

- Award of Senior Research Fellow (SRF) from Council of Scientific and Industrial Research (CSIR) in June 2021.
- Best Oral Presentation Award, “Entitled Fabrication of Nickel Oxide Decorated Zinc Oxide Composite Nanorods: An Excellent photocatalyst by Imtiaz Ahmed and Krishna Kanta Halder in International Conference on “Advanced Functional Materials and Devices” (AFMD-2021) organized by Department of Physics & IQAC, ARSD College, University of

Delhi during 3-5th March 2021”,

- Award of Junior Research Fellowship (CSIR) from Council of Scientific and Industrial
- Award of JKSET (Eligibility Test for Assistant Professor) in 2018 from University of Kashmir.
- Selected for International Postdoctoral Fellowship programme of Thailand 2024.
- Editorial Board member of Journal of Energy and Natural Resources.
- Reviewed many Research and review articles.

Research Experiences:

- (1) **Post Graduate Research** (July 2017-June 2018), Department of Chemistry, Central University of Punjab, Bathinda, India. **Project Title:** NiO QDs/ZnO nanorods composite structure for catalytic reduction of Cr⁶⁺.
- (2) **Ph.D. Work Experience (2019-2023)**. Design and Synthesis of Nanostructured Materials and Their Applications in Catalysis.
- (3) **Postdoctoral Research Experience (Mahidol University Thailand)**. Heterogeneous catalysis, Biomass Conversion.
- (4) **Postdoctoral Research Associate (IIT Indore)**. Multifunctional Hybrid Transition Metal Catalysts for Enhanced Electrocatalytic Water Splitting.

Research Expertise: Materials Science, Electrocatalytic Water Splitting (Hydrogen and Oxygen Evolution Reactions), Seawater electrolysis, Biocatalysis, Supercapacitor applications, Organic Catalysis, Heterogeneous catalysis, and Biomass Conversion.

Teaching Expertise: Inorganic Chemistry, Biophysical Chemistry, Boron Chemistry, Material Chemistry.

Publications:

Research Published Articles: **44**, (In Revision **1**. Submitted **4**), Book Chapter **1**, International Conferences and Workshops **6**, Best Presentation Award **1**, Total Citation: **811**, h-index: **16**, i10-index: **28**, Total cumulative Impact factor (of **Published**): **180.08**

□ *During Postdoc.*

44. A. Rani, S. Sagar, **I. Ahmed**, K. K. Halder Surface Modification of Co₃O₄ by HfO₂ for Improve Efficient Bifunctional Electrocatalyst for Hydrogen and Oxygen Evolutions e202500085 (*ChemNanoMat*).

43. **I. Ahmed**, K. Prakash & Shaikh M. Mobin Lead-free perovskites for solar cells applications: recent progress, ongoing challenges, and strategic approaches (*Chemcomm*).
42. **I. Ahmed**, Zahir Abbas & Shaikh M. Mobin Constructing Polycrystalline Hybrid Ternary CuS/Co₃O₄ with Supported Graphitic Nitride Electrocatalyst for Bifunctional Water Splitting Reactions *J. Mater. Chem. A*, 2025, *Advance Article* 2025.
41. Ritu Raj, **I. Ahmed**, Gajendra Singh K.K. Haldar, Exploring Hf-mediated Surface Engineering to Enhance Co₃O₄/Ag₂S Core-Shell Nanorods as Bifunctional Electrocatalyst for Water Splitting Reaction *Fuel* 2025.
40. C. Kaur **I. Ahmed**, R. Raj, K. K. Haldar* & T. Sen* Modulation of a DNA Origami Template Dimer Gold Nanobipyramid Electrocatalyst for Ultrahigh Oxygen Evolution Reaction Activity. 2025, 8, 4, 1749–1761 *ACS Applied Nano Material*.
39. A. BaQai, M. Shariq H. A. Althikrallah, T. H. Alshareef, K. S. Alrashd, A. F. Alharbi, D. Alhashmialameer, **I. Ahmed*** Synthesis and Characterization of Highly Conductive MXene@Bi₂O₃ Electrode Material for Improved Oxygen Evolution: The Role of Electrocatalyst for Oxygen Evolution Reactions 2024 *Applied Physics A*.(2.7)
38. A. Kittisabhorn; **I. Ahmed**; S. Ratchahat; W. Chaiwat; W. Koo-amornpattana; W. Klysubun; W. Limphirat; S. Assabumrungrat; A. Srifa*. Construction of Ni-Re Supported on Hydrotalcite-Derived NiMgAl Mixed Oxides Catalyst for Boosting Ring Hydrogenation of Furfural into Tetrahydrofurfuryl Alcohol in Water 2024, e202400614, *ChemCatChem*. (IF= 4.3)
37. D. Alhashmialameer ; M. Shariq; I. A. Fani A. A. Alharbi, , Y A Majed; R. Azooz, **I. Ahmed***, A Facile Synthesis Strategy to Supported Hybrid Co₃O₄/MoS₂@g-C₃N₄ Composite Nanostructure: An Excellent Catalyst for HER"2024, *Energy & Fuels* 2024, 38, 16, 15771–15779 (IF = 5.2)
36. Kittisabhorn; **I. Ahmed**; S. Ratchahat; W. Chaiwat; W. Koo-amornpattana; W. Klysubun; W. Limphirat; S. Assabumrungrat; A. Srifa*. Constructing Ni–Pt Bimetallic Catalysts for Catalytic Hydrogenation and Rearrangement of Furfural into Cyclopentanone with Insight in H/D Exchange by D₂O Labeling 2024, 9, 26, 28637–28647 *ACS Omega* (IF = 3.7)
35. **I. Ahmed**, R. Biswas, S. Biswas, A. Roy and K. K. Haldar Need for Rational and Facile Fabrication of W-Ir based Heterojunction Catalysts to Enhance the Electrochemical Water Splitting Performance. 2024, 2, 8, 2152–2163 *ACS Applied Engineering Materials*.
34. **I. Ahmed**, R. Raj, V. Burman, & K. K. Haldar Biogenic Synthesis of Morphological Controlled Co₃O₄ Using Phyllanthus emblica Fruit Extract to Improved Electrochemical OER Activity of Co₃O₄/MoS₂ 16,401–412, 2024, *Waste and Biomass Valorization*. (IF = 2.6)

33. Ritu Raj, [I. Ahmed](#), Vikash Kumar, K.K. Haldar, Gajendra Singh Biogenic Bovine Serum Albumin/Zn₃(PO₄)₂/Cr₂O₃ Hybrid Electrocatalyst for Improved Oxygen Evolution Reaction 5 035001 2024 [Nano Express](#) (IF = 3.0)

32. Raj Sharma, Ritu Raj, Vikash Kumar, [I. Ahmed](#), Gajendra Singh K.K Haldar,. Lycium ruthenicum Stem Extract Mediated synthesis of MnO₂/Mn₃(PO₄)₂ Composite Nanowire Electrocatalyst for Oxygen Evolution Reaction 5, 035015, 2024 [Nano Express](#). (IF = 3.0)

31. M. Iqbal, N. Saykar, A. Singh, [I. Ahmed](#), A. Arya, K.K. Haldar. S. K. Mahapatra, WS₂@Mesoporous carbon composite as a bifunctional electrode for quasi-solid-state Symmetric/Asymmetric Supercapacitor and oxygen evolution reaction. [Advanced Materials Technologies](#), 2024, 2301797 (IF = 6.4)

30. [I. Ahmed](#), R. Biswas, A. Roy, K.K. Haldar. Co₃O₄/WO₃/C Nanorods with Porous Structures as High-Performance Electrocatalyst for Water Splitting reactions. [ACS Applied Nano Materials](#), 2024, 7, 4, 4035–4050 (IF = 5.3)

29. S. Barik, R. Biswas A. Roy, [I. Ahmed](#), N. Begum and K. K. Haldar* Composition Dependent Electrochemical OER Activity of Zn_{0.76}Co_{0.24}S Enriched ZnCo₂S₄/ZnCr₂O₄ Composite Catalyst [ACS Applied Nano Materials](#), 7, 2, 2280–2290 (IF = 5.3)

28. [I. Ahmed](#), S. Dastider, K. Mondal and K. K. Haldar A Nitrogen Doping NiS/ Ni₃S₄ Nanowires Electrocatalyst Promotes Second-Order Hydrogen Evolution Reactions [ACS Applied Nano Materials](#) 7, 1, 661–671 (IF = 5.3)

27. N. Begum R. Biswas A. Roy, [I. Ahmed](#), and K. K. Haldar* Synthesis of FeNi₂S₄/ZnCr₂O₄ composite nanostructure for electrochemical OER activity [ChemSelect](#) 9, 3, 2024 e202302556 (IF = 2.3)

Ph.D. Scholar (2019-Oct-2023)

26. D. Kubba [I. Ahmed](#), A. Roy, P. Kour, C.S Yadav, S. Sharma, K. Yadav and K.K. Coupling of B Site Doped LaFe_{1-x}Co_xO₃ Perovskite Oxide with Petal-like Ni(OH)₂ Nanosheets Electrocatalyst for Oxygen Evolution Reaction [ACS Applied Nano Materials](#) 7, 2, 1536–1547 (IF = 5.3)

25. P.Rani, [I. Ahmed](#), S. Dastider, R. Biswas, K. Mondal; K.K. Haldar, S. Patole, P. Alegaonkar, Synergistic Effect of CoTe@Co₃O₄ Nanocomposite for Enhanced OER Performance, [ACS Applied Engineering Material](#), 2023, 1, 12, 3389– 3402.

24. **I. Ahmed**, V. Burman, R. Biswas, A. Roy, R. Sharma, and K.K. Haldar Bifunctional Electrochemical OER and HER Activity of Ta₂O₅ Nanoparticles Over Fe₂O₃ Nanoparticles. *New Journal of Chemistry* 2023, 47, 17284-17292 (IF = 3.3)

23. Z. Abbas, N. Hussain, **I. Ahmed** and S. M. Mobin. Cu-Metal Organic Framework derived Multilevel Hierarchy (Cu/Cu_xO@NC) as a Bifunctional Electrode for High-performance Supercapacitors and Oxygen Evolution Reaction. *ACS Inorganic Chemistry*, 2023, 62, 23, 8835–8845 (IF = 4.6)

22. R. Biswas, S. G. Dastider, **I. Ahmed**, K. Mondal, K. K. Haldar. Bio-assist Synthesis of Au/Rh Nanotriangle Electrocatalyst for Hydrogen Evolution and Methanol Oxidation Reactions: Composition Mater!. 2023. *ACS Energy and Fuels* 37, 17, 13231–13240 (IF = 5.3)

- 21.D. Kubba, P. Kour, **I. Ahmed**, K. Yadav, S. K. Sharma. BiFeO₃/g-C₃N₄/f-CNF ternary nanocomposite as an efficient photocatalyst for methylene blue dye degradation under solar light irradiation *Journal of Alloys and Compounds* 2023, 960, 171073 (IF = 5.3)

20. **I. Ahmed**, R. Biswas, S. Mete, R.A. Patil Y. R. and Ma K. K. Haldar. Efficient MoS₂/V₂O₅ Electrocatalyst for Enhanced Oxygen and Hydrogen Evolution Reaction. *Electrocatalysis*, (2023) 14, 624–635 (IF = 3.1)

19. R. Biswas, S. G. Dastider, **I. Ahmed**, S. Barua, K. Mondal and K. K. Haldar. Unravelling the Role of Orbitals Interaction in Electrochemical HER of the Trimetallic AgAuCu Nanobowl Catalyst (2023) *The Journal of Physical Chemistry Letters (ACS)* 2023, 14, 13, 3146–3151 (IF = 5.7)

18. **I. Ahmed**, R. Biswas, M. Iqbal, K.K. Haldar. In-Situ fabrication of NiS/MoS₂ Anchored Multiwall Carbon Nanotube Electrocatalyst for Energy Generation and Storage Applications (2022) *ChemNanoMat*. 2023,9,6, e202200550 (IF = 2.6)

17. **I. Ahmed**, R. Biswas, R. Sharma, V. Burman and K.K. Haldar Access to carbon nanofiber composite hydrated cobalt phosphate nanostructure as an efficient catalyst for HER. *Frontiers in Chemistry* 2023, 11, (IF = 3.5)

16. D. Deeksha, P. Kour, **I. Ahmed**, S. Sharma, S. K. Sharma, K. Yadav, Y. K. Mishra, Transition Metal based Perovskite Oxides: Emerging Electrocatalysts for Oxygen Evolution Reaction, *ChemCatChem* 2023,15,6, e202300040 (IF = 3.8)

15. R. Biswas, P. Thakur, **I. Ahmed**, T. Rom, M. S. Ali, R. A. Patil , B. Kumar, S. Som, D. Chopra, A. K. Paul, Y.-R. Ma, K. K. Haldar. Coupling Nonstoichiometric Zn_{0.76}Co_{0.24}S with NiCo₂S₄ Com-

posite Nanoflower for Efficient Synergistic Electrocatalytic Oxygen and Hydrogen Evolution Reactions. *ACS Energy & Fuels*, 2022, 37, 1, 604–613 (IF = 5.2)

14. R. Biswas, **I. Ahmed**, P. Manna, P. Mahata, R. S. Dhayal, A. Singh, J. Lahtinen, K. K. Haldar. Facile Fabrication of Ni₉S₈/Ag₂S Intertwined Structures for Oxygen and Hydrogen Evolution Reactions. *ChemPlusChem*, 2022. e202200320 (IF = 3.1)

13. H. Singh, R. Biswas, **I. Ahmed**, P. Thakur, A. Kundu, A. R. Panigrahi, B. Banerjee, K. K. Halder, J. Lahtinen, K. Mondal, K. K. Haldar. Dumbbell-Shaped Ternary Transition-Metal (Cu, Ni, Co) Phosphate Bundles: A Promising Catalyst for the Oxygen Evolution Reaction. *ACS Applied Materials & Interfaces*, 2022, 14 (5), 6570–6581. (IF = 8.5)

12. **I. Ahmed**, R. Biswas, S. G. Dastider, H. Singh, S. Mete, R. A. Patil, M. Saha, A. K. Yadav, S. N. Jha, K. Mondal, H. Singh, Y. R. Ma, K. K. Haldar. Mechanism of Iron Integration into LiMn_{1.5}Ni_{0.5}O₄ for Electrocatalytic Oxygen Evolution Reaction. *ACS Energy & Fuels*, 2022, 36 (19), 12160–12169. (IF = 5.2)

11. D. Kubba, **I. Ahmed**, P. Kour, R. Biswas, H. Kaur, K. Yadav, K. K. Haldar. LaCoO₃ Perovskite Nanoparticles Embedded in NiCo₂O₄ Nanoflowers as Electrocatalysts for Oxygen Evolution. *ACS Applied Nano Materials*, 2022, 5 (11), 16344–16353. (IF = 5.3)

10. **I. Ahmed**, R. Biswas, H. Singh, R. A. Patil, R. Varshney, D. Patra, Y. R. Ma, K. K. Haldar. Green Synthesis of Hybrid Papain/Ni₃(PO₄)₂ Rods Electrocatalyst for Enhanced Oxygen Evolution Reaction. *New Journal of Chemistry*, 2022, 46, 22237–22245 (IF = 2.7)

9. K. K. Haldar, R. Biswas, A. Arya, **I. Ahmed**, S. Tanwar, A. L. Sharma. Construction of Three Dimensional Marigold Flower Shaped Ni₃V₂O₈ for Efficient Solid-State Supercapacitor Applications. *Energy Storage*, 2022, e378. (IF = 2.7)

8. A. Halder, R. Biswas, P. P. Kushwaha, K. K. Halder, **I. Ahmed**, H. Singh, S. Kumar, K. K. Haldar. Green Synthesis of Bimetallic Au/Ag Nanostructures Using Aqueous Extract of *Eichhornia crassipes* for Antibacterial Activity. *BioNanoScience*, 2022. (IF = 2.7)

7. **I. Ahmed**#, H. Singh#, R. Biswas, S. Mete, K. K. Halder, B. Banerjee, K. K. Haldar. Genomic DNA-mediated formation of a porous Cu₂(OH)PO₄/Co₃(PO₄)₂·8H₂O rolling pin shape bifunctional electrocatalyst for water splitting reactions. *RSC Advances*, 2022, 12(6), 3738–3744. (# equally contributed) (IF = 3.9)

6. **I. Ahmed**, R. Biswas, R. A. Patil, K. K. Halder, H. Singh, B. Banerjee, B. Kumar, Y.-R Ma, K. K. Halder. Graphitic Carbon Nitride Composites with MoO₃-Decorated Co₃O₄ Nanorods as Catalysts for Oxygen and Hydrogen Evolution. *ACS Applied Nano Materials*, 2021, 4 (11), 12672-12681 (IF = 5.3)

5. R. Biswas, P. Thakur, G. Kaur, S. Som, M. Saha, V. Jhahria, H. Singh, **I. Ahmed**, B. Banerjee, D. Chopra, T. Sen, K. K. Halder. Interfacial Engineering of CuCo₂S₄/g-C₃N₄ Hybrid Nanorods for Efficient Oxygen Evolution Reaction. *ACS Inorganic Chemistry*, 2021, 60 (16), 12355-12366. (IF = 4.5)

4. R. Biswas, B. Banerjee, M. Saha, **I. Ahmed**, S. Mete, R. A. Patil, Y. R. Ma, K. K. Kaldar. Green Approach for the Fabrication of Au/ZnO Nanoflowers: A Catalytic Aspect. *The Journal of Physical Chemistry C*, 2021, 125 (12), 6619-6631. (IF = 3.7)

3. R. Biswas, S. Singh, **I. Ahmed**, R. A. Patil, Y. Ron Ma, and K. K. Halder. Rational design of Bimetallic Au/Cu nanostructure: An Efficient Catalyst for Methanol Oxidation. *ChemNanoMat*. 2020, 7(2), 158-164. (IF = 2.6)

2. R. Biswas, S. Mete, M. Mandal, B. Banerjee, H. Singh, **I. Ahmed**, K. K. Halder. Novel Green Approach for Fabrication of Ag₂CrO₄/TiO₂/Au/r-GO Hybrid Biofilm for Visible Light-Driven Photocatalytic Performance. *The Journal of Physical Chemistry C*, 2020, 124, 3373–3388. (IF= 3.7)

❖ Post Graduate (M.Sc.) (2016-2018)

1. S. Singh, **I. Ahmed**, K. K. Halder. Nickel oxide decorated zinc oxide composite nanorods: Excellent catalyst for photoreduction of hexavalent chromium. *Journal of Colloid and Interface Science*. 2018, 523, 1-6. (IF = 9.9)

(Book Chapters)

(1) Deeksha, P. Kour, **I. Ahmed**, K. K. Halder, K. Yadav. Tuning the Morphology of Lanthanum Cobaltite Using the Surfactant-Assisted Hydrothermal Approach for Enhancing Oxygen Evolution Catalysis. *Proceedings of the National Workshop on Recent Advances in Condensed Matter and High Energy Physics*

Under Communication:

4. K. Prakash, **I. Ahmed**, R. Deka, S. M. Mobin, Pyrene-based donor-acceptor two-dimensional covalent-organic frameworks as electrode materials for supercapacitors and electrocatalysts for oxygen evolution reaction *Submitted in Energy Letter*.

3. **I. Ahmed** S. Sagar A. Roy A. Rani & K. K. Haldar *Modification of Co₃O₄ by HfO₂ for Highly Efficient Bifunctional Surface Hydrogen and Oxygen Evolutions at High Current Density (Submitted in *Energy & Fuels*).
2. A. BaQai, M. Shariq **I. Ahmed** H. A. Althikrallah, T. H. Alshareef, K. S. Alrashd, A. F. Alharbi, D. Alhasmialameer, Recent advances in metal-organic frameworks (MOF) based nanocomposite for energy storage in supercapacitors. (Submitted in *Spectrochimica Acta*).
1. **I Ahmed***, Recent Advances in Organic Reactions Catalyzed by Bimetallic and Hybrid Metal Oxide Nanostructures (Submitted in *Organic and Biomolecular Chemistry*).

Conference/Symposium:

Attended:

- (2) An **Oral Presentation** on Fabrication of Nickel Oxide Decorated Zinc Oxide Composite Nanorods: An Excellent photocatalyst, in three days “International Conference on Advanced Functional Materials & Devices” (AFMD-2021)” organized by Department of Physics & IQAC, ARSD College, University of Delhi during 3-5th March 2021 via online mode.
- (1) Five days “International Conference on *Advanced Materials for Better Tomorrow*” (AMBT-2021)” organized by Indian Institute of Technology BHU (IIT-BHU) Varanasi in Association with the Society of Interdisciplinary Research in Material in Biology (SIRMB) from 13-17 July 2021. (**Oral Presentation**)

Workshops Attended:

- (3) Four days **Indo-France** Work shop organized by Institute of Nanoscience Mohali on **Metal Nanoclusters** by CEFIPRA (Poster Presentation).
- (2) Three days **Online Short-Term Course/Workshop on “Analytical Techniques in the realm of Molecules & Materials”** (ATRMM-2020) **June 26-30, 2020** organized by Department of Chemistry, Sant Longowal Institute of Engineering & Technology (Deemed to be University) Longowal, Distt, Sangrur (Punjab), India.
- (1) Participation and Organizing Committee member in One day **Advance Session on Patenting Strategies and Patent Search Exercise for Inventions in Chemical and Environmental Sciences** Organized by Central University of Punjab in collaboration with by IPR Cell and Institution Innovation Council.

DECLARATION

I declare that the above-written particulars are accurate to the best of my knowledge and belief.

Place: IIT Indore

A handwritten signature in blue ink, appearing to read 'Imtiaz Ahmed', is written on a small rectangular piece of paper.

(Dr. Imtiaz Ahmed)