



NONEQUILIBRIUM PROCESSES
IN PLASMA, COMBUSTION, AND ATMOSPHERE

Edited by
A. M. Starik
S. M. Frolov

Preface

The International Symposium on Nonequilibrium Processes, Plasma, Combustion, and Atmospheric Phenomena is a forum for international experts in such fundamental areas as physical and chemical kinetics, physics of low temperature and cluster plasmas, physics of shock and detonation waves, physics and chemistry of aerosols and nanoparticles, combustion and atmospheric chemistry, physics and chemistry of high-speed flows, plasma and laser chemistry, plasma-, laser- and combustion-assisted technologies. This Symposium has already become a notable biannual event attracting a growing attendance of the scientists all over the world. It covers the topics in kinetics of elementary processes, fundamentals of ignition and combustion, novel combustion concepts including plasma-assisted and laser-induced combustion, combustion-, plasma- and laser-generated aerosols and nanoparticles, fuel reforming, synthesis of nanomaterials, gaseous and particulate pollutant formation, pollution control and impact of pollutant emission on the atmospheric chemistry and climate. All topics are very relevant in today's field of research.

The First Symposium was organized in St. Petersburg, Russia, July 8–11, 2003, and was dedicated to the memory of N. N. Semenov, a founder of the chain-branching reaction theory and a Nobel prizewinner. The Second, Third and Fourth Symposia were held in Sochi, Russia, October 3–7, 2005, June 25–29, 2007, and October 5–9, 2009, respectively. The present Fifth Symposium is also organized in Sochi, Russia, October 1–6, 2012.

Sufficient care has been taken to logically select and distribute the papers for the various sessions and to maintain a flow of the subject dealt with. We are pleased with the response from the international scientific and technological community to the call for papers. There are 69 papers written by 232 scientists and engineers from 19 countries. We have carefully edited the submittals and properly distributed them. With this in mind, the content of the Book is divided into 5 parts:

Part 1: Kinetics and Elementary Processes

Part 2: Plasma and Plasma-Based Technologies

Part 3: Combustion

Part 4: Detonation, Explosion, and Atmosphere

Part 5: Nanoparticles and Synthesis

Any endeavor of this nature requires the dedicated service of several individuals. We take this opportunity to thank Ms. Olga Frolova and the personnel of TORUS PRESS responsible for compiling and publishing this volume. We are thankful to Academician Alexander Berlin, Academician Oleg Favorskii, Academician Alexander Merzhanov, and Professor Vladimir Skibin for their valuable advices and encouraging support. We are grateful to Ms. Olga Rein, Ms. Larisa Andreeva, and Dr. Alexander Lebedev for their decisive contribution in organizing the Symposium.

We thank the members of the International Advisory Committee of the Symposium for their active participation in elaborating the technical program of the meeting, and to plenary speakers for their excellent presentations on the challenging issues of modern physics and chemistry. We are indebted to the Symposium participants for being a part of this endeavor in bringing the state-of-the art of combustion, plasma, aerosol, and atmospheric science for fruitful discussions and dissemination.

Finally, we express our appreciation to the Russian Foundation for Basic Research, Department of Chemistry and Material Sciences of the Russian Academy of Sciences, N.N. Semenov Institute of Chemical Physics, P.I. Baranov Institute of Aviation Motors, and Combustion Council of the Russian Academy of Sciences for their continuous support and sponsorship.

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Alexander Starik
Sergey Frolov