

PREFACE

The First Inter–republican Symposium on Atmospheric and Oceanic Optics was held in Tomsk 21–24 June, 1994. It was the first Symposium of a sequence of international conferences, whose themes cover such scientific fields as the laser radiation propagation through the atmosphere and water media, the laser and acoustic sounding of the atmosphere, and the atmospheric optics. In accordance with these themes, three separate symposiums were being previously organized by the Institute of Atmospheric Optics of the Siberian Branch of the Russian Academy of Sciences. Scientific reports from 24 institutes in 14 cities of Russia and Commonwealth of Independent States were presented at this Symposium. These reports contained original theoretical and experimental results on the problems of atmospheric and oceanic optics. Materials of this Symposium provided the basis for the present thematic issue of the journal *Atmospheric and Oceanic Optics* including the most interesting and valuable works.

According to the Symposium topics, the following problems are discussed in this issue:

- absorption of optical waves in gaseous media,
- scattering of optical radiation by atmospheric aerosol,
- propagation of optical waves in randomly inhomogeneous and scattering media,
- optical and acoustic methods of sounding of the atmosphere and ocean,
- instruments for investigations into the atmospheric and oceanic optics.

Different methods of computation of gas optical properties and their efficiency are under examination in the paper of B.A. Fomin, A.N. Trotsenko, and S.V. Romanov. V.A. Kapitanov, M.Yu. Kataev, et al. discuss in their papers the opto–acoustic study of the fast vibrational relaxation and accuracy of the measurements of gas concentration in the multicomponent media. Effect of spatial variations in relaxation matrix on the transmittance of the molecular atmosphere is studied in the paper of Yu.V. Kistenev. L.I. Nesselova, O.B. Rodimova, and S.D. Tvorogov present the model description of the absorption by H₂O molecules in the spectral range from 8 to 14 μm and by CO₂ molecules in the vicinity of 4.3 μm as a function of temperature.

Specific features of microstructure of atmospheric aerosol obtained by optical methods are reported by A.E. Tyabotov, V.V. Veretennikov, V.I. Dobrynin, E.V. Makienko, et al.

The papers presented by V.P. Yakubov, B.N. Chen, V.V. Kolosov, S.B. Mogil'nitskii, R.Sh. Tsvyk, et al. are devoted to the problem of transfer of optical waves through randomly inhomogeneous and scattering media. Problems of optical and acoustic studies of the oceanic water are considered by A.P. Ivanov, V.I. Yuzhakov, N.V. Il'in, et al. Laser sounding of the meteorological element profiles, in particular, using data obtained with satellites, is analyzed by A.I. Grishin, A.V. Kreminskii, et al.

Lidars for ozone sounding and monitoring of the natural gas leaks are described by V.D. Burlakov, R.R. Agishev, et al. Devices for measurements of aerosol mass concentration, gas composition, and meteorological parameters are presented by A.A. Teleganov, A.B. Antipov, A.P. Rostov, O.K. Voitsekhovskaya, et al. An increase in lidar pulse repetition frequency is reported by G.I. Il'in and N.G. Khairullin.

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