Dr. Chandrakanta Dash
Assistant Professor
Department of Chemistry
School of Chemical Sciences and Pharmacy,
Central University of Rajasthan
NH-8, Bandarsindri, Kishangarh, Ajmer-305817
Rajasthan.
Email: ckdash@gmail.com
ckdash@curaj.ac.in
https://scholar.google.co.in/citations?user=WvL-CVcAAAAJ&hl=en

Education and Work Experience:

• Assistant Professor: (**May 2023–*to-date***) Department of Chemistry, School of Chemical Sciences and Pharmacy, Central University of Rajasthan.

• Assistant Professor (UGC-FRP): (**May 2014–May 2023**) Department of Chemistry, School of Chemical Sciences and Pharmacy, Central University of Rajasthan.

• Post-doc: (**Sept. 2013– May 2014**), Department of Chemistry and Biological Chemistry, Nanyang Technological University (NTU), Singapore.
Supervisor: Prof. Rei Kinjo

• Post-doc: (**Sept. 2010 – Sept. 2013**) Department of Chemistry and Biochemistry, University of Texas at Arlington, USA.
Supervisor: Prof. H. V. Rasika Dias

• Ph. D.: **(2010)** Department of Chemistry, Indian Institute of Technology Bombay, Mumbai, India.
Dissertation: "*Triazole Derived N-heterocyclic Carbene Complexes in catalytic C–N and C–C Bond Forming Reactions.*"
Supervisor: Prof. Prasenjit Ghosh

Awards and Fellowship:

• Young scientist award from DST (March 2015) on the project title "Designing novel late transition metal catalysts for atom/group transfer reactions**".**
• Selected as an UGC-Assistant Professor under the UGC-Faculty Recharge Programme (2013).
• Awarded Research Fellowship (JRF/SRF) sponsored by CSIR-UGC, New Delhi, India (2005-2010).
• CSIR partial travel grants to attend the 238th ACS National meeting and Exposition at Washington DC, USA (2009).
• Qualified Graduate Aptitude Test in Engineering (GATE 2004).

Research Subjects:

Organometallic Chemistry and Homogeneous Catalysis

Research Areas:

• Metal catalyzed organic transformations, N-heterocyclic carbene chemistry
• Photocatalysis, C-H bond functionalization

Teaching Experience:

• May 2023–*to-date*: Assistant Professor, Department of Chemistry, School of Chemical Sciences and Pharmacy, Central University of Rajasthan

• May 2014–May 2023: Assistant Professor (UGC-FRP), Department of Chemistry, School of Chemical Sciences and Pharmacy, Central University of Rajasthan

• Jan. 2006–Nov. 2006 Teaching Assistantship (General Chemistry and Laboratory class for undergraduate students), Department of Chemistry, Indian Institute of Technology, Bombay, India.

Course Taught:

UG.: Organic Chemistry, Organic Chemistry Laboratory I, Inorganic Chemistry Laboratory I,
PG.: Chemistry of Main group elements, Organometallic Chemistry, Green Chemistry, Pericyclic reactions and photochemistry, Inorganic Chemistry Laboratory II
Ph.D.: Advanced Inorganic Chemistry

Other Professional Activities:

• Lifetime Member (LM 1889), Chemical Research Society of India (CRSI)
• Lifetime Member, Odisha Chemical Society (OCS)
• Member, American Chemical Society (ACS)

Sponsored Research Projects:

• Title: Designing novel late transition metal catalysts for atom/group transfer reactions. Funding agency: DST-SERB. Grant-in-aid: Rs. 25,74,000/- (Sept. 2015-Sept. 2018).
• Title: Activation of small molecules by transition metal ions. Funding agency: UGC-BSR, New Delhi. Grant-in-aid: Rs. 6,00,000/- (July 2016- July 2018).

Research and Development Activities:

Details of Ph.D. Awarded/Submitted

Sr. No.	Name of Student	Year of Registration	Title of Thesis	Status (Awarded/ Ongoing)
1	Seema Yadav (2014PHDCH007)	2014	Designing New Electron-rich Metal Complex as Catalysts for C-C and C-Heteroatom Bond Forming Reactions	Awarded on 26th July 2020
2	Jyotirmoy Dey (2015PHDCH05)	2015	Development of Transition Metal based Catalysts for Atom/Group Transfer Reactions and Azide-Alkyne Cycloaddition	Submitted

Details of M.Sc. Project supervised

Sr. No.	Name of Students	Year	Title of Dissertation
1.	Roopa Ram (2013MSC019)	2015	Synthesis and characterization of pincer N-heterocyclic carbene ligands and their metal complexes
2.	S. M. Sweta (2013MSC020)	2015	Design and synthesis of new 1,3,5-triazapentadienyl ligands and 1,5-diazapentadienyl ligands
3.	Deepak (2014MSC003)	2016	Designing new water soluble N-heterocyclic carbene ligands
4.	Namonarayan Meena (2014MSC012)	2016	Synthesis and characterization of N-heterocyclic carbene based pincer ligands
5.	Anuradha Chaudhary (2014MSC027)	2016	Studies toward the development of new N-heterocyclic carbene copper(I) complexes
6.	Aeishwariya Dukiya (2015MSCH002)	2017	Designing new electron rich metal catalysts for C-H bond alkylation
7.	Isha Mishra (2015MSCH013)	2017	PEPPSI themed precatalysts: Synthesis and applications
8.	Mamta (2014MSCH014)	2017	N-heterocyclic carbene based zinc complexes in catalytic hydroamination reactions
9.	Ashok Kumar Raigar (2016MSCH001)	2018	Synthesis of tris(carbene)borate ligand based nickel(II) complexes and their application in C-H bond amination
10.	Lata Sharma (2013IMSBCH008)	2018	Development of late transition metal-based bimetallic catalysts for C-H bond activation
11.	Neetu Kanwar Rathore (2013IMSBCH014)	2018	Designing new bis(arylimino)pyridine based zinc(II) complexes and their catalytic application in hydroamination reactions
12.	Pooja Agrawal (2013IMSBCH016)	2018	Bis(pyrrolyl)pyridine based NNN-pincer ligand palladium(II) complexes in C-C bond forming reaction
13.	Akshita Agrawal (2016IMSBCH002)	2019	Bis(imino)pyridine palladium(II) complexes: synthesis and catalytic application
14.	Maheshwari Ghotia (2013IMSBCH017)	2019	Synthesis of new N-heterocyclic carbene based gold(I) complex and its catalytic application
15.	Komal Swami (2014IMSCH011)	2019	Calcium catalyzed carbon-nitrogen bond forming reaction
16.	Raksha Agarwal (2014IMSCH017)	2019	New water soluble N-heterocyclic carbene ruthenium(II) complex: synthesis & catalytic application
17.	Hitesh Ch. Das (2018MSCH014)	2020	Iron-catalyzed multicomponent synthesis of oxazole
18.	Sikandar Gurjar (2018MSCH020)	2020	Pyrrolyl-pyridine based ligands: Synthesis and their characterization
19.	Sanjeeb Kumar Ojha (2018MSCH023)	2020	Synthesis and characterization of bimetallic complexes supported by naphthyridine functionalized mono-pyrrole ligand
20.	Chittaranjan Mishra	2021	Bis(imino)pyridine zinc(II) complex:

	(2019MSCH004)		Synthesis and catalytic application in arylation of indole
21.	Sumit (2016IMSCH012)	2021	Synthesis, characterization and catalytic C-H amination of 2,6-bis(iminoaryl)pyridine-ruthenium(II) complex
22.	Balkrishna Kumawat (2016IMSCH015)	2021	Benzylic C-H oxidation catalyzed by 2,6-bis(arylimino)pyridine ligand based manganese(II) complex
23.	Sayan Kumar Basu (2020MSCH021)	2022	Cobalt catalyzed heterocycles synthesis *via* C-H bond functionalization
24.	Sipra Ray (2020MSCH023)	2022	Bis(imino)pyridine-zinc(II) complexes: Synthesis, characterization and catalytic applications
25.	Vinita Verma (2020MSCH025)	2022	Bis(imino)pyridine based nickel complexes as catalysts for C-H bond functionalization reactions
26.	Manmohan (2017IMSCH004)	2022	Imidazolin-2-iminato as ligands in transition metal chemistry

Research Publications

Book Chapter

1. S. Yadav; **C. Dash*** "Gold-Phosphine Catalysts for C-C and C-Heteroatom Bond Formation Reactions." in the book entitled "*Advances in Chemistry Research*" **2021**, Volume 69, page 131–187,
Nova Science Publishers, Inc., New York.

2. S. Yadav; **C. Dash*** "Transition Metal-Catalyzed Cross-Coupling Reactions on Heterocycles Synthesis Using Tandem/Domino Synthetic Approaches" in the book entitled "*Cross-Coupling Reactions: An Overview*" **2020**, page 61–112,
Nova Science Publishers, Inc., New York.

3. C. Dash; H. V. R. Dias "Synthesis and Reactivity of Gold-Olefin Complexes" in the book entitled "*The Chemistry of Organogold Compounds*" **2014**, page 527–630,
John Wiley & Sons Ltd., Chichester, United Kingdom.

4. C. Dash; P. Ghosh "Palladium complexes of *N*-heterocyclic carbenes in homogeneous catalysis and biomedical applications" in the book entitled
"*Palladium: Compounds, Production and Applications*" **2010**, page 105–164.
"*Homogeneous Catalysts: Types, Reactions and Applications*" **2010**, page 403–462.
Nova Science Publishers, Inc., New York.

Refereed Journals

24. J. Dey; S. Yadav; R. R. Lakshkar; A. Singh; S. Ray; **C. Dash*** "Zinc-bis(imino)pyridine complexes as catalysts for azide-alkyne cycloaddition in water"
ChemistrySelect, **2022**, *7*, e202202239.

23. R. S. Chauhan, D. Oza, S. Nigam, A. Tyagi, S. Ansari, R. J Butcher, S. Yadav, **C. Dash** "Reactivity of hemilabile 2-pyridylselenolate ligand towards $[NiCl_2(dppe)]$: Combined experimental and theoretical study"
J. Mol. Struc. **2022**, 1248, 131368

22. **C. Dash***; A. Das; H. V. R. Dias*, "Mercury(II) complexes of anionic N-heterocyclic carbene ligands: Steric effects of the backbone substituent"
Molecules **2020**, *25*, 3741

21. S. Yadav; S. Ray; A. Singh; S. M. Mobin; T. K. Roy; **C. Dash*** "Dinuclear gold(I)-N-heterocyclic carbene complexes: Synthesis, characterization, and catalytic application for hydrohydrazidation of terminal alkynes"
Appl. Organomet. Chem. **2020**, 34, e5942

20. S. Yadav; **C. Dash*** "One-Pot Tandem Heck Alkynylation/Cyclization Reactions Catalyzed by Bis(Pyrrolyl)pyridine based Palladium Pincer Complexes"
Tetrahedron **2020***, 76*, 131350

19. **C. Dash**; G. Wang; A. Munoz-Castro; T. T. Ponduru; A. O. Zacharias; M. Yousufuddin; H. V. R. Dias "Organic azide and auxiliary-ligand-free complexes of coinage metals supported by N-heterocyclic carbenes"

Inorg. Chem. **2020***,* 59, 2188–2199

18. S. Yadav; A. Singh; I. Mishra; S. Ray; S. M. Mobin; **C. Dash*** "Well-Defined N-Heterocyclic Carbene-Palladium Complexes as Efficient Catalysts for Domino Sonogashira Coupling/Cyclization Reaction and C-H bond Arylation of Benzothiazole"
Appl. Organomet. Chem. **2019**, *33*, e4936

17. R. S. Chauhan; D. Oza; S. Yadav; **C. Dash***; A. Slawin; N. Shivran "Copper Complexes of arylselenolate based ligands: synthesis and catalytic activity in azide-alkyne cycloaddition reactions"
New J. Chem. **2019**, 43, 2381–2388

16. S. Yadav; A. Singh; N. Rashid; M. Ghotia; T. K. Roy; P. P. Ingole; S. Ray; S. M. Mobin; **C. Dash*** "Phosphine-free *bis*(pyrrolyl)pyridine based NNN-pincer palladium(II) complexes as efficient catalysts for Suzuki-Miyaura cross-coupling reactions of aryl bromides in aqueous medium"
ChemistrySelect, **2018**, *3*, 9469–9475

15. R. S. Chauhan; D. B. Cordes; A. M. Z. Slawin; S. Yadav; **C. Dash** "Reactivity of hemilabile pyridyl- and methyl-substituted pyrimidylselenolates with $[MCl_2(dppf)]$ (M = Pd, Pt; dppf = *bis*(diphenylposhpino)ferrocene)"
Inorg. Chim. Acta. **2018**, *478*, 125–129

14. N. V. Kulkarni; **C. Dash**; N. B. Jayaratna; S. G. Ridlen; S. K. Khani; A. Das; X. Kou; M. Yousufuddin; T. R. Cundari; H. V. R. Dias "Zinc(II)-mediated carbene insertion into C-H bonds in alkanes"
Inorg. Chem. **2015***, 54,* 11043–11045

13. A. Das; **C. Dash**; M. Yousufuddin; H. V. R. Dias "Coordination and ligand substitution chemistry of bis(cyclooctyne)copper(I)"
Organometallics **2014***, 33,* 1644–1650

12. C. Dash; M. Yousufuddin; T. R. Cundari; H. V. R. Dias "Gold mediated expulsion of dinitrogen from organic azides"
J. Am. Chem. Soc. **2013**, *135*, 15479–15488

11. A. Das; **C. Dash**; M. Yousufuddin; M. A. Celik; G. Frenking; H. V. R. Dias "Tris(alkyne) and bis(alkyne) complexes of coinage metals: synthesis and characterization of $(cyclooctyne)_3M^+$ (M = Cu, Ag) and $(cyclooctyne)_2Au^+$ and coinage metal (M = Cu, Ag, Au) family group trends"
Organometallics **2013***, 32*, 3135–3144. Highlighted on the **Organometallics** Cover, June 10, 2013

10. C. Dash; A. Das; M. Yousufuddin; H. V. R. Dias "Isolable, copper(I) dicarbonyl complexes supported by N-heterocyclic carbenes".
Inorg. Chem. **2013***, 52,* 1584–1590

9. M. A. Celik; **C. Dash**; V. A. K. Adiraju; A. Das; M. Yousufuddin; G. Frenking; H. V. R. Dias "End-on and side-on π-acid ligand adducts of gold(I): carbonyl, cyanide,

isocyanide and cyclooctyne gold(I) complexes supported by N-heterocyclic carbenes and phosphines"
Inorg. Chem. **2013**, *52*, 729–742

8. A. Das; **C. Dash**; M. Yousufuddin; M. A. Celik; G. Frenking; H. V. R. Dias "Isolable tris(alkyne) and bis(alkyne) complexes of gold(I)"
Angew. Chem. Int. Ed. **2012**, *51*, 3940–3943

7. H. V. R. Dias; **C. Dash**; M. Yousufuddin; M. A. Celik; G. Frenking, "Cationic gold carbonyl complex on a phosphine support"
Inorg. Chem. **2011**, *5*0, 4253–4255

6. **C. Dash**; P. Kroll; M. Yousufuddin; H. V. R. Dias "Isolable, gold carbonyl complexes supported by N-heterocyclic carbenes"
Chem. Commun. **2011**, *47*, 4478–4480

(Highlighted in Chemical and Engineering News**, April 4,** 2011**,** "Gold carbonyl proliferates" in Science & Technology Concentrates, page 31)**.**

5. **C. Dash**; M. M. Shaikh; P. Ghosh "Silver complexes of 1,2,4-triazole derived N-heterocyclic carbenes: synthesis, structure and reactivity studies"
J. Chem. Sci. **2011**, *123*, 97–106

4. M. K. Samantray; **C. Dash**; M. M. Shaikh,; K. Pang; R. J. Butcher; P. Ghosh "Gold(III) N-heterocyclic carbene complexes mediated synthesis of β–enaminones from 1,3-dicarbonyl compounds and aliphatic amines"
Inorg. Chem. **2011**, *50*, 1840–1848

3. **C. Dash**; M. M. Shaikh; R. J. Butcher; P. Ghosh, "Highly convenient regioselective intermolecular hydroamination of alkynes yielding ketimines catalyzed by gold(I) complexes of 1,2,4-triazole based N-heterocyclic carbenes"
Inorg. Chem. **2010**, *49*, 4972–4983

2. **C. Dash**; M. M. Shaikh; R. J. Butcher; P. Ghosh "A comparison between nickel and palladium precatalysts of 1,2,4-triazole based N-heterocyclic carbenes in hydroamination of activated olefins"
Dalton Trans. **2010**, *39*, 2515–2524

1. **C. Dash**; M. M. Shaikh; P. Ghosh "Fluoride-free Hiyama and copper- and amine-free Sonogashira coupling in air in a mixed aqueous medium by a series of PEPPSI-themed precatalysts"
Eur. J. Inorg. Chem. **2009**, 1608–1618

Symposia/Conferences

1. ***Poster presentation***: C. Dash; P. Ghosh "Silver(I) and gold(I) complexes of new class of 1,2,4-triazole based N/O-functionalized N-heterocyclic carbenes" 238th ACS National meeting and Exposition at Washington DC, USA, August 16-20, 2009.

2. ***Oral presentation***: C. Dash; M. A. Celik; G. Frenking; H. V. R. Dias "Isolation and theoretical studies of N-heterocyclic carbene and phosphine stabilized gold(I) carbonyls" 245th ACS National meeting and Exposition at New Orleans, USA, April 7-11, 2013.

3. ***Poster presentation***: C. Dash; H. V. R. Dias "Cationic zinc(II) complexes of fluorinated tris(pyrazolyl)borates: Synthesis and characterization" 245th ACS National meeting and Exposition at New Orleans, USA, April 7-11, 2013.

4. ***Poster presentation***: C. Dash; H. V. Rasika Dias "Synthesis and catalytic application of cationic zinc(II) complexes supported by fluorinated tris(pyrazolyl)borates" 18th CRSI National Symposium in Chemistry, Punjab University, Chandigarh, February 5-7, 2016.

5. ***Poster presentation***: C. Dash "N-heterocyclic Carbene Ligands: A Pandora's Box of the Catalysis" National Symposium on Emerging Trends in Applied Chemical Sciences (ETACS), CU Rajasthan, March 18, 2016.

6. ***Poster presentation***: C. Dash; S. Yadav; H. V. Rasika Dias "Novel Hg(II) complexes supported by anionic N-heterocyclic carbene ligands: Synthesis and structural studies" 20th CRSI National Symposium in Chemistry, Gauhati University, Guwahati, Assam, February 2-5, 2017.

7. ***Poster presentation***: C. Dash; S. Yadav; J. Dey "Synthesis and catalytic application of N-heterocyclic carbene based zinc(II) complexes in hydrohydrazination of alkynes" 3rd International conference on Frontiers at the Chemistry-Allied Sciences Interface (FCASI-2017), Rajasthan University, Jaipur, Rajasthan, July 22-23, 2017.

8. ***Poster presentation***: C. Dash; S. Yadav "Bis(pyrrolyl)pyridine based NNN-pincer palladium(II) complexes for catalyzing Suzuki-Miyaura cross-coupling reaction in aqueous medium" 24th ISCB International Conference (ISCBC-2018) on "*Frontier Research in Chemistry & Biology Interface*", Manipal University, Jaipur, Rajasthan, January 11-13, 2018.

9. ***Poster presentation***: C. Dash; S. Yadav "New Bis-N-heterocyclic Carbene based Gold(I) Complexes: Synthesis, Characterization and Catalytic Application" 23rd CRSI National Symposium in Chemistry (CRSI-NSC-23), IISER Bhopal, July 13-15, 2018

10. ***Invited Talk:*** C. Dash "Development of Well-defined Transition Metal-based Catalysts for C–C and C–heteroatom Bond Forming Reactions" International conference on Chemical & Biological Sciences in Drug Discovery-2019 (IC-CBSDD-2019), Berhampur University, Odisha, March 08-10, 2019.

11. ***Invited Talk:*** C. Dash "Efficient zinc and copper catalyzed azide-alkyne cycloaddition reaction in aqueous medium" National Conferences on Emerging Trends in Chemical Sciences (ETCS-2019), Central University of Jammu, Samba (J&K), March 14-15, 2019.

12. ***Poster presentation***: C. Dash; S. Yadav "Well-defined *bis*(pyrrolyl)pyridine based palladium catalysts for domino Sonogashira coupling/cyclization reaction" 25th CRSI National Symposium in Chemistry (CRSI-NSC-25), IIT Kanpur, July 19-21, 2019.

13. ***Invited Talk:*** C. Dash "Recent Advances in Organometallic Chemistry" National Webinar on Supra Molecular Chemistry and Organometallic Chemistry, Government Autonomous College, Rourkela, Odisha, April 12, 2023.

Workshop/Seminar/Training Program

1. Participated in faculty development program on "Frontiers of NMR Spectroscopy: Nucleus to Nucleotides" held at Center of Excellence, NFDD complex, Department of Chemistry, Saurashtra university, Rajkot, Gujrat, during January 15-21, 2016.

2. Participated in GIAN course on "Bioinorganic Chemistry" conducted at Central University of Rajasthan, during December 05-09, 2016.

3. Participated in "Four weeks induction training program" conducted during May 01-26, 2018 by Teaching Learning Center @ Central University of Rajasthan with 'A' grade.

4. Attended 2nd ACS-CRSI meeting at IIT Kanpur on July 18, 2019.

5. Participated in the "Ten days workshop on teaching-learning & evaluation for faculty members of HEIs" conducted during November 04-14, 2019 by Teaching Learning Center @ Central University of Rajasthan, Ajmer, Rajasthan.

6. Participated in the "Online refresher course in chemistry for higher education" conducted during 01st Sep 2019-31st Dec 2019 (Exam Date: February 16, 2020) by Sri Guru Tegh Bahadur Khalsa College, University of Delhi with 'A' grade.

7. Participated in the Faculty Development Program on "Four-quadrant model for development of E-content, MOOCs and Teacher's e-kit" conducted during 29th September-05th October, 2021 by Sri Guru Tegh Bahadur Khalsa College, University of Delhi with 'A' grade.

8. Participated Professional Development Programme on 'Implementation of NEP-2020 for University and College Teachers' held from 23 February – 03 March, 2023 with 'A' grade.