

PREFACE

The 25th International Symposium on Rarefied Gas Dynamics (RGD25) was held on July 21-28, 2006 in Repino, a suburb of St. Petersburg. This is the second RGD symposium held in Russia. The previous one took place in 1982, in Novosibirsk (though the number of this symposium was devil's dozen, it was extremely successful).

The first RGD symposium was organized in June 1959 in Nice (France) by M. Devienne, Director of the Mediterranean Laboratory of Thermodynamic Research. That symposium was stimulated by the launch of the first artificial satellite (sputnik) of the Earth. Participants of RGD1 were scientists who made invaluable contributions to rarefied gas dynamics: H. Grad, J. Stalder, F. Sherman, L. Talbot, F. Hurlbut, R. Probstein, M. Devienne, C. Cercignani, S. J. Bai, and others. The topics of that symposium were inspired by the development of missiles and space rockets.

For the last decades, the topics of the symposium have become more numerous and cover various fields of mechanics, physics, and engineering involving nonequilibrium processes, where the use of approaches of continuum mechanics is difficult or invalid. This is a natural consequence of the basic and universal nature of the laws of physics of molecular interaction, gas-surface interaction, and kinetic theory of gases as a whole.

The present symposium was focused on the following topics: kinetic and transport theory, Boltzmann and related equations, DSMC and related simulations, numerical solutions of kinetic equations, experimental procedures in RGD, molecular beams and molecular collisions, clusters and aerosols, gas-surface interaction, space vehicles aerodynamics, internal flows, jets and plumes, reaction and relaxation processes, plasma flows and processing, micro/nano scale flows and devices, RGD in astrophysics and aeronomy, molecular dynamics simulations, and vacuum gas dynamics.

New challenges of scientific progress, namely, development of micro- and nanotechnologies were reflected in symposium presentations. Rarefied gas dynamics as a science in its current status turned out to be already prepared for solving these new problems.

The development of rarefied gas dynamics method was strongly enhanced by evolution of computer engineering. Extensive computations with Monte Carlo methods produced large amounts of new results and affected the development of experimental facilities. These new trends did not slowdown the development of the kinetic theory of gases, which is confirmed by the content of the last symposium.

To come to the concrete information about the symposium, there were 2 memorial lectures dedicated to H. Grad and L. Thomas, 22 invited lectures, 151 oral presentations, and 92 poster presentations. Two hundred thirty six participants represented 27 countries: Russia (89), USA (30), Japan (24), Italy (21), France (13), the Netherlands (10), Germany (7), South Korea (7), Sweden (7), Australia (4), Spain (3), Bulgaria (2), Great Britain (2), Kazakhstan (2), Turkey (2), Taiwan (2), Belarus (1), Brazil (1), Greece (1), India (1), Iran (1), Israel (1), Liechtenstein (1), New Zealand (1), Norway (1), Portugal (1), Ukraine (1). As St. Petersburg is a worldwide

famous cultural center, it also attracted 43 accompanying persons whose presence contributed to the amiable social spirit.

Official organizers of the symposium were the Kutateladze Institute of Thermophysics and Khristianovich Institute of Theoretical and Applied Mechanics of the Siberian Branch of the Russian Academy of Sciences under the umbrella of the National Committee of Theoretical and Applied Mechanics of the Russian Academy of Sciences.

The symposium sponsors were the European Space Agency; the European Office of Aerospace Research and Development, Air Force Office of Scientific Research, United States Air Force Research Laboratory; Russian Foundation for Basic Research; International Science and Technology Center; Office of Naval Research Global; Presidium of the Russian Academy of Sciences, and Presidium of the Siberian Branch of the Russian Academy of Sciences.

A significant contribution to symposium organization was made by the members of the International Advisory Committee and Paper Committee who had to review the abstracts and then the full papers.

Extensive technical activities in symposium organization were performed by a specialized company Monomax from St. Petersburg. This company was responsible for the symposium website, registration, abstract submission, hotel accommodation, etc. The main burden of symposium preparations was carried by the Local Organizing Committee composed of scientists from the Institutes of Theoretical and Applied Mechanics and Thermophysics, who moved to St. Petersburg for the symposium period.

We hope that the symposium enhanced communication of scientists from different countries, revealed the latest scientific achievements, and was a noticeable scientific event of 2006. The symposium was successful due to active contributions of all participants. We wish new and fruitful contacts during the next symposiums.

The International Advisory Committee decided that the next (26th) RGD Symposium will be held in Kyoto, Japan in 2008 under the chairmanship of Prof. Takashi Abe.

RGD25 Co-Chairmen
M.S.Ivanov and A.K.Rebrov