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Cluster Preface: Chemical Synthesis and Catalysis in India

Debabrata Maiti *[a]
Santanu Mukherjee *[b]

[a] Department of Chemistry, Indian Institute of Technology Bombay, Powai, Mumbai 400076, India
dmaiti@iitb.ac.in
[b] Department of Organic Chemistry, Indian Institute of Science, Bangalore 560012, India
sm@iisc.ac.in

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Debabrata Maiti (left) received his Ph.D. from Johns Hopkins University in 2008 under the supervision of Prof. Kenneth D. Karlin. After postdoctoral studies at MIT with Prof. Stephen L. Buchwald, he joined the Department of Chemistry at IIT Bombay in 2011. His research interests are focused on the development of new and sustainable synthetic and catalytic methodologies. He is currently an Associate Editor of the *Journal of Organic Chemistry*.

Santanu Mukherjee (right) obtained his Ph.D. in 2006, working under the supervision of Prof. Albrecht Berkessel at the Universität zu Köln, Germany. He subsequently worked as a postdoctoral fellow with Prof. Benjamin List at the Max-Planck Institut für Kohlenforschung, and with Prof. E. J. Corey at Harvard University. In 2010, he joined the Department of Organic Chemistry at IISc Bangalore. His research interests revolve around various aspects of asymmetric catalysis, with particular emphasis on organocatalytic enantioselective desymmetrization and transition-metal-catalyzed enantioselective allylic, allenylic and propargylic substitution reactions. He is an Associate Editor of *Organic & Biomolecular Chemistry*.

What can be more exciting than creation? This is where synthetic chemists come into play, bringing ideas for developing unprecedented reactions, reagents, catalysts and strategies, which not only open up areas beyond traditional approaches and new chemical space, but also make the synthesis of complex targets achievable. For industries such as pharmaceuticals, petrochemicals, and agrochemicals to continue to develop breakthrough therapies for global healthcare and ensure food and nutrition supplies for growing populations, the invention of new synthetic transformations is critical. As the fifth largest economy in the World, Indian industry plays an important role and has witnessed remarkable expansion, with huge investments to meet the growing global demand.

Organic chemistry in India during a major part of the twentieth century was primarily confined to natural products: both isolation and synthesis. Though slow progress was observed in the early and mid-twentieth century, the past thirty years have witnessed a tremendous growth in the field of synthetic chemistry across India. Besides the total synthesis of natural products, modern chemists are developing different aspects of synthetic methodology, bioorganic chemistry, organic materials chemistry, and other combinatorial aspects of synthetic chemistry. A number of Indian universities and research institutes have been recognized for their contributions to scientific research as well as their excellence in educating and training high-quality students. In addition to the already established institutions, such as the Indian Institute of Science (IISc), the Indian Institutes of Technology (IITs), the Council of Scientific & Industrial Research (CSIR) laboratories, the National Institutes of Technology (NITs), and the Central and State Universities, the first decade of the twenty-first century witnessed the emergence of several institutions such as the Indian Institutes of Science Education & Research (IISERs), the National Institute of Science Education & Research (NISER), the National Institutes of Pharmaceutical Education and Research (NIPERs), new IITs, and more recently private universities. As a natural outcome, India now hosts a large number of synthetic chemists – diverse in every aspect, most importantly in terms of the research areas they practice.

This diversity, even within chemical synthesis, is reflected in the research articles and accounts presented in this special issue on *Chemical Synthesis and Catalysis in India*, which is published in two subsequent SYNLETT issues. The 40 articles, including research papers and accounts, published herein were contributed by authors from more than 30 institutions across India. The research topics of these articles encompass essentially every area of chemical synthesis, from the development of synthetic methodol-

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ogies and catalysis of various types, including enantioselective catalysis, to the synthesis of complex targets. In terms of synthetic techniques, both traditional as well as modern approaches, including photoredox and electrochemical methods, are covered. Overall, the breadth of research topics presented here certainly reflects the global trend in research at this time.

This preface would be incomplete without acknowledging the generous support provided by the funding agencies that have contributed to the research presented in this special issue. There has been a steady growth in the financial support provided by the Government of India through its funding agencies such as the Ministry of Education of India (MoE), the Department of Science and Technology (DST), the Science & Engineering Research Board (SERB), the Council of Scientific & Industrial Research (CSIR), the Department of Atomic Energy (DAE), the Defence Research Development Organization (DRDO), the Indian Space Research Organization (ISRO), the Ministry of New and Renewable Energy (MNRE), etc. Besides, more and more Indian industries are opening their doors to support academic research in India. Apart from providing funding for carrying out research in academic institutions, industries based in India have contributed to the development of research ecosystems, and much more is promised in the coming years. Consequently, India has emerged as a major global producer of pharmaceuticals, agrochemicals, and other commodities to meet the ever-growing global market.

Assuming a steady growth in funding support for basic science research along with an ever-expanding pool of exciting talent, the coming years are certain to witness an increase in research output in chemical synthesis, especially in terms of quality, volume, and diversity in research topics. The future of chemical synthesis in India indeed looks bright!

Debabrata Maiti and Santanu Mukherjee
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Conflict of Interest

The authors declare no conflict of interest.