

Khantesh Agrawal, Ph.D.

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Assistant Professor, IIT (ISM) Dhanbad

Chemical Engineering

June 2025-till

Research areas: Durable electrocatalysts for hydrogen and oxygen reactions, Critical mineral overlayers and thin films, Electrochemical process intensification and scale-up, Nanomaterial synthesis and characterization

Post-PhD R&D experience

Research Scientist at Honeywell UOP, Gurgaon

Nov 2023- June 2025

- Developed a three-compartment flow-cell setup for high-selectivity CO₂-to-ethylene electroreduction
- Studied the impact of various parameters affecting the system performance to achieve the desired target of >65% Faradaic efficiency 400 mA cm⁻² current density and 100+ h durability

EDUCATION

Program	Institution	%/CGPA	Year of completion
Ph.D.	Indian Institute of Science (IISc), Bangalore Department of Chemical Engineering Advisor: Dr. Venugopal S., Associate Professor Thesis: <i>Platinum overlayers - Fabrication via self-terminating electrodeposition and characterization</i>	8.9 (Distinction)	April 2024
M.Tech.	Indian Institute of Science (IISc), Bangalore Department of Chemical Engineering Advisor: Dr. Venugopal S., Associate Professor Thesis: Printed Electrodes for PEMFC (IChE Ambuja's Young Researcher Award for M.Tech)	8.6 (Distinction)	June 2018
B.E.(Hons)	BITS Pilani, Pilani campus, Rajasthan Department of Chemical Engineering Advisor: Dr. Bharti Khungar, Associate Professor Thesis: Wastewater treatment using functionalized graphene oxide	9.17 (Distinction)	June 2016

AWARDS

- 2nd prize in Oral presentation, Honeywell UOP annual TCO-2024
- ECS student Travel Grant award to attend the 242nd ECS meeting in Fall-2022
- Carl Storm International Diversity Award for Gordon Research Conference Fuel Cells-2022
- M.P. Chary memorial award by IChE during SCHEMCON-2021
- Young Scholar award - Outstanding performance in Oral presentation, EIHE 2020
- 1st prize, New Generation Ideation Contest-2019 (all India level) by HPCL R&D

- Prime Minister's Research Fellowship (Aug'19 PMRF selection round) for pursuing a PhD
- All India Rank-12 (top 0.1%) in GATE Chemical Engineering– 2016
- Best All-Rounder Student Award -2013 in Chemical Engineering, BITS Pilani
- INSPIRE Fellowship Award - 2012 by the Department of Science and Technology (DST), Govt. of India
- KVPY Scholarship - 2012 by the Department of Science and Technology (DST), Govt. of India

FUNDED PROJECTS

S.No.	Project Title	Amount (in Lakhs)	Duration & Role	Funding Agency
1.	Development of high-capacity solid-state batteries with long-term stability.	78.89	2 Years (Co-PI)	IIT (ISM) Dhanbad
2.	Nanostructured Thin Film (NSTF) Electrocatalyst for Hydrogen Energy Application.	20.0	2 Years (PI)	IIT (ISM) Dhanbad

COURSES TAUGHT

S.No.	Course Title	Duration/Semester	No. of students	Feedback (out of 10)
1.	CHD418: Electrochemical Science and Engineering	Jan-May 2026	46	8.37
2.	NCHE101: Unit Operations and Unit Processes	July-Dec 2025	49	9.04
3.	NCHE201: Chemical Process Technology	July-Dec 2025	52	8.88

JOURNAL PUBLICATIONS

- (Under review in Journal of Power Sources), A Anil; K Agrawal*; S Kumar S. U.; L Elias; V. S. Sumi, "Tuning Amorphous-Crystalline Balance via Phosphorus Incorporation in NiFeCoP for Enhanced Alkaline HER"
- (Under review in Digital discovery journal) K. Garg, D. Kumar, K Agrawal, "When LLMs Ideate and Judge: Human–AI Alignment in Chemical Engineering Research Ideation"
- K. Agrawal and V. Santhanam, "*Durable Platinum thin film on silver leaf, formed by Self-Terminating Electrodeposition*", Electroanalysis vol. 38(4), e70135 (2026)
- K.Agrawal and V. Santhanam, "Electrochemical cycling durability of platinum overlayers formed by self-terminating electrodeposition", International Journal of Hydrogen Energy, 51, pp.722-73 (2024)
- K. Agrawal, A.A. Naik, S. Chaudhary, D. Parvatalu and V. Santhanam, "Prudent Practices in Ex-Situ Durability Analysis Using Cyclic Voltammetry for Platinum-based Electrocatalysts", Chem-Asian J 16(21), 3311- 3325 (2021)
- K. Agrawal, S. Chaudhary, D. Parvatalu, and V. Santhanam, "Durability of Platinum Overlayers formed By Self- Terminating Electrodeposition". ECS Transactions 2021., 104(8), p.379-386

INVITED SPEAKER

- Invited speaker at 4th edition of Short-Term Course– Electrochemistry Fundamentals & Applications (EFAE26) in Engineering at NIT Rourkela, 14th -18th April'26
- Delivered an invited lecture at the International Online Conference on Energy Sciences, 10th -12th Dec'21
- Invited panel member for discussion on "*Life @ BITS and beyond*", 5th Aug'17, at BITS Pilani, Pilani campus

CONFERENCES ATTENDED

- 10th Global Refining & Petrochemicals Congress (GRPC) 2026 during 18th-19th June, 2026 at New Delhi (Poster presentation)
- 2nd International Conference on Materials for Humanity by MRS Singapore, 19th-21st Sept'22 (Oral presentation)
- AIChE Annual Meeting 2021 (virtual), 15th-19th Nov'21 (Oral presentation)
- The 240th ECS meeting (virtual), 10th-14th Oct '21 (Sponsored registration by the US Office of Naval Research and Army Research Office) (Oral presentation)
- Electrochemical Society of India Research Scholars Meet, 21st-22nd Jan'21(**Virtual ECSIRM-2020, Best Paper Award**) (Oral presentation)
- The 8th International Conference on Hydrogen and Fuel Cell (IHFC-2019), Mumbai, India, 8th-10th Dec'19 (**HY-Contest'19 Awardee poster presentation**)

DETAILS OF EXTRA-CURRICULAR ACTIVITIES

- **Students Welfare:** Regular interaction with some B.Tech students at the Dept of Chemical Engg, IIT (ISM) Dhanbad to ensure their overall health.
- **Department Duties:**
 - Departmental monthly and R&D (quarterly basis) newsletter coordinator of Chemical Engg. Dept, (Oct-2025 till now)
 - Standby DPAC member of Chemical Engineering department (May-2026 till now)
 - Discharged several other duties assigned by the department/institute like PhD entrants' documents' scrutiny, invigilation duties, indenting several setups to establish UG/PG teaching lab etc.
 - DUGC member (July-2026 till now)

REFERENCES

1. **Prof. S Venugopal (PhD and M.Tech thesis advisor)**
Chemical Engg Dept, IISc Bangalore, Email: svgpal@iisc.ac.in, Phone: +91-80-2293 3113
2. **Prof. Sanjeev Kumar Gupta (PhD review committee member)**
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3. **Prof. Nagaphani Aetukuri (PhD review committee member)**
Solid State and Structural Chemistry Unit, IISc Bangalore, Email: phani@iisc.ac.in, Phone: +91-2293 3701
4. **Prof. Ganapathy Ayappa (M.Tech thesis committee member)**
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5. **Prof. Banasri Roy (UG mentor)**
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