

Dr. DEBASISH KUNDU

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PERSONAL

Date of Birth : 19th March, 1986
 Nationality : Indian
 Marital status : Married
Current Address: Department of Chemistry,
 Government General Degree College, Mangalkote,
 University of Burdwan
 Mangalkote, Burdwan-713143
 West Bengal
 India

Permanent Address: Village-Lalkuthipara
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 Dist.- Birbhum
 West Bengal
 India, Pin-731101

ACADEMIC PROFILE

- Ph. D (Organic Chemistry):** Indian Association for the Cultivation of Science, Jadavpur, Kolkata, India
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.**
- 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)

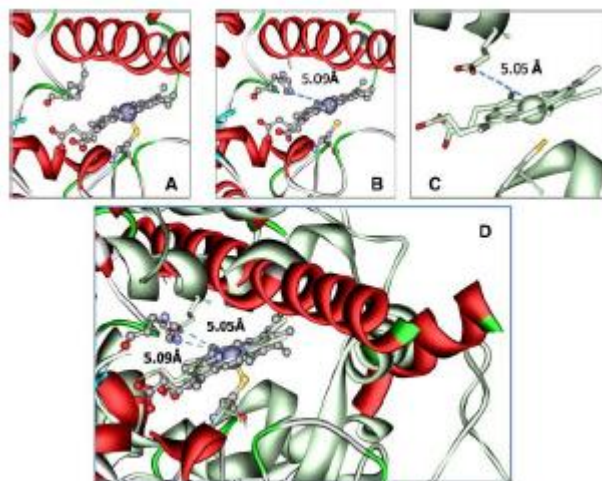
3. **B. Sc. (Chemistry):** 2008, Visva-Bharati university, West Bengal, India (1st class: 76.9%). (**University rank 1st**)
4. **Higher Secondary Education in Science (10+2):** 2004, Birbhum Zilla School, Birbhum, India (1st division: 86.1%).
5. **Secondary Education:** 2002, Birbhum Zilla School, West Bengal, India (1st division: 83.1%).

ACADEMIC ACHIEVEMENTS AND AWARDS

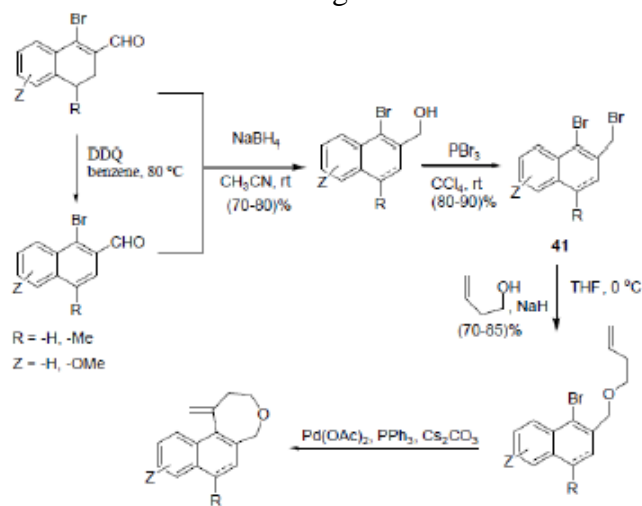
1. University Merit Scholarship for **1st Rank holder** in B.Sc. in University.
2. **UGC Merit Scholarship** (One of the most prestigious scholarships in India) for University first rank in B.Sc during the period of 2009-2010.
3. All India rank in JAM-2008 is **38**.
4. **INSTITUTE SILVER MEDAL** for **1st position in M.Sc.** in IIT-Kharagpur.
5. **10 pointer** in IIT-Kharagpur in 3rd semester in Autumn 2009 (Reportedly only Ten pointer in the past 30 years 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 **VS RP-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. **Best Poster Award** in International Symposium of **Light in Chemistry, Materials and Biology (LCMB-2014)** held in IIT-Kharagpur.
12. Selected for PhD interview in **BIG-NSE Germany; only 20 students were selected from all over the world.**
12. **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.)
13. **Eli Lilly Asia Outstanding Thesis Award 2015** for PhD research in application of sustainable catalysis in organic synthesis.
14. **Marie Skłodowska-Curie Seal of Excellence Award** by European Commission in **EU Framework Programme for Research and Innovation** 2014-2020 in 2017 and 2018.

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.

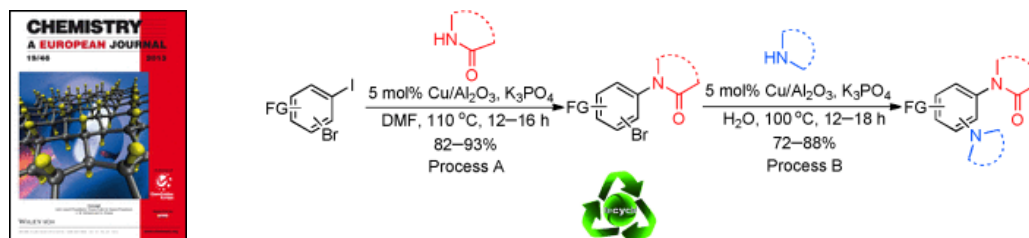


2. **“Synthesis of Carbacycles and seven-membered oxacycles by Pd-catalysed intramolecular Heck reaction and intramolecular tandem Michel-Aldol Reaction”** under the guidance of **Prof. Jayanta K. Ray** in **IIT-Kharagpur**. In this Project I have developed a general method for the synthesis of fused **seven membered oxacycles** derivative by palladium catalyzed intramolecular heck reaction. This methodology can be applied for the synthesis of Naphthoxepine 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 acti

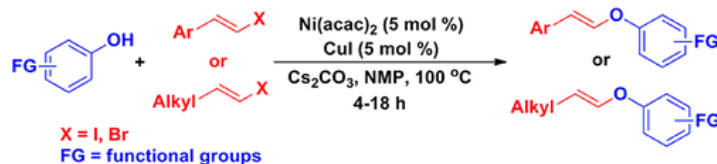


PUBLICATIONS

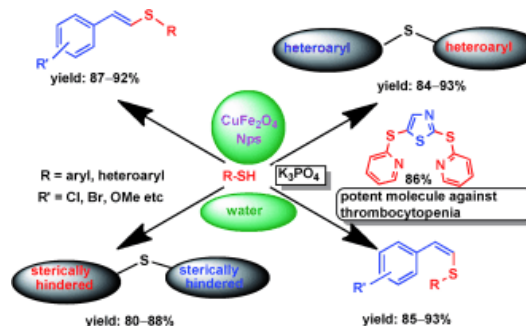
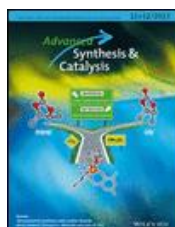
- 1) Heterogeneous Cu(II) catalyzed solvent controlled selective *N*-arylation of cyclic amides and amines with bromo-iodoarenes, **Debasish Kundu**, Sukalyan Bhadra, Nirmalya Mukherjee, Bojja Sreedhar and Brindaban C. Ranu, *Chem. -Eur. J.*, **2013**, *19*, 15759.



- 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.



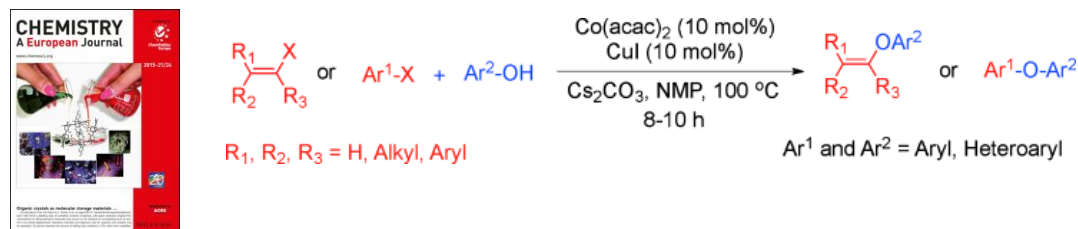
- 3) Magnetically Separable CuFe_2O_4 Nanoparticles Catalyzed Ligand-free C-S Coupling in Water: Access to (*E*)- and (*Z*)-Styrenyl-, Heteroaryl and Sterically Hindered Aryl Sulfides, **Debasish Kundu**, Tanmay chatterjee, Brindaban C. Ranu., *Adv. Synth. Catal.*, **2013**, *355(11+12)*, 2285.



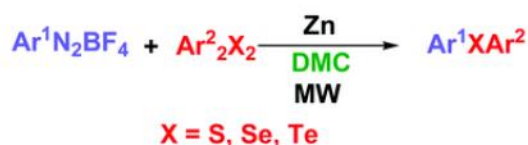
- 4) Visible light photocatalyzed direct conversion of aryl-/heteroaryl amines to selenides at room temperature, **Debasish Kundu**, Sabir Ahammed and Brindaban C. Ranu, *Org. Lett.*, **2014**, *6*, 1814.



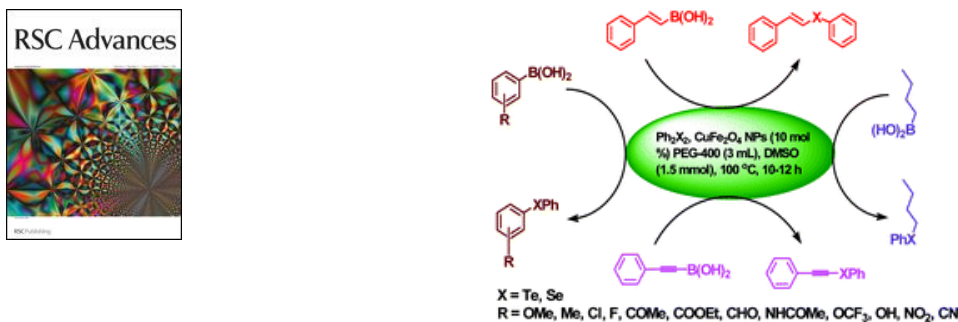
- 5) First Cobalt-catalyzed Intermolecular C(*sp*²)-O Cross-Coupling, **Debasish Kundu**, Manisha Tripathy, Pintu Maity, Brindaban C. Ranu, *Chem.-Eur. J.* **2015**, *21*, 8727.



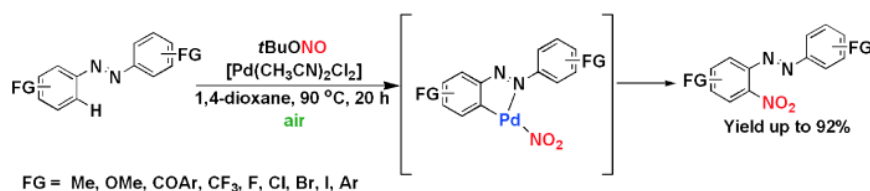
- 6) Microwave-assisted reaction of aryl diazonium fluoroborate and diaryldichalcogenides in dimethyl carbonate: a general procedure for the synthesis of unsymmetrical diaryl chalcogenides, **Debasish Kundu**, Sabir Ahammed and Brindaban C. Ranu, *Green Chem.*, **2012**, *14*, 2024.



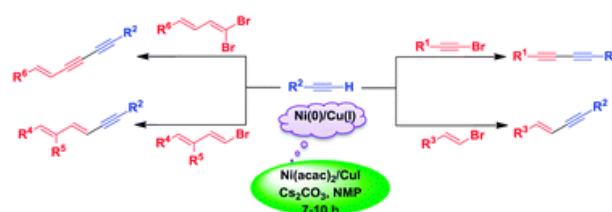
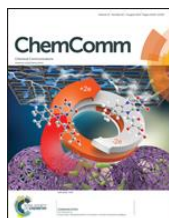
- 7) Magnetically separable and recyclable CuFe₂O₄ nanoparticle catalysed coupling of organoboronic acids and dichalcogenides in PEG-400: A general protocol for the synthesis of organochalcogenides, **Debasish Kundu**, Nirmalya Mukherjee and Brindaban C. Ranu, *RSC Adv.*, **2013**, *3*, 117–125.



- 8) *Tert*-butyl nitrite mediated regioselective 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.



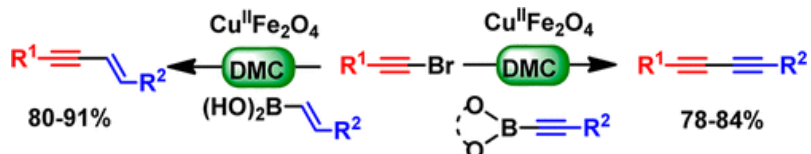
- 9) A co-operative Ni/Cu system for Csp-Csp and Csp-Csp² cross-coupling providing a direct access to unsymmetrical 1,3-diynes and en-yne, Nirmalya Mukherjee, **Debasish Kundu**, Brindaban C. Ranu, *Chem. Commun.* 2014, 50, 17584.



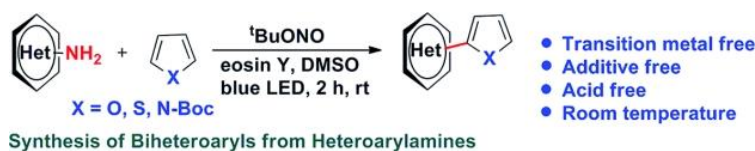
- 10) A Direct Synthesis of selenophenes by Cu-catalyzed one-pot Addition of Selenium Moiety to (*E, E*)-1,3-Dienyl Bromides and Subsequent Nucleophilic Cyclization, Pintu Maity, **Debasish Kundu**, Rajdip Roy, Brindaban C. Ranu, *Org. Lett.* 2014, 16, 4122. (Highlighted in Synfacts)



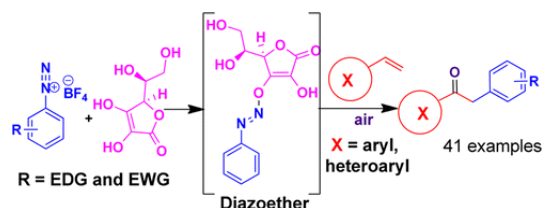
- 11) Cu-Catalyzed Fe-Driven Csp-Csp and Csp-Csp² Cross-Coupling: An Access to 1,3-Diynes and 1,3-Enynes Sabir Ahammed, **Debasish Kundu**, Brindaban C. Ranu, *J. Org. Chem.* 2014, 79, 7391. (Highlighted in Synfacts).



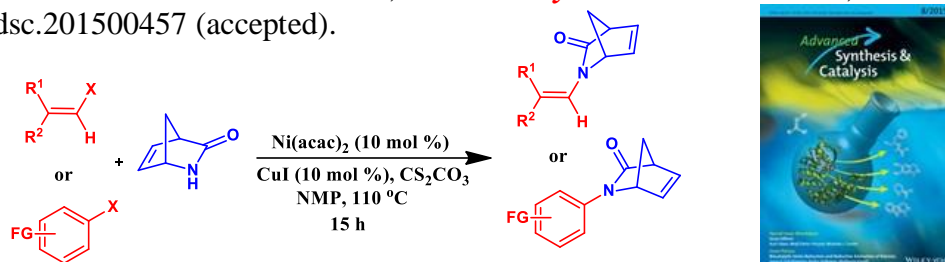
- 12) Visible-Light-Photocatalyzed Metal-Free C-H Heteroarylation of Heteroarenes at Room Temperature: A Sustainable Synthesis of Biheteroaryls, Pintu Maity, **Debasish Kundu*** and Brindaban C. Ranu*, *Eur. J. Org. Chem.* 2015, 1727. (Most accessed article in 2/2015).



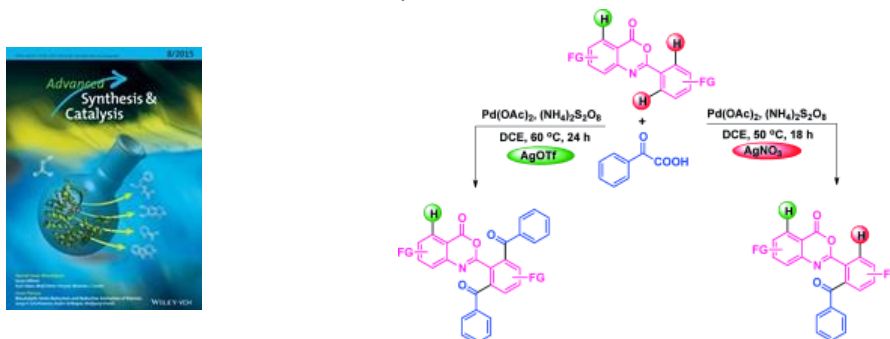
- 13) Ascorbic Acid Promoted Oxidative Arylation of Vinyl Arenes to 2-Aryl Acetophenones without Irradiation at Room Temperature under Aerobic Conditions, Biju Majhi, **Debasish Kundu** and Brindaban C. Ranu, *J. Org. Chem.*, 2015, DOI: 10.1021/acs.joc.5b00825.



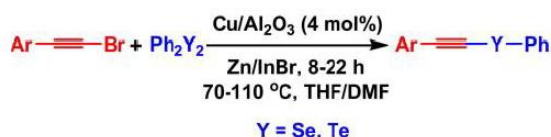
- 14) Nickel-Copper Catalyzed C(sp²)-N Cross Coupling of Cyclic and Bridged Amides: An Access to Cyclic Enamides and Alkenyl Vince Lactams, Pintu Maity, Debasish Kundu and Brindaban C. Ranu, *Adv. Synth. Catal.* **2015**, DOI 10.1002/adsc.201500457 (accepted).



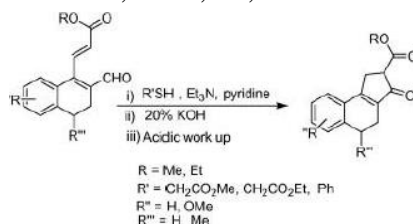
- 15) Palladium-Catalyzed Decarboxylative Selective Acylation of 4*H*-benzo[*d*][1,3]oxazin-4-one Derivatives with α -Oxocarboxylic acids via Cyclic Imine- *N*-directed Aryl C-H Activation, Biju Majhi, Debasish Kundu, Tubai Ghosh and Brindaban C. Ranu, *Adv. Synth. Catal.* **2016**, 358, 283.



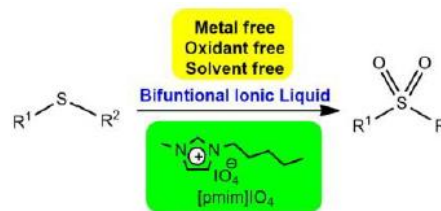
- 16) An efficient and general procedure for the synthesis of alkynyl chalcogenides (selenides and tellurides) by alumina-supported Cu(II)-catalyzed reaction of alkynyl bromides and diphenyl dichalcogenides; Sabir Ahammed, Sukalyan Bhadra, **Debasish Kundu**, Bojja Sreedhar and Brindaban C. Ranu; *Tetrahedron*,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



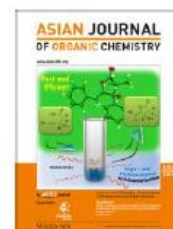
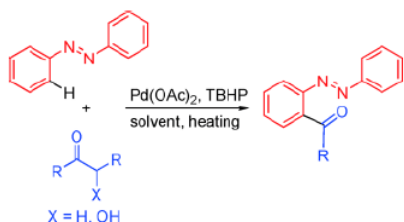
- 17) Thiol-mediated tandem Michel-aldol reaction: a convenient method for the synthesis of fused cyclopentenones, Subhankar Samanta, Nasima Yasmin, **Debasish Kundu** and Jayanta K. Ray., *Tetrahedron Lett.*, **2010**, 51, 4132-4136



- 18) 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.

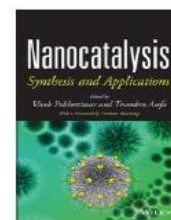


- 19) Palladium-Catalyzed Oxidative C—C Bond Cleavage of α -Hydroxyketones: Application to C—H Acylation of Azoarenes and Synthesis of a Liver(X) Receptor Agonist, B. Majhi, S. Ahammed, **D. Kundu**, B. C. Ranu, *Asi. J. Org. Chem.* DOI: 10.1002/ajoc.201402280.

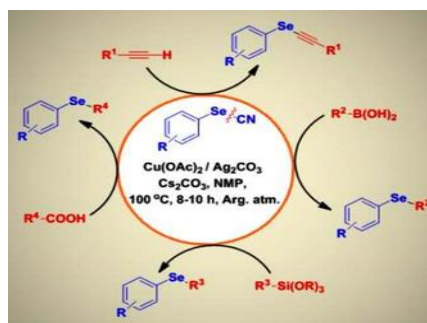
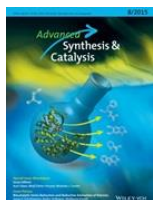


- 20) Ionic liquid as base and phase transfer agent: A green protocol for the synthesis of diaryl sulphides in water, **Debasish Kundu** and Brindaban C. Ranu, *J. Ind. Chem. Soc.*, **2013**, 90, 1761. [Invited Manuscript in honour of Prof. Sunil Kumar Talapatra on the occasion of his 80th birthday.

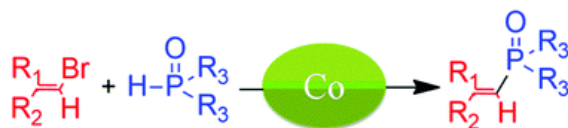
- 21) Book Chapter on Aryl Carbon-Heteroatom Coupling Reactions Using Nano-Metal Catalyst, in **Nanocatalysis: Synthesis and Applications** (eds V. Polshettiwar and T. Asefa), John Wiley Sons, Inc., Hoboken, NJ, USA. doi: 10.1002/9781118609811.ch 6, pp 189-220, Brindaban C. Ranu, Debasree Saha, **Debasish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



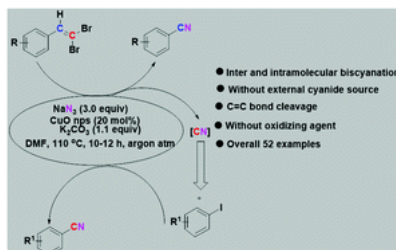
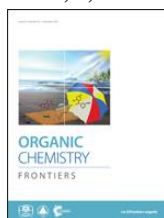
- 22) Copper-Silver Dual Catalyzed Decyanative C-Se Cross-Coupling, Nirmalya Mukherjee, Debasish Kundu and Brindaban C. Ranu, *Adv. Synth. Catal.*, **2017**, 359, 329.



- 23). Cobalt catalyzed copper-assisted C(sp²)-P cross-coupling. T. Ghosh, P. Maity, D. Kundu, B. C. Ranu *New. J. Chem.* **2016**, *40*, 9556.



- 24) Copper catalyzed cyanation through C=C bond cleavage of gem-aryl dibromide 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.



PROFESSIONAL COMPETENCE

- * **Operational experience:** (i) FT-NMR (¹H, ¹³C NMR)
 (ii) UV-VIS Spectrophotometer.
 (iii) Fluorescence 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**).
6. **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**), *CuFe₂O₄ 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)**, Mittelwihr, 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).

Teaching Experience

During his PhD studies in IACS Kolkata the candidate used to teach classes of integrated PhD students in their master courses on “Applied organometallic chemistry and Spectroscopic analysis of organometallic compounds” from 2012 to 2015. After being employed as an Assistant professor by Govt. of West Bengal (through an all India based PSC written exam and interview) in A. B. N. Seal College under Panchanan Barma University, the candidate teaches classes of B.Sc. courses in different disciplines of organic chemistry (stereochemistry, retrosynthesis, reagent chemistry, spectroscopy, etc...) and organometallic Chemistry. He also teaches organic practical classes of B.Sc. students in the same institute, as well as M.Sc. students of Panchanan Barma University in the area of stereoselective synthesis and advanced organometallic chemistry. After getting transferred to the Government general degree college Mangalkote, the candidate is currently engaged in teaching organic and organometallic chemistry theory courses and organic chemistry practical classes in B.Sc.

Supervising, Mentoring Activities

The candidate had the opportunity to train several master and graduate students (1 student per year) in his laboratory during the period of his PhD program in India. This teaching assistantship led him training undergraduate students the organic reaction experiments in safely manner and teaching instrument techniques (HPLC, IR, UV and NMR spectroscopy). He has also guided and trained summer project students from different leading institutes in India for two months period (1 student

per year). They have also published research on that project in reputed international journals (D. Kundu et al. *Chem. –Eur. J.* **2015**, 21, 8727). Currently, he is guiding masters' students in Burdwan University in their M.Sc. thesis in the area of synthetic organic chemistry. This experience provides him self-confidence to participate efficiently in the research management in the host laboratory and to bring strong support to the above research program.

Examples of participation in industrial innovation by international collaborations

Apart from his own thesis research work, the candidate has also handled several international collaborative projects of industrial importance of his thesis supervisor. He has successfully completed a collaborative industrial project with Saudi Arabia in the field of development of Green procedure for the removal of organic sulfides from petroleum and published the work in an international journal as a co-author (S. Ahammed et al. *Tetrahedron Lett.*, **2015**, 56, 335).

He has also handled a joint Indo-US collaborative project of his thesis supervisor with Prof. M. H. Ali from Southeast Missouri State University (SEMO, Missouri, USA), for three consecutive years from 2013 to 2015 (during June to July) on the development of heterogeneous Ru catalysts for sustainable oxidations of organic compounds. During this project he has trained 12 B.Sc. students from SEMO (4 students each year), developing their practical skills as well as theoretical knowledge about green catalysis and its applications (M. H. Ali, B. Olesen, B. Ranu, L. Clippard, J. Heath, G. Meyer, T. Williams, *Synthesis* **2016**, 48, 429).

Extra-curricular Experience

The candidate is used to manipulate software for scientific communication including drawing tools such as *Chemdraw*, plotting using *Origin*, preparing power-point presentations and developing graphical abstract for manuscripts using *Photoshop*. The candidate also has a good practice of *Scifinder* for literature search. The candidate is also capable of running FORTRAN programming and DFT calculations for organometallic reactions in Gaussian Software. Consolidation of this knowledge in computational chemistry (mainly DFT) within the host laboratory will be performed as to allow the candidate to carry out predictive modeling prior to laboratory experiments.

The candidate is familiar in handling different instrumental tools like TEM (Transmission Electron Microscopy), SEM (Scanning Electron Microscopy), UV, IR, HRMS, NMR (Bruker, 500, 400 and 300 MHz), XRD, EPR, X-Ray crystallography independently and analyzing the data during the 8 years of research experience in organometallic catalysis and synthetic organic chemistry. The candidate has excellent fluency in English and he has represented the ongoing research works of his supervisor several times in front of visiting or invited internationally recognized scientists from all parts of the world in his institute in IACS-Kolkata.

He had two months of summer project research experience (May-July 2009 during summer vacation in IIT-KGP) in TIFR-Mumbai under Prof. Shyamalava Mazumdar on "Enhancement in peroxidase activity in thermophilic Cytochrome P 450 (CYP175A1) through rational protein engineering". There, he carried out site specific mutation of a P-450 enzyme by using several important techniques like PCR (Polymerase Chain Reaction), GC-MS, bacteria cell culture, etc.

The candidate was used to review manuscripts in the fields of synthetic organic chemistry, metal and photocatalysis and green chemistry of leading journals (ACS, Wiley, RSC, Elsevier etc) during his 5 years of PhD studies. He was also an independent reviewer for an *RSc Advances* manuscript.

The candidate has experience to act as a coordinator in the organization of an international seminar in the area of interdisciplinary fields of Science (Funded by UGC) during his employment in A. B. Seal

College under Panchanan Barma University. He also remained a member of the advisory committee of the institute Journal (BN Seal Journal of Science ISSN: 0975-5624) during that period and also published an invited article in it (Ascorbic Acid promoted Metal Free Borylation of Aromatic Diazonium Salts under Room Temperature, D.Kundu* and T. Roy, *BN Seal journal of Science*, 2016, (Vol. VIII), 114-117).

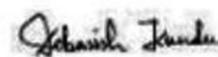
References

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Declaration

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

Date : 01/12/2018



Signature