



Debabrata Mukherjee, PhD

Date of Birth: 4th July 1984

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➤ **Professional Experience.**

- Assistant Professor (March 2018-present)
Department of Chemistry, IIT Kharagpur
- Postdoctoral Research Associate (March 2017-February 2018)
Advisor: Prof. Dr. Jun Okuda, RWTH Aachen University, Germany.
- Alexander von Humboldt Postdoctoral Research Fellow (March 2015-February 2017)
Host Advisor: Prof. Dr. Jun Okuda, RWTH Aachen University, Germany.
- Postdoctoral Appointee (June 2013-December 2014)
Homogeneous Catalysis Group, Argonne National Laboratory, USA.

➤ **Education and Training.**

- Iowa State University, Ames, IA, USA **Ph.D.** Inorganic Chemistry **2013**
(August 2007-May 2013)
Thesis Supervisor: Prof. Aaron D. Sadow
Thesis title: “*Stoichiometric and catalytic reactivity of tris(oxazolinyl)phenylborato zinc and magnesium complexes.*”
- Indian Institute of Technology – Kanpur **M.Sc.** Chemistry **2007**
(August 2005-May 2007)
Thesis Supervisor: Prof. V. Chandrasekhar
Thesis title: “*Synthesis of substituted pyrazoles with different stereoelectronic properties and the study of P-N bond sensitivity in phosphorous pyrazolides.*”
- Ramakrishna Mission Vidyamandira, Belur Math **B.Sc. (Hons.)** Chemistry **2005**
(Affiliated to Calcutta University)
(August 2002-May 2005)

➤ **Awards, recognitions, and achievements.**

- **Alexander von Humboldt Postdoctoral Fellowship** in 2014 (awarded by AvH foundation in Germany).
- Selected to participate NSF’s CENTC (Center for Enabling New Technologies Through Catalysis) Summer School, 2013.
- **Frank J. Moore and Thoreen Beth Moore Fellowship** in 2011 (awarded at Iowa State University for research Excellency).
- **Chevron Phillips Fellowship** in 2010 (awarded by Iowa State University for research Excellency).
- **Outstanding mentor award** for the SULI (Science Undergraduate Laboratory Internship) program in 2010 (awarded by United States-Department of Energy, Office of Science, Ames Laboratory).
- Qualified **NET (CSIR)** for carrying out research in India in 2007; Shortlisted for the **SPM Fellowship** interview.
- Acquired **3rd rank** in the all-India JAM (Joint Admission Test for M.Sc.) exam in 2005.

➤ **Research Interest.**

Interested in the multidisciplinary area of chemistry including synthetic organometallic chemistry, catalyst design and application, small molecule activation, material synthesis, polymers, and green chemistry.

➤ **List of publication.**

Publications as a corresponding author:

1. **Debabrata Mukherjee***, Danny Schuhknecht, and Jun Okuda*, "Hydrido Complexes of Calcium: A New Family of Molecular Alkaline Earth Metal Compounds." *Angew. Chem. Int. Ed.* (Review article) **2018**, *in press*, DOI: 10.1002/anie.201801869.
2. **Debabrata Mukherjee*** and Jun Okuda*, "A monoanionic NNNN-type macrocyclic ligand for electropositive metal centers." *Chem. Commun.* (Feature article) **2018**, *54*, 2701-2714.
3. **Debabrata Mukherjee*** and Jun Okuda*, "Molecular magnesium hydrides." *Angew. Chem. Int. Ed.* (Review article) **2018**, *57*, 1458-1473.
4. Hassan Osseili, Khai-Nghi Truong, Thomas P. Spaniol, **Debabrata Mukherjee***, Ulli Englert*, and Jun Okuda*, "Mononuclear Alkali Metal Organoperoxides Stabilized by an NNNN-Macrocyclic and Short Hydrogen Bonds from ROOH Molecules." *Chem. Eur. J.* **2017**, *23*, 17213-17216.

Other publications:

1. **Debabrata Mukherjee**, Thomas Höllerhage, Valeri Leich, Thomas P. Spaniol, Ulli Englert, Laurent Maron, and Jun Okuda, "The Nature of the Heavy Alkaline Earth Metal-Hydrogen Bond: Synthesis, Structure, and Reactivity of a Cationic Strontium Hydride Cluster." *J. Am. Chem. Soc.* **2018**, *140*, 3403-3411.
2. Arnab Rit, Ann-Kristin Wiegand, **Debabrata Mukherjee**, Thomas P. Spaniol, and Jun Okuda, "Zinc dihydride and mixed halo hydrides supported by an N-heterocyclic carbene." *Eur. J. Inorg. Chem.* **2018**, *2018*, 1114-1119.
3. Hassan Osseili, **Debabrata Mukherjee**, Thomas P. Spaniol, and Jun Okuda, "Ligand influence on the carbonyl hydroboration catalysis by alkali metal hydridotriphenylborates [(L)M][HBPh₃] (M = Li, Na, K)." *Chem. Eur. J.* **2017**, *23*, 14292-14298.
4. **Debabrata Mukherjee**, Satoru Shirase, Klaus Beckerle, Thomas P. Spaniol, Kazushi Mashima, and Jun Okuda, "Group 2 metal (Mg, Ca, Sr) silylamides supported by a cyclen-derived macrocyclic polyamine." *Dalton Trans.* **2017**, *47*, 8451-8457.
5. **Debabrata Mukherjee**, Hassan Osseili, Thomas P. Spaniol, and Jun Okuda, "Facile ring-opening of THF at lithium induced by a pendant Si-H bond and BPh₃." *Dalton Trans.* **2017**, *46*, 8017-8021.
6. Hassan Osseili, **Debabrata Mukherjee**, Klaus Beckerle, Thomas P. Spaniol, and Jun Okuda, "Me₆TREN-supported alkali metal hydridotriphenylborates [(L)M][HBPh₃] (M = Li, Na, K): synthesis, structure, and reactivity." *Organometallics* **2017**, *36*, 3029-3034.
7. **Debabrata Mukherjee**, Ann-Kristin Wiegand, Thomas P. Spaniol, and Jun Okuda, "Zinc hydridotriphenylborates supported by a neutral macrocyclic polyamine." *Dalton Trans.* **2017**, *46*, 6183-6186.
8. **Debabrata Mukherjee**, Hassan Osseili, Khai-Nghi Truong, Thomas P. Spaniol, and Jun Okuda, "Ring-opening of cyclic ethers by aluminium hydridotriphenylborate." *Chem. Commun.* **2017**, *53*, 3493-3496.
9. **Debabrata Mukherjee**, Thomas P. Spaniol, and Jun Okuda, "Unexpected alkane elimination from group 13 cationic dialkyls in reaction with a macrocyclic polyamine." *Dalton Trans.* **2017**, *46*, 651-655.
10. **Debabrata Mukherjee**, Satoru Shirase, Thomas P. Spaniol, Kazushi Mashima, and Jun Okuda, "Magnesium hydridotriphenylborate [Mg(thf)₆][HBPh₃]₂: a versatile hydroboration catalyst." *Chem. Commun.* **2016**, *52*, 13155-13158.
11. **Debabrata Mukherjee**, Satoru Shirase, Kazushi Mashima, and Jun Okuda, "Chemoselective reduction of tertiary amides to amines catalyzed by triphenylborane." *Angew. Chem. Int. Ed.* **2016**, *55*, 13326-13329.

12. **Debabrata Mukherjee**, Hassan Osseili, Thomas P. Spaniol, and Jun Okuda, "Alkali metal hydridotriphenylborates [(L)M][HBPh₃] (M = Li, Na, K): chemoselective catalysts for carbonyl and CO₂ hydroboration." *J. Am. Chem. Soc.* **2016**, *138*, 10790-10793.
13. Regina R. Reinig, **Debabrata Mukherjee**, Zachary B. Weinstein, Weiwei Xie, Toshia Albright, Benjamin Baird, Tristan S. Gray, Arkady Ellern, Gordon J. Miller, Arthur H. Winter, Sergey L. Bud'ko, and Aaron D. Sadow, "Synthesis and Oxidation Catalysis of [Tris(oxazolinyl)borato]cobalt(II) Scorpionates." *Eur. J. Inorg. Chem.* **2016**, *2016*, 2486-2494.
14. **Debabrata Mukherjee**, Daniel F. Sauer, Alessandro Zanardi, and Jun Okuda, "Selective metal-free hydrosilylation of CO₂ catalyzed by triphenylborane in highly polar, aprotic solvents." *Chem. Eur. J.* **2016**, *22*, 7730-7733.
15. Nicole L. Lampland, Megan Hovey, **Debabrata Mukherjee**, and Aaron D. Sadow, Magnesium-catalyzed mild reduction of tertiary and secondary amides to amines." *ACS Catal.* **2015**, *5*, 4219-4225.
16. **Debabrata Mukherjee**, Arkady Ellern, and Aaron D. Sadow, "Magnesium-Catalyzed Hydroboration of Esters: Evidence of a new zwitterionic mechanism." *Chem. Sci.* **2014**, *5*, 959-964.
17. **Debabrata Mukherjee**, Nicole L. Lampland, KaKing Yan, James F. Dunne, Arkady Ellern, and Aaron D. Sadow, "Divergent reaction pathways of tris(oxazolinyl)borato zinc and magnesium silyl compounds." *Chem. Commun.* **2013**, *49*, 4334-4336.
18. Jing Zhu, **Debabrata Mukherjee**, and Aaron D. Sadow, "Abstraction of β -hydrogen vs. alkyl groups in reactions of dialkylzinc compounds and bis(oxazolinyl)borane." *Chem. Commun.* **2012**, *48*, 464-466.
19. **Debabrata Mukherjee**, Arkady Ellern, and Aaron D. Sadow, "Remarkably robust monomeric alkylperoxyzinc compounds from tris(oxazolinyl)boratozinc alkyls and O₂." *J. Am. Chem. Soc.* **2012**, *134*, 13018-13026.
20. Kan Wu, **Debabrata Mukherjee**, Arkady Ellern, Aaron D. Sadow, and William E. Geiger, "Anodic electrochemistry of Mn and Re tricarbonyl complexes of tris(oxazolinyl)phenyl borate ligands: comparison to tris(pyrazolyl) borate complexes." *New J. Chem.* **2011**, *35*, 2169-2178.
21. **Debabrata Mukherjee**, Richard R. Thompson, Arkady Ellern, and Aaron D. Sadow, "Coordinatively saturated tris(oxazolinyl)borato zinc hydride-catalyzed cross dehydrocoupling of silanes and alcohols." *ACS Catal.* **2011**, *1*, 698-702.
22. **Debabrata Mukherjee**, Arkady Ellern, and Aaron D. Sadow, "Conversion of a Zinc Disilazide to a Zinc Hydride Mediated by LiCl." *J. Am. Chem. Soc.* **2010**, *132*, 7582-7583.

➤ **Selective Presentations in international conferences.**

- 42nd International Conference on Coordination Chemistry (ICCC), Brest, France (2016).
- Summer School Program, Center for Enabling New Technologies through Catalysis, at University of Washington, Seattle, USA (2013).
- 240th ACS national meeting, Boston, USA (2010).

➤ **Teaching and mentoring experience.**

- Supervised undergrad-level courses on synthetic organic and inorganic chemistry.
- Delivered lectures, review sessions, exams, proctoring, and grading.
- Supervised undergraduate and graduate students in research laboratories. Worked closely with them on a one-to-one basis to teach the aspects of laboratory safety, and other tools and techniques.