

Dr. Vijay Kumar



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Career Objective:

Dedicated mechanical engineering professional with teaching and research expertise, committed to applying knowledge and skills to contribute to academic, research, and administrative excellence.

Professional Summary:

Mechanical Engineering researcher with specialization in Green Hydrogen Production, Nanofluids, Renewable Energy Systems, Computational Fluid Dynamics (CFD), and Process Simulation. Ph.D. candidate with multiple SCI/SCIE journal publications in high-impact journals including International Journal of Hydrogen Energy, Desalination, and Journal of Cleaner Production. Experienced in CFD modelling, energy systems analysis, electrolysis technologies, and process simulation using ASPEN Plus and MATLAB. Strong research background with conference publications, academic training, and industrial design experience.

Broad area of specialization: Mechanical Engineering

Specific areas of specialization: Green Hydrogen Production, Renewable Energy Systems, Nanofluidics, Computational Fluid Dynamics (CFD), Thermal Engineering, Process Modelling and Simulation.

Experience:

Design Engineer

- Industrial experience as a design and quality check engineer in **ADCC Infocad Limited, Lucknow.** (June 2015 – July 2016)

Responsibilities:

- Design of new area border of land for digital mapping.
- Quality check approval of digital maps under Government of India scheme.

Projects & Trainings:

- **Ph.D. Project:** Integration of renewable energy to water electrolyzer for green hydrogen production.
- **M. Tech Project:** CFD modelling of nanofluid based direct absorption parabolic trough solar collector.
- **B. Tech Project:** Arduino based automated firefighting robot.

- **Vocational Training:**

- Industrial Training in Hindustan Aeronautics Limited (H.A.L), Lucknow. (2014)
- Industrial Training in Carriage & Wagon (C&W), Indian Railways, Lucknow. (2013)

Education:

- **Ph.D. (Under AICTE Doctoral Fellowship)** – Mechanical Engineering, Institute of Engineering & Technology, Lucknow.
(Dec 2021 – July 2026)
- **M. Tech** (8.87/10) – Mechanical Engineering, Institute of Engineering & Technology, Lucknow.
(Aug 2017 – Dec 2019)
- **B. Tech** (77.78%) – Mechanical Engineering, Integral University, Lucknow.
(July 2011 – June 2015)

Additional Qualifications:

- Certified course in **ANSYS** from M CADDiS CAD Training Centre. (2018)
- Certified course in **ADCA** (Advanced Diploma in Computer Application) from Welborn Software Pvt. Ltd. (2016)
- Certified course in **NX CAM** (Computer Aided Manufacturing) **Siemens controlled** from CADD CENTRE. (2014)
- Certified course in **SOLID WORKS** from CADD CENTRE. (2014)
- Certified course in **AUTOCAD** from UPTEC Computer Institute. (2011)

Published Papers in Journals:

- **Kumar V.**, Javed S., Tiwari A.K., Said Z., Enhancing parabolic trough collector efficiency using hybrid nanofluids and inserts: experimental and CFD investigation, *Energy Conversion and Management: X*, September 2026. **IF: 8.8 (SCI, Elsevier).**
- **Kumar V.**, Tiwari A.K., Design implication of alkaline water electrolyzer for green hydrogen generation towards efficiency, sustainability, and economic viability, *International Journal of Hydrogen Energy*, January 2025. **IF: 9.2 (SCI, Elsevier).**
- **Kumar V.**, Tiwari A.K., Performance assessment of green hydrogen generation via distinct electrolytes dedicated to renewable energy, *Desalination*, August 2024. **IF: 9.9 (SCI, Elsevier).**
- Tiwari A.K., **Kumar V.**, Said Z., Paliwal H.K., A review on the application of hybrid nanofluids for parabolic trough collector: Recent progress and outlook, *Journal of Cleaner Production*, April 2021. **IF: 10.7 (SCI, Elsevier).**
- **Kumar V.**, Tiwari A.K., Numerical Investigation of Alkaline Water Electrolysis for Green Hydrogen Generation. *International Journal of Fluid Mechanics Research*, May 2025, **IF: 1.1 (SCI, Begell House).**
- **Kumar V.**, A study on improved version of automated fire fighting robot, *Global Journal of Engineering Science and Researches*, 2018, **IF: 5.0 (Scopus, Peer Reviewed).**

Published Book Chapter:

- **Kumar V.**, Tiwari A.K., Sea Water Application for Green Hydrogen Synthesis by Alkaline Electrolyzer. *Advanced Materials and Technologies for Engineering Applications*, June 2026.
- **Kumar V.**, Tiwari A.K., Efficient Water Splitting-Based Green Hydrogen Synthesis: A Numerical Approach. *Proceedings of Fluid Mechanics and Fluid Power (FMFP)*, Springer Nature Singapore, August 2025.
- **Kumar V.**, Tiwari A.K., Performance Assessment of Alkaline Water Electrolysis for Hydrogen Production. *Proceedings of ISHMT-ASTFE Heat and Mass Transfer*, Begel House Inc., September 2024.

Full Papers in International Conference Proceedings:

- **Kumar V.**, Tiwari A.K., Alkaline Electrolyzer Performance with Diverse Electrolyte Solutions for Efficient Green Hydrogen Production. *International Conference on Characterization & Advanced Research in Materials (CHARM)*, 2025.
- **Kumar V.**, Tiwari A.K., Harnessing Seawater for Green Hydrogen Production Using Alkaline Electrolyzer. *International Conference on Advanced Materials and Technologies*, 2025.
- **Kumar V.**, Tiwari A.K., Numerical Investigation of Alkaline Water Electrolysis for Green Hydrogen Generation. *International Conference on Recent Trends in Transport Processes*, 2024.
- **Kumar V.**, Tiwari A.K., Efficient Water Splitting-Based Green Hydrogen Synthesis: A Numerical Approach. *Proceedings of Fluid Mechanics and Fluid Power (FMFP)*, 2023.
- **Kumar V.**, Tiwari A.K., Performance Assessment of Alkaline Water Electrolysis for Hydrogen Production. *Proceedings of the 27th National and 5th International ISHMT-ASTFE Heat and Mass Transfer Conference*, 2023.
- **Kumar V.**, A study on improved version of automated fire fighting robot, 2nd International Conference on Challenges & Opportunities for Technological Innovation in India (COTII-2018), *Global Journal of Engineering Science and Researches*, 2018, AIMT, Lucknow, India.

Workshop/Short Term Course/Faculty Development Program attended:

- Participated in one-week national faculty development programme on “*Emerging Materials for Next Generation Energy Storage Device (EMGES 2026)*” organized by School of basic Sciences, Department of Chemistry, sponsored by Institute of Science, Technology & Advanced Studies, Chennai. 01 April 2026-07 April 2026.
- Participated in one week faculty development programme on “*Hydrogen Energy Systems for a Clean and Green Future*” organized by Avanthi Institute of Engineering and Technology, Hyderabad, sponsored by AICTE. 12 October 2025-18 October 2025.
- Participated in one week faculty development programme on “*Integrating AI Technologies for MSME Digitization in the Smart Manufacturing Era*” organized by Dronacharya Group of Institutions, Greater Noida, sponsored by AICTE. 22 September 2025-27 September 2025.
- Participated in one week faculty development programme on “*Circular Economy for Green Energy and Carbon Neutrality*” organized by Sardar Vallabhbhai National Institute of Technology, Surat, sponsored by AICTE. 27 January 2025-02 February 2025.

- Participated in MEd Engineering Education Seminar, “*Empowering Next Generation Engineers*” organized by AKTU, Lucknow. 30 April 2024.
- Participated in one week workshop on “*Sophisticated Mechanical Characterization Instruments*” organized by IIT (ISM), Dhanbad, sponsored by DST, Government of India. 04 July 2022-10 July 2022.
- Attended one week faculty development program on “*Pedagogy of Scientific Writing, Reporting and Scholarly Networks*” organized by Feroze Gandhi Institute of Engineering and Technology, Raebareli, 19 June 2020-23 June 2020.
- Attended three days faculty development program on “*Finite Element Analysis Using ANSYS*” organized by Department of Mechanical Engineering, Institute of Engineering and Technology, Lucknow, 08 April 2018-10 April 2018.
- Attended two-day workshop on “*Computational fluid Dynamics for Beginners*” organized by Department of Mechanical Engineering, Institute of Engineering and Technology, Lucknow, 08 March 2018-09 March 2018.

Awards & Achievements:

- Graduate Aptitude Test in Engineering (GATE) qualified.
- Best Oral Presentation in International Conference on Recent Trends in Transport Processes. (NIT, Hamirpur). (2024)
- 2nd prize in Model Display in “Technical Competition IUET”. (2014)
- 2nd prize in Robot Race in “Technical Competition IUET”. (2014)
- 3rd prize in Robot Race Expo in “Technical Competition IUET”. (2014)
- 3rd prize in Computer Aided Designing (CAD) in “Technical Competition IUET”. (2013)
- 3rd prize in Robot Race in “Technical Carnival AIMT”. (2013)
- Working as a volunteer in MARATHON in “AGHA AZ SPORT MEET IUET.” (2012)
- Participated in 3rd INTERNATIONAL MATHS OLYMPIAD and secured (3rd School rank, 39th State rank and 237th International rank). (2010)
- 2nd prize in Swine Flu Quiz Competition organize by “THE TIMES OF INDIA”. (2009)
- Participated in 12th NATIONAL SCIENCE OLYMPIAD and secured (3rd School rank, 63rd State rank and 716th All India rank). (2008)
- Participated in 2nd INTERNATIONAL MATHS OLYMPIAD and secured (3rd School rank, 49th State rank and 423th International rank). (2008)
- Participated in 11th NATIONAL SCIENCE OLYMPIAD and secured (4th School rank, 50th State rank and 286th All India rank). (2008)
- Participated in 8th NATIONAL CYBER OLYMPIAD and secured (8th School rank, 157th State rank and 935th All India rank). (2008)
- Participated in 7th NATIONAL CYBER OLYMPIAD and secured (5th School rank, 201th City rank). (2007)
- Awarded in “Bhartiya Sanskriti Gyan Pariksha.” (2005)

Social Responsibility & Leadership:

Participated in a 1-week National Service Scheme (N.S.S.) special camp involving community cleanliness, tree plantation, social awareness campaigns, health & hygiene awareness, leadership communication, and various social welfare activities. (2013)

Key Skills:

- Proficient in process modelling and simulation using ASPEN Plus software.
- Proficiency in low-level and high-level computer languages (C, C++, and MATLAB).
- Computer aided designing (CAD), modelling (CAE), and manufacturing (CAM).
- Keen interest towards innovations in the preferred domain.
- Enthusiastic towards research related activities.

Personal Information:

Date of Birth: 11th November 1992

Nationality: Indian

Gender: Male

Marital Status: Single

Language Known: English & Hindi

Declaration:

I hereby declare that the above information is true and correct to the best of my knowledge and belief.

(Dr. Vijay Kumar)