

## Curriculum Vitae

**Kartick Chandra Bhowmick, Ph.D.**

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Assistant Professor (Stage-III)

Department of Chemistry

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### Research Interest

Green Chemistry, Asymmetric C-C Bond-forming reactions, Asymmetric Organocatalysis, Domino/Cascade reactions, Aqueous phase asymmetric catalysis, Total synthesis of bioactive organic compounds

### Summary of Academic Qualifications

- **Post-Doctoral Research :** Department of Chemistry, University of Texas at San Antonio, USA. From **June 2016 to May 2017**.  
**Field of Research work:** Asymmetric organocatalysis, Asymmetric Domino and cascade reactions, Selective amination of biomolecules  
**Mentor:** Prof. J. C. G. Zhao and Prof. M. P. Doyle
- **Doctor of Philosophy (Ph. D.):** Awarded in **2006**.  
**Field of Research Work:** Synthetic Organic Chemistry (Asymmetric Synthesis)  
**Topic of Thesis:** *"Synthesis and Applications of a New C<sub>2</sub>-Symmetric Chiral 1,3-Diol"*.  
From National Chemical Laboratory, University of Pune, Pune, India. .  
**Name of Supervisor:** **Dr. N. N. Joshi, Scientist**  
Department of Organic Synthesis  
National Chemical Laboratory, Pune-411 008, India.
- **Master of Science (M. Sc.)- Chemistry**
  - Specialization in Organic Chemistry
  - Year of Completion – **1999** (with First Class)
  - From University of Burdwan, West Bengal, India.
- **Bachelor of Science (B. Sc.)- Chemistry**
  - Physics, Chemistry and Mathematics
  - Year of Completion – **1997** (With First Class)
  - From Sreegopal Banerjee College Affiliated to University of Burdwan, West Bengal, India.

#### Summary of Academic Experience

##### ➤ Teaching Experience:

Sl. No.	University/ Institute	Position	Duration
1	Taki Government College, Taki, 24 Pgs (N), W. B.	Assistant Professor in Chemistry	March 2006-April 2008
2	Visva-Bharati University	Assistant Professor in Chemistry	April 2008-till date

#### Fellowships and Awards

- Received '*Raman Fellowship for post-doctoral research in USA*' awarded by University Grants Commission, Govt. of India. June 2016 to May 2017.
- Received Senior Research Fellowship from Council of scientific and Industrial Research (CSIR), New Delhi. January 2002 to January 2005.
- Received Junior Research Fellowship from Council of Scientific and Industrial Research (CSIR), New Delhi. January 2000 to December 2001.
- Received National Scholarship (NSS) from the Govt. of India. (March 1998 to August 1999).
- Received National Scholarship (NSS) from the Govt. of India. (July 1994 to August 1997).

#### Training/ Seminar/Symposium/Workshop

- Presented poster entitled "Asymmetric direct aldol reaction catalyzed by (1R,2R)-(+)-1,2-diammoniumcyclohexane-L-tartrate in water" in the National Seminar on Recent trends in chemical science research and applications organized by Dept of chemistry, Visva-Bharati held on September 13, **2019**.
- Chaired the poster session in the International Conference entitled "**International Conference on Advancement in Science & Technology (ICAST-2018)**" organized by the Indian JSPS Alumni Association in association with the Department of Physics, Visva-Bharati, Santiniketan during September 3-4, **2018**.
- Presented poster entitled "**A new organocatalyst derived from (S)-pyrrolidin-2-ylmethanamine and isobutyl chloroformate in highly enantioselective Michael addition reactions in aqueous media**" in National symposium on Recent Advances in Chemistry & Industry (2017) organized by Indian Chemical Society at IEST, Shibpur, Howrah, West Bengal, India during August 2-3, **2017**.

- Delivered an oral talk entitled **“Small organic molecules as catalysts for asymmetric direct aldol reactions in aqueous media: A green chemistry approach for industrial applications”** in 2<sup>nd</sup> International Conference on Industrial chemistry and water treatment organized by Conference series at Las Vegas, USA during May 22-23, **2017**.
- Delivered an oral talk entitled **“Asymmetric organocatalysis for direct aldol reactions in aqueous media: A journey towards sustainable chemistry”** in International Conference on Frontiers at The Chemistry-Allied Sciences Interface (FCASI-2106) organized by University of Rajasthan, Jaipur, India during April 25-26, **2016**.
- Presented poster entitled **“Sustainable Asymmetric Organocatalysis in Direct Aldol Reaction”** in Three-Day National Level Seminar organized by Department of Chemistry, University of Burdwan, West Bengal, India on Design, Synthesis, Interactions, Chemical and Biochemical Activities of Different Functional Molecules during February 04-06, **2016**.
- Presented poster entitled **“Advances on asymmetric organocatalyzed mannich reactions in aqueous and non-aqueous media”** in National seminar on Chemistry of functional materials of current interest organized by Dept of chemistry, Jadavpur University, Kolkata on March 16, **2016**.
- Participated as Organizing member in Science Academies' Education programmes' Lecture Workshop on Trends in Chemistry with Reference to Teaching and Research organized by Department of Chemistry, Visva-Bharati, Santiniketan, West Bengal, India from March 13-14, **2015**.
- Presented a poster entitled *“An environmentally friendly direct asymmetric aldol reaction”* in **National Seminar on Multifunctional Polymer Materials (POLY-2014)** held at Department of Chemistry, Visva-Bharati, Santiniketan, India between February 14-15, **2015**.
- Presented a poster entitled *“An environmentally benign direct asymmetric aldol reaction”* in **International Conference on Environmental Biology and Ecological Modeling (ICEBEM 2014)** held at Visva-Bharati University, Santiniketan, India between February 24-26, **2014**.
- Presented a poster entitled *“A truly catalytic and highly enantioselective direct aldol reaction in aqueous media: Application of a new catalyst derived from 4-hydroxy-L-Proline and Abietic acid”* in **CRSI Mid-Year Symposium 2013** held at National Institute of Technology Surathkal, Mangalore, Karnataka, India between July 12-13, **2013**.
- Presented a poster entitled *“A comprehensive study on the effect of acid additives in 1(R),2(R)-Bis[(S)-prolinamido]cyclohexane catalyzed direct asymmetric aldol reactions in*

*aqueous media*" in **15<sup>th</sup> CRSI National Symposium in Chemistry** held at Benaras Hindu University, Varanasi, U.P., India between 1-3<sup>rd</sup> February, **2013**.

- Participated in one day workshop on "*National E-Governance Plan*" organized by Computer Centre, Visva-Bharati and sponsored by Department of electronics and Information Technology, Govt. of India held on 3<sup>rd</sup> December, **2012**.
- Participated in Lecture Workshop on "*Recent Developments in Chemistry*" between 29<sup>th</sup> November – 1<sup>st</sup> December, **2012**, Sponsored by Royal Society of Chemistry, Eastern Chapter, India and organized by Department of Chemistry, Siksha-Bhavana, Visva-Bharati.
- Participated in UGC-Sponsored National level seminar on "*Recent advances in chemical science and related areas*" jointly organized by Sreegopal Banerjee College, Bagati, Magra and Hooghly Women's College, Hooghly during 18-19 November, **2011**.
- Organized as Joint Convener in UGC-Sponsored one day seminar on "*International year of chemistry: Impact of chemistry on our life*" organized by Department of Chemistry, Siksha-Bhavana, Visva-Bharati on 25<sup>th</sup> March, **2011**.
- Participated in National seminar on "Science and Nature: Tagore's vision and its relevance" organized by Siksha-Bhavana, Visva-Bharati, Santiniketan during 12-13 March, **2011**.
- Presented a poster entitled "*Aldol-Tishchenko-Tishchenko reaction: sodium-tert-butoxide mediated one step formation of 1,3-glycol diester from benzaldehyde and isobutyrophenone*" in **National Symposium on Organic Chemistry-IV** organized by Department of Chemistry, Jadavpur University and Sponsored by UGC, Govt. of India, during February 2-3, **2011**.
- Presented lecture in the division of Organic Synthesis, National Chemical Laboratory, during **OCS-Day'2005**.
- Presented poster during **Science Day'2004** at National Chemical Laboratory, Pune, India on 28<sup>th</sup> February, **2004**.
- Presented poster in **Ninth IUPAC International Conference** on "*Biodiversity and Natural Products*" organized by Dept. of Chemistry, Delhi University, New Delhi, India, held during Jan 27-31, **2004**.
- Participated in **Post NOST Mini Symposium** in Organic Chemistry, NCL, Pune, 3<sup>rd</sup> Nov, **2003**.
- Presented poster during **Science Day' 2003** at National Chemical Laboratory, Pune, India on 28<sup>th</sup> February, **2003**.

- Participated in **Fourth National Symposium in Chemistry**, NCL, Pune, India during 2-4 February, **2002**.
- Participated in **Fifth IUPAC International Symposium** on Bio-Organic Chemistry (ISBOC-5), NCL, Pune, India during Jan 30-Feb 4, **2000**.

#### Publications

1. "Synthesis and resolution of 2,2-dimethyl-1,3-diphenyl-1,3-propanediol, a new  $C_2$ -symmetric and conformationally rigid acyclic diol" by **K. C. Bhowmick**, K. R. K. Prasad and N. N. Joshi. *Tetrahedron: Asymmetry* **2002**, 13, 851-855.
2. "Syntheses and applications of  $C_2$ -symmetric chiral diols" by **K. C. Bhowmick** and N. N. Joshi. *Tetrahedron: Asymmetry* **2006**, 17, 1901-1929.
3. "A stereocontrolled route to the synthesis of ( $\pm$ )-3-amino-2,2-dimethyl-1,3-diphenylpropan-1-ol" by M. N. Patil, **K. C. Bhowmick**, and N. N. Joshi *Tetrahedron Lett.* **2010**, 51, 5927-5929.
4. "Catalytic asymmetric carbon-carbon bond-forming reactions in aqueous media" by S. Bhowmick and **K. C. Bhowmick** *Tetrahedron: Asymmetry* **2011**, 22, 1945-1979.
5. "Aldol-Tishchenko-Tishchenko reaction: sodium-*tert*-butoxide mediated one step formation of 1,3-glycol diester from benzaldehyde and isobutyrophenone" by S. Bhowmick and **K. C. Bhowmick\*** *Mendeleev Communications* **2013**, 23, 96-97.
6. "The smallest organocatalyst in highly enantioselective direct aldol reaction in wet solvent-free conditions" by S. Bhowmick, S. S. Kunte and **K. C. Bhowmick\*** *RSC Advances* **2014**, 4, 24311-24315.
7. "A new organocatalyst derived from abietic acid and 4-hydroxy- L-proline for direct asymmetric aldol reactions in aqueous media" by S. Bhowmick, S. S. Kunte and **K. C. Bhowmick\*** *Tetrahedron: Asymmetry* **2014**, 25, 1292-1297.
8. "A comprehensive study on the effect of acid additives in 1(*R*),2(*R*)-Bis[(*S*) prolinamido] cyclohexane catalyzed direct asymmetric aldol reactions in aqueous media" by S. Bhowmick, S. S. Kunte and **K. C. Bhowmick\*** *Indian J Chem* **2015**, 54B, 84-87.
9. "Water: the most versatile and nature's friendly media in asymmetric organocatalyzed direct aldol reactions" by S. Bhowmick, A. Mondal, A. Ghosh and **K. C. Bhowmick\*** *Tetrahedron: Asymmetry* **2015**, 26, 1215-1244.
10. "Advances on asymmetric organocatalyzed Mannich reactions in aqueous and non-aqueous media" by A. Ghosh, S. Bhowmick, A. Mondal, H. Garai and **K. C. Bhowmick\*** *Current Organocatalysis* **2016**, 3, 133-160.

11. "Advances on asymmetric organocatalytic 1,4-conjugate addition reactions in aqueous and semi-aqueous media" by A. Mondal, S. Bhowmick, A. Ghosh, T. Chanda and **K. C. Bhowmick**\* *Tetrahedron: Asymmetry* **2017**, 28, 849-875.
12. "Prolinal dithioacetals: Highly efficient organocatalysts for the direct nitro-Michael additions in both organic and aqueous media" by T. Mandal, W. Kuo, M. Su, **K. C. Bhowmick**, J. C.-G. Zhao\* *Tetrahedron* **2017**, 73, 6597-6603.
13. "Highly selective acylation of polyamines and aminoglycosides by 5-acyl-5-phenyl-1,5-dihydro-4H-pyrazol-4-ones" by K. O. Marichev, E. C. Garcia, **K. C. Bhowmick**, D. J. Wherritt, H. Arman, M. P. Doyle\* *Chem. Sci.* **2017**, 8, 7152-7159.
14. "Organocatalyzed Asymmetric Diels-Alder Reactions in Aqueous or Semi-Aqueous Media" by **K. C. Bhowmick**, M. Bihani, J. C. -G. Zhao\* *Mini Reviews in Organic Chemistry* **2018**, 15, 3-19.
15. "The carbamate esters as organocatalysts in asymmetric Michael addition reactions in aqueous media: when pyrrolidine backbone surpasses 1,2diaminocyclohexane" by A. Mondal, **K. C. Bhowmick**\* *ARKIVOC* **2018**, 320-331.
16. "Asymmetric Direct Aldol Reaction Catalyzed by (1*R*, 2*R*)-(+)-1,2-Diammonium Cyclohexane-L-tartrate in Water" by A. Mondal, **K. C. Bhowmick**\* *Current Organocatalysis* **2019**, 6, 165-170.
17. "Asymmetric Organocatalyzed Warfarin Synthesis in Aqueous and Non-aqueous Media: A Discussion in the Era of COVID-19 Pandemic" by A. Mondal, **K. C. Bhowmick**\* *Current Organocatalysis* **2021**, 8, 109-125.

#### Symposium Proceedings

1. "Asymmetric Catalysis In Aqueous Media: A Green Approach" by **K. C. Bhowmick** in the *Proceedings of UGC-Sponsored two-days National seminar on some modern aspects of chemical research-Grooming of UG and PG students* **2012**, 1, 45-47 published by Bidhannagar Government College (ISBN: 978-93-80673-69-1). Held on 7-8<sup>th</sup> February **2012**.

#### Patents

1. "A Novel Enzymatic Resolution of Hydroxy Lactone Derivative of Atorvastatin" by M. N. Bhanu and **K. C. Bhowmick**. Pat. Appl. No. **01152/ KOL / 2005A** Filed on 14<sup>th</sup> December, 2005 and Patent Publication Date- **20<sup>th</sup> July, 2007**.

#### Book Chapter

1. Bhowmick, K. C.; Chanda, T. Chapter 12: Asymmetric Organocatalysis in Aqueous Media. In *Green Techniques for Organic Synthesis and Medicinal Chemistry* (2<sup>nd</sup> Edn); Zhang, W.; Cue, B. W. Eds.; John Wiley & Sons Ltd.: New Jersey, USA, **2018**; pp 291-324.

#### Sponsored Projects

1. Project Title: **“Asymmetric Catalysis in water/aqueous media: Design and Applications of Chiral Catalysts for C-C Bond-forming Reactions”** Sponsored by Department of Science & Technology, Govt. Of India, New Delhi. No: **SR/FT/CS-013/2009**, Duration: 1-12-2009 to 30-11-2012, Sanctioned amount: **16.56 lac**

#### PhD and PG dissertation

PhD awarded (as PI): 02  
PG dissertation: 32

PhD awarded (as Co-PI): 01