Vikram Singh

Short Biography

Dr. Vikram Singh is a senior assistant researcher in the unit of electrochemical processes at IMDEA Energy Institute, Madrid, Spain. His research focuses on electrochemical energy storage, particularly the development of membrane and membrane-free near-neutral aqueous organic redox-flow batteries (RFBs) and covalent organic frameworks (COFs) as electrode materials metal-organic hybrid batteries. He obtained his PhD in chemical sciences in 2015 from the University of Delhi, India, where he specialized in "copper complex-based monolayers for DNA cleavage". His postdoctoral research at POSTECH, South Korea (2015–2016), and KAIST, South Korea (2017–2020), explored continuous-flow and standard synthesis of 2D COFs. From 2020 to 2024, he served as a Research Assistant Professor at the Natural Science Research Institute, KAIST, where he developed naphthalene diimide (NDI) derivatives as two-electron anolytes for aqueous RFBs and investigated azo-functionalized COFs for electrochemical energy storage.

Dr. Singh research has been published in leading journals with 32 published papers (research articles, reviews, perspective and highlights), including in Chemical Society Reviews (2025), Nature Energy (2024), JACS (2024), Advanced Materials (2023), ACS Applied Energy Materials (2023) and Advanced Energy Materials (2021). Alongside his research, he has experience in teaching and mentoring, having delivered courses on supramolecular chemistry, surface chemistry, and nanomaterials, while working as a DST-INPIRE faculty at Panjab University in India. He has also supervised master's students in their research projects. He is also an inventor on multiple patents, including covalent organic frameworks for lithium-ion battery applications and functionalized NDI derivatives for aqueous and non-aqueous redox-flow batteries. Throughout his career, he has received several prestigious awards, including the "Caesar Nombela" Talento fiveyear grant from the Community of Madrid in 2024, beginning 2025. He has also been awarded the Maria de Maeztu (MdM) mobility fellowship for a research stay at Radboud University in 2025. His expertise in organic electrochemistry, redox-flow batteries, and molecular energy materials continues to contribute to advancements in next-generation energy storage technologies.