Meet Dr. Raju Jannapu Reddy, Thieme Chemistry Journals Awardee 2025!



Dr. Raju Jannapu Reddy *obtained his PhD from the University of Hyderabad (India) in 2008. Following his doctoral studies, he conducted postdoctoral research first at National Taiwan Normal University (2008–2010), then at Kyoto Pharmaceutical University, Japan, as a JSPS postdoctoral fellow (2010–2012), and then as a Marie Curie Research Fellow at the University of Birmingham (UK) until early 2015. Since then, he has been working as a UGC Assistant Professor in the Department of Chemistry at the University College of Science, Osmania University, Hyderabad (India).*

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

Dr. Reddy: Organic chemistry is essential to our existence, and I have a strong fascination with organosulfur chemistry, primarily because sulfur has been used medicinally since ancient times. It is one of the most well-known elements, recognized by the Greeks for its healing properties. Moreover, sulfur-containing compounds continue to play a significant role in the development of FDA-approved drugs and have contributed to numerous breakthroughs in the era of antibiotics. Historically, crop protection has also been closely linked to elemental sulfur, which is undoubtedly the oldest known pesticide. Sulfur is unique in that it can exist in five oxidation states, enabling the formation of a diverse range of promising functional groups. Overall, many sulfur-containing compounds are crucial in pharmaceuticals, agrochemicals, and materials science. Based on these insights, our research group is actively engaged in various aspects of developing organosulfur chemistry and has made significant contributions in recent years.

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

Dr. Reddy: In addition to my primary interest in organosulfur chemistry, we are exploring the use of sulfenyl- and sulfonyl-radical-triggered photo-redox and electrochemical syntheses to develop sustainable methodologies. Additionally, we will focus on the total synthesis of tetrahydroisoquinoline natural products, employing key techniques that utilize asymmetric organocatalysis. Our strong motivation is to address practical challenges in the pharmaceutical industry to find effective solutions that bridge the gap between academia and industry.

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

Dr. Reddy: Organic chemistry plays a crucial role in modern science and technology, with a wide range of applications across fields such as medicine, materials science, energy, and environmental sustainability. As this field continues to evolve, it is expected to have a significant impact on the future. Key areas of interest within organic chemistry include: (i) green chemistry and sustainable synthesis and development; (ii) AI-driven drug design to enhance the efficiency of pharmaceutical production; (iii) organic electronics for the creation of wearable and flexible devices; (iv) improved organic solar cells and energy-efficient materials; and (v) engineering microorganisms to produce valuable chemicals. The prospects of organic chemistry in these areas underscore its ongoing relevance and potential to address contemporary challenges, directly benefiting society.

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

Dr. Reddy: Organic chemistry encompasses a vast array of reactions, mechanisms, and concepts, which can often feel overwhelming for chemists. To thoroughly grasp reaction mechanisms and synthesis pathways, it's essential to cultivate strong practical and analytical skills. Laboratory work in organic synthesis can be unpredictable, requiring both patience and effective problem-solving abilities. Additionally, handling hazardous chemicals and following safety protocols can pose challenges for beginners. Key analytical techniques, such as nuclear magnetic resonance, infrared spectroscopy, and mass spectrometry, are vital for success in this field. However, mastering these techniques demands time and practice. Accurately interpreting data can also be challenging for those new to organic chemistry. It is important to recognize that positions in academia, industry, and research can be highly competitive, especially for individuals without professional training.
Here are some tips for young chemists: (i) Focus on fundamental concepts, such as reaction mechanisms, stereochemistry, and retrosynthesis; (ii) Develop a solid understanding of functional groups and their reactivity; (iii) Regularly practice problems and work through reaction mechanisms; (iv) Gain proficiency in laboratory techniques like chromatography, distillation, recrystallization and accurately interpreting NMR data; (v) Understand that failure is a common part of organic chemistry, especially in experimental work. And finally, learn from your mistakes, refine your techniques, and remain persistent.

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

Dr. Reddy: As an independent researcher, I have built a research laboratory from the ground up and have successfully secured numerous research grants from various funding agencies in India. Over the past ten years, my research group has focused on various aspects of organic chemistry, making significant contributions to organosulfur chemistry. This impact is evidenced by my 27 publications in highly reputable journals, including three review articles and two book chapters. Notably, two review articles (*Org. Biomol. Chem.* **2021**, *19*, 3087 and *RSC Adv.* **2021**, *11*, 9130) were recognized as being among the top 10% of cited articles in 2022. Additionally, our Practical Synthetic Procedures article (*SynOpen* **2021**, *5*, 91) was featured in the Thieme Chemistry news magazine *Synform*. Many of my research papers have also been recognized as Most Accessed Articles or Very Important Publications. Overall, my research group has made significant advancements in organosulfur chemistry, particularly in the applications of thiosulfonates and β-iodovinyl sulfones, especially considering the resources available.

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

Dr. Reddy: Outside the lab, I enjoy reading about scientific discoveries, solving puzzles, and exploring how chemistry intersects with everyday life. Additionally, I have a general interest in going for long walks or jogging, playing badminton, swimming, watching movies, and spending time with my family and friends.