 © 2014 Russian Academy of Sciences and Turpion Ltd

Modern organic synthesis

Organic chemistry is a demanding area of outstanding importance in modern science, which is highly valuable for the improvement of living standards of people, health care, development of new generations of pharmaceuticals, including drugs for the prevention and treatment of high priority diseases. Most of currently operating industrial processes are related to the production and treatment of organic compounds. Organic molecules do play and will continue to play the most important role in the fuel and energy sector (hydrocarbon processing) and this area will govern anticipated progress in the development of chemical industry. Meanwhile, perception of organic chemistry in the last decades has changed dramatically. According to a common impression of researchers and specialists, nowadays applications of organic compounds and development of new synthetic procedures for their preparation have actually replaced the fundamental organic chemistry. This area of chemical science has almost disappeared from the majority of ongoing projects, it is not present in roadmaps, and only a few scientific foundations and grant agencies provide support for the fundamental research in organic chemistry. Bright and rapidly advancing applications of organic compounds and fascinating scientific initiatives (pharma, bio, nano, energy, materials) have largely displaced the fundamental science of organic synthesis — the real basement of scientific projects and innovations.

This issue of the journal presents a unique review prepared by highly qualified Russian scientists, who develop the key areas of modern chemistry. The review highlights an interesting trend in the development of organic chemistry, namely, implementation of reactions with 'atomic precision' as the frontier of organic synthesis and complex chemical transformations. In our opinion, modern organic chemistry urgently needs such reviews to stimulate discussions, correct future research programmes and subsequently to develop fundamental science. The successful work of a large team, representing thirteen research institutes and universities in Russia, resulted in the present review containing fourteen sections. Of course, it was impossible to analyze in detail all of the areas of organic chemistry. Nevertheless, this review has no analogues in the scientific literature and maintains the optimal balance in the presentation of the material. I am sure that this review will be extremely useful for a broad audience of readers.

M P Egorov
Academician, Director of the N D Zelinsky
Institute of Organic Chemistry,
Russian Academy of Sciences