

**PREFACE**

More than a hundred of leading scientists and engineers from Russia, Ukraine, Kazakhstan, Belarus, USA, Italy, France, Japan, and Israel were the participants of the conference Pulse Lasers on Atomic and Molecular Transitions held in Tomsk, September 7–9, 1992 under the auspices of the Institute of Atmospheric Optics and the Institute of High–Current Electronics of the Siberian Branch of the Russian Academy of Sciences as well as of the State University and the Siberian Physicotechnical Scientific–Research Institute at the State University, Tomsk. Our thematic issue involves the papers on the following topics:

- gas lasers,
- dye lasers, and
- application of lasers.

Papers devoted to discussions of methods and mechanisms of pumping the lasing levels of atoms and molecules, physical phenomena in plasma when generating, new active media of exciplex molecules, atoms, and ions of noble gases and metal vapor open our issue. All these problems were the subjects of discussions at the first section of the conference.

The topics of the second section were the problems connected with the design of dye lasers pumped with radiation of excimer lasers, with ascertainment of regularities in relations between the spectral–luminescent and generation properties of dye molecules and peculiarities of inter and intramolecular interactions.

The third section of the conference devoted a number of reports to laser applications to medicine. The problems on the laser radiation interaction with biological objects and some aspects of designing laser for clinical applications were discussed there. Besides, lasers applications to sounding of the atmosphere, scientific and commercial technologies also were the topics discussed there.

The tendencies towards the laser market development were discussed in the context of the Round Table arranged during the last day of the conference.

Our thematic issue is opened by articles of our foreign colleagues.

G.S. Evtushenko, editor