIC-XXII) during December 18–21, 2025 at Delhi University
- **Plenary Lecture** at the “International Symposium on Bioinorganic Chemistry: Structure, Function, and Applications (ISBIC-2025)”, organized by the Amity Institute of Click Chemistry Research and Studies (AICCRS), Amity University, on 14th November 2025 at Noida
- **Keynote Lecture** in the International Conference on “MOLECULES, MATERIALS & BEYOND (MMB-2025)” during November 11-12, 2025 at the Kalyani University
- **Keynote Lecture** in the 10th International Conference on Coordination Chemistry (ICCC 2024) held in Hanoi (Vietnam) from October 24 to 27, 2025 (and also have Chaired a session).
- National Symposium entitled “Recent Advances in Chemistry (RAC 2025)” conducted on 25th April 2025 at Jadavpur University
- 5th Frontiers Symposium in Chemistry (FS-CHM 2025) conducted from the 31st January to 2nd February 2025 at Indian Institute of Science Education and Research Thiruvananthapuram
- **Keynote Lecture** in the National Symposium on “Recent Advances in Chemical Sciences” (RACS - 2024) at the Department of Chemistry, Indian Institute of Engineering Science and Technology (IIST) Shibpur during November 07-09, 2024.
- **Keynote Lecture** in the 4th edition of Modern Trends in Molecular Magnetism and 3rd edition of Spins in Molecular Systems (MTMM / SiMS) from 5-8th November 2024 at the IISc Bangalore
- 45th International Conference on Coordination Chemistry (ICCC 2024) held at Colorado State University, FORT COLLINS, USA during July 30-August 4, 2024 (and also have **Chaired** a session).
- **Keynote Lecture** at Modern Perspective of Advances in Chemical Sciences (MPACS-2024), during July 22 to July 23, 2024 held at Ramakrishna Mission Vidyamandira, Belur Math, Kolkata

- **Plenary Lecture** at National Symposium entitled “Frontiers in Chemical Sciences 2024 (FCS 24)” on March 01, 2024 at Department of Chemistry and Chemical Technology, Vidyasagar University
- **Keynote Lecture** at International Indo-German conference on “Sustainable Chemistry-2024” from February 20-22, 2024, at Kenilworth Resorts Goa organized by IIT Indore
- **Keynote Lecture** at 6th International Symposium on Advanced Biological Inorganic Chemistry (SABIC-2024) during January 7-11, 2024 in Kolkata jointly organized by IACS, Kolkata and TIFR, Mumbai
- Department of Chemistry, University of Calcutta on 19th December, 2023
- **Keynote Lecture** at 20th International Conference on Modern Trends in Inorganic Chemistry (MTIC-XX) during December 14-17, 2023 held at Indian Institute of Science (IISc), Bangalore
- DST-Sponsored Workshop on “Chemistry in Health, Energy, Materials and Environment” at Department of Chemistry, IIT Kanpur on Nov 18, 2023
- IPC Department, IISc Bangalore, on July 27, 2023
- Department of Chemistry, Hebrew University (Israel) on Jan 04, 2023
- Department of Chemistry, Technion-Israel Institute of Technology (Israel) on Jan 02, 2023
- Department of Chemistry, Tel Aviv University (Israel) on Jan 01, 2023
- **Keynote Lecture** at the 2nd Asian Conference on Molecular Magnetism (ACMM II) held at IISER Bhopal during Dec 6-10, 2022.
- **Keynote Lecture** at the 3rd International Conference on “Modern Trends in Molecular Magnetism (MTMM) held at IIT Kharagpur during Dec 11-14, 2022.
- Department of Chemistry, IIT Bombay on Sept 30, 2022
- School of Materials Science and Engineering, Nankai University (China) (on-line lecture) on Aug 26, 2022
- ACS National Meeting held in Chicago, USA during Aug 21-Aug 25, 2022.
- 12th International Conference on Porphyrins and Phthalocyanines (ICPP-12) held on Madrid, Spain during July 10-July 16, 2022.
- Institute of Materials Chemistry and Engineering, Kyushu University (Japan) on July 06, 2022
- Department of Chemistry, Tohoku University (Japan) on July 01, 2022
- Department of Chemistry, Tsukuba University (Japan) on June 29, 2022
- Department of Chemistry, NIMS (Japan) on June 28, 2022
- Department of Chemistry, Tokyo University (Japan) on June 27, 2022
- Department of Chemistry, Kanazawa University (Japan) on June 24, 2022
- Department of Chemistry, Nagoya University (Japan) on June 22, 2022
- Department of Chemistry, Tokyo Metropolitan University (Japan) on June 10, 2022
- Department of Chemistry, Ritsumeikan University (Japan) on June 07, 2022
- Department of Chemistry, Kyoto University (Japan) on June 06, 2022
- Department of Chemistry, Osaka University (Japan) on June 02, 2022

- Department of Chemistry, Hiroshima University (Japan) on June 01, 2022
- Department of Chemistry, Kumamoto University (Japan) on May 26, 2022
- Department of Chemistry, Nagasaki University (Japan) on May 23, 2022
- Department of Chemistry, Faculty of Engineering, Kyushu University (Japan) on May 18, 2022
- **Keynote Speaker** in the National Conference on “Novel Trends in Chemistry” Govt. Digvijay Autonomous PG College on October 20, 2021
- Faculty Development Programme (under DBT Star College Scheme) held on the St. Xavier’s college (Autonomous), Kolkata on September 30, 2021.
- Refresher Course in Chemistry for University and College Teachers in the UGC-Human Resource Development Centre, GGV, Bilaspur from 23rd Aug to 4th Sept 2021.
- 11th International Conference on Porphyrins and Phthalocyanines (ICPP-11) held on New York, USA during June 26-July 2, 2021.
- Workshop on Recent Advances in Spectroscopy, Catalysis and Synthesis at the Department of Chemistry, IIT Kanpur during June 14 – July 02, 2021
- Refresher Course in Chemistry for University and College Teachers in the UGC-Human Resource Development Centre, Kumaun University from 15th to 28th Feb 2021.
- **Professor R S Varma Memorial Award Lecture** at the International Conference on Recent Trends in Chemical Sciences (RTCS-2020) organized by Indian Chemical Society during Dec 26-29, 2020
- National Conference on “Recent Trends in Chemical Sciences” held at National Institute of Technology, Manipur during 12th-16th October, 2020
- Faculty Development Programme on "Recent Advances in Molecular Chemistry and Functional Materials" held at Amity University, Delhi during 17th- 21st August 2020
- International Webinar on “Chemistry and Biology: Sustainable Progress of Human Civilization” organized by Indian Chemical Society held on June 29-30, 2020
- International Conference on ‘Catalysis and Synthesis 2020’ (CS-2020) during March 13-14, 2020 at the Department of Chemical Sciences, IISER Kolkata
- **Keynote speaker** in the Dr. APJ Abdul Kalam Technical University in the Faculty Development Program on 15th January, 2020.
- **Plenary Lecture** at the “International Conference on Chemistry for Human Development (ICCHD-2020)” held during January 9-11, 2020 in Kolkata.
- **INSPIRE** (Innovation in Science Pursuit for Inspired Research) Science Camp held on S.R.M.S.C.E.T., Lucknow on Nov 30, 2019.
- International Conference on “Recent Advances in Fundamental and Applied Sciences” held at LPU, Phagwara, Punjab during Nov 5-6, 2019.
- Department of Chemistry, IEST, Shibpur on Nov 1, 2019.
- **INSPIRE** (Innovation in Science Pursuit for Inspired Research) Science Camp held on S.R.M.S.C.E.T., Unnao on September 1, 2019.
- International Conference on “Emerging Trends in Chemistry” held at IIT Indore during July 12-15,

2019.

- Department of Chemistry, IIT-Bombay on June 28, 2019.
- Department of Chemistry, IIT-Gandhinagar on April 23, 2019.
- School of Chemistry, University of Hyderabad on April 8, 2019.
- **Keynote Lecture** at the National Conference on “Chemical Sciences: Advancing Frontiers” at University of Lucknow, held during March 15-16, 2019.
- **INSPIRE** (Innovation in Science Pursuit for Inspired Research) Science Camp held on S.R.M.S.C.E.T. Unnao on March 1, 2019.
- 1st International Conference on Advanced Chemical and Structural Biology (ICACSB-2019) held at PRIST, Chennai during 19-21st February 2019.
- Department of Chemistry, IIT-Madras on February 19, 2019.
- **C. N. R. Rao National Prize for Chemical Science Lecture** at 24th CRSI National Symposium in Chemistry (NSC-24) held at CSIR-CLRI, Madras during 8th- 10th February, 2019.
- National Conference on “Recent Developments in Chemistry” RDC-2018 at the Department of Chemistry, NIT-Durgapur on December 17-19, 2018.
- Symposium on “New Frontiers in Chemical Science (NFCS)” held at Indian Institute of Technology Bombay, Mumbai during 13th-14th December, 2018.
- **INSPIRE** (Innovation in Science Pursuit for Inspired Research) Science Camp held on S.R.M.S.C.E.T. Unnao on November 21, 2018.
- Symposium on “*National Symposium on Emerging Trends in Chemical Sciences (NSETCS- 2018)*” held on Institute of Science, Banaras Hindu University, Varanasi during November, 17-18, 2018.
- 1st International Symposium on “Main-group Molecules to Materials” (MMM-2018) held in the Department of Inorganic and Physical Chemistry (IPC), Indian Institute of Science, Bangalore during October 28th-31st October 2018
- UK-India Symposium on Advances in Inorganic Chemistry held on the University of Manchester, UK, on 26th September 2018, jointly organised by the Royal Society of Chemistry and the Chemical Research Society of India
- 43rd International Conference on Coordination Chemistry (ICCC 2018) held on Sendai, Japan during July 30-August 4, 2018 (and also have **Chaired** a session).
- Refresher Course in Chemistry (Theme: Chemistry with Industrial and Pharma link) held at the UGC-Human Resource Development Centre, Kumaun University, Nainital, during July 23-24, 2018.
- Institute of Inorganic Chemistry, Humboldt-University Berlin, Berlin, Germany on July 12, 2018.
- Institut für Anorganische und Analytische Chemie, Technische Universität, Braunschweig, Germany on July 10, 2018.
- Institut für Anorganische Chemie, University of Jena, Germany on July 9, 2018.
- 10th International Conference on Porphyrins and Phthalocyanines (ICPP-2018) held on Munich,

Germany during July 01- July 6, 2018 (and also have **Chaired** a session).

- Academy's Lecture Workshop on "*Emerging Trends in Bioinorganic Chemistry*" sponsored by National Science Academies held on IIT Roorkee, Roorkee during March 8-10, 2018.
- Symposium on "*Frontiers in Inorganic Chemistry-II (FIC-II)*" held on IACS-Kolkata during March 8-9, 2018.
- **Plenary Lecture** in the National Symposium "Facets of Chemistry in Materials & Biology (FOCMB-2018)" held on the St. Xavier's college (Autonomous), Kolkata during February 16-17, 2018.
- Lecture Workshop on Department of Chemistry, NIT-Rourkela on February 16, 2018.
- Academy Lecture Workshop on "Bioinorganic Chemistry and its Application" sponsored by National Science Academies held on Devanga Arts College, Madurai during January 29-31, 2018.
- Symposium on "Modern Trends in Inorganic Chemistry-XVII (MTIC)" held on Pune during December 11-14, 2017.
- Department of Chemistry, IIT-Indore on July 18, 2017.
- Department of Chemistry, IIT-Kharagpur on June 27, 2017.
- JNCASR, Bangalore on June 14, 2017.
- Department of Inorganic and Physical Chemistry, IISc Bangalore on June 13, 2017.
- Department of Chemistry, IIT-Roorkee on May 29, 2017.
- Department of Chemistry, IISER-Pune on April 28, 2017.
- Department of Chemistry, Delhi University, on March 30, 2017
- National conference on "Recent Advances in Chemical Sciences" during March 25-26, 2017 organized by Department of Chemistry, AMU, Aligarh.
- RSC symposium on 'Inorganic Chemical Biology'" during March 17-18, 2017 organized by Madurai Kamaraj University, Madurai.
- **Institute Foundation Day Lecture**, NIT Patna on January 27, 2017
- **Keynote Lecture** at 5th Symposium of Advanced Biological Inorganic Chemistry (SaBIC-2017) held during January 7-11, 2017 in Kolkata.
- Institute for Intensive Research in Basic Sciences, M.G. University, Kerala on January 07, 2017
- Recent Trends in Inorganic and Supramolecular Chemistry held at Department of Chemistry at IIT Kanpur on October 26, 2016
- Department of Chemistry, Indian Institute of Technology Bombay on April 11, 2016
- National Symposium on Facets of Chemistry in Biology (FOCB-2016) held at St. Xavier's College (Autonomous), Kolkata on February 22-23, 2016
- Department of Chemistry, Calcutta University, Kolkata on February 22, 2016
- 22nd Annual Meeting of National Magnetic Resonance Society, India (NMRS-2016) on 18- 21st February, 2016 at Indian Institute of Technology, Kharagpur
- **Bronze Medal Lecture** at the 18th CRSI National Symposium in Chemistry in Chandigarh, India, during Feb. 4-7, 2016.

- Department of Chemistry, IISER-Pune on January 25, 2016.
- Frontiers in Chemistry-2016 held at National Institute of Science Education and Research (NISER), Bhubaneswar on January 09, 2016
- Lucknow Science Congress (LUSCON-2015) in the B. B. Ambedkar University at Lucknow during October 30 to November 1, 2015.
- 17th International Conference on Biological Inorganic Chemistry (ICBIC-17) held during July 20-24, 2015 in Beijing, China (and also have **Chaired** a session).
- Institute Colloquium at Institute of Inorganic and Analytical Chemistry, Goethe-Universität Frankfurt, Germany on July 15, 2015.
- Institute Colloquium at Institute of Organic Chemistry, University of Siegen, Germany, on July 13, 2015
- Institute Colloquium at Institute of Inorganic and Analytical Chemistry, Justus-Liebig-Universität, Gießen, Germany, on July 2, 2015.
- Institute Colloquium at Institute of Inorganic and Analytical Chemistry, Johannes Gutenberg-Universität, Mainz, Germany on June 16, 2015.
- Institute of Inorganic and Analytical Chemistry, Heidelberg University, Heidelberg, Germany on June 9, 2015.
- Institute Colloquium at Institute of Inorganic and Analytical Chemistry, Universität Stuttgart, Stuttgart, Germany on June 2, 2015.
- National Conference on “Recent Advances in Chemical Sciences-2015” held in the Department of Chemistry, the University of Burdwan, Burdwan, West Bengal during 19-21 February 2015 (and also have **Chaired** a session).
- 13th Eurasia Conference on Chemical Sciences (EuAsC2S-13) at the Indian Institute of Science (IISc), Bangalore, India, during Dec. 14-18, 2014.
- 7th Asian Biological Inorganic Chemistry Conference (AsBIC-7) held on Queensland, Australia during November 30- December 5, 2014 (and also have **Chaired** a session).
- 41st International Conference on Coordination Chemistry (ICCC41) held on Singapore during 21-25 July 2014 (and also have **Chaired** a session).
- **INSPIRE** (Innovation in Science Pursuit for Inspired Research) Science Camp held on Meerut during July 24-27, 2014.
- 8th International Conference on Porphyrins and Phthalocyanines (ICPP-8) held on Istanbul, Turkey during June 22-27, 2014 (and also have **Chaired** a session).
- Indo-French Symposium on 'Bio-inorganic Approaches to Current Health Problems' held on Pondicherry University, Pudhucherry during March 24 - 28, 2014.
- School of Chemistry, University of Hyderabad on March 7, 2014.
- India-France Collaborative Symposium titled “Functional metal-organics: Applications in materials and catalysis” held on NISER-Bhubaneswar during February 24-26, 2014.
- Department of Chemistry, IISER-Kolkata on February 21, 2014.
- Symposium on Modern Trends in Inorganic Chemistry-XV (MTIC) held on IIT Roorkee on December 13-16, 2013

- 12th International Symposium on Applied Bioinorganic Chemistry (ISABC12) held on Guangzhou, China on December 3-6, 2013 (and also have Chaired a session).
- Department of Chemistry, NIT-Rourkela on November 15, 2013.
- 4th Asian Conference on Coordination Chemistry (ACCC-4) held on International Convention Center, Jeju, Korea on November 4-7, 2013 (and also have Chaired a session).
- International Conference on Interdisciplinary Areas with Chemical Sciences (ICIACS-2013) held on Punjab University, Chandigarh on October 30 - 1st November, 2013 organized by Punjab University in association with Institute of Nano Science and Technology, Mohali.
- 4th International Collaborative and Cooperative Symposium (ICCCS-4) held on IITK on October 24-26, 2013.
- Institute Colloquium at Department of Chemistry and Earth Sciences, Heidelberg University, Germany on July 1, 2013.
- Institute Colloquium at Institute of Chemistry and Biochemistry, Freie Universität, Berlin, Germany on June 03, 2013.
- Institute Colloquium at Institut für Anorganische und Analytische Chemie, Technische Universität, Braunschweig, Germany on May 29, 2013.
- Institute Colloquium at Department of Chemistry and Pharmacy, Friedrich-Alexander-University Erlangen-Nuremberg, Germany on May 13, 2013.
- Institute Colloquium at Institut für Anorganische Chemie, Georg-August-Universität Göttingen Tammannstrasse 4, Göttingen, Germany on April 23, 2013
- Institute Colloquium at Institut für Anorganische Chemie, Technische Universität Kaiserslautern, Germany on March 07, 2013.
- Institute Colloquium at Institut für Anorganische Chemie, Karlsruher Institut für Technologie, Germany on February 04, 2013.
- Department of Chemistry and Earth Sciences, Heidelberg University, Germany on January 08, 2013.
- Bioinorganic Chemistry Zing Conference held on Lanzarote, Spain during February 19-22, 2013.
- Academy Lecture Workshop on Bioinorganic Chemistry and its Application sponsored by National Science Academies held on School of Chemistry, Madurai Kamaraj University, Madurai-625021 during September 28-30, 2012.
- *ChemFest*, Department of Chemistry, IIT Kanpur on September 1, 2012.
- Department of Inorganic Chemistry, IACS-Kolkata on March 12, 2012.
- National Symposium on Advanced Functional Materials under UGC-CAS Program held on the Department of Chemistry, Banaras Hindu University, during February 11-12, 2012.
- Celebration Chemistry @IITK held on the Department of Chemistry, IIT Kanpur, during December 3-5, 2011.
- Workshop on Advances in Bioinorganic and Nano-Chemistry held on D.A-V. Post graduate College, Civil Lines, Kanpur, during November 12-13, 2011.
- Department of Chemistry, IIT Roorkee on June 10, 2011.

- Department of Chemistry, IIT Kharagpur on June 6, 2011.
- Department of Chemistry and Chemical Technology, Vidyasagar University on June 7, 2011.
- 13th CRSI and 5th RSC Symposium held on NISER-Bhubaneswar, during February 03-06, 2011.
- FICS-2010 Symposium held on IIT Guwahati, during December 03-04, 2010.
- International Conference on 60th Anniversary Conference on Coordination Chemistry in Osaka, JAPAN during September 27-30, 2010 organized by Chemical Society of Japan.
- International Conference on Porphyrin and Phthalocyanines held on New Mexico, USA during July 3-10, 2010.
- Department of Chemistry, University of California, Davis, USA on 12th July, 2010.
- DST Group Monitoring Workshop at Department of Chemistry, IITK on April 05, 2010.
- Invited Talk in the National Symposium on Modern Trends in Inorganic Chemistry (MTIC-XIII) held on IISc, Bangalore during Dec. 7-10, 2009.
- Symposium on Advanced Biological Inorganic Chemistry (SaBIC-2009) held at TIFR, Mumbai during Nov. 2-7, 2009.
- 2nd Asian Conference on Coordination Chemistry (ACCC-2), held on Nanjing, China during Nov. 1-4, 2009.
- Department of Chemistry, IIT Bombay on June 19, 2009.
- Department of Chemical Sciences, TIFR, Mumbai on June 15, 2009.
- *ChemFest*, Department of Chemistry, IIT Kanpur on 5th April-2008.
- Department of Chemistry and Chemical Technology, Vidyasagar University, West Bengal on 7th March, 2007.
- National Symposium on Modern Trends in Inorganic Chemistry (MTIC-XI) held on IIT Delhi from Dec. 8-10, 2005.

List of Publications

Perspective /Frontier/ Review articles:

- 1. Binuclear Complexes with Single M-F-M Bridge (M: Fe, Mn, and Cu): A Critical Analysis of the Impact of Fluoride for Isoelectronic Hydroxide Substitution**
S. Sarkar, F. S. T. Khan, T. Guchhait and S. P. Rath*
Coord. Chem. Rev. **2023**, 479, 215003. *(Invited article)*
- 2. Effect of heme-heme interaction: modulation of metal spin state in oxo/hydroxo/fluoro bridged diiron(III)/dimanganese(III) porphyrin dimers**
F. S. T. Khan, D. Sil, and S. P. Rath*
Adv. Inorg. Chem. **2023**, 81, 95-184 *(Invited book chapter to the Special Volume devoted to 'Inorganic Chemistry in India')*
- 3. Induction, Control and Rationalization of Supramolecular Chirogenesis using Metalloporphyrin tweezers: A Structure-Function Correlation**
A. Dhamija, P. Mondal, B. Saha, and S. P. Rath*
Dalton Trans. **2020**, 49, 10679-10700 *(Invited Perspective article)*
- 4. Cyclic Metalloporphyrin Dimers: Conformational Flexibility, Applications and Future Prospects**
P. Mondal and S. P. Rath*
Coord. Chem. Rev. **2020**, 405, 213117.
(Invited article for a special issue on "Coordination Chemistry and Catalysis Controlled by Ligand Design")
- 5. Multiheme Proteins: Effect of Heme-Heme Interactions**
D. Lai, F. S. T. Khan, and S. P. Rath*
Dalton Trans. **2018**, 47, 14388-14401 *(Invited Frontier article)*
(Special Thematic Issue: Molecular metal-containing soft materials)

6. **Oxo- and Hydroxo-bridged Diiron(III) Porphyrin Dimers: Inorganic and Bioinorganic Perspectives and Effects of Intermacrocylic Interactions**
T. Guchhait, S. Sasmal, F. S. T. Khan, and S. P. Rath*
Coord. Chem. Rev. **2017**, 337, 112-144. (*Invited Article*)
7. **Hydroxo-Bridged Diiron(III) and Dimanganese(III) Bisporphyrins: Modulation of Metal Spins by Counter Anions**
F. S. T. Khan, T. Guchhait, S. Sasmal and S. P. Rath*
Dalton Trans. **2017**, 46, 1012-1037 (*Invited Perspective and Cover page Article*)
8. **Ethane-bridged Porphyrin Dimer as Model of Di-heme Proteins: Inorganic and Bioinorganic Perspectives and Consequences of Heme-Heme Interactions**
D. Sil and S. P. Rath*
Dalton Trans. **2015**, 44, 16195 - 16211. (*Invited Perspective Article*)

Top Ten Research Articles:

1. **Unusually Stable Synthetic Diheme bis-Fe(IV)oxo: An Intermediate in Diheme Enzymes *MauG* and *BthA***
D. Samanta, S. Sarkar, D. Singh, S. Samanta, S. Manna, K. D. Dubey,* A. Dey*, S. Shaik* and S. P. Rath*
J. Am. Chem. Soc. **2025**, 147, 22562-22571.
2. **Probing Substrate Binding inside a Paramagnetic Cavity: A NMR Spectroscopy Toolbox for Combined Experimental and Theoretical Investigation**
S. Sarkar, C.-Q. Wu, S. Manna, D. Samanta, P. P.-Y. Chen* and S P Rath*
Chem. Sci. **2024**, 15, 17407-17417 (*EDGE Article*)
(Invited article for the Spotlight Collection on Bioinorganic Chemistry)
3. **Unusual Stabilisation of Remarkably Bent Tetra-cationic Tetra-radical Intermolecular Fe(III) μ -oxo Tetranuclear Complexes**
S. Sarkar, R. K. Tiwari, D. Samanta, T.Guchhait, E. C.Sañudo, G. Rajaraman* and S. P. Rath*
Angew. Chem. Int. Ed. **2024**, 63, e202402344. (*HOT Paper*)

4. **Modulation of Supramolecular Chirality by Stepwise Axial Coordination in a Nano-size Trizinc (II) porphyrin Trimer**
A Dhamija, D Chandel, and S P Rath*
Chem. Sci. **2023**, *14*, 6032-6038 (*EDGE Article*)
(This article is part of the themed collection: Most popular 2023 polymer and supramolecular chemistry articles)
5. **Cooperativity in Diiron(III)porphyrin Dication Diradical-Catalyzed Oxa-Diels-Alder Reactions: Spectroscopic and Mechanistic Insights**
S. Sarkar, P. Sarkar, D. Samanta, S. K. Pati and S. P. Rath*
ACS Catal. **2022**, *12*, 9589-9601.
6. **Silver(III)•••Silver(III) Interaction that Stabilizes the *Syn*-form in a Porphyrin Dimer Upon Oxidation**
A. K. Singh, F. S. T. Khan and S. P. Rath*
Angew. Chem. Int. Ed. **2017**, *56*, 8849-8854
7. **Highly Oxidized Cobalt Porphyrin Dimer: Spin Coupling and Stabilization of 4e-Oxidized Product**
S. Dey, D. Sil and S. P. Rath*
Angew. Chem. Int. Ed. **2016**, *55*, 996-1000.
8. **Oxidation Triggers Extensive Conjugation and Unusual Stabilization of Two Di-heme Dication Diradical Intermediates: Role of Bridging Group for Electronic Communication**
D. Sil, S. Dey and S. P. Rath*
Chem. Sci., **2016**, *7*, 1212-1223. (*Edge Article*)
9. **Hydrogen-Bonding Interactions Trigger a Spin-Flip in Iron(III)-Porphyrin Complexes**
D. Sahoo, M. G. Quesne, S. P. de Visser and S. P. Rath*
Angew. Chem. Int. Ed. **2015**, *54*, 4796 - 4800.
10. **A Remarkably Bent Diiron(III)- μ -Hydroxo Bisporphyrin: Unusual Stabilization of Two Spin States of Iron in a Single Molecular Framework**
S. K. Ghosh and S. P. Rath*
J. Am. Chem. Soc. **2010**, *132*, 17983 - 17985.

Complete List of Publications

159. **Electronic Coupling in Cofacial Heterobimetallic AgCu-Porphyrin Dimers: Bioinspired Analogs of Chlorophyll Special Pairs**
N. Dutta, S. Banerjee, N. Awasthi, A. K. Singh, R. Butcher, E. Garribba,* and S. P. Rath*
Chem. Eur. J. **2026**, *32*, e71286.
158. **Engineering Cofacial Trizinc(II)porphyrin Trimers: Linking Molecular Architecture with Excited-State Dynamics**
C. Pal, D. Chandel, J. Lee, J. Ryu, J. Kim, J. Oh,* and S. P. Rath*
Inorg. Chem. **2026**, *65*, 15627-15639.
157. **Unusual Stabilization of Ferriheme in Three Different Spin States Upon Stepwise Cyanide Coordination in a Single Molecular Framework**
S. Pramanik, N. Awasthi, and S. P. Rath*
Inorg. Chem. **2026**, *65*, 8129-8138.
156. **Implications of Intramolecular Interactions on the Fluorescence of a Highly Flexible Ethane-Bridged Porphyrin Dimer.**
S. Kundu, A. Roychowdhury, A. Chowdhury, A. K. Dutta*, S. P. Rath* and A. Datta*
ACS Phys. Chem Au **2026**, *6*, 0000.
155. **Tunable Fluorescence–Phosphorescence Dual Emission in a Urea-bridged Di-Silver(III) Porphyrin Dimer via Unusual Ag(III)•••Ag(III) Interaction**
A. Sarkar, N. Awasthi, M. N. Begg, E. Garribba, A. Datta,* and S. P. Rath*
Inorg. Chim. Acta. **2026**, *598*, 123196. (Invited article in a special volume dedicated to Prof. Animesh Chakravorty on the occasion of his 90th birthday)
154. **Secondary-Sphere Hydrogen Bonds Regulating Spin–Redox Interplay in Hemes**
S. Pramanik, C. Zhu, P. Chakraborty, S. P. de Visser,* S. P. Rath*
Chem. Eur. J. **2026**, *32*, e70839.
153. **Stabilization of Double Sandwich Structure of Mercury(II) Porphyrins: Hg•••Hg•••Hg Interactions and Structure-Function Correlation**
A. Sarkar, A. K. Pandey, M. N. Begg, D. Chandel, M. Usman, A. Datta, and S. P. Rath*
Inorg. Chem. Front. **2026**, *13*, 163-174.

152. **Making and Breaking: Supramolecular Chirality Modulation via Stepwise Assembly and Disassembly of Nano-size Trizinc(II)porphyrin Trimers**
D. Chandel, G. Pescitelli and S. P. Rath*
Chem. Eur. J. **2026**, *32*, e202404425.
151. **Facile One-pot Synthesis of Triply-Fused, Fluorescent Chlorin-porphyrin Heterodimer with Near-IR Absorption: Impact of pi-conjugation on Optical Properties**
S. J. Shah, A. Sharma, B. Khamrui, A. Roychowdhury, D. Goswami, S. P. Rath*
Inorg. Chem. Front. **2026**, *13*, 3377-3388.
150. **Bioinspired Oxidized Dicobalt Porphyrin Dimer Catalyzed Cycloaddition Reactions: Cooperative Catalysis and Spectroscopic and Mechanistic Investigation**
D. Samanta, N Chakraborty, Y A Pandit, E Garribba and S. P. Rath*
Inorg. Chem. **2025**, *64*, 17696-17711.
149. **Unusually Stable Synthetic Diheme bis-Fe(IV)oxo: An Intermediate in Diheme Enzymes *MauG* and *BthA***
D. Samanta, S. Sarkar, D. Singh, S. Samanta, S. Manna, K. D. Dubey,* A. Dey*, S. Shaik* and S. P. Rath*
J. Am. Chem. Soc. **2025**, *147*, 22562-22571.
148. **Controlling Intramolecular Electronic Communication through the Conformation Changes via Stepwise Oxidations in Dicopper(II) and Dinickel(II) Porphyrin Dimers**
S. J. Shah, R. K. Tiwari, N. Ghosh, E. Garribba, M. Ishida, G. Rajaraman, H. Furuta and S. P. Rath*
Inorg. Chem. Front. **2025**, *12*, 6532–6549.
147. **Green light for photoredox catalysis by corroles and porphyrins**
T. Ianovici, W. Sinha, V. K. Sharma, S. Manna, D. Samanta, A. Mahammed, S. P. Rath* and Z. Gross*
J. Porphyrin and Phthalocyanines **2025**, *29*, 751-758 (Invited article in a Special Issue on the 80th birthday of Prof. Karl Kadish)
146. **Impact of Structural Subtleties on Chirality Induction and Amplification in Trizinc(II)porphyrin Trimers**
D. Chandel, C. Pal, and S. P. Rath*
Chem. Eur. J. **2025**, *31*, e202404425.

145. **Modulating Magnetic Exchange, Spin Dynamics and Intermacrocylic Interactions via Oxo-bridge in Dihemes Through Stepwise Oxidations**
S. Banerjee, R. K. Tiwari, P. Chakraborty, G. Rajaraman* and S P Rath*
Inorg. Chem. Front. **2025**, *12*, 2613-2626.
144. **Electron Shuttling in High-Valent Heterobimetallic NiFe-Porphyrin Dimers: Stabilization of Ni(III) and Fe-Phenoxy Radicals**
S. Banerjee, N. Awasthi, A. Roychowdhury, D. Samanta, P. Arora, N. Dutta, A. Draksharapu, E. Garribba and S P Rath*
Inorg. Chem. **2025**, *64*, 5431-5441.
143. **Probing Substrate Binding inside a Paramagnetic Cavity: A NMR Spectroscopy Toolbox for Combined Experimental and Theoretical Investigation**
S. Sarkar, C.-Q. Wu, S. Manna, D. Samanta, P. P.-Y. Chen* and S P Rath*
Chem. Sci. **2024**, *15*, 17407-17417 (*EDGE Article*)
(Invited article for the Spotlight Collection on Bioinorganic Chemistry)
142. **Conformational Switching of a Nano-Size Urea-bridged Zn(II)Porphyrin Dimer by External Stimuli**
B. Saha, C. Pal, H. Malik, T. G. Gopakumar and S. P. Rath*
Chem. Eur. J. **2024**, *30*, e202402536. (Invited article in a Special Issue on the 65th birthday of Prof. G. K. Lahiri)
141. **Bridge vs. Terminal Cyano-coordination in Binuclear Cobalt Porphyrin Dimers: Interplay of Electrons between Metal and Ligand, and Spin-Coupling via Bridge**
S. Sanfui, M. Usman, A. Roychowdhury, S. Pramanik, E. Garribba, C. J. Gómez García, P. P.-Y. Chen, S. P. Rath*
Inorg. Chem. **2024**, *63*, 15619-15633.
140. **Unusual Stabilisation of Remarkably Bent Tetra-cationic Tetra-radical Intermolecular Fe(III) μ -oxo Tetranuclear Complexes**
S. Sarkar, R. K. Tiwari, D. Samanta, T. Guchhait, E. C. Sañudo, G. Rajaraman* and S. P. Rath*
Angew. Chem. Int. Ed. **2024**, *63*, e202402344. (*HOT Paper*)
139. **Reversible open-close conformational switching of a nano-size metalloporphyrin dimers triggered by light and temperature**
S. J. Shah, A. Singh, D. Goswami, M. Ishida and S. P. Rath*

Dalton Trans. **2024**, 53, 6758-6765.

(Special Thematic Issue: Celebrating the scientific accomplishments of RSC Fellows)

138. **Spin-Flip via Subtle Electronic Perturbation in Axially Ligated Diiron(III) Porphyrin Dimer**

P. Chakraborty, N. Ghosh, N. Awasthi and S. P. Rath*

Chem. Eur. J. **2024**, 30, e202400266

137. **Metal vs. Ligand Oxidation: Coexistence of Both Metal-centred and Ligand-centred Oxidized Species**

S. Sanfui, M. Usman, A. Roychowdhury, E. Garribba, C. J. Gómez-García, and S. P. Rath*

Inorg. Chem. **2024**, 63, 5423-5431.

(Virtual Special Issue: Celebrating the 25th Anniversary of the Chemical Research Society of India)

136. **Modulation of Supramolecular Chirality by Stepwise Axial Coordination in a Nano-size Trizinc (II) porphyrin Trimer**

A Dhamija, D Chandel, and S P Rath*

Chem. Sci. **2023**, 14, 6032-6038 (*EDGE Article*)

(This article is part of the themed collection: Most popular 2023 polymer and supramolecular chemistry articles)

135. **Stable Dication Diradicals of Triply-fused Metallo Chlorin-porphyrin Heterodimers: Impact of the Bridge on Control of Spin Coupling to Reactivity**

S. J. Shah, Y. A. Pandit, E. Garribba, M. Ishida and S. P. Rath*

Chem. Eur. J. **2023**, 29, e202301963.

134. **Binuclear Complexes with Single M-F-M Bridge (M: Fe, Mn, and Cu): A Critical Analysis of the Impact of Fluoride for Isoelectronic Hydroxide Substitution**

S. Sarkar, F. S. T. Khan, T. Guchhait and S. P. Rath*

Coord. Chem. Rev. **2023**, 479, 215003 (26 pages) (*Invited article*)

133. **Modulation of iron spin states in highly distorted iron(III)porphyrin: H-bonding interactions and implications for the hemoproteins**

D. Sahoo, R. Mazumdar, S.Pramanik, S. Banerjee, R. Patra and S. P. Rath*

Dalton Trans. **2023**, 52, 8904-8917 (*HOT article*).

132. **Effect of heme-heme interaction: modulation of metal spin state in oxo/hydroxo/fluoro bridged diiron(III)/dimanganese(III) porphyrin dimers**
F. S. T. Khan, D. Sil, and S. P. Rath*
Adv. Inorg. Chem. **2023**, *81*, 95-184 (Invited book chapter to the Special Volume devoted to 'Inorganic Chemistry in India')
131. **Diheme Cytochromes: Effect of Mixed-Axial Ligation on the Electronic Structure and Electrochemical Properties with Cobaltic Heme**
S. Sanfui, S. Sarkar, and S. P. Rath*
J. Inorg. Biochem. **2023**, *240*, 112109. (Invited article in a Special Issue in the memory of Prof. F. Ann Walker)
130. **Induction and Rationalization of Supramolecular Chirality in a Zn(II)porphyrin Dimer using Chiral Substrates: Role of Substrates in the Architectural Selectivity**
B. Saha, D. Chandel, C. Pal, and S. P. Rath*
J. Porphyrin and Phthalocyanines **2022**, *27*, 350-362 (Invited article in a Special Issue on the 70th birthday of Prof. Tomas Torres)
129. **Control of Spin Coupling Through Redox-active Bridge in Dinickel(II) Porphyrin Dimer: Step-wise Oxidations Enable Isolations of the Chlorin-porphyrin Heterodimer and Dication Diradical with Singlet Ground State**
Y. A. Pandit, M. Usman, A. Sarkar, S. J. Shah, and S. P. Rath*
Dalton Trans. **2023**, *52*, 877-891 (Front Cover Page Article).
128. **Cooperativity in Diiron(III)porphyrin Dication Diradical-Catalyzed Oxa-Diels-Alder Reactions: Spectroscopic and Mechanistic Insights**
S. Sarkar, P. Sarkar, D. Samanta, S. K. Pati and S. P. Rath*
ACS Catal. **2022**, *12*, 9589-9601.
127. **Induction and Rationalization of Supramolecular Chirality in Highly-Flexible Zn(II)porphyrin Dimer: Structural, Spectroscopic and Theoretical Investigations**
D. Chandel, C. Pal, B. Saha, and S. P. Rath*
Dalton Trans. **2022**, *51*, 14125-14137.
126. **Hydrogen Bonding Interactions Trigger Induction of Chirality via Formation of a Cyclic Dimer**
B. Saha, D. Chandel, and S. P. Rath*
Inorg. Chem. **2022**, *61*, 2154-2166.

125. **Highly Oxidized Cobalt Porphyrin Dimer: Control of Spin Coupling *via* Bridge**
S. Sanfui, M. Usman, S. Sarkar, E. Garribba and S. P. Rath*
Inorg. Chem. **2022**, *61*, 8419-8430.
124. **Long-Range Intramolecular Spin Coupling Through-Redox-Active Bridge Upon Step-wise Oxidations: Control and Effect of Metals**
Y. A. Pandit, S. J. Shah, M. Usman, S. Sarkar, and S. P. Rath*
Inorg. Chem. **2022**, *61*, 5270-5282.
123. **Ferromagnetic Coupling in Oxidovanadium(IV)–Porphyrin Radical Dimers**
A. K. Singh, M. Usman, S. Sarkar, G. Sciortino, D. Kumar, E. Garribba, and S. P. Rath*
Inorg. Chem. **2021**, *60*, 16492-16506.
122. **Heme–Heme Interactions in Diheme Cytochromes: Effect of Mixed Axial Ligation on the Electronic Structure and Electrochemical Properties**
F. S. T. Khan, D. Samanta, D. Chandel, S. J. Shah, and S. P. Rath*
Inorg. Chem. **2021**, *60*, 12870-12882.
121. **Through Bridge Spin Coupling in Homo and Hetero-bimetallic Porphyrin Dimers upon Stepwise Oxidations: A Spectroscopic and Theoretical Investigation**
A. Kumar, M. Usman, D. Samanta and S. P. Rath*
Chem. Eur. J. **2021**, *27*, 11428-11441.
120. **Magnesium Inserted Porphyrin Compound, Its Blends and Devices Thereof**
S. S. K. Iyer, S. P. Rath, A. Singh and Sk A. Ikbal
Patent Number (Indian): 372753 granted on 26 July 2021
119. **Design and control of axial binding with flexible Zn(II) porphyrin dimer: building-up novel polymer with *exo–endo* binding**
D. Chandel, B. Saha, S. A. Ikbal, and Sankar Prasad Rath*
J. Porphyrin and Phthalocyanines **2021**, *25*, 1161-1175 (*Invited article in a special issue on the 70th birthday of Prof. Lechosław Latos-Grażyński and the 65th birthday of Prof. Hiroyuki Furuta*)
118. **Fluoro-bridged dimanganese(III) porphyrin dimer: Effect of intermacrocyclic interactions in modulating metal spin state**
D. Sil, S. Banerjee, S. K. Ghosh, and S. P. Rath*

J. Porphyrin and Phthalocyanines **2021**, *25*, 522-532 (*Invited article in a special issue dedicated to Professor T. K. Chandrashekar on the occasion of his 65th birthday*)

117. **Electronic Coupling in Hetero-bimetallic Porphyrin Dimers: A Spectroscopic Investigation**

S. Roy, S. Banerjee, S. Sanfui, and S. P. Rath*

J. Ind. Chem. Soc. **2020**, *97*, 2541-2552. (*Invited article for a Convention Special Issue, Professor R. S. Varma Memorial Award Lecture*)

116. **Induction, Control and Rationalization of Supramolecular Chirogenesis using Metalloporphyrin tweezers: A Structure-Function Correlation**

A. Dhamija, P. Mondal, B. Saha, and S. P. Rath*

Dalton Trans. **2020**, *49*, 10679-10700 (*Invited Perspective article*)

115. **Hg $\cdots$ Hg $\cdots$ Hg Interaction Stabilizes Unusual Trinuclear Double Sandwich Structure of Mercury(II) Porphyrins**

A. K. Pandey, M. Usman and S. P. Rath*

Inorg. Chem. **2020**, *59*, 12988–12993. (*Communication*)

114. **Complexation of Chiral Zinc(II)Porphyrin Tweezer with Chiral Guests: Control, Discrimination and Rationalization of Supramolecular Chirality**

B. Saha, S. A. Ikbal, and S. P. Rath*

Inorg. Chem. **2020**, *59*, 7795-7809.

113. **Molecule to Supramolecule: Chirality Induction, Inversion, and Amplification in a Mg(II)porphyrin Dimer Templated by Chiral Diols**

A. Dhamija, B. Saha, D. Chandel, H. Malik and S. P. Rath*

Inorg. Chem. **2020**, *59*, 801-809.

112. **Intermacrocyclic Interaction Upon Stepwise Oxidations in a Monometallic Porphyrin Dimer: Ring *versus* Metal-centre Oxidations and Effect of Counter Anions**

A. K. Singh, and S. P. Rath*

Chem. Eur. J. **2020**, *26*, 14405 –14418.

111. **Stepwise Oxidations in a Cofacial Copper(II) Porphyrin Dimer: Through Space Spin Coupling and Interplay between Metal and Radical spins**

A. Kumar, S. Sanfui, G. Sciortino, J.-D. Maréchal, E. Garribba, and S. P. Rath*

Chem. Eur. J. **2020**, *26*, 7869 – 7880. *Hot Paper*

110. **Through Space Spin Coupling in a Silver(II) Porphyrin Dimer upon Stepwise Oxidations: $\text{Ag}^{\text{II}}/\text{Ag}^{\text{II}}$, $\text{Ag}^{\text{II}}/\text{Ag}^{\text{III}}$ and $\text{Ag}^{\text{III}}/\text{Ag}^{\text{III}}$ Metallophilic Interactions**
A. K. Singh, M. Usman, G. Sciortino, E. Garribba and S. P. Rath*
Chem. Eur. J. **2019**, *25*, 10098-10110. *Hot Paper (Front Cover Page Article)*
Chem. Eur. J. **2019**, *25*, 10021-10021. *(Cover Picture)*
Chem. Eur. J. **2019**, *25*, 10025-10025. *(Cover Profile)*
109. **Cyclic Metalloporphyrin Dimers: Conformational Flexibility, Applications and Future Prospects**
P. Mondal and S. P. Rath *
Coord. Chem. Rev. **2020**, *405*, 213117.
(Invited article for a special issue on “Coordination Chemistry and Catalysis Controlled by Ligand Design”)
108. **Counter Ion Triggers Stabilization of Two Geometrical Isomers of a Ni(II)dication Diradical Porphyrin Dimer: Role of Anion- π Interactions**
A. K. Pandey, M. Usman and S. P. Rath*
Chem. Commun. **2019**, *55*, 7926-7929.
107. **A Dimanganese(III) porphyrin dication diradical and its transformation to a μ -hydroxo porphyrin-oxophlorin heterodimer**
A. Kumar, D. Sil, M. Usman and S. P. Rath*
Chem. Commun. **2019**, *55*, 1588-1591.
106. **Complexation of Chiral Zinc(II)Porphyrin Tweezer with Achiral Aliphatic Diamines Revisited: Molecular Dynamics, Electronic CD and ^1H NMR analysis**
B. Saha, A. G. Petrovic, A. Dhamija, N. Berova and S. P. Rath*
Inorg. Chem. **2019**, *58*, 11420-11438.
105. **Stepwise Oxidations of Nickel(II)-Iron(III) Heterobimetallic Porphyrin Dimer: Structure, Spectroscopic and Theoretical Investigation**
A. Kumar, S. Banerjee, S. Sarkar and S. P. Rath*
Dalton Trans. **2019**, *48*, 10089-10103.
104. **Controlling the Photophysics of Aromatic Guests Using a Cyclic Porphyrin Dimer: Synthesis, Structure and Encapsulation Mediated “ON-OFF” Switch**
P. Mondal, S. Banerjee and S. P. Rath*

Eur. J. Inorg. Chem. **2019**, 3629-3637.

103. **Axial Ligand Mediated Switchable Rotary Motions in a Ferrocene-bridged Diiron(III) Porphyrin Dimer**

A. K. Pandey, F. S. T. Khan and S. P. Rath*

J. Organomet. Chem. **2019**, 894, 28-38 (*Invited article in a special issue dedicated to Prof. V. Chandrasekhar on the occasion of his 60th birthday*)

102. **Equatorial Ligand Plane Perturbations Lead to a Spin-state Change in a Diiron(III)porphyrin Dimer**

F. S. T. Khan, S. J. Shah, S. Bhowmik, M. A. Sainna, S. P. de Visser,* and S. P. Rath*

Dalton Trans. (Communication) **2019**, 19, 6353-6357.

101. **Stabilizing Intermediate-Spin State in Iron(III) Porphyrins**

D. Sahoo, S. Roy, and S. P. Rath*

Polyhedron **2019**, 172, 8-14. (*Invited article in a special issue dedicated to Prof. A. R. Chakravorty on the occasion of his 65th birthday*).

100. **Ethene-bridged Diiron Porphyrin Dimer as Models of Diheme Cytochrome c: Structure-Function Correlation and Modulation of Heme Redox Potential**

F. S. T. Khan, A. Kumar, D. Lai and S. P. Rath*

Inorg. Chim. Acta. **2019**, 484, 503-512. (*Invited article in a special issue dedicated to Prof. R. N. Mukherjee on the occasion of his 65th birthday*)

99. **Modulation of Iron Spin in Ethane-bridged Diiron(III) Porphyrin Dimer: Anion Dependent Spin State Switching**

F. S. T. Khan, A. K. Pandey and S. P. Rath*

J. Chem. Sci. **2018**, 130:85. (*Invited article in a Special Issue on MTIC-XVII*).

98. **Diheme Cytochrome c: Structure-Function Correlation and Effect of Heme-heme Interactions**

F. S. T. Khan, S. Banerjee, D. Kumar and S. P. Rath*

Inorg. Chem. **2018**, 57, 11498–11510.

97. **Unusual Stabilization of Dication Diradical Intermediate of Dizinc(II) Porphyrin Dimer**

Y. A. Pandit and S. P. Rath*

Z. Anorg. Allg. Chem. **2018**, 644, 856-863. (*Invited article for the special issue dedicated to Prof. Peter Comba on the occasion of his 65th birthday*)

96. **Multiheme Proteins: Effect of Heme-Heme Interactions**
D. Lai, F. S. T. Khan, and S. P. Rath*
Dalton Trans. **2018**, 47, 14388-14401 (*Invited Frontier article*)
(*Special Thematic Issue: Molecular metal-containing soft materials*)
95. **Silver(III)•••Silver(III) Interaction that Stabilizes the Syn-form in a Porphyrin Dimer Upon Oxidation**
A. K. Singh, F. S. T. Khan and S. P. Rath*
Angew. Chem. Int. Ed. **2017**, 56, 8849-8854
94. **Intermacrocyclic Interaction Triggers Facile One-step Synthesis of a Chlorin-Porphyrin Heterodimer**
Y. A. Pandit and S. P. Rath*
Chem. Eur. J. **2017**, 23, 13415-13422.
93. **Probing Bis-Fe^{IV} MauG: Isolation of Highly Reactive Radical Intermediates**
T. Guchhait, S. Sarkar, Y. A. Pandit and S. P. Rath*
Chem. Eur. J. (Communication) **2017**, 23, 10270-10275.
92. **Cyclic Bisporphyrin Based Flexible Molecular Containers: Controlling Guest Arrangements and Supramolecular Catalysis by Tuning Cavity Size**
P. Mondal, S. Sarkar and S. P. Rath*
Chem. Eur. J. **2017**, 23, 7093-7103.
Highlighted in Synfacts **2017**, 13(08), 0816.
91. **A Tunable Cyclic Container: Guest-Induced Conformational Switching, Efficient Guest Exchange and Selective Isolation of C₇₀ from Fullerene Mixture**
P. Mondal and S. P. Rath*
Chem. Asian J. **2017**, 12, 1824-1835.
90. **Metal-Centre-Driven Supramolecular Chirality Induction and Rationalization in Tweezer Amino Alcohol Complexes: Structural, Spectroscopic and Theoretical Investigations**
A. Dhamija, B. Saha, and S. P. Rath*
Inorg. Chem. **2017**, 56, 15203-15215.

89. **Oxo- and Hydroxo-bridged Diiron(III) Porphyrin Dimers: Inorganic and Bio-inorganic Perspectives and Effects of Intermacrocylic Interactions**
T. Guchhait, S. Sasmal, F. S. T. Khan, and S. P. Rath*
Coord. Chem. Rev. **2017**, 337, 112-144. (*Invited Article*)
88. **Complexation of Chiral Zinc-Porphyrin Tweezer with Achiral Diamines: Induction and Two-Step Inversion of Interporphyrin Helicity Monitored by ECD**
B. Saha, S. A. Ikbal, A. G. Petrovic, N. Berova* and S. P. Rath*
Inorg. Chem. **2017**, 56, 3849-3860.
87. **Hydroxo-Bridged Diiron(III) and Dimanganese(III) Bisporphyrins: Modulation of Metal Spins by Counter Anions**
F. S. T. Khan, T. Guchhait, S. Sasmal and S. P. Rath*
Dalton Trans. **2017**, 46, 1012-1037 (*Invited Perspective and Cover page Article*)
86. **Highly Oxidized Cobalt Porphyrin Dimer: Spin Coupling and Stabilization of 4e-Oxidized Product**
S. Dey, D. Sil and S. P. Rath*
Angew. Chem. Int. Ed. **2016**, 55, 996-1000.
85. **Hydrogen-Bonding Interactions Trigger a Spin-Flip in Iron(III)-Porphyrin Complexes**
D. Sahoo, M. G. Quesne, S. P. de Visser and S. P. Rath*
Angew. Chem. Int. Ed. **2015**, 54, 4796 - 4800.
84. **Oxidation Triggers Extensive Conjugation and Unusual Stabilization of Two Di-heme Dication Diradical Intermediates: Role of Bridging Group for Electronic Communication**
D. Sil, S. Dey and S. P. Rath*
Chem. Sci., **2016**, 7, 1212-1223. (*Edge Article*)
83. **A Nonempirical Approach for Direct Determination of the Absolute Configuration of 1,2-Diols and Amino Alcohols using Mg(II)bisporphyrin**
S. A. Ikbal, A. Dhamija, S. Brahma and S. P. Rath*
J. Org. Chem., **2016**, 81, 5440–5449.
82. **Remarkable Anion Dependent Spin state Switching in Diiron(III)- μ -Hydroxo Bisporphyrins: What role do Counter ions play?**
F. S. T. Khan and S. P. Rath*

Chem. Eur. J. **2016**, *22*, 16124-16137.

81. **Diiron(III)- μ -fluoro Bisporphyrins: Effect of Bridging Ligand on the Metal Spin State**

D. Sil, A. Kumar and S. P. Rath*

Chem. Eur. J. **2016**, *22*, 11214-11223. [*Highlighted as Frontispiece (Hot Paper)*]

80. **Effect of Inter-porphyrin Distance on Spin-state in Diiron(III) μ -Hydroxo Bisporphyrins**

D. Sil and S. P. Rath*

Chem. Eur. J. **2016**, *22*, 14585-14597.

79. **Cyclic Zn(II)bisporphyrin Based Molecular Switch: Supramolecular Control of Complexation Mediated Conformational Switching and Photoinduced Electron Transfer**

P. Mondal and S. P. Rath*

Chem. Eur. J. **2016**, *22*, 5607-5619.

78. **Binuclear Highly distorted Iron(III) Porphyrins Bridged by the Dianions of Hydroquinones: Role of Bridge in the Electronic Communication**

D. Sahoo, A. K. Singh and S. P. Rath*

Eur. J. Inorg. Chem. **2016**, 3305-3313.

77. **Spin Modulation in Highly Distorted Fe(III) Porphyrinates Using Axial Coordination and their π -Cation Radicals**

D. Sahoo, T. Guchhait and S. P. Rath*

Eur. J. Inorg. Chem. **2016**, 3441-3453.

76. **Induction and Rationalization of Supramolecular Chirality in the Tweezer–Diamine Complexes: Insights from Experimental and DFT Studies**

A. Dhamija, S. A. Iqbal and S. P. Rath*

Inorg. Chem., **2016**, *55*, 13014-13026.

75. **Experimental and Theoretical Investigation on a Series of Novel Dimanganese(III)- μ -hydroxo Bisporphyrins: Magneto-Structural Correlation and Effect of Metal Spin on Porphyrin Core Deformation**

D. Sil, S. Bhowmik, F. Khan and S. P. Rath*

Inorg. Chem. **2016**, *55*, 3239-3251.

74. **Effect of Two Interacting Rings in Metalloporphyrin Dimers upon Stepwise Oxidations**

S. Dey, D. Sil, Y. A. Pandit and S. P. Rath*

Inorg. Chem. **2016**, *55*, 3229-3238.

73. **Controlled Generation of Highly Saddled (porphyrinato) Iron(III) Iodide, Tri-iodide and One-electron Oxidized Complex**

D. Sahoo, and S. P. Rath*

Chem. Commun. **2015**, *51*, 16790-16793.

72. **Step-wise Induction, Amplification and Inversion of Molecular Chirality Through the Coordination of Chiral Diamines with Zn(II)bisporphyrin**

S. A. Ikbal, S. Brahma and S. P. Rath*

Chem. Commun. **2015**, *51*, 895 - 898.

71. **Metal-coordination-driven Mixed Ligand Binding in Supramolecular Bisporphyrin Tweezers**

Sk. A. Ikbal, A. Dhamija and S. P. Rath*

Chem. Commun., **2015**, *51*, 14107 - 14110.

70. **Ethane-bridged Porphyrin Dimer as Model of Di-heme Proteins: Inorganic and Bioinorganic Perspectives and Consequences of Heme-Heme Interactions**

D. Sil and S. P. Rath*

Dalton Trans. **2015**, *44*, 16195 - 16211. (*Invited Perspective article*)

69. **Spin State Ordering in Hydroxo Bridged Diiron(III)bisporphyrin Complexes**

M. A. Sainna, D. Sil, D. Sahoo, B. Martin, S. P. Rath,* P. Comba* and S. P. de Visser*

Inorg. Chem. **2015**, *54*, 1919 - 1930.

68. **Highly Selective and Sensitive Detection of Picric Acid Explosive by a Bisporphyrin Cleft: Synergistic Effects of Encapsulation, Efficient Electron Transfer, and Hydrogen Bonding**

P. Mondal and S. P. Rath*

Eur. J. Inorg. Chem. **2015**, 4956-4964.

67. **Aggregation-Controlled Excimer Emission in an Axial Anthracene-Sn(IV)Porphyrin-Anthracene Triad in Solid and Solution Phases**

S. Dey, P. Mondal and S.P. Rath*

New J. Chem. **2015**, *39*, 4100 - 4108. (*Invited article*)

66. **Stoichiometry-controlled Supramolecular Chirality Induction in Magnesium (II) Porphyrin Dimer by Amino Alcohols: Mechanistic Insights and Effect of Ligand Bulkiness**
S. A. Ikbal, B. Saha and S. P. Rath*
J. Indian Chem. Soc. **2015**, 92, 2001-2014. *(Special issue dedicated to Prof. Animesh Chakravorty on the occasion of his 80th birthday)*
65. **Efficient Host-Guest Complexation of a Bisporphyrin Host with Electron Deficient Guests: Synthesis, Structure and Photoinduced Electron Transfer**
P. Mondal and S. P. Rath*
Isr. J. Chem. **2016**, 56, 144-155. *(Invited article in a special issue on "Porphyrins and Porphyrinoids")*
64. **Iron(III) and Copper(II) Complexes of Trans-bis(ferrocenyl)porphyrin: Effect of Metal Ions on Long-range Electronic Communication**
D. Sahoo and S. P. Rath*
J. Chem. Sci. **2015**, 127, 327 - 335. *(Invited article in a Special Issue on MTIC-XV).*
63. **Axial Thiophenolate Coordination on Diiron(III)bisporphyrin: Influence of Heme-Heme Interactions on Structure, Function and Electrochemical Properties of the Individual Heme Center**
D. Sil, F. S. T. Khan and S. P. Rath*
Inorg. Chem. **2014**, 53, 11925 - 11936.
62. **Transfer and Control of Molecular Chirality in the 1:2 Host-Guest Supramolecular Complex Consisting of Mg(II) bisporphyrin and Chiral Diols: Effect of H-bonding on Rationalization of Chirality**
Sk. A. Ikbal, S. Brahma and S. P. Rath*
Chem. Commun. **2014**, 50, 14037 - 14040.
61. **Highly Enhanced Bisignate Circular Dichroism of Ferrocene-Bridged Zn(II) Bisporphyrin Tweezer with Extended Chiral Substrates due to Well-matched Host-Guest System**
S. Brahma, Sk. A. Ikbal, A. Dhamija and S. P. Rath*
Inorg. Chem. **2014**, 53, 2381 - 2395.
60. **Synthesis, Structure, and Properties of a Series of Chiral Tweezer-Diamine Complexes Consisting of an Achiral Zinc(II) Bisporphyrin Host and Chiral Diamine Guest: Induction and Rationalization of Supramolecular Chirality**
S. Brahma, Sk. A. Ikbal and S. P. Rath*

Inorg. Chem. **2014**, *53*, 49 - 62.

59. **Syn-Anti Conformational Switching in an Ethane-bridged Co(II)bisporphyrin Induced by External Stimuli: Effects of Inter-macrocyclic Interactions, Axial Ligation and Chemical and Electrochemical Oxidations**

S. Dey and S. P. Rath*

Dalton Trans. **2014**, *43*, 2301 - 2314.

58. **Building-up Novel Coordination Polymer with Zn(II) Porphyrin Dimer: Synthesis, Structures, Surface Morphology and Effect of Axial Ligands**

Sk. A. Ikbal, S. Brahma, A. Dhamija and S. P. Rath*

J. Chem. Sci. **2014**, *126*, 1451 - 1461. (*Invited article in the special issue on "Chemical Crystallography"*).

57. **Self-assembly of Cobalt(II) and Zinc(II) Tetranitro Octaethylporphyrin via Bidentate Axial Ligands: Synthesis, Structure, Surface Morphology and Effect of Axial Coordination**

S. Dey, Sk A. Ikbal and S. P. Rath*

New J. Chem. **2013**, *37*, 1458-1470. (*Invited article*)

56. **Unusual Stabilization of an Intermediate Spin of Iron upon Axial Phenoxide Coordination on a Diiron(III)bisporphyrin: Effect of Heme-Heme Interactions**

S. Bhowmik, S. Dey, D. Sahoo and S. P. Rath*

Chem. Eur. J. **2013**, *19*, 13732 - 13744.

55. **Supramolecular BODIPY-Zn(II)-Bisporphyrin Dyad and Trinitrofluorenone Encapsulated Triad as Model of Antenna-Reaction Center: Synthesis, Structure and Photophysical Properties**

P. Mondal, A. Chaudhary and S. P. Rath*

Dalton Trans. **2013**, *42*, 12381 - 12394.

54. **Effect of Heme-Heme Interactions and Modulation of Metal Spins by Counter Anions in a Series of Diiron(III)- μ -hydroxo Bisporphyrins: Unusual Stabilization of Two Different Spins in a Single Molecular Framework**

S. K. Ghosh, S. Bhowmik, D. Sil and S. P. Rath*

Chem. Eur. J. **2013**, *19*, 17846 - 17859.

53. **Formation of Exo-exo, Exo-endo and Tweezer Conformation Induced by Axial Ligand in a Zn(II)bisporphyrin: Synthesis, Structure and Properties**

A. Chaudhary, Sk. A Ikbal and S. P. Rath*

Polyhedron **2013**, *52*, 761 - 769. (Invited article in a special issue dedicated to Prof. Alfred Werner on the occasion of 100th anniversary of the Nobel Prize in Chemistry).

52. **Building-up Remarkably Stable Magnesium Porphyrin Nano-Structures in One Pot: Synthesis, Structure, Surface Morphology and Effect of Bridging Ligands**

Sk A. Ikbal, S. Brahma and S. P. Rath*

Inorg. Chem. **2012**, *51*, 9666 - 9676.

51. **Switching Orientation of Two Axial Imidazole Ligands between Parallel and Perpendicular in Low-Spin Fe(III) and Fe(II) Nonplanar Porphyrinates**

R. Patra, D. Sahoo, S. Dey and S. P. Rath*

Inorg. Chem. **2012**, *51*, 11294 - 11305.

50. **Protonation of an oxo-Bridged Diiron Unit Makes Two Iron Centers Different: A New Class of Diiron(III)- μ -hydroxo Bisporphyrin and Control of Spins by Counter Anions**

S. Bhowmik, S. K. Ghosh, S. Layek, H. C. Verma and S. P. Rath*

Chem. Eur. J. **2012**, *18*, 13025 – 13037.

49. **Encapsulation of TCNQ and Acridinium Ion within Bisporphyrin Cavity: Synthesis, Structure, Photophysical and HOMO-LUMO Gap Mediated Electron Transfer Properties**

A. Chaudhary and S. P. Rath*

Chem. Eur. J. **2012**, *18*, 7404 - 7417.

48. **Induction of Supramolecular Chirality in Di-Zinc(II) Bisporphyrin via Tweezer Formation: Synthesis, Structure and Rationalization of Chirality**

S. Brahma, Sk. A. Ikbal, S. Dey and S. P. Rath*

Chem. Commun. **2012**, *48*, 4070 - 4072. (Invited article in a special thematic issue 'Porphyrins and Phthalocyanines')

47. **Efficient Complexation of Pyrrole-bridged Di-Zinc(II) Bisporphyrin with Fluorescent Probe Pyrene: Synthesis, Structure, and Photoinduced Singlet-Singlet Energy Transfer**

A. Chaudhary and S. P. Rath*

Chem. Eur. J. **2011**, *17*, 11478 - 11487.

46. **Axial Phenoxide Coordination on Di-Iron(III)bisporphyrin: Insights from Experimental and DFT Studies**

S. Bhowmik, D. Sil, R. Patra and S. P. Rath*

J. Chem. Sci. **2011**, 123, 827 - 837. (Invited article in the special issue of *International Year of Chemistry*).

45. **Models for the Photosynthetic Reaction Center: Synthesis, Structure, and Electrochemical Properties of a Cofacial Di-palladium Bisporphyrin**

A. Chaudhary, R. Patra and S. P. Rath*

Indian J. Chem., Sec. A. **2011**, 50, 1436 - 1442. (Invited article in the special issue dedicated to Acharya Prafulla Chandra Ray on the occasion of his 150th birth anniversary).

44. **Control of Spins by Ring Deformation in a Diiron(III)bisporphyrin: Reversal of ClO_4^- and CF_3SO_3^- Ligand Field Strength on the Magnetochemical Series**

S. Bhowmik, S. K. Ghosh and S. P. Rath*

Chem. Commun. **2011**, 47, 4790 - 4792.

(Themed collection: 20th Anniversary of the CRSI: Celebrating Indian Chemistry in Chem. Commun.)

43. **Syn-anti Conformational Switching: Synthesis and X-ray Structures of Tweezer and Anti Form in a Zinc Porphyrin Dimer Induced by Axial Ligands**

S. Brahma, S. A. Ikbal and S. P. Rath*

Inorg. Chim. Acta. **2011**, 372, 62 - 70. (Invited article in the special volume dedicated to Professor S. S. Krishnamurthy on the occasion of his 70th birth anniversary).

42. **Synthesis, Structure and Properties of a High-Spin Fe(III) Porphyrin with Nonequivalent Axial Ligands: Implications for the Hemoproteins**

A. Chaudhary, R. Patra and S. P. Rath*

Indian J. Chem., Sec. A. **2011**, 50, 432 - 437. (Invited article in the special issue on *Bioinorganic Chemistry* dedicated to Professor S. Mitra on the occasion of his 70th birth anniversary).

41. **Magnesium Inserted Porphyrin Compound, Its Blends and Devices Thereof**

S. S. K. Iyer, S. P. Rath, A. Singh and Sk A. Ikbal

Patent Application No. **3272/DEL/2011** dated November 17, 2011

40. **A Remarkably Bent Diiron(III)- μ -Hydroxo Bisporphyrin: Unusual Stabilization of Two Spin States of Iron in a Single Molecular Framework**

S. K. Ghosh and S. P. Rath*

J. Am. Chem. Soc. **2010**, *132*, 17983 - 17985.

39. **Binding of Catechols to Iron(III) Octaethyl Porphyrin: An Experimental and DFT Investigation**

A. Chaudhury, R. Patra and S. P. Rath*

Eur. J. Inorg. Chem. **2010**, 5211 - 5221.

38. **Effects of Axial Pyridine Coordination in a Saddle-Distorted Porphyrin macrocycle: Stabilization of Hexa-coordinated High-Spin Fe(III) and Air-stable Low-Spin Iron(II) Porphyrinates**

R. Patra, S. Bhowmik, S. K. Ghosh and S. P. Rath*

Dalton Trans. **2010**, *39*, 5795 - 5806.

37. **Synthesis, Structure and Photocatalytic Activity of a Remarkably Bent, Cofacial Ethene-linked Diiron(III) μ -oxobisporphyrin**

S. K. Ghosh, R. Patra and S. P. Rath*

Inorg. Chim. Acta. **2010**, *363*, 2791 - 2799. (*Invited article in the special volume dedicated to Professor A. Chakravorty on the occasion of his 75th birth anniversary*).

36. **Synthesis and Characterization of Anti-bisFe(III) Porphyrins, Syn-bisFe(III)- μ -oxo Porphyrin and Syn-bisFe(III)- μ -oxo Porphyrin Cation Radical**

S. K. Ghosh, R. Patra and S. P. Rath*

Inorg. Chem. **2010**, *49*, 3449 - 3460.

35. **Axial Ligand Orientations in a Distorted Porphyrin Macrocycle: Synthesis, Structure and Properties of Low-Spin bis (Imidazole) Fe(III) and Fe(II) porphyrinates**

R. Patra, A. Chaudhary, S. K. Ghosh and S. P. Rath*

Inorg. Chem. **2010**, *49*, 2057 - 2067.

34. **Cyanide Binding to Iron in a Highly Distorted Porphyrin Macrocycle: Synthesis and Structure of Low-spin Fe(II) dicyano Porphyrin**

R. Patra and S. P. Rath*

Inorg. Chem. Commun. **2009**, 515 - 519. (*Invited article*)

33. **The Effect of Steric Crowding on Porphyrin Conformation and Ring Orientations in a Series of Iron(III) μ -Oxo Dimers Containing *meso*-Nitrooctaethylporphyrins**

R. Patra, S. Bhowmik, S. K. Ghosh and S. P. Rath*

Eur. J. Inorg. Chem. **2009**, *5*, 654 - 665.

32. **Modulation of Metal Displacement in a Saddle Distorted Macrocyclic: Synthesis, Structure, and Properties of High Spin Fe(III) porphyrins and Implications for the Hemoproteins**
R. Patra, A. Chaudhary, S. K. Ghosh and S. P. Rath*
Inorg. Chem. **2008**, *47*, 8324 - 8335.
31. **Remarkably Bent, Ethane-Linked, Diiron(III) μ -Oxobisporphyrin: Synthesis, Structure, Conformational Switching, and Photocatalytic Oxidation**
S. K. Ghosh, R. Patra and S. P. Rath*
Inorg. Chem. **2008**, *47*, 10196 - 10198.
30. **Axial Ligand Coordination in Sterically Strained Vanadyl Porphyrins: Synthesis, Structure, and Properties**
S. K. Ghosh, R. Patra and S. P. Rath*
Inorg. Chem. **2008**, *47*, 9848 - 9856.
29. **Electronic Structure of the Glyoxalbis(2-hydroxyanil) (gha) Ligand in $[\text{Co}^{\text{III}}(\text{gha})(\text{PPh}_3)_2]^+$: Radical vs. Non-radical States**
A. S. Roy, N. Muresan, H. M. Tuononen, S. P. Rath and P. Ghosh
Dalton Trans. **2008**, *26*, 3438 - 3446.
28. **First Ruthenium Complex of Glyoxalbis(N-phenyl)osazone ($\text{L}^{\text{NHPH}}\text{H}_2$): Synthesis, X-ray Structure, Spectra, and Density Functional Theory Calculations of $(\text{L}^{\text{NHPH}}\text{H}_2)\text{Ru}(\text{PPh}_3)_2\text{Cl}_2$**
A. S. Roy, H. M. Tuononen, S. P. Rath and P. Ghosh
Inorg. Chem. **2007**, *46*, 5942 - 5948.
27. **Dioxygen Reactivity of Meso-hydroxylated Hemes: Intermediates in Heme Degradation Process Catalyzed by Heme-oxygenase**
S. P. Rath*
J. Chem. Sci. **2006**, *118*, 463 - 474. (*Invited article*)
26. **Electron Distribution in Octaethyloxophlorin Complexes. Importance of the Fe(III) Oxophlorin Trianion Form in the Bis-pyridine and Bis-imidazole Complexes**
S. P. Rath, M. M. Olmstead and A. L. Balch
Inorg. Chem. **2006**, *45*, 6083 - 6093.
25. **Metal Complexes of meso-Amino-octaethylporphyrin and the Oxidation of Ni(II)(meso-amino-octaethylporphyrin)**

N. Sprutta, S. P. Rath, M. M. Olmstead and A. L. Balch

Inorg. Chem. **2005**, *44*, 1452 -1459.

24. **Pyramidalization of Gd₃N inside a C₈₀ Cage. The Synthesis and Structure of Gd₃N₂C₈₀**

S. Stevenson, J. P. Stevenson, J. E. Reid, M. M. Olmstead, S. P. Rath and A. L. Balch

Chem. Commun. **2004**, 2814 - 2815.

23. **Oxidative Verdoheme Formation and Stabilization by Axial Isocyanide Ligation**

S. P. Rath, M. M. Olmstead and A. L. Balch

Inorg. Chem. **2004**, *43*, 7648 - 7655.

22. **Reaction of Meso-hydroxyhemes with Carbon Monoxide and Reducing Agents in Search of the Elusive Species Responsible for the g=2.006 Resonance of Carbon Monoxide Treated Heme Oxygenase. Isolation of Diamagnetic Iron(II) Complexes of Octaethyl meso-hydroxyporphyrin**

S. P. Rath, M. M. Olmstead and A. L. Balch

Inorg. Chem. **2004**, *43*, 6357 - 6365.

21. **Formation of a Highly Oxidized Iron Biliverdin Complex Upon Treatment of a Five-coordinate Verdoheme with Dioxygen**

K. T. Nguyen, S. P. Rath, L. Latos-Grazynski, M. M. Olmstead and A. L. Balch

J. Am. Chem. Soc. **2004**, *126*, 6210 - 6211.

20. **The Effect of Axial Ligands on Spin States and Electron Distribution in Iron Complexes of Octaethylchlorin, Intermediates in Heme Degradation**

S. P. Rath, M. M. Olmstead and A. L. Balch

J. Am. Chem. Soc. **2004**, *126*, 6379 - 6386.

19. **A Novel Pentacoordinated Dioxovanadium(V) Salicylaldiminate: Solvent Specific Crystallisation of Dimorphs with Contrasting Coordination Geometries, Ligand Conformations and Supramolecular Architectures**

B. Baruah, S. P. Rath and A. Chakravorty

Eur. J. Inorg. Chem. **2004**, 1873 - 1878.

18. **Facile Ring Opening of Iron(III) and Iron (II) Complexes of meso-Amino-octaethylporphyrin by Dioxygen**

S. P. Rath, H. Kalish, L. Latos-Grazynski, M. M. Olmstead and A. L. Balch

J. Am. Chem. Soc. **2004**, *126*, 646 - 654.

17. **Formation and Isolation of an Iron-Tripyrrole Complex from Heme Degradation**
S. P. Rath, M. M. Olmstead, L. Latos-Grazynski and A. L. Balch
J. Am. Chem. Soc. **2003**, *125*, 12678 - 12679.
16. **Reversible Binding of Nitric Oxide and Carbon-Carbon Bond Formation in a Meso-Hydroxylated Heme**
S. P. Rath, R. Koerner, M. M. Olmstead and A. L. Balch
J. Am. Chem. Soc. **2003**, *125*, 11798 - 11799.
15. **Heme Cleavage with Remarkable Ease: Paramagnetic Intermediates Formed by Aerial Oxidation of a Meso-Amino-Substituted Iron Porphyrin**
H. Kalish, H. M. Lee, M. M. Olmstead, L. Latos-Grazynski, S. P. Rath and A. L. Balch
J. Am. Chem. Soc. **2003**, *125*, 4674 - 4675.
14. **Synthesis, Structure and Properties of Mononuclear Oxovanadium(V) Alkoxides Incorporating Chelated Ethane-1,2-diol and Propane-1,3-diol**
K. K. Rajak, S. Mondal and S. P. Rath*
Polyhedron **2000**, *19*, 931 - 936.
13. **Sugar Binding to VO^{3+} . Synthesis and Structure of a New Mannopyranoside Vanadate**
K. K. Rajak, B. Baruah, S. P. Rath and A. Chakravorty
Inorg. Chem. **2000**, *39*, 1598 - 1601.
12. **Ruthenium Dithiophosphates: Synthesis, X-ray Crystal Structure, Spectroscopic and Electrochemical Properties**
P. U. Jain, P. Munshi, M. G. Walawalkar, S. P. Rath and K. K. Rajak and G. K. Lahiri
Polyhedron **2000**, *19*, 801 - 808.
11. **Synthesis, Structure and Catecholase Reaction of a Vanadate Ester System Incorporating Monoionized Catechol Chelation**
S. P. Rath, K. K. Rajak and A. Chakravorty
Inorg. Chem. **1999**, *38*, 4376 - 4377.
10. **Carbohydrate Binding to VO^{3+} . Sugar Vanadate Esters Incorporating L-Amino Acid Schiff Bases as Coligands**
K. K. Rajak, S. P. Rath, S. Mondal and A. Chakravorty
Inorg. Chem. **1999**, *38*, 3283 - 3289.

9. **Sugar Vanadates: Synthesis and Characterisation of Mannopyranoside and Ribofuranoside Esters Incorporating VO³⁺**
K. K. Rajak, S. P. Rath, S. Mondal and A. Chakravorty
J. Chem. Soc., Dalton Trans **1999**, 2537 - 2540.
8. **Sugar Vanadates: Synthesis and Characterisation of a Mannopyranoside Ester Incorporating VO³⁺**
K. K. Rajak, S. P. Rath, S. Mondal and A. Chakravorty
Indian J. Chem. **1999**, 38A, 405 - 406.
7. **A Family of (N-Salicylidene- α -aminoacidato)Vanadate Esters Incorporating Propane-1,3-diol and Glycerol: Synthesis, Structure and Reaction**
S. Mondal, S. P. Rath, K. K. Rajak and A. Chakravorty
Inorg. Chem. **1998**, 37, 1713 - 1719.
6. **Synthesis and Structure of Vanadate Esters of Glycerol and Propane-1,3-diol**
S. P. Rath, K. K. Rajak, S. Mondal and A. Chakravorty
J. Chem. Soc., Dalton Trans **1998**, 2097 - 2102.
5. **Chemistry of Hydrazone Oxovanadium(V) Alkoxides Derived from Dihydric/Monohydric Alcohols**
S. P. Rath, S. Mondal and A. Chakravorty
Inorg. Chim. Acta **1997**, 263, 247 - 253. (Invited article: R. H. Holm issue)
4. **Synthesis, Structure and Metal Redox of Alkoxide Bound Oxovanadium(V) Complexes Incorporating N-salicylidene/N-naphthalidene- α -aminoalcohols**
S. P. Rath, T. Ghosh and S. Mondal
Polyhedron **1997**, 16, 4179 - 4186.
3. **Chemistry of Oxovanadium(V) Alkoxides: Synthesis and Structure of Mononuclear Complexes Incorporating Ethane-1,2-diol**
S. Mondal, S. P. Rath, S. Dutta and A. Chakravorty
J. Chem. Soc., Dalton Trans **1996**, 99 - 103.
2. **Mixed-Ligand Oxovanadium(V) Complexes Incorporating Bidentate Salicylaldehyde and Tridentate Aldimine Ligands**
S. P. Rath, S. Mondal and T. Ghosh
Transition Met. Chem. **1996**, 21, 309 - 311.

1. **Water Soluble Mixed-Ligand Oxovanadium(IV) Complexes of Acetylacetone and Aldimine Ligands**

S. P. Rath, S. Mondal and T. Ghosh

Indian J. Chem. **1996**, 35A, 527 - 529.