

**Dr. Parthasarathi Das, FRSC**

**Professor & Head**

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### **PROFESSIONAL PROFILE**

*Organic/Medicinal Chemist with 22 Year Experience in Pharmaceutical Industry & Academic (CSIR and IIT)*

#### **EMPLOYMENT (TwentyTwo Year of Experience in Academic and Pharmaceutical Industry) (2003-Till Date)**

##### **Academic (2012-till date)**

- Professor Department of Chemistry & Chemical Biology, **Indian Institute of Technology (ISM) Dhanbad, India**
- Associate Professor Department of Chemistry & Chemical Biology, **Indian Institute of Technology (ISM) Dhanbad, India**
- Principal Scientist, Department of Medicinal Chemistry, **CSIR-Indian Institute of Integrative Medicine, Jammu, India**

##### **Industry (2003-2011)**

Research Investigator (Chemistry-Lead) **Aurigene Discovery Technologies Ltd. (Dr. Reddy's Laboratories Ltd.)**  
Hyderabad, India

Associate Director, Discovery Chemistry, **Dr. Reddy's Laboratories Ltd., Hyderabad, India**

#### **ACADEMIC LEADERSHIP**

- **Head of Department Chemistry and Chemical Biology IIT (ISM) Dhanbad** June 2021-Till Date  
-Leading the Department of 300 Academic and Research Personal (22 Faculty, 120 MSc student, 40 M TechStudent, 110 Ph D and PostDoc)
- **Course Coordinator** M.Tech in Pharmaceutical Science & Engineering, IIT (ISM) Dhanbad 2018-2023  
- Designing and implementing the interdisciplinary M Tech Course, which is first time in IIT System
- **Head of Department, Department of Natural Product Chemistry, CSIR-IIM Jammu** 2015-2017  
- Lead a Team of Scientist and Technical Staff in execution of various CSIR Mission mode project

#### **INDUSTRY LEADERSHIP**

##### **Dr. Reddy's Laboratories Ltd. Hyderabad (2003-2011)**

- **Chemistry-Lead, Associate Director**, Dr. Reddy's Laboratories Ltd  
-Lead a group of Thirty Discovery Chemist responsible for timely delivery of compounds for various therapeutic areas for biological and pharmacokinetics activities  
- Lead a group of Chemist from Gram to kilo level synthesis of Key Starting Material (KSM)/ Active Pharmaceutical Ingredient (API)

#### **POST DOCTORAL EXPERIENCE (1999-2003)**

- Department of Chemistry and Chemical Biology, **Harvard University**, Cambridge, MA, USA
- Department of Chemistry, **Tohoku University**, Sendai, Japan
- Institut für Organische Chemie, **RWTH-Aachen**, Aachen, Germany

#### **EDUCATION (1993-1998)**

- Doctor of Philosophy (Ph.D), Organic Chemistry  
**CSIR-National Chemical Laboratory, University of Poona, India**
- Master of Science (M.Sc.), Organic Chemistry  
**University of Burdwan, Burdwan, India**

#### **RESEARCH AREA**

- Catalysis and Heterocyclic Chemistry
- Medicinal Chemistry and Drug Discovery
- Total Synthesis of Biological Active Molecules
- Affordable Synthesis of FDA-Approved Drugs
- Synthesis and Characterization of Drug Impurities

#### **HIGHLIGHTS OF RESERCH ACTIVITIES**

##### **Industrial Collaboration and Translational Research**

- **AarogyaAI** (<https://aarogya.ai/>) a startup Biotech Company aims to diagnose **Drug-Resistant Tuberculosis (DR-TB)** using Artificial Intelligence.  
@IITISM\_DHANBAD has signed **MOU with AarogyaAI** a Biotech Company aims to cooperate in participating academic and research activities in the area of Drug Discovery, Bioinformatics, Artificial Intelligence and Machine

Learning in Healthcare and Human Well Being on **01 Oct, 2021**.

- IIT(ISM) Dhanbad and **Tokyo Chemical Industry Co, Ltd (TCI) Japan** have signed a **MOU** on **12<sup>th</sup> July 2022** **Material Transfer Agreement (MTA)** for fine & specialty chemical products.  
-An initiative from **Bench to Market**
- Affordable Process for Synthesis of **Molnupiravir**: From Lab-scale to Kilo-scale (*Indian Patent Application No. 202131023578, 2021*)
- **Synthesis of novel impurities of anti-diabetic drug Repaglinide** (*Drug Test. Analysis 2018, 10, 212*) (Reviewed as Making Diabetes Drugs Cleaner; <http://www.chemistryviews.org>)
- Design and synthesis of **DRL-20035 (Dr. Reddys Lab)** as potent *c-Jun-N-terminal kinase inhibitor* for cardio-metabolic risk reduction (*US Provisional patent application number: 61/053,403*)

## **RESEARCH PUBLICATION**

Publications in peer reviewed SCI Journals (Up to March 2024): 88

*h*-index-28; *i10* index-58

### **Selected Research Publication**

1. **CuI/DMAP-Catalyzed Oxidative Alkynylation of 7-Azaindoles: Synthetic Scope and Mechanistic Studies** Vishal Talukdar, Krishanu Mondal, Devendra Kumar Dhaked, and Parthasarathi Das\* *Chem Asian J.* **2024**, e202300987 (**Highlighted HOT Article Wiley-Vch**)
2. **Two-Chamber-Enabled Hydrogenation Reactions Using Al-H<sub>2</sub>O/NaOH: Access to Pharmaceuticals** Ashif Iqbal, Pallabi Halder, and Parthasarathi Das\* *J. Org. Chem.* **2023**, *88*, 17047–17061 (**Highlighted in Synfacts**)
3. **7-Azaindole N-Oxide (7-AINO) Mediated Cu-Catalyzed N-Arylation: Mechanistic Investigation into the Role of Fluoride Ions** Krishanu Mondal, Narottam Mukhopadhyay, Susanta Patra, Tanumay Roy, and Parthasarathi Das\* *ACS Catal.* **2023**, *13*, 11977-11995.
4. **Carbonylative Transformations Using a DMAP-Based Pd-Catalyst through Ex Situ CO Generation** Pallabi Halder, Ashif Iqbal, Krishanu Mondal, Narottam Mukhopadhyay, and Parthasarathi Das\* *J. Org. Chem.* **2023**, *88*, 15218–15236.
5. **CuF<sub>2</sub>/MeOH-Catalyzed N<sub>3</sub>-Selective Chan-Lam Coupling of Hydantoins: Method and Mechanistic Insight** Tanumay Roy, Krishanu Mondal, Arunava Sengupta, and Parthasarathi Das\* *J. Org. Chem.* **2023**, *88*, 9, 6058–6070 (**Highlighted in organic portal <https://www.organic-chemistry.org/>**)
6. **CuF<sub>2</sub>/DMAP-Catalyzed N-Vinylation: Scope and Mechanistic Study**, Krishanu Mondal, Susanta Patra, Pallabi Halder, Narottam Mukhopadhyay and Parthasarathi Das\* *Org. Lett.* **2023**, *25*, 8, 1235–1240. (**Highlighted in organic portal <https://www.organic-chemistry.org/>**)
7. **Exploiting Coordination Behavior of 7-Azaindole for Mechanistic Investigation of Chan-Lam Coupling and Application to 7-Azaindole Based Pharmacophores**, Krishanu Mondal, Narottam Mukhopadhyay, Arunava Sengupta, Tanumay Roy, Parthasarathi Das\* *Chem. Eur. J.* **2023**, e202203718.
8. **Palladium-Catalyzed Aminocarbonylation of Isoquinolines Utilizing Chloroform-CO<sub>2</sub> Chemistry**, Pallabi Halder, Vishal Talukdar, Ashif Iqbal and Parthasarathi Das\* *J. Org. Chem.* **2022**, *87*, 21, 13965–13979.
9. **Programmed synthesis of triarylnitroimidazoles via sequential cross-coupling reactions**, Gaurav Raina, Prakash Kannaboina, Nagaraju Mupparapu, Sushil Raina, Qazi Naveed Ahmed and Parthasarathi Das\*, *Org. Biomol. Chem.*, **2019**, *17*, 2134.
10. **Palladium-catalyzed aminocarbonylation of halo-substituted 7-azaindoles and other heteroarenes using chloroform as a carbon monoxide source**, Prakash Kannaboina, Gaurav Raina, K. Anil Kumar and Parthasarathi Das\*, *Chem. Commun.*, **2017**, *53*, 9446.
11. **Cobalt-Catalyzed Regioselective Ortho C(sp<sup>2</sup>)-H Bond Nitration of Aromatics through Proton-Coupled Electron Transfer Assistance**, D. Nageswar Rao, Sk. Rasheed, Gaurav Raina, Qazi Naveed Ahmed, Chaitanya Kumar Jaladanki, Prasad V. Bharatam and Parthasarathi Das\*, *J. Org. Chem.* **2017**, *82*, 7234.
12. **Copper (II)-catalyzed Chan-Lam cross-coupling: chemoselective N-arylation of aminophenols**. SivaReddy, K. RanjithReddy, D.Nageswar Rao, Chaitanya K. Jaladanki, Prasad V. Bharatam, Patrick Y. S. Lam and Parthasarathi Das\*, *Org. Biomol. Chem.* **2017**, *15*, 801.

## **REVIEW & BOOK CHAPTER**

- **Pyrazolopyridine-based kinase inhibitors for anticancer targeted therapy** Pallabi Halder, Anubhav Rai, Vishal Talukdar, Parthasarathi Das \* and Naga Rajiv Lakkaniga\* *RSC Med. Chem DOI: 10.1039/d4md00003j*
- **Development of Azaindole-Based Frameworks as Potential Antiviral Agents and Their Future Perspectives**, Urvashi, J. B. Senthil Kumar, Parthasarathi Das and Vibha Tandon, *J. Med. Chem.* **2022**, *65*, 9, 6454–6495.
- **Recent developments in selective N-arylation of azoles**, Pallabi Halder, Tanumay Roy, Parthasarathi Das, *Chem. Commun.* **2021**, *57*, 5235.
- **Advances in Carbon–Element Bond Construction under Chan–Lam Cross-Coupling Conditions: A Second Decade**, Ajesh Vijayan, Desaboini Nageswara Rao, K. V. Radhakrishnan, Patrick Y. S. Lam, Parthasarathi Das\*, *Synthesis* **2021**, *53*, 805.
- **Strategic Advances in Sequential C-Arylations of Heteroarenes**, Savio Cardoza, Manoj Kumar Shrivash, Parthasarathi Das\*, and Vibha Tandon, *J. Org. Chem* **2021**, *86*, 1330.
- **Recent advances in the global ring functionalization of 7-azaindoles**, Prakash Kannaboina, Krishanu Mondal, Joydev K.

## **BOOK CHAPTER**

1. “Regio-selective C-H functionalization of 7-azaindoles”, Prakash Kannaboina, and Parthasarathi Das, *Wiley-VCH book “Handbook of CH-Functionalization; Editor D. Maiti Sept 2022.*
2. “C-H Functionalization Utilizing CO Surrogates”, Sheetal, Parthasarathi Das, and Pralay Das, *Wiley-VCH book “Handbook of CH-Functionalization; Editor D. Maiti Sept 2022*

## **TEACHING HIGHLIGHTS**

- CYD 501 Medicinal Chemistry (M.Sc)
- CYC 516 Strategies in Organic Synthesis (M.Sc)
- CYI 101 Common Chemistry (B.Tech)
- CYI 102 Chemistry Practical (B.Tech)
- CYC525 Basic Pharmacology and Drug Design (M Tech)
- CYC 526 Process Chemistry and Technology (M Tech)

## **SUPERVISION PhD/MSc/M Tech**

- **2010-till date: Twelve PhD Completed**  
CSIR-Indian Institute of Integrative Medicine (AcSIR), Jawaharlal Nehru Technological University (JNTU)-Hyderabad
- **Twelve Ongoing Ph. D Students IIT Dhanbad**
- **2018-till date: Twenty MSc/MTech Students**  
Indian Institute of Technology (ISM) Dhanbad/ Dr. Reddys Laboratories Ltd.

## **FELLOWSHIP & AWARDS**

- **Research Council Member of CSIR-Indian Institute of Integrative Medicine Jammu**
- **International Advisory Board Member of New Journal of Chemistry (NJC)**
- **Fellow of the Royal Society of Chemistry (FRSC)**
- **Council Member, Chemical Research Society of India (CRSI) (2020-2023)**
- **PEC Member, Technology Development Board (TDB), DST, Govt. India**
- **Publons Peer Review Awards 2019**
- **Chemical Research Society of India (CRSI) Bronze Medal 2019**
- **Publons Peer Review Awards 2018**
- **Prof. K. N. Johry Memorial Lecture Award, University of Delhi 2018**
- **Featured in the “TCI-India League of Extraordinary Chemists” 2014**
- **Panel Member ACS-Dr. Reddy's Symposium on Recent Advances in Drug Development 2016**
- **Harvard Post Doctoral Fellowship, Harvard University, USA 2002**
- **CREST-Postdoctoral Fellowship, Japan Science and Technology (JST), JAPAN 2000**
- **Graduiertenkollegs Fellowship, DFG, GERMANY 1999**

## **MEMBERSHIP**

- Indian Chemical Society (ICS), Kolkata, India
- American Chemical Society (ACS), USA
- Royal Society of Chemistry (RSC), UK
- Chemical Research Society of India (CRSI), Bangalore, India
- Indian Society of Chemists and Biologist (ISCB), Lucknow, India

## **Social Commitment & Community Outreach**

- **Atal Community Innovation Centre (ACIC) IIT (ISM) Foundation**, an incubation centre, is funded by IIT (ISM) Dhanbad and **Niti Aayog, Government of India**. The Foundation aims to create opportunities for enterprises and start-ups bringing innovative solutions that solve a community problem. The Foundation addresses several economically weaker sections of our society that includes women, persons with disabilities, tribal communities and others who lack formal resources to earn livelihood.
- **Technical expert and lead scientist on medicinal and aromatic plant-based products for traditional medicine and value-added product.**

## **SELECTED INVITED LECTURE & PAPER PRESENTATION**

- International Conference on “Emerging Trends in Catalysis & Synthesis” IC-ETCS – 2024 **IIT Kharagpur** 7-9th March **2024**
- International Conference on Organometallics and Catalysis (ICOC-2023) **Goa, 30th Oct-2nd Nov 2023.**
- Sustainability & Interdisciplinary in Chemical Sciences (SICS) **IISER Kolkata**, 13-15<sup>th</sup> July **2023**
- Emerging Trends in Chemical Sciences (ETCS-2023) **NEHU, Shillong**, 2-4th March **2023**
- Contemporary Facets in Organic Synthesis (CFOS) **IIT Roorkee** 1-4th December **2022**
- 58th Annual Convention of Chemists (ACC) Indian Chemical Society (ISC) **IIT Kharagpur** 22-24 December **2021**
- Recent Trends in Organic Chemistry, **National Institute of Technology, Manipur**, 26-30 November, **2020**
- Chemical Science for Drug Discovery & Therapy', **VNIT Nagpur**, 22-26th July **2020**
- Department of Chemistry, **California State University, Fresno**, August 27th **2019, USA**
- **ACS Fall 2019 National Meeting & Exposition**, San Diego August 25-29th **2019, USA**
- 25th CRSI National Symposium in Chemistry”, **IIT Kanpur**, 19-21st July **2019, Kanpur**
- Chemical Biology 2019, Singapore, June 20-21st, **2019, Singapore**
- RAOBC-2019, Department of Chemical Sciences, **IISER Mohali** 22-24th March **2019, Mohali**