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 clusters, aerosols and nanoparticles, combustion and atmospheric chemistry, physics and chemistry of high-speed flows, plasma and laser chemistry, plasma-, laser-, and combustion-based technologies. It covers the topics in kinetics and elementary processes, fundamentals of ignition and combustion, novel combustion concepts including plasma-assisted and laser-induced combustion, hydrogen safety, detonation, plasma and laser generated aerosols and nanoparticles, physics of clusters, synthesis of nanomaterials, gaseous and particulate pollutant formation, and impact of pollutant emission on the atmospheric chemistry and climate. All topics are very relevant to up-to-date research.

The First Symposium was held 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, Fourth, Fifth, and Sixth Symposia moved to Sochi, Russia (October 3–7, 2005; June 25–29, 2007; October 5–9, 2009; October 1–6, 2012; and October 5–9, 2014), the new venue well accepted by the scientific community. Therefore, the Seventh Symposium is also organized in Sochi in the period from October 2 to 7, 2016.

We are pleased with the response from the international scientific and technological community. There are 77 papers submitted by 272 scientists and engineers from 14 countries.

We have carefully edited and formatted the selected contributions and included them in two Volumes under the same title "Nonequilibrium Processes in Physics and Chemistry:"

Volume 1: Plasma, Clusters, and Atmosphere

Part 1: Kinetics and Elementary Processes
Part 2: Plasma and Plasma Based Technologies
Part 3: Clusters, Nanoparticles and their Application

Volume 2: Combustion and Detonation

Part 4: Combustion and its Application
Part 5: Detonation and Explosion

As a result, this two-volume monograph continues a series of our books [1–8] published since the First Symposium. 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 these volumes. We are thankful to Academician Alexander Berlin and Academician Oleg Favorskii for their valuable advices and encouraging support. We are very grateful to General Director of the Central Institute of Aviation Motors Vladimir Babkin and Deputy Director Elena Bohanova for their kind attention and valuable support in the organization of this event. We are also thankful to Ms. Olga Rein, Ms. Tatyana Dulitskaya, 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 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 quantum chemistry, physical and chemical kinetics, combustion, plasma, physics of clusters and nanoparticles, and atmospheric science and for fruitful discussions and dissemination.

We express our appreciation to the Department of Chemistry and Material Sciences of the Russian Academy of Sciences and to the Scientific Council on Combustion and Explosion of the Russian Academy of Sciences for friendly support of this regular event.

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Alexander Starik
Sergey Frolov