Dr. DEBASISH KUNDU

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Ph. No: +91-9679326889
Orchid ID: 0000-0002-2819-4367, Scopus ID: 55263408400,
Researcher ID: I-4692-2016; Vidwan ID: 521122, H-index: 20

Research Interest: Transition Metal Catalysis, Green Chemistry, Photocatalysis, Nanocatalysis

PERSONAL

Date of Birth : 19th March, 1986
Nationality : Indian
Marital status : Married

Current Affiliation : Assistant Professor (WBES), Department of Chemistry, Acharya Prafulla Chandra Roy Government College, Siliguri, University of North Bengal, Matigara, Darjeeling, WB-734010, West Bengal, India (Since 15/01/2025)

Previous Position : I) Assistant Professor, Government General Degree College, Mangalkote, The University of Burdwan, West Bengal-713132, India (from 28/07/2016 to 13/01/2025)

II) Assistant professor in Chemistry, ABN Seal College, Cooch-Behar, Panchanan Barma University, WB (from 11/12/2015 to 25/07/2016)

Permanent Address: Village-Lalkuthipara, P.O.- Suri, Dist.- Birbhum , West Bengal-731101

ACADEMIC PROFILE

1. **Ph. D (Organic Chemistry):** Indian Association for the Cultivation of Science, Jadavpur, Kolkata, India [Thesis was selected for Eilli Lilly Asia Outstanding Research Award]
   Supervisor: Prof. Brindaban C. Ranu (**FNA**, **FASc**, **J C Bose National Fellow**).
   Thesis title: Synthetic Studies on the Catalysis by Supported Metal, Metal Nanoparticles and Other Benign Materials.

2. **M. Sc. (Chemistry):** 2010, IIT-Kharagpur, India (1st class: 9.21 CGPA out of 10). (**University Rank 1st**)
   Thesis title: **"Synthesis of carbacycles and seven-membered oxacycles by Pd-catalysed intramolecular Heck reaction and intramolecular tandem Michel-Aldol reaction."**
   Supervisor: Prof. Jayanta K. Ray (**FRSC**)

3. **All India Rank in JAM-2008 : 38, NET(CSIR-2009)-126 and GATE-2010: 149**
4. **B. Sc. (Chemistry):** 2008, Visva-Bharati University, West Bengal, India (1st class: 76.9%). (**University rank 1st**)
5. **Higher Secondary Education in Science (10+2):** 2004, Birbhum Zilla School, Birbhum, India (1st division: 86.1%).
6. **Secondary Education:** 2002, Birbhum Zilla School, West Bengal, India (1st division: 83.1%).

ACADEMIC ACHIEVEMENTS AND AWARDS

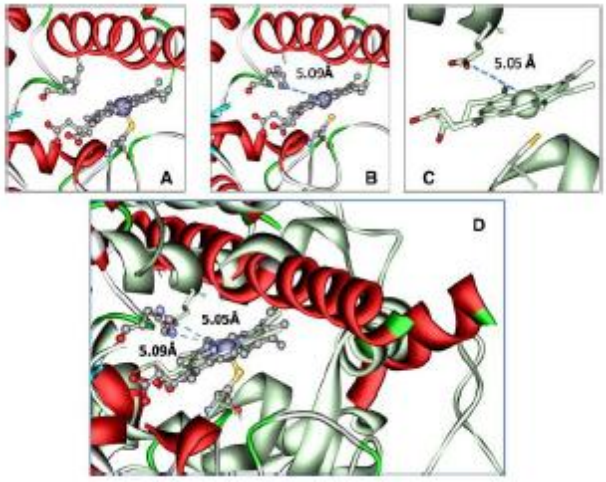
1. University Merit Scholarship for **1st Rank holder** in B.Sc. in University.
2. **UGC Merit Scholarship** (One of the most prestigious scholarships in India) for University first rank in B.Sc during the period of 2009-2010.
3. All India rank in JAM-2008 is **38**.
4. **INSTITUTE SILVER MEDAL** for **1st position in M.Sc**. in IIT-Khragpur.
5. **10 pointer** in IIT-Kharagpur in 3rd semester in Autumn 2009 (Reportedly only Ten pointer in the past 30 years Since 2010 in Chemistry department of IIT Kharagpur).
6. Selected for Summer Research Fellowship Programme **(SRFP)** in 2009 in **JNCASR**, Bangalore (Only 30 students were selected from all over India).
7. Registered as a **VSRP-2009** (Visiting Students Research Programme) in **TIFR**, Mumbai.
8. **Senior Research Fellowship** (2012-2015) and **Junior Research Fellowship** (2010- 2012) from CSIR-New Delhi, India.
9. **National Merit scholarship** for ranking in higher secondary examination (rank-770 out of more than 350000 students).
10. Selected in the **2nd Indo-German Symposium on Sustainable Catalysis** in ICT-Mumbai for poster presentation.
11. **DST-DFG Award** of Selection as an **Indian researcher participant** in **65th Lindau Nobel Laureate Meeting-2015, Germany** which is dedicated to Chemistry, Physics, Medicine and Physiology (672 research scholars were selected from 88 countries and only 16 research scholars were selected from India.)
12. **Eli Lilly Asia Outstanding Thesis Award 2015** for PhD research in application of sustainable catalysis in organic synthesis.
13. **Marie Skłodowska-Curie Seal of Excellence Award** by European Commission in ***EU Framework Programme for Research and Innovation*** 2014-2020 in 2017 and 2018.
14. **Outstanding Research Award** in 3rd Regional Science and Technology Congress held in The University of Burdwan in 2019.
15. **Outstanding Research Award** in 6th Regional Science and Technology Congress held in Durgapur Government College in 2024.
16. **Outstanding Research Award** in 7th Regional Science and Technology Congress held in Rampurhat College in 2025.

Projects as Principal Investigator

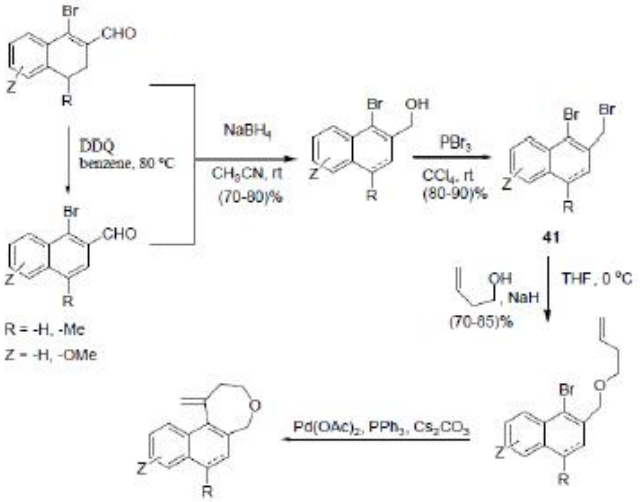
Name of the Project	**Name of the Funding Agency**	**Current status**	**No. of Publication out of this project**
Dual transition metal catalysed C-C and C-heteroatom cross-coupling: Sustainable approach towards the synthesis of bio-active molecules"	Department of Science, technology & Biotechnology, Govt. Of West Bengal	Completed in 2024	11

PROJECTS TAKEN in M.Sc.

1. **"Enhancement in peroxidase activity in thermophilic Cytochrome P 450(CYP175A1) through rational protein engineering"** under the guidance of **Prof. Shyamalava Mazumdar** in **TIFR Mumbai.** In this project I carried out site – specific mutation of a cyt P-450(A221D) enzyme (changing Alaline into Glutamic acid) and studied the peroxidase activity of the mutated enzyme in different reactions. The mutated enzyme shows appreciable increase in rate of the reaction.



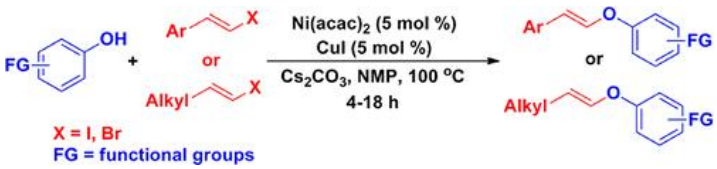
2. **"Synthesis of Carbacycles and seven-membered oxacycles by Pd-catalysed intramolecular Heck reaction and intramolecular tandem Michel-Aldol Reaction "**under the guidance of **Prof. Jayanta K. Ray** in **IIT-Kharagpur.** In this Project I have developed a general method for the synthesis of fused **seven membered oxacycles** derivative by palladium catalyzed intramolecular heck reaction. This methodology can be applied for the synthesis of Napthoxepine related natural product in due time. I have also developed a new methodology for the synthesis of **cyclopentenones** which are the building block of several drug targets and biologically act



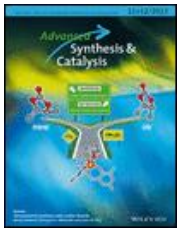
PUBLICATIONS

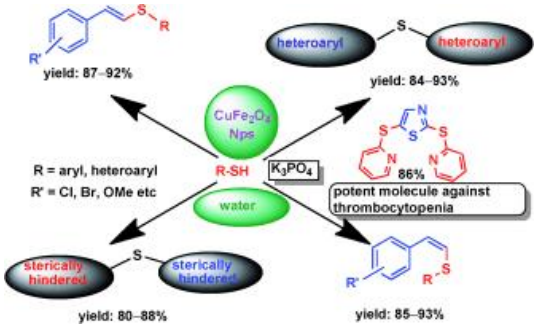
1) Heterogeneous Cu(II) catalyzed solvent controlled selective *N*-arylation of cyclic amides and amines with bromo-iodoarenes, **Debasish Kundu**, Sukalyan Bhadra, Nirmalya Mukherjee, Bojja Sreedhar and Brindaban C. Ranu, ***Chem. -Eur. J.***, **2013**, *19*, 15759.

2) Copper assisted nickel catalyzed ligand free C(sp^2)-O cross coupling of vinyl halides and phenols, **Debasish Kundu**, Pintu maity and Brindaban C. Ranu, ***Org. Lett.***, **2014**, *6*, 1040.



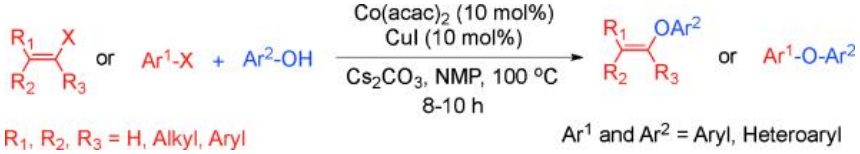
3) Magnetically Separable $CuFe_2O_4$ Nanoparticles Catalyzed Ligand-free C-S Coupling in Water: Access to (*E*)- and (*Z*)-Styrenyl-, Heteroaryl and Sterically Hindered Aryl Sulfides, **Debasish Kundu**, Tanmay chatterjee, Brindaban C. Ranu., ***Adv. Synth. Catal.***, **2013**, *355(11+12)*, 2285.



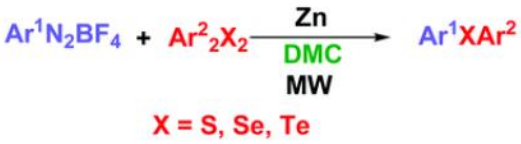


4) Visible light photocatalyzed direct conversion of aryl-/heteroaryl amines to selenides at room temperature, **Debasish Kundu**, Sabir Ahammed and Brindaban C. Ranu, ***Org. Lett.***, **2014**, *6*, 1814.

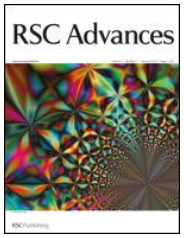
5) First Cobalt-catalyzed Intermolecular C(sp^2)-O Cross-Coupling, **Debasish Kundu**, Manisha Tripathy, Pintu Maity, Brindaban C. Ranu, ***Chem. -Eur. J.*** **2015**, *21*, 8727.

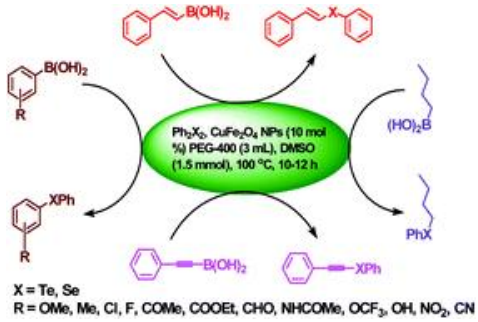


6) Microwave-assisted reaction of aryl diazonium fluoroborate and diaryldichalcogenides in dimethyl carbonate: a general procedure for the synthesis of unsymmetrical diaryl chalcogenides, **Debasish Kundu**, Sabir Ahammed and Brindaban C. Ranu, ***Green Chem***., **2012**, *14*, 2024.

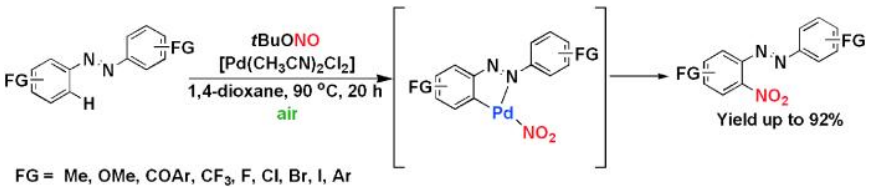


7) Magnetically separable and recyclable $CuFe_2O_4$ nanoparticle catalysed coupling of organoboronic acids and dichalcogenides in PEG-400: A general protocol for the synthesis of organochalcogenides, **Debasish Kundu**, Nirmalya Mukherjee and Brindaban C. Ranu, ***RSC Adv***., **2013**, *3*, 117–125.



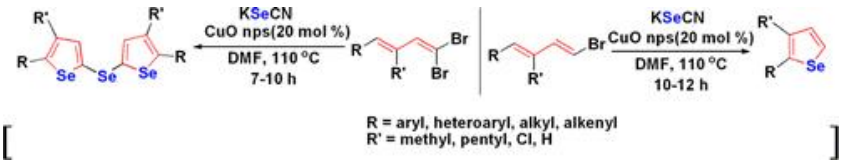


8) *Tert*-butyl nitrite mediated regiospecific nitration of (*E*)-azoarenes *via* palladium catalyzed directed C-H activation, Biju Majhi, **Debasish Kundu**, Sabir Ahammed and Brindaban C. Ranu, ***Chem.-Eur. J.*** **2014,** *20***,** 9862.

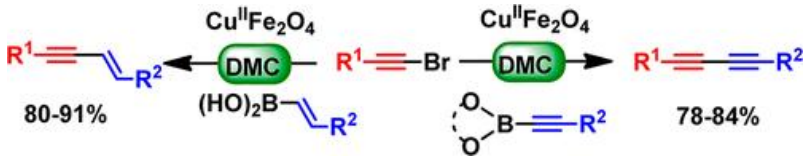


9) A co-operative Ni/Cu system for Csp-Csp and Csp-Csp2 cross-coupling providing a direct access to unsymmetrical 1,3-diynes and en-ynes, Nirmalya Mukherjee, **Debasish Kundu**, Brindaban C. Ranu, ***Chem. Commun.***2014, 50, 17584.

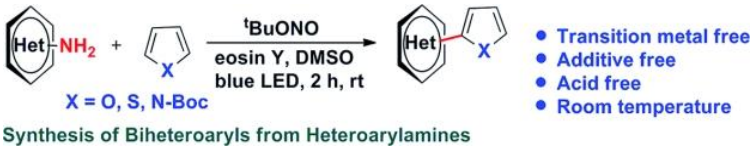
10) A Direct Synthesis of selenophenes by Cu-catalyzed one- pot Addition of Selenium Moiety to (*E, E*)-1,3-Dienyl Bromides and Subsequent Nucleophilic Cyclization, Pintu Maity, **Debasish Kundu**, Rajdip Roy, Brindaban C. Ranu, ***Org. Lett.*** **2014**, *16*, 4122. (**Highlighted in Synfacts**)



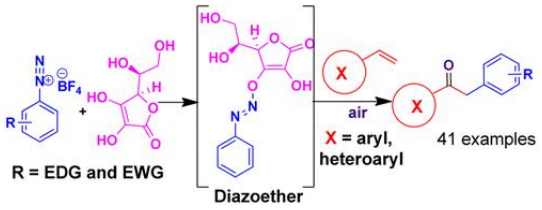
11) Cu-Catalyzed Fe-Driven Csp–Csp and Csp–Csp^2 Cross-Coupling: An Access to 1,3-Diynes and 1,3-Enynes Sabir Ahammed, **Debasish Kundu**, Brindaban C. Ranu, ***J. Org. Chem.*** **2014,** *79,* 7391**.** (**Highlighted in Synfacts**).



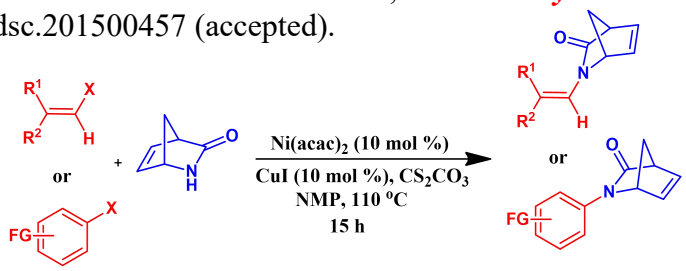
12) Visible-Light-Photocatalyzed Metal-Free C–H Heteroarylation of Heteroarenes at Room Temperature: A Sustainable Synthesis of Biheteroaryls, Pintu Maity, **Debasish Kundu*** and Brindaban C. Ranu*, ***Eur. J. Org. Chem.*** **2015**, 1727. (Most accessed article in 2/2015).

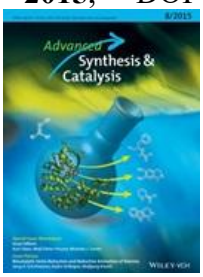


13) Ascorbic Acid Promoted Oxidative Arylation of Vinyl Arenes to 2-Aryl Acetophenones without Irradiation at Room Temperature under Aerobic Conditions, Biju Majhi, **Debasish Kundu** and Brindaban C. Ranu, ***J. Org. Chem.***, **2015**, **DOI:** 10.1021/acs.joc.5b00825.

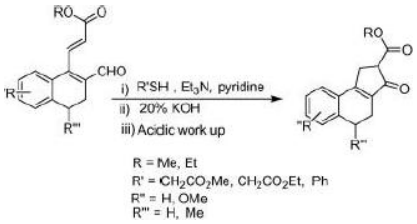


14) Nickel-Copper Catalyzed C(sp2)-N Cross Coupling of Cyclic and Bridged Amides: An Access to Cyclic Enamides and Alkenyl Vince Lactams, Pintu Maity, Debasish Kundu and Brindaban C. Ranu, ***Adv. Synth. Catal***. **2015**, DOI 10.1002/adsc.201500457 (accepted).

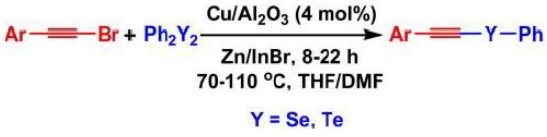




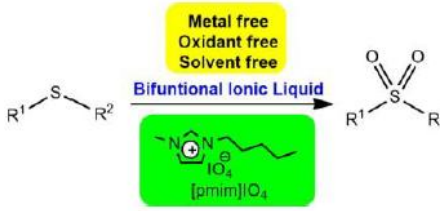
15) Thiol-mediated tandem Michel-aldol reaction: a convenient method for the synthesis of fused cyclopentenones, Subhankar Samanta, Nasima Yasmin, **Debasish Kundu** and Jayanta K. Ray., ***Tetrahedron Lett***., **2010**, *51*, 4132-4136



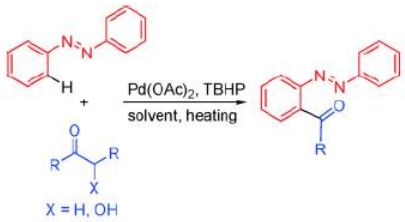
16) An efficient and general procedure for the synthesis of alkynyl chalcogenides(selenides and tellurides) by alumina-supported Cu(II)-catalyzed reaction of alkynyl bromides and diphenyl dichalcogenides; Sabir Ahammed, Sukalyan Bhadra, **Debasish Kundu**, Bojja Sreedhar and Brindaban C. Ranu; ***Tetrahedron***, **2012**, *68*, 10542.

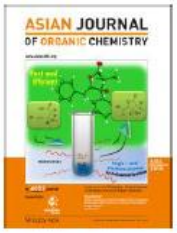


17) Metal and solvent free selective oxidation of sulfides to sulfone using bifunctional ionic liquid [pmim]IO4, Sabir Ahammed, **Debasish Kundu** and Brindaban C. Ranu, ***Tetrahedron Lett***., **2015**, *56*, 335.



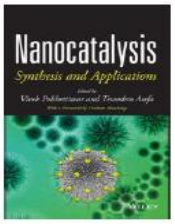
18) Palladium-Catalyzed Oxidative C — C Bond Cleavage of α-Hydroxyketones: Application to C—H Acylation of Azoarenes and Synthesis of a Liver(X) Receptor Agonist, B. Majhi, S. Ahammed, **D. Kundu**, B. C. Ranu, ***Asi. J. Org. Chem.*** **DOI: 10.1002/ajoc.201402280.**



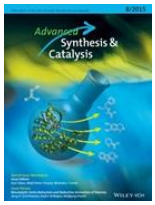


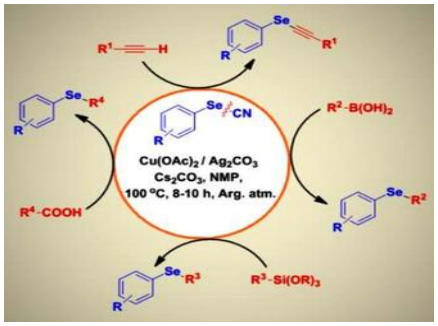
19) Ionic liquid as base and phase transfer agent: A green protocol for the synthesis of diaryl sulphides in water, **Debasish Kundu** and Brindaban C. Ranu, ***J. Ind. Chem. Soc.***, **2013**, *90*, 1761. [Invited Manuscript in honour of Prof. Sunil Kumar Talapatra on the occasion of his 80th birthday.

20) Book Chapter on Aryl Carbon-Heteroatom Coupling Reactions Using Nano-Metal Catalyst, in **Nanocatalysis: Synthesis and Applications** (eds V. Polshettiwar and T. Asefa), John Wiley Sons, Inc., Hoboken, NJ, USA. doi: 10.1002/9781118609811.ch 6, pp 189-220, Brindaban C. Ranu, Debasree Saha, **Debasish Kundu** and Nirmalya Mukherjee.

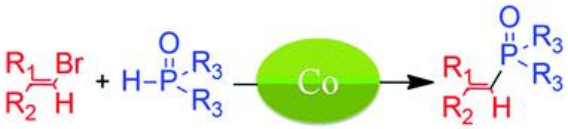


21) Copper-Silver Dual Catalalyzed Decyanative C-Se Cross-Coupling, Nirmalya Mukherjee, Debasish Kundu and Brindaban C. Ranu, ***Adv. Synth. Catal.***, **2017**, *359*, 329.

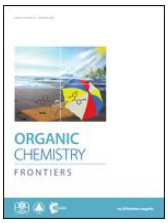


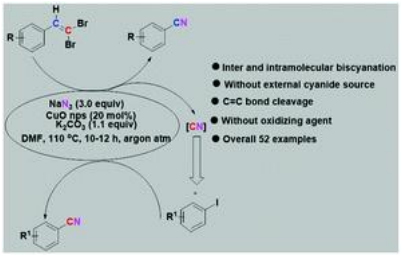


22). Cobalt catalyzed copper-assisted C(sp^2)-P cross-coupling.T. Ghosh, P.Maity, D.Kundu, B. C. Ranu *New. J. Chem.***2016**, *40*, 9556.

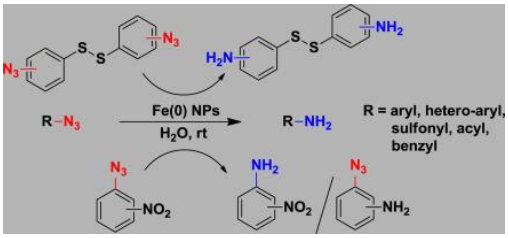


23) Copper catalyzed cyanation through C=C bond cleavage of gem-aryl dibromide followed followed by second cyanation of iodoarene by a released CN unit; Pintu Maity, Debasish Kundu, Tubai Ghosh and Brindaban C. Ranu, ***Org. Chem. Front.***, **2018**,*5*, 1586-1599.

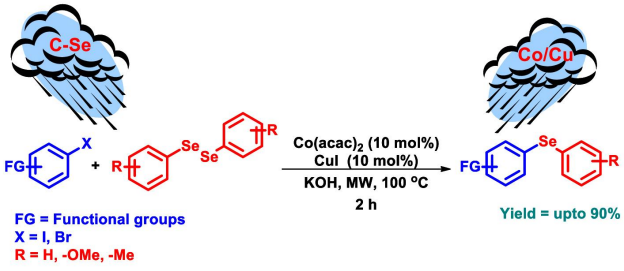




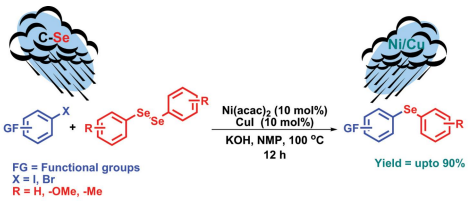
25) Highly chemoselective reduction of azides to amines by Fe(0) nanoparticles in water at room temperature. S.Panja, **D.Kundu**, S.Ahammed, B. C. Ranu *Tetrahedron Lett*. **2017**, *58*, 3457.



26) Microwave-assisted Cobalt-copper Dual Catalyzed Ligand Free C-Se Cross-coupling, **D. Kundu***, A. Roy, S. Panja, Current. Microwave. Chem., **2020**, 7(2), 157-163

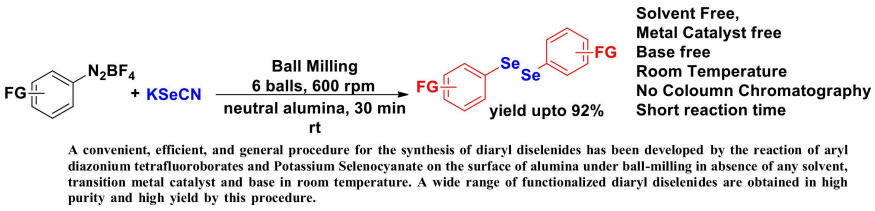


27) Nickel-copper Co-catalyzed Sustainable Synthesis of Diaryl-chalcogenides, **D. Kundu***, A. Roy, A. Singha and S. Panja, *Current. Green. Chem*., **2021**, *8(2)*, 147-156



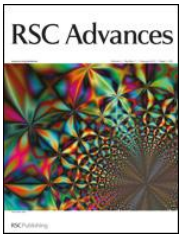
A sustainable dual Ni-copper catalytic system has been developed for performing C-Se cross coupling reactions. A wide range of substituted aryl selenides and tellurides have been developed by the reaction of diaryldiselenides with aryl iodides and bromides in presence of KOH in NMP under the dual Co/Cu catalytic system following oxidative-addition and reductive-elimination mechanism.

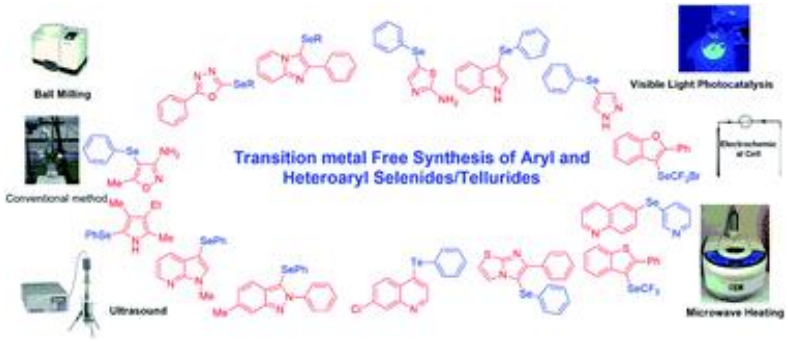
28) Transition Metal Catalyst, Solvent, Base Free Synthesis of Diaryl Diselenides under Mechanical Ball Milling, **D. Kundu***, A. Roy, S. Panja, *Current. Org. Synth.*, **2022**, *19(4)*, 477-483.



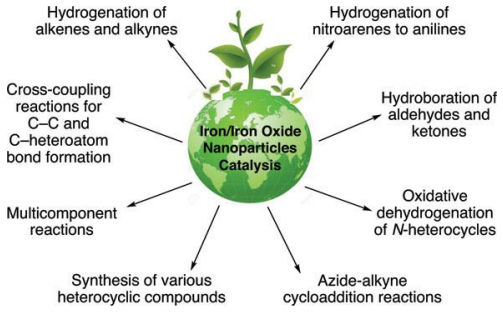
A convenient, efficient, and general procedure for the synthesis of diaryl diselenides has been developed by the reaction of aryl diazonium tetrafluoroborates and Potassium Selenocyanate on the surface of alumina under ball-milling in absence of any solvent, transition metal catalyst and base in room temperature. A wide range of functionalized diaryl diselenides are obtained in high purity and high yield by this procedure.

29) Synthetic strategies for aryl/heterocyclic selenides and tellurides under transition-metal-catalyst free conditions, **D. Kundu***, *RSC. Adv.*, **2021**, *11*, 6682-6698.

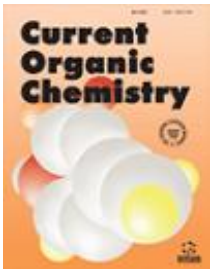




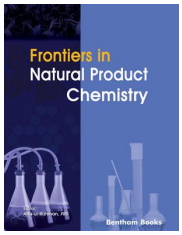
30) Reusable Iron/Iron Oxide-based Nanoparticles Catalyzed Organic Reactions, L. Adak*, **D. Kundu***, K. Roy, M. Saha, A. Roy, Current. Org. Chem., 2022, 26(4), 399-417



Reusable iron/irion oxides nanoparticles in sustainable organic Synthesis.



31) Progress in the Research of Naturally Occurring Biflavonoids: A Look Through, D. Gorai, S. K. Jash and **D. Kundu***, Frontiers in Natural Product Chemistry (Vol 10), 73-153, ISBN : 978-981-5040-76-0 (Online)



32) Recent Advances in Copper-Catalyzed Carbon Chalcogenides Cross- Coupling Reactions, T, Roy, A. Mahanta and **D. Kundu***, *Curr. Org. Synth.,* **2022**, **DOI:** 10.2174/1570179419666220324122735

33) Synthesis of aryl/heteroaryl selenides using transition metals catalyzed cross coupling and C─H activation, **D. Kundu***, A. Mahata and T. Roy, *Curr. Organic. Chem*., **2022**, **DOI:** 10.2174/1385272827666221103104321

34) Synthesis of Unsymmetrical Diaryl Tellurides Under Mechanical Ball Milling in Room Temperature, A. Roy, S . Panja, P . K. Basu and **D. Kundu***, *Curr. Green. Chem*., **2024**, *28(4)*, 319-324; https://www.eurekaselect.com/article/138680

35) Carbon-Chalcogenide Cross-Coupling Reactions in Water, A. Mahata, T. Roy, A. Mondal and D. Kundu*, *Curr. Green. Chem*., **2024**, 11*(4)*, 325-355; https://www.eurekaselect.com/article/139159

36) Synthesis of Polynuclear Aromatic Hydrocarbons by Palladium-catalyzed C-H Bond Functionalization, M. Diwan, S. Bera, S. Samanata, D. Kundu* and R. Jana*, *Curr. Org. Chem,* 2024, 28(18), 1387-1403; https://benthamscience.com/article/141180

Projects and Fundings & Research Guidance

Title of the Project: Dual transition metal catalysed C-C and C-heteroatom cross-coupling: Sustainable approach towards the synthesis of bio-active molecules, Order No.: 43(Sanc.)/ST/P/S&T/15G-21/2018, Date: 30/01/2019
From Department of Science, technology and Biotechnology, Government of West Bengal.

Registered Ph. D. Guide under the University of Burdwan

No. of students perusing Ph. D. : 1 (Name: Anup Roy)
[Reg No: R-Ph.D/Regn./Chem/E-1]
Thesis Title: "Sustainable development for carbon-heteroatom cross-coupling under both metal catalyzed and metal free conditions"
Present Status: Pre-Thesis Seminar passed from the University.

PROFESSIONAL COMPETENCE

* **Operational experience**: (i) FT-NMR (^{1}H, ^{13}C NMR)
(ii) UV-VIS Spectrophotometer.
(iii) Fluroscence Spectrophotometer.
(iv)UV-VIS spectrometer
(v) EPR
(vi) TEM
(vii) SEM
(viii) Liquid Chromatography Mass Spectra
(ix) Microwave reactor (CEM Discover)
(X) Cell Culture and protein extraction

* **Synthetic skill**: (i) Synthesis of useful organic molecules
(ii) Chromatographic purification
(iii) Spectral analysis for characterization of the molecules,
(iv) Designing of heterogeneous catalysts, nano-catalysts and their application in synthetic organic chemistry

PARTICIPATIONS

1. 13th CRSI National Symposium in Chemistry (NISER and KIIT Bhubaneswar, India), 4-6th February, 2011. (**Attendee**).

2. International Symposium on Chemistry and Complexity (IACS-Kolkata), 6-8th December, 2011. (**Attendee**).

3. 7th J-NOST conference (IISER Mohali), 15-18th December, 2011, (**Oral Presentation**), ***Copper Catalysed Solvent Selective Differential N-Aylations of Cyclic amides and amines with Bromo-iodobenzenes***.

4. National Seminar on "Recent Trends in Chemical Research: Challenges Ahead" (Guru Ghasidas University, Bilaspur), 30-31st March, 2012, **(Poster Presentation)**, ***Microwave-assisted reaction of aryl diazonium fluoroborate and diaryl dichalcogenides in dimethylcarbonate: A general procedure for the synthesis of unsymmetrical diaryl chalcogenides.***

5. ACS-Meeting at IACS-Kolkata, 12th October, 2012, (**Attendee**).

7. **2nd International Indo-German Symposium** on "Green Chemistry and Catalysis for Sustainable Development" (ICT-Mumbai, Matunga), 29-31st October, 2012, (**Poster Presentation**), ***Copper Catalysed Solvent Selective Differential N-Aylations of Cyclic amides and amines with Bromo-iodobenzenes***.

7. 8th J-NOST Conference (IIT-Guwahati), 8-10th December, 2012, (**Oral Presentation**), ***$CuFe_2O_4$ Nanoparticle Catalysed Coupling of Different Types of Organoboronic Acids and Dichalcogenides in PEG-400***.

8. International Symposium of Light in Chemistry, Materials and Biology (LCMB-2014) (IIT-Kharagpur), 24-25th February, 2014, (**Poster Presentation**), ***Visible Light Photocatalyzed Direct Conversion of Aryl-/Heteroarylamines to Selenides at Room Temperature.***

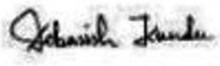
Visited Research Institutes

1) Visiting researcher in **University of Tubingen**, Germany.
2) Visiting researcher in **Spemann Graduate School for biology and medicine (SGBM), University of Freiburg,** Germany.
3) Visiting researcher in **Max-Plank –Institute for the Science of Light (MPL)**, Erlangen, Germany.
4) Visiting researcher in **Institute of Molecular Biology gGmbH (IMB),** Mainz, Germany.
5) Visiting researcher in **Collaborative Research Center (SFB) 1083**: Structure and Dynamics of Internal Interfaces, Marburg, Germany.
6) Visiting researcher **in Cluster of Excellence (EXC 147): Cardio Pulmonary System**, Giessen, Germany.
7) Visiting researcher in **Summer School of the IRTG 1642 (International Research Training Group)**, Mittlelwihr, France.
8) Visiting researcher in **IIT-Guwahati** during oral presentation in 8th J-NOST conference.
9) Visiting researcher in **IISER- Mohali** during oral presentation in 7th J-NOST conference.
10) Visiting researcher in **ICT-Mumbai** during 2nd International Indo-German Symposium on Sustainable catalysis.
11) Visiting Researcher in **Tata Institute of Fundamental Research (TIFR-Mumbai)** in visiting student's research programme (VSRP-2009).
12) Visiting Researcher in BITs Pilani in 2021.

Declaration

I hereby declare that all the above-mentioned information given is true to the best of my knowledge.

Date : 05/02/2025



Signature