

Biocatalysis 2007: Basic Research and Applications

DOI: 10.3103/S0027131408020016

In June 2007, the International Scientific Conference on Problems of Biological Catalysis took place, which has traditionally been held every two years since 1993 and is the continuation of the All-Union conferences with the same name, held at the same interval beginning from 1974. The wide circle of problems discussed in the area of biocatalysis, biotechnology, and chemical and engineering enzymology stimulates increased interest among scientists worldwide and gathers from 200 to 300 participants, of whom 70–100 are foreign researchers. This year, for the first time, the number of foreign participants (150) exceeded the number of Russian ones (120). Participating in the work of the conference were both leading foreign and Russian scientists and representatives of the largest chemical biotechnology companies (Degussa, DSM, Sandoz, Dow Chemical). As a rule, such conferences held in Russia attract many graduates of Moscow State University, in particular, of the Department of Chemical Enzymology, now working abroad. Biocatalysis 2007 was not an exception, attracting the attention of theoretical and applied researchers interested in discussion and information exchange.

Traditionally, the conferences are held on a riverboat, which allows the close association of their participants to be arranged not only at conference sessions but also throughout the day. This year the conference site was the riverboat “Aleksandr Suvorov,” following the route Moscow–Uglich–Goritsy (the Kirillo-Belozersky monastery)–Kizhi–Mandrogi–St. Petersburg. At the meeting, a wide circle of problems was covered, from basic research on the phenomenon of biological catalysis to the specific use of enzymes for solving various problems of an applied nature. Within the framework of the conference, a mini symposium was also held, dedicated to the 70th anniversary of the discovery by Academician A.E. Braunshtein of the reaction of transamination. Plenary reports on fundamental problems of biocatalysis and the study of the structure of biomolecules were made by Profs. G.M. Blackburn (United Kingdom) and Paul Wentworth (United Kingdom), K. Nierhaus (Germany), M. Dunn (United States), and A.G. Gabibov (Shemyakin–Ovchinnikov Institute of Bioorganic Chemistry, Russian Academy of Sciences). The main tendencies of development of applied aspects of biocatalysis were illuminated in plenary lectures by Profs. K. Drauz, vice president of Degussa (Germany), and A.P. Sinitsyn (Moscow State University, Russia), as well as in the section reports of

Prof. V. Shvedas (Moscow State University), Drs. K. Laane and H. Moody (DSM, the Netherlands), and Dr. R. Lloyd (Dow Chemicals, United Kingdom). The wide spectrum of problems examined makes the conference a unique scientific forum attracting both theoretical and applied researchers interested in discussion and information exchange.

The diverse topics of the conference allowed the most interesting lines of research, intensively developed in recent years, to be identified. At the 2007 conference, reports were presented on state-of-the-art methods of study of the structure and mechanism of action of enzymes (X-ray crystallography, NMR, mass spectrometry), as well as works on the study of enzyme structure and molecular mechanisms of action of biocatalysts, on genetic engineering and targeted mutagenesis of proteins, and on the creation of biocatalysts by methods of directed evolution and the search for new enzymes on the basis of the analysis of the genomes of whole organisms. Much attention was also given to bio-information aspects of both fundamental and applied research. A considerable part of the reports were devoted to the use of enzymes for fine organic synthesis, in particular, for obtaining optically active compounds.

The materials presented at the conference showed the growing role of various genetic engineering methods in scientific research, in the creation of new biocatalysts on the basis of enzymes and whole cells, and in the development of biocatalytic processes on the whole.

At the conference, reports were also presented on the use of enzymes in medicine and analytical biotechnology. The plenary lecture at the close of the conference was devoted to this problem.

The conference Biocatalysis 2007, at which many outstanding achievements were presented, demonstrated yet again the validity of the thesis “enzymes are well studied and widely applied chemical catalysts.”

The materials of the conference have been published in the form of a collection of abstracts and in a special issue of the journal *Vestnik Moskovskogo Universiteta, Ser. 2: Khimiya* (Moscow Univ. Chem. Bull.) (2008, no. 2). This issue contains articles written by conference participants based on the materials of reports.

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