Prof. Biswajit Chowdhury

Contact

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Languages

English
Hindi
Bengali

Designations

- **Professor (HAG) (2023-**
- **Professor (2016-2023)**
- **Associate Professor (2010-2016)**
- **Assistant Professor (2007-2010)**

Fellowship and Membership of Professional Bodies

- **Fellow of Royal Society of Chemistry (2021-**
- **Member of American Chemical Society**
- **Member of International Union of Pure and Applied Chemistry (IUPAC)**
- **Life Member:** Catalysis Society of India; Indian Council of Chemist; Indian Chemical Society
- **Life Member** Chemical Research Society of India; Bangalore
- **Member:** Center of Excellence in Renewable Energy funded by MHRD Govt of India.
- **Editorial board member:** Green and Sustainable Chemistry

Skill Highlights:

- **Post Graduate leve**l-17 Year (Materials Chemistry; Surface Science & Catalysis, Advanced Materials, Quantum Chemistry, Molecular Spectroscopy).
- **Undergraduate levels-** 22 yrs (Physical Chemistry); 8 years (Petroleum Chemistry)

Research Interest

Nanomaterials and Heterogeneous Catalysis

Synthesis of nanomaterial (gold nanoparticle, ceria nanorod, ceria nanocube, porous material)

- Spectroscopic characterization by different techniques

Catalytic studies (both in liquid phase and gas phase)

- Process development for reactions related to petroleum refining
- Biomass conversion, Biofuel
- CO_2 Capture Technology
- Sustainable Chemistry
- Hydrogen generation

Education

Name of Degree	University/Institute	(Year)	Award of degree
Ph.D	Indian Institute of Chemical Technology (IICT) Degree conferred by Osmania University, Hyderabad	2000	
M.Sc (Physical Chemistry Specialization)	Jadavpur University, Kolkata	1995	1st Class
B. Sc (Honors) in Chemistry)	Jadavpur University, Kolkata	1993	1st Class honors with distinction in subsidiary subjects

Professional Experience

- **2024: 10 th June 2024 to 9th July 2024 : Visiting Researcher; UiT The Arctic University of Norway; Tromso**
- **2022: 9th June 2022 to 15th June 2022 (07 days): Guest Scientist: Ruhr University of Bochum. Germany**
- **2019: 30th September to 11th October (Two weeks): Visiting Research Scientist; The Energy Institute; MARMARA RESEARCH CENTER; TUBITAK; REPUBLIC OF TURKEY**
- **2015: (13th Feb-20th Feb): Visiting Professor**: **Department of Chemical Engineering**; **King Saud University**, **Saudi Arabia** (07 days)
- **2014: 29th June 2014 – 07th July 2014; Visiting Professor**: **Department of Chemistry and Chemical Engineering**; **Eindhoven University of Technology**, **Netherland**
- **2013: 1st June to 10th June 2013: Visiting Professor, Research Center for Gold Chemistry; Tokyo Metropoliton University; JAPAN**
- **2003-2005**: **Visiting research scientist**, **Nanoparticle Catalysis Group**, **National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, JAPAN,** Supervisor: **Prof. Masatake Haruta**
- **2002-2003**: **Mumbusho Post Doctoral Fellowship, Research Laboratory of Hydrothermal Chemistry, Kochi University JAPAN**; **Supervisor; Kazumichi Yanagisawa**
- **1999-2002 & 2005-2007**: **Lecturer, Department of Chemistry, Uluberia College (Calcutta University)**
- **1996-2000: Research Fellow: Indian Institute of Chemical Technology (IICT); Hyderabad**

Publication; 95 Book Chapter: 03 Conference Proceedings 1; Review 7

Patents: Japanese granted patent: 01; Indian patent granted;05; Published 01

Filed 01 h index 34 citation 3487 i-index 70 (Google scholar)

Reviewer: Several journals published **by Institute of Physics (IOP); Royal Society of Chemistry; American Chemical Society, Wiley Elsevier etc**

Research Guidance: Ph. D -05 (ongoing) 13 (awarded) M. Tech (03) M. Phil -03. M.Sc (38)

PhD Students Guided

Name of Student	Title of the Thesis	Role	Year of Degree Award
Dr. Olusola Oladele James (CSIR-TWAS Fellow)	Mixed Metals Promotion On Iron and Cobalt based Fischer-Tropsch Catalysts: Synergistic effect of Calcium and Transition Metals	Co-Supervisor	2013
Dr. Sandip Mondal	Design of Gold Nanoparticle Supported on Mesoporous Material useful for mild Oxidation	Sole Supervisor	2013
Dr. Sumbul Rahman	Preparation, Characterization and Catalytic Activity Studies of different Metal doped Mesoporous Silica for Oxidation Reaction	Sole Supervisor	2015
Dr. Chiranjit Santra	Promotional effect of Gold Nanoparticles on Alcohol Oxidation Activity of Nanoporous Metal doped Ceria Catalyst	Sole Supervisor	2015
Dr. Rawesh Kumar	Development of Efficient Siliceous and Non-Siliceous Mesoporous Oxide for Vapor Phase Beckmann Rearrangement Reaction	Sole Supervisor	2016
Dr. Nagasuresh Enjamuri	Oxidant free Dehydrogenation of Alcohol over Mixed Oxide Supported Metal Nanoparticle Catalyst	Sole Supervisor	2018
Dr. Sneha Shah	Development of Solid Acid Catalyst for Dehydration and C-H Activation Reaction	Sole Supervisor	2019
Dr. Prangya Paramita Das	Development of Metal Nanoparticles Embedded in Mesoporous Silica and Carbon Catalysts for Fine Chemical Synthesis	Sole Supervisor	2020
Dr. Shahid Hassan	Development of Nanostructured Material with Tunable Chemical Property	Sole Supervisor	2022
Dr. Kumer Saurav Keshri	Oxide Based Nanocatalysts for Organic and Environmentally Benign Transformations	Sole Supervisor	2022

Dr. Kushnava Bhaduri	**Design of functionalized nanomaterials for bio-renewable glycerol upgradation and water pollutant removal reactions**	**Sole Supervisor**	**2022**
Dr. Anindya Ghosh	**Development of Carbon-based Catalysts for Biomass Conversion and CO_2 Utilization Reactions**	**Sole Supervisor**	**2022**
Dr. Aniruddha Singha	**Oxidative Transformation of Organic Compounds to Value-added Chemicals over Metal Oxide based Heterogeneous Catalysts**	**Sole Supervisor**	**2023**

M.Tech Students Guided

Name of the Student	Title of the Thesis	Role	Discipline	Year
Ms Soni Jaiswal	Removal of heavy metals from processing plants effluents and waste water using mesoporous silica synthesized by different templates	Co-Supervisor	Duel degree (Mineral Engineering and Materials Technology)	2013
Md. Shahnawaz Alam	Removal of Anions Using functionalized Nanoporous sorbents	Co-Supervisor	Duel degree (Mineral Engineering and Materials Technology)	2013
Mr. Avinash Tripathi	Removal of Heavy Metal ions from waste water using functionalized mesoporous silica materials	Co-Supervisor	Duel degree (Mineral Engineering and Materials Technology)	2013

Awards

- 2024: **Life fellow of Chemical Research Society of India, Bangalore**
- **2023: Life fellow of Indian Chemical Society**
- **2021: Member of American Chemical Society**

- **2020: Fellow of Royal Society of Chemistry (FRSC)**
- **2019: Awarded TUBITAK 2221 FELLOWSHIP; Govt of Turkey as Visiting Scientist**
- **2010:** Awarded **DST-JSPS fellowship in 2010** for carrying out XAFS measurement at **KEK Photon Factory at Tsukuba, JAPAN**
- **2007: Fast Track Young Scientist (DST); Govt of India**
- **2003-2005:: AIST Fellowship (Visiting research scientist) Nanoparticle Catalysis Group, AIST, Tsukuba, JAPAN**
- **2002-2003:: Mumbusho Post Doctoral Fellowship, Research Laboratory of Hydrothermal Chemistry, Kochi University; JAPAN**
- **1995-1999: Research fellowship (for qualifying UGC NET held at Dec19**

- **1987-1995**: **National Merit Scholarship, Govt of India**

  (For obtaining more than 75% marks in **10th (1987)** W.B.B.S.E; 73.5% in **(10+2)** W.B.C.H.S.E(**1989)**

- **2018 -**Bharat Vikash Award by Institute of Self Reliance, Odisha, for contribution in **Heterogeneous Catalysis and Nanomaterial**

Session Chair

1. **Chaired a Session in 17th National Workshop of Catalysis Society of India at IIT Delhi during 31st May -1st June 2019**
2. **Panel discussion at Ruhr-University of Bochum; Germany during 11th Sept 2019-13th Sept 2019**
3. **Member of National Organizing Committee of CEES-2024**

Special Lectures/Presentation

1. **Invited Lecture at Sun Petrochemicals Pvt Ltd, Mumbai on 21st May 2024**
2. **Invited Lecture in the National Conference on Catalysis for Environment and Sustainability (CEES-2024) held at Indian Institute of Chemical Technology (IICT), Hyderabad during 18-20 September 2024**
3. **Invited Lecture on *International Conference on Sustainable Chemistry and Engineering* at Institute of Chemical Technology (ICT, Mumbai) during 14th -16 th September 2023**
4. **Invited lecture on *Conference on Catalysis for Energy, Environment and Sustainability* (CEES-2023) during 25th -27th September 2023 at IIT Mandi**
5. **Invited lecture on 10 th June 2022 at Ruhr University of Bochum, Germany Presented in IGSTC partners' meet in Frankfurt Germany (13th June) 2022**
6. **Invited lecture 2021 INTPART WINTER WORKSHOP ON "Microscopy, Bioimaging and Artificial Intelligence" held on 21st Dec 2021 (IIT Delhi)**
7. **Invited lecture Series in Energy Institute; TUBITAK Marmara Research Centre, Republic of Turkey during 30th September to 11th October 2019.**
8. **Invited Speaker in the International Conference on Advances in Industrial Catalysis: Industrial Outlook held at IICT Hyderabad (1st - 2nd August) 2019**
9. **Keynote lecture in the conference Recent Advances in Applied Science held at Guahati University (17th - 18th May 2019)**
10. **Invited talk at Reliance Research and Development Center (RRDC) 28 th Dec 2017**
11. **Invited lecture Series in Department of Chemical Engineering, King Saud University Saudi Arabia in 2015**
12. **337th colloquium lecture on June 6th 2013 in Tokyo Metropoliton University, JAPAN**
13. Ceria based mesoporous mixed oxide supported gold nanoparticle for

alcohol oxidation reaction using molecular O2 **B. Chowdhury**, Sandip Mandal and Chiranjit Santra **(Presented Oral in the International Conference on Nanoscience and Nanotechnology held at Zurich, Switzerland, July 5-6 th 2012)**

14. 3-D Mesoporous Silylated Titanosilicate Supported Gold Nanoparticles for Direct Vapor Phase Epoxidation of Propylene: Role of Solid and Gaseous promoters

Presented Oral in International Conference in Chemistry and Chemical Engineering held at Kyoto, JAPAN 1st Aug to 3rd Aug (2010)

R&D Activities

1. **Bioscopy - Towards modern transdisciplinary education and research in microscopy**
   Project No: INCP2-2024/10271
   Role: Co-PI (Indian side)
   PI: Prof. Krishna Agarwal, Professor, UIT (Norway)
   Funded by: Indo-Norwegian Cooperation Program

2. **Ongoing projects: Consultancy/Testing project:**
   Steam reforming of Glycerol
   Funded by Tata Steel Pvt Ltd; Jamshedpur
   Layout 35.0 lakh INR

External Research Projects (Major) Completed as PI

1. **Title of the project: CO_2 and Biomass as Feedstock for the Production of Fuels and Chemical Intermediates CO2BioFeed**
   Funded by Indo-German Center of Science and Technology Center
   A Bilateral Institution of Government of India (DST) and Federal Ministry of Education and Research (BMBF) (2020-2024)
   Funding for IIT (ISM): 84.1 lakh
   Total Outlay: 4 crores approx. in Indian side (Completed on 31st July 2024)

Indian Academic Partner	Prof. Biswajit Chowdhury, Indian Institute of Technology (Indian School of Mines), Dhanbad
Indian Academic Partner	Prof. Asim Bhaumik, Indian Association for the Cultivation of Science, Kolkata

Indian Industrial Partner	Dr. Praveen Chinthala, Reliance Industries Limited, Jamnagar
German Academic Partner	Prof. Dr. Thomas Ernst Müller, Ruhr-Universität Bochum, Bochum, Germany Förderkennzeichen: **01DQ20004A/B/C**
German Industrial Partner	Dr. Jens Hannes, RWE Power Aktiengesellschaft, Essen, Germany Förderkennzeichen: **01DQ20004A/B/C**
German Industrial Partner	Gernot Nell, Parr Instrument (Deutschland) GmbH, Frankfurt, Germany Förderkennzeichen: **01DQ20004A/B/C**

2. **CO_2 as a building block for synthesis of fine chemical and fuel over functionalized materials**

Indo-Russian bi-lateral project funded by DST, Govt of India and Russian Science Foundation (RSF), Russia. Role PI *Total outlay 63,12,032 Rs* (Indian side)

DST/INT/RUS/RSF/P-25 (Completed) 31.12.2022 (PI)

Russian Side PI. Dr. Sci Sergey E. Lyubimov; Institute of Organoelements Compound, MOSCOW, RUSSIA

3. **Design of novel bifunctional gold-Ti- and Fe-modified zeolite functional materials for the catalytic oxidation of hydrocarbons**

India-the Netherland bi-lateral project (Project duration four years) (Funded by **DST, Govt of India** and NWO,Netherland) Role: Project leader Co-Investigator Dr. Vinod Prabhakaran, NCL Pune

PI from Netherland: Prof Emiel Hensen; Eindhoven University of Technology, Netherland

Completed March 2018 Total Outlay 59 lakh (Indian Side)

Coordinating Institute: Indian Institute of Technology (Indian School of Mines), Dhanbad

4. **Mesoporous Mixed Oxide Supported Gold Nanoparticle for Oxidant free Dehydrogenation Reaction**

5. **Project duration three years (Funded by DST, Govt. of India) Total outlay 49 lakh Completed October 2016**

6. **Design & Synthesis of Mesoporous Titanosilicate Supported Gold Nanoparticle Useful for mild Oxidation Reaction** (**DST**, Govt of India, Completed) Total outlay 20 lakh

7. **Catalytic transformation of Glycerol to Acrolein over porous Solid Acid Catalyst**

(Project duration three years; **CSIR; Govt. of India;**) **Total outlay 17 lakh Completed 2017**

8. **Development of Organic-Inorganic hybrid nanocomposites for Vapour phase Beckmann Rearrangement Reaction** (**Completed, Sponsored by UGC, Govt. Of India**,) **Total outlay 10 lakh**

Co-PI

Establishment of Centre of Excellence for training and research in frontier areas of science and technology (FAST)

MHRD(COE)/RE/2014-15/402/INST:

Role Co-PI

PI. Prof. Mukul Das; Associate Professor; Dept of Electronics Engineering

Total outlay 4.00 crore

9. DST Infrastructural project as Co-PI (Departmental Level)

FIST Program to Augment the Research Facilities in the Department for purchasing a 400 MHz NMR (CoPI with Prof. G Udyabhanu (PI), Prof. Swapan Dey and Prof. S Sahu as Co PI) Sanction Order No SR/FST/CSI256/2013 dated Nil Nov, 2013)

Outlay 1.65 crore

10. Institute Project

Chemically functionalized metal oxide nanotubes with tunable chemical properties

(Sponsored by ISM, Dhanbad, completed) Total outlay 10 lakh

Conference/Workshop Organized as Convener

1. 1st Annual Workshop on Catalysis 2017 6th to 9th March 2017

2. 1st Annual Meeting cum Workshop of **India-Netherland Project** on Functional Material and Catalysis 24th to 25th September 2017 under Indo-Netherland DST project

3. **Indo-French bi-lateral Workshop on Green and Sustainable Chemistry: Role of Catalyst 6th to 8th Feb 2018**

   Solely sponsored by Indo-French Center of Promotion of Advanced Research. (Sanctioned Amount 20 lakh INR)
   Co-Coordinator Dr.(Mrs) Aline Auroux

   Institut de recherches sur la catalyse et l'environnement de Lyon (IRCELYON), UMR5256 CNRS- Université Lyon1, 2 avenue Albert Einstein, 69626, Villeurbanne Cedex, France.

4. **One Day International Webinar on Catalytic Materials (27/02/2021) organized by IIT (ISM) Dhanbad and Catalysis Society of India**

5. **Organized one day IGSTC Workshop on 23rd January (2023) at IIT (ISM) Dhanbad.**

6. **Organized GIAN course " Functional Material and Heterogeneous Catalysis" as Course Coordinator funded by Ministry of Education; Govt of India**

   Guest Faculty: Prof Emiel J M Hensen; Eindhoven University of Technology; Netherland

   Duration: 11th December 2023 to 15th December 2023

Administrative Experience:

1. **Associate Dean (International Relations): January 2020—March 2023**

   Experienced in Erasmus+ student, faculty exchange program, ICCR student exchange program, KOSPIE student exchange program (DAAD)

- **Local Coordinator (2013-2017): AREAS+ (Erasmus-Munda's program) funded by European Union**

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https://scholar.google.com/citations?user=i0GS48YAAAAJ&hl=en