

# Editorial

## Chemistry in India Part 1



Peter Maienfisch

Chemical science has chartered an impressive journey, having evolved from a utility science to a central science and now positioned as a sustainability science. A distinguishing and captivating feature of its advance, compared to other branches of science, has been its abiding interface with industry in the service to humankind. Indeed, the chemical industry provides products and enables technical solutions to virtually all spheres of human activity and existence, and is vital for the economic development, enhancement of quality of life and sustainability of our planet.

The chemical industry is now increasing its footprint eastwards, driven by the greater manufacturing competitiveness of the emerging Asian economies, increasing local demand and a ready access to aspirational human resources to drive innovations. Countries like India and China are recognized as global players due to increasing investments in chemical research with major initiatives in catalysis, smart materials, drug discovery and green-sustainable chemistry to name but a few. There is concurrent expansion of manufacturing capabilities for a diverse range of chemical intermediates, drugs and pharmaceuticals, pesticides, functional materials *etc.* As a result, the share of Asia in the global chemical industry has increased from 31% in 1999 to 45% in 2009. In this scenario of Asia's growing contribution to the global chemical industry, India emerges as one of the attractive destinations for chemical companies worldwide. The current size of the Indian chemical industry is about \$108 billion, accounting for roughly 3% of the global chemical industry.



Goverdhan Mehta

Encouraged by several government initiatives, new investments in R&D by transnational corporations through establishment of targeted innovation platforms and unfolding of the entrepreneurial potential of young generation Indians, the chemical industry in India is poised for impressive growth and has the ambition to reach ~\$290 billion (6% of the global share) by 2017. Recent research activities in India have made notable contributions to the areas of synthesis, catalysis, chemistry at nano-scale and femto-second time domains, chemical biology, supramolecular and materials chemistry. In addition, innovations in manufacturing processes – especially reduction in cost of production, efficient basic building block synthesis for downstream chemical products, application development and design of new products with global level potential and relevant to the Indian needs (like clean water availability, sustainable energy solutions, affordable medicine *etc.*) – can be expected to define a higher trajectory in research and development.

Basic research is the bedrock of new knowledge creation and innovations. Chemical research in particular is a fertile forum for integrating different knowledge domains and creative expressions at molecular level. A transformative future for chemical sciences in India is being enabled by a flourishing chemistry research community, continuously recharged by a stream of talented youngsters keen on carving out a career in chemistry, sustained and facilitated by several newly established good quality academic and research institutions. Indeed, the share of chemical literature emanating from India is steadily rising and has reached 6.5% of the world output (highest among all branches of science and engineering from India) in 2010. This augurs well for a promising future for chemistry and chemical industry in India.

With 'Chemistry in India', we wish to continue a series, focusing on research in chemistry in emerging economies, which commenced with the first offering on 'Chemistry in China' (12/2011). Our intent here is to provide the reader a flavor of some selected research highlights and recent trends in chemical research in India. In this and CHIMIA issue 1-2/2013, 16 representative contributions from some of the leading chemists covering diverse areas of their current research activities, are being presented. Besides many contributions in mainline organic chemistry, the coverage encompasses research at interfaces like soft matter, facets of chemical biology and supramolecular chemistry. We wish you an enjoyable and informative read of this issue of CHIMIA.

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