

Preface

Dear readers!

In September 13–17, 1999 the Fourth International Conference on Atomic and Molecular Pulsed Lasers took place in Tomsk. Traditionally, the conference was organized by the Institute of Atmospheric Optics and the Institute of High-Current Electronics, Siberian Branch of the Russian Academy of Sciences, as well as by Tomsk State University and the Siberian Physico-Technical Institute.

The conference has been financially supported by the Russian Academy of Sciences and its Siberian Branch, Russian Foundation for Basic Research, International Center for Fundamental Physics (Moscow), SPIE Russia Chapter, Academy of Engineering Sciences of the RF, Tomsk Innovation Center, EQARD, and LEOS/IEEE. More than 150 scientists from Russia, Belarus, Ukraine, USA, Germany, France, and Japan took part in the conference. Proceedings of the conference will be published in topical issues of the journals *Kvantovaya Elektronika* (Russian Quantum Electronics), *SPIE*, and *Atmospheric and Oceanic Optics*. In this issue we publish the papers which were presented by the starting date of the conference and selected by the Organizing Committee for publication in the first turn. The papers deal with the following subjects:

- *gas and plasma lasers, physical processes in these lasers,*
- *physics and technology of metal-vapor lasers,*
- *dye lasers and photoprocesses in complex organic molecules,*
- *laser systems and their applications,*
- *incoherent sources of UV and VUV radiation, conversion of laser radiation.*

The issue starts with the paper by Professor I.I. Klimovskii, who considers the possibility of designing a new class of lasers that use the repulsive terms of flying-apart molecules as the states yielding the lasing effect. V.A. Churikov, [A.G. Gridnev], and D.Yu. Shestakov in their papers discuss some aspects of designing gamma lasers and metal-vapor lasers pumped by photoresonant plasma. In the following papers the problems of optimization of the performance characteristics are considered as applied to gas lasers (CO₂, HF, HgBr) and dye lasers. The papers devoted to the problems of conversion of laser radiation and generation of effective incoherent radiation in the UV spectral region complete the issue.

The Organizing Committee of the conference would like to express its gratitude to the Editorial Board of the journal *Atmospheric and Oceanic Optics* for the opportunity they granted for fast publication of most interesting reports presented at the conference.

The Organizing Committee informs the readers that the next Fifth Conference on Atomic and Molecular Pulsed Lasers will take place in Tomsk in September 2001 and all the interested specialists are invited to take part in it.

Scientific Secretary of the Organizing Committee
Doctor of Technical Sciences
G.S. Evtushenko