

Name: DR ARIJIT DAS
Designation: Associate Professor and HOD, BBM College
Address for Communication: Department of Chemistry, BBM College, Agartala, Pin-799004
Mobile No.: 09862211165
Email: arijitdas78chem@gmail.com
Website: <https://arijitchemistryworld.in/>
Area of Specialization: Inorganic Chemistry (Coordination Chemistry)

Research Area:

SYNTHETIC INORGANIC CHEMISTRY:

- i) Mixed ligand Complexes
- ii) 1,1-Dithiolates
- iii) Crystallography Study
- iv) DFT study
- v) TGA
- vi) Luminescent properties
- vii) Conductivity over a wide range of temperature
- viii) Antibacterial and antifungal activity studies

INNOVATION IN CHEMICAL EDUCATION:

i) Organic Chemistry ii) Inorganic Chemistry

Courses Taught: Chemistry (Hons. and general) & IMD Chemistry Course

PUBLICATION DETAILS:

- i) **57 research papers were published in different SCI, SCOPUS, UGC indexed and referred journals** (<https://arijitchemistryworld.in/curriculum-vitae/>) in which 21 research papers were indexed in the Stanford University (<https://arijitchemistryworld.in/indexing-and-citation/>).
- ii) **Achieved five (05) copyrights (Ownership) from the copyright office, Govt. of India, New Delhi (2018-2024) on 24 innovative teaching methodologies and 40 invented formulae in Chemical Education** (Link: <https://arijitchemistryworld.in/copyright-registration-by-the-govt-of-india/>).
- iii) **Two (02) Books published** (International). Link: (<https://arijitchemistryworld.in/books-book-chapter/>) in which **one book indexed in the Stanford University** (<https://searchworks.stanford.edu/view/14279378>).
- iv) **Twenty Eight (28) Innovative Chapters** on UG-PG course published in **WikiEducator (OER), Otago Polytechnic, New Zealand**, Under CC-BY-SA License w.e.f. May 2021 (<https://arijitchemistryworld.in/chapters-published/>).
- v) **Ten (10) innovative Articles Published** from the **ERIC, US Department of Education** (2013-2021) (<https://arijitchemistryworld.in/eric-indexed-articles/>).
- vi) **Nine (09) Innovative Chapters Published** from the **University of California, Davis, US** (<https://arijitchemistryworld.in/uc-davis-us/>).
- vii) **Two (02) Educational Tools Launched** from the **Minerazzi.com**, US (<https://arijitchemistryworld.in/tool-software/>) (2015 & 2018) and **indexed in the City College of New York: City College Chemistry Web Resources Page (Computational Chemistry Section)** (<https://library.cny.cuny.edu/chemistry/computational>).

Details List of Publications

Journal Articles:

1. **Synthesis and characterization of ionic heterobimetallic complexes of Ni(II), Cu(II), Zn(II) and Cd(II) ions containing nitrogen and sulphur donors.**
M.K.Singh, R.Laskar & **A.Das**, *Indian Journal of Chemistry*, 41A, Nov 2002, p 2282.
2. **Synthesis and structural characterization of mixed ligand complexes of nickel(II) with 1,1-dicyanoethylene-2,2-dithiolate and some nitrogen donors**
Mahesh K.Singh, **Arijit Das** and Bijaya Paul, *Trans. Metal Chem*, Sept 2005, 30, p 655.
3. **Synthesis and structural characterization of mixed ligand complexes of nickel(II) with 1-cyano-1-carboethoxyethylene-2,2-dithiolate and some nitrogen donors**
Mahesh K.Singh, **Arijit Das** and Bijaya Paul, *Trans Metal Chem*, Sept 2007, 32, p 732.

4. Synthesis and characterization of mixed ligand complexes of Zn(II) and Cd(II) with 1,1-dicyanoethylene-2,2-dithiolate and some nitrogen donors

M. K.Singh, **A. Das**, B. Paul and R. Laskar, *J.Ind.Chem.Soc.*, May 2008, 85, p 485.

5. Synthesis and characterization of mixed ligand complexes of Zn(II) and Cd(II) with 1-cyano-1-carboethoxyethylene-2,2-dithiolate and some nitrogen donors

M. K. Singh, **A. Das**, B. Paul and R. Laskar, *J. Ind. Chem. Soc.*, Feb 2009, 86,P-143.

6. Synthesis and characterization of mixed ligand complexes of cobalt(II) ion with some nitrogen and sulphur donors

Mahesh K. Singh, **Arijit Das** and Bijaya Paul, *Journal of Co-ordination Chemistry*, 62(16), Aug 2009, P-2745.

7. Synthesis, characterization and Luminescent properties of mixed ligand complexes of nickel (II) with 1,1-dicarboethoxy ethylene-2,2-dithiolate and some nitrogen donors.

M.K.Singh, **A. Das**, B.Paul, S.Sutradhar and S.Bhattacharjee, *J.Ind.Chem.Soc.*, 89, March 2012, P-421.

8. Synthesis, Characterization, Luminescent properties and biological activity studies of mixed ligand complexes of nickel (II) with sulphur and some nitrogen donors

Mahesh K Singh, Sanjit Sutradhar, Bijaya Paul, D. Barman and **Arijit Das*** *J. Ind. Chem. Soc.*, 90, Feb - 2013, p-163.

9. New Innovative Methods for prediction of hybridization State in a very short time

Arijit Das, *Ind. Journal of Applied Research*, 3(7), p594, July-2013,

<https://doi.org/10.15373/2249555x/july2013/188> (Crossref Metadata)

Indexed Stanford University Link:

https://searchworks.stanford.edu/articles/edsair_edsair.doi.dedup...._90483a1acf253b2174b9fd9a181fe05e

10. New innovative methods for prediction of bond order of mono and diatomic molecules, ions and also acid radicals in a very short time

Arijit Das, *Indian Journal of Applied Research*, 3(7), p114, July-2013,

<https://doi.org/10.15373/2249555x/july2013/30> (Crossref Metadata)

Indexed Stanford University Link:

https://searchworks.stanford.edu/articles/edsair_edsair.doi.....b397118b7b7ec0ba1920c8e369978044

11. New innovative methods for determination of IUPAC nomenclature of spiro and bicyclo compounds in Organic Chemistry

Arijit Das, *Indian Journal of Applied Research*, 3(7), p596, July-2013,

<https://doi.org/10.15373/2249555x/july2013/189> (Crossref Metadata)

Indexed Stanford University Link :

https://searchworks.stanford.edu/articles/eric_ED610985

12. New innovative methods for determination of spin multiplicity, spin state and Magnetic properties of diatomic heteronucler molecules or ions in a very short Interval of time

Arijit Das, *Indian Journal of Applied Research*, 3(8), p67, Aug-2013,

<https://doi.org/10.15373/2249555x/aug2013/21> (Crossref Metadata)

Indexed Stanford University Link:

https://searchworks.stanford.edu/articles/edsair_edsair.doi.dedup....7814003569841c47e4b864cbbcf15370

13. A rapid and innovative method for the identification of aromatic and anti-aromatic nature of organic compounds

Arijit Das, Suman Adhikari, Bijaya Paul, V. Jaggnadam and R.Sanjeev, *World*

Journal of Chemical Education, 1(1), p6, Sept-2013, SEP, USA, DOI:10.12691/wjce-1-1-2,

Indexed Stanford University Link:

https://searchworks.stanford.edu/articles/eric_ED610995.

14. A rapid and innovative method for the easy prediction of Magnetic behavior of homo and hetero nuclear mono and diatomic molecules or ions without MOT

Arijit Das, *Indian Journal of Applied Research*, 3(10), p1, Oct-2013,

<https://doi.org/10.15373/2249555x/oct2013/13> (Crossref Metadata)

Indexed Stanford University Link:

https://searchworks.stanford.edu/articles/edsair_edsair.doi.dedup...._7814003569841c47e4b864cbbcf15370

15. New methods for prediction of Bond order of mono and diatomic homo and hetero Nuclear molecules or ions with (1-20)e⁻s and Oxide based acid radicals –
An innovative approach

Arijit Das, *Ind. J. of Applied Research*, 3(11), pp41-43 Nov-2013,

Indexed Stanford University Link:

https://searchworks.stanford.edu/articles/edsair_edsair.doi.dedup...._16bd4464d1175bd201d3900668d1d415

16. Simple Thinking Makes Chemistry Metabolic and Interesting - A Review Article

Arijit Das, *IOSR-Journal of Applied Chemistry (IOSR-JAC) TIE UP WITH NASA and ANED*, e-ISSN: 2278-5736. Volume 6, Issue 4 (Nov. – Dec. 2013), PP 08-15, DOI-10.9790/5736-0640815, USA.

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https://searchworks.stanford.edu/articles/edsair_edsair.doi_....._8a8181b923391c07320a00e2809ecdad

17. Simultaneous Equations as a Tool in the Spectrophotometric Analysis of Two Non-interacting Substances in a Binary Mixture: Senior Undergraduate Physical and Physical-Organic Chemistry Laboratory Experiment

R. Sanjeev, V. Jagannadham, R. Ravi, R. Veda Vrath, **Arijit Das**

Journal of Laboratory Chemical Education, 2013, 1(4),p59-64,SAP,,USA, DOI: 0.5923/j.jlce.20130104.01

18. New Methods for the prediction of Magnetic Moment of homo and hetero nuclear mono and diatomic molecules or ions without MOT-A Rapid Innovative Approach
Arijit Das, *International Journal of Advance Research in Applied Chemistry*, SCI Pub.,01(10), Oct-2013, pp1-7, ISSN(online): 2320-9178, USA.

19. Rapid calculation of the number of π -bonds, σ -bonds, single and triple bonds in aliphatic unsaturated open chain and cycloalkynes

Arijit Das, Suman Adhikari, Debapriya Paul, Bijaya Paul, V. Jagannadam and R.Sanjeev, *World Journal of Chemical Education*, 2014, 2(1), pp1-3, SEP, USA, DOI:10.12691/wjce-2-1-1,

Indexed Stanford University, Link:

https://searchworks.stanford.edu/articles/eric_ED610994

20. Supramolecular Chemistry and its application

Suman Adhikari, **Arijit Das** & Basu Maan Daas, Prayas, *Journal of Multidisciplinary Area*, 01(01), pp 72-78, Feb-2014 Online ISSN 2348-618X.

21. Rapid calculation of the number of π -bonds, σ -bonds, single and double bonds in aliphatic unsaturated open chain and cyclic olefinic hydrocarbons

Arijit Das, Debapriya Pal, Bijaya Paul, R. Sanjeev and V. Jagannadham, *Education in Chemical Science and Technology*, published by *Ind. Chem. Soc.*, Aug-2014, 2(1), pp 41-46

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https://searchworks.stanford.edu/articles/edsair_edsair.doi.dedup...._82605d8b4a6b30f248_dae88821885581

22. Synthesis and Characterization of mixed ligand complexes of Co(II) ion with some N and S donor

Mahesh K. Singh*, Ranajoy Laskar, Sanjit Sutradhar, Bijaya Paul, S. Bhattacharjee and **Arijit Das***, *IOSR Journal of Applied Chemistry (IOSR-JAC)* e-ISSN: 2278-5736. Volume 7, Issue 4 (1), (Apr. 2014), PP 24-29, DOI: 10.9790/5736-07412429, ANED DDL(American National Engineering Database Digital Data link) no: 23.5736/iosr-jac-E07412429

23. Innovative And Time Economic Pedagogical Views In Chemical Education – A Review Article

Arijit Das, R.Sanjeev and V.Jagannadham, *World Journal of Chemical Education*, 2014, Vol. 2, No. 3, 29-38, Science and Education Publishing, USA, DOI:10.12691/wjce-2-3-1.

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24. Association Behavior of Mono, Di and Tri-hydric Alcohols with Three Carbon

Skeleton in a Straight Chain

R. Sanjeev, V. Jagannadham, Adam A. Skelton, **Arijit Das**, *World Journal of Chemical Education*, 2014, Vol. 2, No. 3, 39-41, Science and Education Publishing, USA, DOI:10.12691/wjce-2-3-2.

25. Time Economic Innovative Methodology on the Prediction of Hybridization State of

Heterocyclic Compounds

Arijit Das, Bijaya Paul, R.Sanjeev and V.Jagannadham *IOSR Journal of Applied Chemistry (IOSR-JAC) e-ISSN: 2278-5736. Volume 7, Issue 8(2), (Aug-2014), PP 38-39, DOI: 10.9790/5736-07412429.*

Indexed Stanford University:

https://searchworks.stanford.edu/articles/edsair_edsair.doi_163b173556164ad77ee822824fccb6a5

26. Synthesis, Crystal Structure And Antifungal Activity Studies of a Newly Synthesized

Polymeric Mixed Ligand Complex of Zn (II) With 1,1-dithiolate and Nitrogen donors

Mahesh Kumar Singh, Sanjit Sutradhar, Bijaya Paul, Suman Adhikari, Raymond J. Butcher, Sandeep Acharya and **Arijit Das***

J.of Co-ordination Chemistry, Taylor & Francis Pub.(London),Vol.67,No.22,3613–3620, 2014, <http://dx.doi.org/10.1080/00958972.2014.972388>

27. Cd(II) complexation With 1,1-dithiolate and Nitrogen donors: Synthesis, Luminescence, Crystal Structure And Antifungal Activity Study

Mahesh Kumar Singh, Sanjit Sutradhar, Bijaya Paul, Suman Adhikari, Raymond J. Butcher, Sandeep Acharya and **Arijit Das***

J.of Co-ordination Chemistry, 2015, Vol. 68, No. 8, 1423–1432, Taylor & Francis Pub.(London) <http://dx.doi.org/10.1080/00958972.2015.1013946>

28. Time Economic Innovative Pedagogies In Chemical Science - A Review Article

Arijit Das* and Bijaya Paul, *Education in Chemical Science and Technology*,

Ind.Chem.Soc., Vol-3, No.1, PP 1-28, Aug-2015.

Indexed Stanford University Link:

https://searchworks.stanford.edu/articles/edsair_edsair.doi.dedup...._cc94683bf601ac348fedd716862353e

29. Six-coordinate cadmium (II) complex containing a bridging dithiolate ligand: Synthesis, Crystal Structure and Antifungal Activity Study

Mahesh Kumar Singh, Sanjit Sutradhar, Bijaya Paul, Suman Adhikari, Raymond J. Butcher, Sandeep Acharya and **Arijit Das***

J. of Co-ordination Chemistry, Taylor & Francis Pub.(London),UK (online published 3rd Nov-2015) Volume 69, Issue 1, January 2016, pages 168-175.

30. Synthesis and Structural Characterization of Mixed Ligand Complexes of Manganese (II) With Some Nitrogen and Sulphur Donors by Magnetic and Spectroscopic Methods

M.K.Singh, Bijaya Paul , **Arijit Das**, *IOSR-JAC*, 9, 2(1),p42-48, Feb-2016

31. Manganese(II) Complexation with 1,1-dithiolate and Nitrogen donors – Synthesis, magnetic properties and spectroscopic studies

Mahesh K. Singh, Bijaya Paul and **Arijit Das**, *IOSR-JAC*, Vol 9, Issue 11(11), p1-7 Nov-2016

32. Synthesis, TGA, Luminescent and Antifungal Activity Studies of Nickel (II) Complexes

of 1,1-dithiolate - Mahesh K. Singh, Sanjit Sutradhar, **Arijit Das** and Sandeep Acharya, *Asian J. of Chemistry*, Vol 29, No 5, 1023-1028, 2017

33. A new Cadmium(II) complex with bridging dithiolate ligand: synthesis, crystal structure and antifungal activity study

Mahesh Kumar Singh, Sanjit Sutradhar, Bijaya Paul, Suman Adhikari, F.Laskar, Raymond J. Butcher, Sandeep Acharya and **Arijit Das***, *Journal of Molecular Structure*, ElsevierPub., Vol 1139, 5 July 2017, Pages 395–399, <https://doi.org/10.1016/j.molstruc.2017.03.073>.

34. Synthesis and Structural characterization of mixed ligand complexes of nickel(II) with 1, 8-diaminonaphthalene and 1-cyano-1-carboethoxyethylene-2,2-dithiolate

M. K.Singh, Sanjit Sutradhar and **Arijit Das**, *J. of the Indian Chem. Soc.*, pp 497-502, May 2017.

35. Bond-order and Magnetic Behavior of Diatomic Species without Molecular Orbital

Theory **Arijit Das**, *World Journal of Chemical Education*, Book Chapter, vol. 5, no. 4, June 19, 2017, pp 128-131, doi:10.12691/wjce-5-4-2,

Indexed Stanford University, Link:

https://searchworks.stanford.edu/articles/eric_ED610993

36. Chemical Bonding: Time Economic Innovative Pedagogies - A Review Article

Arijit Das, *Global Journal of Science Frontier Research Chemistry (GJSFR B)*, Vol 17, Issue 2 (1), 28th Nov 2017, pp 1-16, doi:10.17406/GJSFR

37. Mixed-ligand complexes of zinc(II) with 1,1-dicyanoethylene-2,2-dithiolate and N-donor ligands: A combined experimental and theoretical study

Arijit Das et al. *Journal of Molecular Structure*, Elsevier, 1164, July 2018, pp 334-343,

<https://doi.org/10.1016/j.molstruc.2018.03.073>.

38. Time Economic Innovative Mnemonics In Chemical Education - A Review Article

Arijit Das, *International Journal of Physics & Chemistry Education (Eurasian Journal of Physics and Chemistry Education - EJPCE)*, 10(1), June 2018, pp 27-40, (<https://doi.org/10.12973/ijpce/81589>)

39. Lone Pair Electron Discriminate Hybridization with Aromatic and Anti Aromatic behavior of Heterocyclic Compounds - Innovative Mnemonics

Arijit Das, *World Journal of Chemical Education*, vol. 6, no. 2, 4th April 2018, pp95-101,

DOI: 10.12691/wjce-6-2-4,

Indexed Stanford University, Link:

https://searchworks.stanford.edu/articles/eric_ED609311

40. Time Economic Innovative Mnemonics in Chemical Education - A Review Article

Arijit Das, *American Journal of Chemistry and Applications*, Open science, 5(1), pp 19-32, 2018.

41. Lone Pair of Electrons Discriminate Hybridization with Aromaticity in the Heterocyclic Compounds - Innovative Mnemonics

Arijit Das, *World Journal of Chemical Education*, vol. 6, no. 3, 27th April 2018, pp107-112, DOI: 10.12691/wjce-6-3-1.

42. Review of Innovative Mnemonics for Inorganic and Organic Chemical Education

Arijit Das, *Chemistry Journal*, published by the American Institute of Science(AIS), Vol. 4, No. 2, 2018, pp. 11-31,

Indexed Stanford University, Link:

https://searchworks.stanford.edu/articles/eric_ED610991

43. INNOVATIVE MNEMONICS IN CHEMICAL EDUCATION: REVIEW ARTICLE

Arijit Das, *African Journal of Chemical Education (AJCE)*, *AJCE*, 2018, 8(2), pp144-189, July 2018 Issue, ISSN 2227-5835

Indexed Stanford University: Link:

https://searchworks.stanford.edu/articles/edsair_edsair.78975075580c..51d5907555b6d138677e0b9ee360e7ca

44. Innovative Mnemonics Make Chemical Education Time Economic – A Pedagogical Review Article Special Issue "Teaching Science in the 21st Century, **Arijit Das**, *World Journal of Chemical Education*, vol. 6, no. 4, pp154-174, 25th Sept 2018 DOI:10.12691/wjce-6-4-2,

Indexed Stanford University, Link: https://searchworks.stanford.edu/articles/eric_ED609695 .

45. Predicting the hybridization state: a comparative study between conventional and innovative formulae, **Arijit Das**, *Journal of Education and Learning (EduLearn)*, Vol. 14, No. 2, May 2020, pp. 272-278, ISSN: 2089-9823, Published by the Universitas Ahmad Dahlan (UAD) in collaboration with Institute of Advanced Engineering and Science (IAES), Indonesia, DOI:<http://dx.doi.org/10.11591/edulearn.v14i2.14078>,

Indexed Stanford University, Link:

https://searchworks.stanford.edu/articles/eric_EJ1266632 .

46. Bimetallic and Trimetallic Cd(II) and Hg(II) Mixed-Ligand Complexes with 1,1-dicyanoethylene-2,2-dithiolate and Polyamines: Synthesis, Crystal structure, Hirshfeld Surface analysis, and Antimicrobial study, Suman Adhikari, Tirtha Bhattacharjee, Priyatosh Nath, **Arijit Das**, Jerry P. Jasinski, Raymond J. Butcher, Debasish Maiti, *Inorganica Chimica Acta*, 512 (2020), pp 119877, Available online 11 July 2020, doi: <https://doi.org/10.1016/j.ica.2020.119877>.

47. **On the supramolecular properties of neutral, anionic and cationic cadmium complexes harvested from dithiolate–polyamine binary ligand systems**, Suman Adhikari, Tirtha Bhattacharjee, **Arijit Das**, Subhadip Roy, Constantin Gabriel Daniliuc, Jan K. Zaręba, Antonio Bauzá g and Antonio Frontera, *CrystEngComm*, Royal Society of Chemistry, October 2020, DOI: 10.1039/d0ce01233e.

48. **IUPAC Nomenclature of Higher Alkanes – Innovative Mnemonics**, **Arijit Das**, *World Journal of Chemical Education*, Vol. 9, No. 2, pp 42-45, 2021

Indexed Stanford University, Link:

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49. **Classification of Negative Charge Discriminate Hybridization with Aromatic and Anti-aromatic Behavior of Organic Compounds - Innovative Mnemonics (Indexed Stanford University)**, Link: https://searchworks.stanford.edu/articles/eric_ED613509

Arijit Das, *World Journal of Chemical Education*, Vol. 9, No. 2, pp 57-63, 2021

50. **Exploring dithiolate-amine binary ligand systems for the supramolecular assemblies of Ni(II) coordination compounds: Crystal structures, theoretical studies, cytotoxicity studies, and molecular docking studies**

Tirtha Bhattacharjee, Suman Adhikari, , Sharmila Bhattacharjee, Sourav Debnath, **Arijit Das**, Constantin Gabriel Daniliuc , Krishnan Thirumoorthy, Sarubala Malayaperumal, Antara Banerjee, Surajit Pathak, Antonio Frontera, *Inorganica Chimica Acta*, 543 (Dec 2022), 121157, DOI: <https://doi.org/10.1016/j.ica.2022.121157>

51. **Mixed Ligand Complexes of Cobalt (II) – Synthesis, Reactivity, Physico-chemical and Spectroscopic studies**, **ARIJIT DAS**, PARESH DEBNATH, BIJAYA PAUL, KARTICK LALBHOWMIK, ABHIJIT BHATTACHARYA, and BANTI GANGULY, *Asian Journal of Chemistry*, 2023, 35(4), pp 910-916, <https://doi.org/10.14233/ajchem.2023.27479> .

52. **Metal Ions Separation Via Paper Chromatography: Enhanced Methods Using Eluting Solutions**. **Arijit Das**, Digvijaya Sarmaa, Paresh Debnath and Bijaya Paul, *World Journal of Chemical Education*. Nov 2023; 11(4):134-140. doi: 10.12691/wjce-11-4-2 .

53. **Cd(II) and Zn(II) complexes with 2-mercaptopyridine: Synthesis, crystal structure, Hirshfeld surface analysis, luminescent properties, aggregation behaviours, current-voltage characteristic and antibacterial assay**, **Arijit Das**, Syed Arshad Hussain, Hritinava Banik, Debasish Maiti, Tamanna Aktar, Bijaya Paul, Pratima Debnath, Lesław Sieron, Abhijit Bhattacharya, Kartick Lal Bhowmik , Waldemar Maniukiewicz, Paresh Debnath, *Polyhedron* (Elsevier), 247, 11674, 2024, <https://doi.org/10.1016/j.poly.2023.116747>.

54. **Metal-Based Drugs in Cancer Therapy**, Sourav Nath, Abhijit Datta, **Arijit Das** and Suman Adhikari, *Int. J. Exp. Res. Rev.*, Vol. 37: 159-173 (2024), DOI: <https://doi.org/10.52756/ijerr.2024.v37spl.014>, International Academic Publishing House (IAPH).

55. Multifunctional Transition Metal Complexes: Design, Synthesis, Luminescent Features,Electrical Behaviour, Nanostructure Morphology and Bioactive Properties with 1,1- Dicyanoethylene-2,2-dithiolate and p-Phenylenediamine Ligands, Arijit Das, Syed Arshad Hussain, Hritinava Banik, Debasish Maiti, Tamanna Aktar, Sandeep Acharya, Paresh Debnath, *Asian Journal of Chemistry*, Vol. 36, No. 6 (2024), 1348-1358.

56. Advanced Methods for the Separation and Identification of p and d block elements by Paper Chromatography, Arijit Das, Digvijaya Sarmaa, Rupak Das, Bijaya Paul, Pratima Debnath, Suman Adhikari, Arnab Bhattacharya, and Paresh Debnath, (Book Chapter), "A Basic Handbook of Science, Technology and Innovation for Inclusive Development (Volume-1)", **International Academic Publishing House (IAPH)**, pp- 40-61; **Published online: 27th May, 2024, ISBN: 978-81-969828-4-3.**

57. Separation and Identification of Metal ions by Paper Chromatography: Improved Qualitative Inorganic Analysis, Arijit Das, Paresh Debnath, Digvijaya Sarmaa, Rupak Das 2 , Bijaya Paul 3 and Pratima Debnath, **African Journal of Chemical Education (AJCE)**, Vol. 14, No. 1, July 2024 (Accepted).

Two (02) BOOK PUBLISHED:

1.TITLE: ‘Innovative Mnemonics in Chemical Education: A Handbook for Classroom Lectures’

Publication Date: 11Sept 2019 (Online) & 1st Nov-2019 (Hard Back)

Publisher: Cambridge Scholars Publishing, Lady Stephenson Library, Newcastle upon Tyne,NE6 2PA, UK, ISBN (10): 1-5275-3922-9; ISBN (13): 978-1-5275-3922-8

Link: <https://www.cambridgescholars.com/innovative-mnemonics-in-chemical-education>.

Indexed:

British Library Cataloguing in Publication Data. A catalogue record for this book is available from the British Library.

Link:

https://bll01.primo.exlibrisgroup.com/discovery/search?query=any.contains.Arijit%20Das%20Innovative%20Mnemonics%20in%20Chemical%20Education:%20A%20Handbook%20for%20Classroom%20Lectures&tab=LibraryCatalog&search_scope=Not_BL_Suppress&vid=44BL_INST:BLL01&lang=en&offset=0

Indexed Stanford University, Link: <https://searchworks.stanford.edu/view/14279378>

2. TITLE: '*Mixed Ligand complexes of 1,1-dithiolates and Nitrogen Donors*',

Publication Year: 2016.

Publisher: Lambert Academic Publishing (LAP), Germany,

ISBN-10: 3659909807

ISBN-13: 978-3-659-90980-1

Link: <https://www.amazon.com/Ligand-Complexes-1-Dithiolates-Nitrogen-Donors/dp/3659909807>

Twenty eight (28) Chapters Published in the WikiEducator, Open Educational Resource (OER) Foundation, Otago Polytechnic, Dunedin, New Zealand (2021-2023):

CHEMICAL BONDING

Chapter 1 - PREDICTION OF THE HYBRIDIZATION STATE OF SIMPLE MOLECULES or IONS, pp 1-22

Link: https://wikieducator.org/File:Chapter_1-PREDICTION_OF_THE_HYBRIDIZATION_STATE_OF_SIMPLE_MOLECULES_or_IONS.pdf

Pub Date: May 06, 2021

Chapter 2 - PREDICTION OF THE HYBRIDIZATION STATE OF ORGANIC COMPOUNDS, pp 23-34

Link: https://wikieducator.org/File:Chapter_2_-_PREDICTION_OF_THE_HYBRIDIZATION_STATE_OF_ORGANIC_COMPOUNDS_pp_23-34.pdf

Pub Date: May 06, 2021

Chapter 3 - Prediction Of The Hybridization State – A Comparative Study Between Conventional and Innovative Formulae, pp 35-43

Link: https://wikieducator.org/File:Chapter_3_-_Prediction_Of_The_Hybridization_State_%E2%80%93_A_Comparative_Study_Between_Conventional_and_Innovative_Formulae_pp_35-43.pdf

Pub Date: May 06, 2021

Chapter 4 - BOND ORDER OF DIATOMIC SPECIES WITHOUT MOLECULAR ORBITAL THEORY (MOT), pp 44-54

Link: [https://wikieducator.org/File:Chapter-4_BOND_ORDER_OF_DIATOMIC_SPECIES_WITHOUT_MOLECULAR_ORBITAL_THEORY_\(MOT\)_pp_44-54.pdf](https://wikieducator.org/File:Chapter-4_BOND_ORDER_OF_DIATOMIC_SPECIES_WITHOUT_MOLECULAR_ORBITAL_THEORY_(MOT)_pp_44-54.pdf)

Pub Date: May 06, 2021

Chapter 5 - PREDICTION OF THE BOND ORDER OF OXIDE BASED ACID

RADICALS, pp 55-58 Link: [https://wikieducator.org/File:Chapter_5 -](https://wikieducator.org/File:Chapter_5_-_PREDICTION_OF_THE_BOND_ORDER_OF_OXIDE_BASED_ACID_RADICALS_pp_55-58.pdf)

[_PREDICTION OF THE BOND ORDER OF OXIDE BASED ACID RADICALS pp 55-58.pdf](https://wikieducator.org/File:Chapter_5_-_PREDICTION_OF_THE_BOND_ORDER_OF_OXIDE_BASED_ACID_RADICALS_pp_55-58.pdf)

Pub Date: May 06, 2021

Chapter 6 - PREDICTION OF THE MAGNETIC BEHAVIOUR AND BOND ORDER OF DIATOMIC SPECIES WITHOUT MOLECULAR ORBITAL THEORY (MOT), pp 59-68

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[_PREDICTION OF THE MAGNETIC BEHAVIOUR AND BOND ORDER OF DIATOMIC SPECIES WITHOUT MOLECULAR ORBITAL THEORY \(MOT\) pp 59-68.pdf](https://wikieducator.org/File:Chapter-6_-_PREDICTION_OF_THE_MAGNETIC_BEHAVIOUR_AND_BOND_ORDER_OF_DIATOMIC_SPECIES_WITHOUT_MOLECULAR_ORBITAL_THEORY_(MOT)_pp_59-68.pdf)

Pub Date: May 07, 2021

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[_INNOVATIVE METHOD FOR THE PREDICTION OF SPIN MULTIPLICITY pp 69-80.pdf](https://wikieducator.org/File:Chapter_7_-_INNOVATIVE_METHOD_FOR_THE_PREDICTION_OF_SPIN_MULTIPLICITY_pp_69-80.pdf)

Pub Date: May 08, 2021

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[_INNOVATIVE METHODS FOR THE PREDICTION OF AROMATIC ANTI-AROMATIC AND NON-AROMATIC BEHAVIOUR OF SIMPLE ORGANIC COMPOUNDS pp 81-91.pdf](https://wikieducator.org/File:Chapter_8_-_INNOVATIVE_METHODS_FOR_THE_PREDICTION_OF_AROMATIC_ANTI-AROMATIC_AND_NON-AROMATIC_BEHAVIOUR_OF_SIMPLE_ORGANIC_COMPOUNDS_pp_81-91.pdf)

Pub Date: May 10, 2021

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[_INNOVATIVE METHODS FOR THE PREDICTION OF AROMATIC, ANTI-AROMATIC AND NON AROMATIC BEHAVIOUR OF HETEROCYCLIC COMPOUNDS pp 92-109.pdf](https://wikieducator.org/File:Chapter_9_-_INNOVATIVE_METHODS_FOR_THE_PREDICTION_OF_AROMATIC_ANTI-AROMATIC_AND_NON_AROMATIC_BEHAVIOUR_OF_HETEROCYCLIC_COMPOUNDS_pp_92-109.pdf)

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_INNOVATIVE_METHODS_FOR_THE_CALCULATION_OF_CHEMICAL_BONDS_IN_A
LKENES_pp_110-113.pdf](https://wikieducator.org/File:Chapter_10_-_INNOVATIVE_METHODS_FOR_THE_CALCULATION_OF_CHEMICAL_BONDS_IN_ALKENES_pp_110-113.pdf)

Pub Date: May 19, 2021

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Pub Date: Aug 09, 2021

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_IUPAC_Nomenclature_of_Higher_Alkanes_%E2%80%93_Innovative_Method_pp_125-
130.pdf](https://wikieducator.org/File:Chapter_13_-_IUPAC_Nomenclature_of_Higher_Alkanes_%E2%80%93_Innovative_Method_pp_125-130.pdf)

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Pub Date: Jan 12, 2022

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Pub Date: Jan 19, 2022

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Pub Date: Jan 25, 2022

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Pub Date: March 14, 2022

Chapter 25 - Coordination Chemistry (IUPAC Nomenclature), pp 204-208

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Pub Date: March 19, 2022

Chapter 26 - Coordination Chemistry - Crystal Field Theory (CFT), pp 209-220

Link: [https://wikieducator.org/File:Chapter-26_Coordination_Chemistry_-_Crystal_Field_Theory_\(CFT\)_pp_209-220.pdf](https://wikieducator.org/File:Chapter-26_Coordination_Chemistry_-_Crystal_Field_Theory_(CFT)_pp_209-220.pdf)

Pub Date: Sept 05, 2022

File:Chapter-27 Coordination Chemistry - Crystal Field Stabilization Energy (CFSE) pp 221-228

Link: [https://wikieducator.org/File:Chapter-27_Coordination_Chemistry_-_Crystal_Field_Stabilization_Energy_\(CFSE\)_pp_221-228.pdf](https://wikieducator.org/File:Chapter-27_Coordination_Chemistry_-_Crystal_Field_Stabilization_Energy_(CFSE)_pp_221-228.pdf)

Pub Date: Dec 02, 2022

File: Chapter-28 Paper Chromatography-Separation of mixtures of ions (Pb²⁺ & Ag⁺) by Paper Chromatographic Technique pp 229-231

Link: [https://wikieducator.org/File:Paper_Chromatography-Separation_of_mixtures_of_ions_\(Pb²⁺ & Ag⁺\)_by_Paper_Chromatographic_Technique_pp_229-231.pdf](https://wikieducator.org/File:Paper_Chromatography-Separation_of_mixtures_of_ions_(Pb2%2B_%26_Ag%2B)_by_Paper_Chromatographic_Technique_pp_229-231.pdf)

Pub Date: Dec 02, 2022

ERIC Published Innovative 10 Articles (2013-2021):

ERIC is an online library of education research and information, sponsored by the Institute of Education Sciences (IES) of the U.S. Department of Education.

1. IUPAC Nomenclature of Higher Alkanes -- Innovative Mnemonics

ERIC Number: ED611724

Pub Year: 2021

ERIC Link: <https://eric.ed.gov/?q=Arijit+Das+chemistry&id=ED611724>

2. Classification of Negative Charge Discriminate Hybridization with Aromatic and Anti-Aromatic Behavior of Organic Compounds - Innovative Mnemonics

ERIC Number: ED613509

ERIC Link: <https://eric.ed.gov/?q=arijit+chemistry&id=ED613509>

Pub Year: 2021

3. Predicting the Hybridization State: A Comparative Study between Conventional and Innovative Formulae

ERIC Number: EJ1266632

ERIC Link: <https://eric.ed.gov/?q=Hybridization&id=EJ1266632>

Pub Year: 2020

4. Lone Pair Electron Discriminate Hybridization with Aromatic and Anti Aromatic Behavior of Heterocyclic Compounds - Innovative Mnemonics

ERIC Number: ED609311

ERIC Link: <https://eric.ed.gov/?q=Arijit+Das+chemistry&id=ED609311>

Pub Year: 2018

5. Innovative Mnemonics Make Chemical Education Time Economic -- A Pedagogical Review Article

ERIC Number: ED609695

ERIC Link:

<https://eric.ed.gov/?q=Arijit+Das+World+Journal+of+Chemical+Education&id=ED609695>

Pub Year: 2018

6. Review of Innovative Mnemonics for Inorganic and Organic Chemical Education

ERIC Number: ED610991

ERIC Link: <https://eric.ed.gov/?q=Mnemonics&pg=2&id=ED610991>

Pub Year: 2018

7. Bond-Order and Magnetic Behavior of Diatomic Species without Molecular Orbital Theory

ERIC Number: ED610993

ERIC Link:

<https://eric.ed.gov/?q=Arijit+Das+World+Journal+of+Chemical+Education&id=ED610993>

Pub Year: 2017

8. Rapid Calculation of the Number of [Pi]-Bonds, [Sigma]-Bonds, Single and Triple Bonds in Aliphatic Unsaturated Open Chain and Cycloalkynes

ERIC Number: ED610994

ERIC Link: <https://eric.ed.gov/?q=Arijit+Das+chemistry&id=ED610994>

Pub Year: 2014

9. A Rapid and Innovative Method for the Identification of Aromatic and Anti-Aromatic Nature of Organic Compounds

ERIC Number: ED610995

ERIC Link: <https://eric.ed.gov/?q=Arijit+Das+chemistry&id=ED610995>

Pub Year: 2013

10. New Innovative Methods for IUPAC Nomenclature of Bicyclo and Spiro Compounds in Organic Chemistry

ERIC Number: ED610985

ERIC Link: <https://eric.ed.gov/?q=Spiro+and+bicyclo&id=ED610985>

Pub Year: 2013

Published Nine (09) Innovative article in the chem.libretexts.org , University of California, DAVIS, US (2015-2018):

Title with Digital Links:

1.PREDICTING THE BOND-ORDER OF DIATOMIC SPECIES

https://chem.libretexts.org/Core/Physical_and_Theoretical_Chemistry/Electronic_Structure_of_Atoms_and_Molecules/Predicting_the_Bond-Order_of_Diatomic_Species

2.PREDICTING THE HYBRIDIZATION OF SIMPLE MOLECULES

https://chem.libretexts.org/Core/Physical_and_Theoretical_Chemistry/Electronic_Structure_of_Atoms_and_Molecules/Predicting_the_Hybridization_of_Simple_Molecules

3.PREDICTING THE HYBRIDIZATION OF HETEROCYCLIC COMPOUNDS

https://chem.libretexts.org/Core/Organic_Chemistry/Fundamentals/Bonding_in_Organic_Compounds/Predicting_the_Hybridization_of_Heterocyclic_Compounds

4.MAGNETIC BEHAVIOR OF DIATOMIC SPECIES

https://chem.libretexts.org/Core/Physical_and_Theoretical_Chemistry/Electronic_Structure_of_Atoms_and_Molecules/Magnetic_Behavior_of_Diatomic_Species

5.CALCULATING OF π -BONDS, Σ -BONDS, SINGLE AND DOUBLE BONDS IN STRAIGHT CHAIN AND CYCLOALKENE SYSTEMS

https://chem.libretexts.org/Core/Organic_Chemistry/Fundamentals/Bonding_in_Organic_Compounds/Calculating_of_%CF%80-bonds%2C_%CF%83-Bonds%2C_single_and_double_bonds_in_Straight_Chain_and_Cycloalkene_Systems

6.IDENTIFYING AROMATIC AND ANTI-AROMATIC COMPOUNDS

https://chem.libretexts.org/Core/Organic_Chemistry/Fundamentals/Bonding_in_Organic_Compounds/Identifying_Aromatic_and_Anti-Aromatic_Compounds

7.PREDICTING THE BOND-ORDER OF OXIDES BASED ACID RADICALS

https://chem.libretexts.org/Core/Physical_and_Theoretical_Chemistry/Electronic_Structure_of_Atoms_and_Molecules/Predicting_the_Bond-Order_of_Oxides_based_Acid_Radicals

8.EVALUATING SPIN MULTIPLICITY

https://chem.libretexts.org/Core/Physical_and_Theoretical_Chemistry/Electronic_Structure_of_Atoms_and_Molecules/Evaluating_Spin_Multiplicity

9. PREDICTION OF AROMATIC, ANTI AROMATIC AND NON AROMATIC CHARACTER OF HETEROCYCLIC COMPOUNDS ALONG WITH THEIR OMISSION BEHAVIOR- INNOVATIVE MNEMONICS

https://chem.libretexts.org/Core/Physical_and_Theoretical_Chemistry/Electronic_Structure_of_Atoms_and_Molecules/Prediction_of_Aromatic%2C_Anti_Aromatic_and_Non_Aro

matic Character of Heterocyclic Compounds along with their Omission Behavior- Innovative Mnemonics

Two (02) EDUCATIONAL TOOLS LAUNCHED IN THE US

1. HYDROCARBONS PARSER Tool:

It was launched on 24th Aug-2015 by Minerazzi.com, Bayamon, Puerto Rico, US to calculate number of chemical bonds in Hydrocarbon. It came in the form namely 'Hydrocarbon Parser'.

This tool parses an input chemical formula and predicts the number and types of chemical bonds present in them with its normal boiling point and few other things. The predicted data can then be comparing with experimental results. The tool works without consulting molecular orbital theory (MOT) or a chemical database. Just enter a set of formulae 'CxHy'.

'Hydrocarbons Parser' tool freely accessible online in the Tools section of Minerazzi at <http://www.minerazzi.com/tools/hydrocarbons/parser.php>.

2. Bond Order Calculator Tool:

It was launched on 20th Dec-2018 by the Minerazzi.com, Bayamon, Puerto Rico, USA. This tool computes bond orders of diatomic species having up to 20 electrons, without using Molecular Orbital Theory. **This tool is useful for chemistry educators, scholars, and students interested in bond order theory and its applications.** 'Bond Order Calculator' tool freely accessible online in the Tools section of Minerazzi at <http://www.minerazzi.com/tools/bond-order/calculator.php>.

Both tools indexed in the 'City College of New York',US

Link : [Computational - Chemistry - LibGuides at City College Libraries \(cuny.edu\)](http://www.cuny.edu/libguides/computational-chemistry/).

Research Project Details:

1. SERB. DST. Govt. of India. New Delhi : (Ongoing)

Title of the project: "Transition Metal Complexes with Nitrogen & Sulphur donors - Synthesis, Crystal Structure, Luminescent Properties and Biological Activity Studies".

Lab: 'SERB-DST Research Lab', **Sponsored by SERB-DST, New Delhi, Govt. of India**, at Bir Bikram Memorial College, Agartala, West Tripura, Tripura, India, PIN-799004.

Amount: Rs. 34,37,808/- (Rs. Thirty Four Lakh Thirty Seven Thousand Eight Hundred and Eight Only).

Duration: 03 yrs (March-2022 to March-2025).

Sanctioned No: EEQ/2021/000257 dated Feb 25, 2022.

Number of Project Associate: One (01), Name: Dr. Paresh Debnath, M.Sc., Ph.D., NET (Inorganic Chem.) @ 33480.00 / month (Duration 3yrs).

2. SERB, DST, Govt. of India, New Delhi : (Completed)

Title of the project: "Synthesis, Characterization, Luminescent Properties and Biological Activity Studies of mixed ligand complexes of some Transition Metal ions with Nitrogen and Sulphur Donors".

Lab: 'Synthetic Inorganic Research Lab.', **Sponsored by DST, New Delhi, Govt. of India**, at Ramthakur College, Agartala, West Tripura, Tripura, India, PIN-799003

Amount: Rs.12,00,000/-(Rupees twelve lakhs)

Duration: 02 yrs (Dec-2013 to Dec-2015)

Sanctioned No: SB/EMEQ-014/2013 dated 28/11/2013

Number of Project Fellow: One (01), Name: Mr. Sanjit Sutradhar, M.Sc., NET (Inorganic Chem.) @ 14000.00 / month (Duration 2yrs).

Seminar/Conference/Workshops Participated: 46

Seminar/Conference/Workshops Conducted: 04

Membership in Academic Bodies:

- 1. Editorial Board Member, 'Cambridge Scholars publishing', Lady Stephenson Library, Newcastle upon Tyne, UK (2019 - 2023).**
- 2. Editor, WORLD JOURNAL OF CHEMICAL EDUCATION', Science and Education Pub., US (Link: <http://www.sciepub.com/journal/WJCE/EditorialBoard>) (2013-till).**
- 3. Nominated Member of American Chemical Society (ACS), US (06-12-2013-till)**
- 4. 'Indian Chemical Society', 92, A.P.C. Road, Kolkata-700009 – Senior Fellow / 7158 (2010 - till).**
- 5. 'Indian Academy of Forensic Science', 30, Gorachand Road, Kolkata-700014 – A-029 (Life Member) (2011-till).**
- 6. 'Indian Science Congress Association', 14, Dr. Biresh Guha Street, Kolkata – 700017, India - L18176 (2011-) (Life Member).**
- 7. IQAC, Member, Tripura University, Agartala, Tripura, India (May 01, 2020-) (Link: <https://www.tripurauniv.ac.in/UploadFile/AdminPanel/IOAC/88f6c7bb-55ca-41d3-9c51-f152d61f67db.pdf>).**

Involvement Beyond Academic Activities:

Worked as **NTA Observer** (NEET-2023).

TBJEE Observer (TBJEE-2024).

Resource person in DDK, Agartala (2018, 2020 & 2022).

Resource person in the **District and State Level Science Fair organized by the SCERT, District Education office, Govt. of Tripura** (2020-2024).

KEY Note Speaker in the Program organized by the **Department of Science, Technology and Environment, Govt. of Tripura** (September 2018).

Judge in the 50th Jawaharlal Nehru National Science Mathematics & Environment Exhibition and Seminar JNSMEE- 2022-23 and 50th Rashtriya Bal Vaigyanic Pradarshini (RBVP) for students of all the KVs of Tripura Cluster on 21.04.23.

Resource Person in the National Seminar organized by the G.D.C. Dharmanagar along with Indian Science Congress March 2024.