Meet Dr. Soumya Mukherjee, Thieme Chemistry Journals Awardee 2025!


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***Dr. Soumya Mukherjee** is currently an associate professor at the University of Limerick, Ireland. After obtaining his PhD from the Indian Institute of Science Education & Research Pune, India in 2016, he held two postdoctoral positions, first at the University of Limerick (2017–2019) and then at the Technical University of Munich, Germany (2020–2022).*

Thieme: Which field of organic chemistry are you interested in the most and why?

Dr. Mukherjee: I am most interested in reticular chemistry, particularly in the design and development of advanced organic and metal-organic materials for adsorptive separations and purifications of air, commodity chemicals, and freshwater. What draws me to this field is the potential to create energy-efficient solutions that can replace conventional, resource-intensive industrial separations that have been little changed for a century. Organic chemistry provides an incredible toolbox for tailoring materials at the molecular level, allowing us to design porous functional materials that can act like sponges for capture of removal of toxin molecules. This intersection of organic synthesis, crystal engineering, and environmental applications makes materials chemistry both intellectually stimulating and impactful.

Thieme: Following that, what is the focus of your current research activity?

Dr. Mukherjee: My team's current research projects focus upon the design and development of advanced porous materials, including organic and metal-organic polymers, for applications in chemical purification, gas separation, and environmental sustainability. Specifically, I aim to establish new solid-state materials chemistry approaches to enable energy-efficient carbon capture, water purification, and light hydrocarbon separations, addressing critical challenges in air and freshwater decontamination.

Thieme: What do you think about the modern role and prospects of organic chemistry?

Dr. Mukherjee: I am driven by the idea that chemistry should contribute to a cleaner, more sustainable future. By developing next-generation sorbents, I aim to bridge the gap between fundamental materials science and environmental sustainability, ensuring that our work delivers real benefits for energy, industry, and, most importantly, the environment—and its irrefutable impact on humankind.

Thieme: Which difficulties are there for young upcoming chemists in your field? Do you have any tips?

Dr. Mukherjee: One of the biggest challenges for young, upcoming chemists in my field is the lack of sufficient support from funding agencies at all levels, a problem that is becoming more evident on a global scale. In an increasingly divided world, higher education and research funding are often subject to complex, bureaucratic constraints and diminishing budgets, making it harder than ever for early-career researchers to secure stable positions, resources, and long-term career prospects. This creates an environment of uncertainty, anxiety, and fear, which is far greater than what previous generations of scientists had to face.
My advice to young researchers is to diversify their skill set and collaborations—both within academia and beyond. Building strong interdisciplinary networks, seeking international collaborations, and being open to industry partnerships can provide alternative avenues for securing funding and advancing research. Additionally, developing resilience and adaptability is key—research is often a long game, and persistence, coupled with strategic career planning, can make all the difference.

Thieme: What is your most important scientific achievement to date and why?

Dr. Mukherjee: Not long ago, we discovered a new class of sorbent material that can efficiently remove 'forever chemicals' (per- and polyfluoroalkyl substances, PFAS) from drinking water (*Adv. Mater.* **2025**, *37*, 2413120). Collaborating with members from my alma mater, Technical University of Munich (Germany), my team designed a highly selective metal-organic framework (MOF)-based adsorbent that can capture even minute (*parts per billion*) traces of PFAS—a class of persistent pollutants notorious for their long-term environmental and health hazards. This breakthrough holds huge societal importance, given that PFAS contamination is an escalating global crisis, tainting water supplies for millions. Existing filtration methods, such as activated carbon and ion-exchange resins, often fall short of the mark when it comes to removing these chemicals at ultra-low concentrations. Our MOF-based filtration system not only boasts exceptional efficiency and reusability, but also introduces a bespoke approach to designing next-generation adsorbents. While scaling up to industrial application is the next big hurdle, this breakthrough takes us one step closer to ensuring access to cleaner, safer drinking water and tackling one of the most stubborn environmental challenges of our time.

Thieme: Could you tell us something about yourself outside the lab, such as your hobbies or extra-work interests?

Dr. Mukherjee: In my free time, I love exploring Ireland's rugged coastline and pretending to be a master chef—despite all evidence to the contrary!