Preface

VI International Conference on Atomic and Molecular Pulsed Lasers (AMPL-03)

The Sixth International Conference on Atomic and Molecular Pulsed Lasers (AMPL-03) was held in September 15–19 of 2003. Traditionally, it is held every two years in the ancient Siberian city of Tomsk. In the recent years, the AMPL Conference becomes increasingly popular, that is reflected in the number of papers presented and published in ten topical issues of *Atmospheric and Oceanic Optics* (vol. 6, Nos. 3, 6 (1993); vol. 8, No. 11 (1995); vol. 10, No. 11 (1997); vol. 11, Nos. 2–3 (1998); vol. 12, No. 11 (1999); vol. 13, No. 3 (2000); vol. 14, No. 11 (2001); vol. 15, No. 3 (2002)), and four topical issues of *Proceedings of SPIE* (vol. 2619 (1995); vol. 3403 (1997); vol. 4071 (1999); vol. 4747 (2001)). The last conference was devoted to the 40th anniversary of the start of the first laser in Tomsk and the 125th anniversary of the Tomsk State University.

The AMPL-03 scientific program was traditional and included the following sessions:

– *gas and plasma lasers (Session A),*
– *metal vapor lasers (Session B),*
– *dye lasers and photoprocesses in complex organic molecules (Session C),*
– *physical processes in gas lasers (Session D),*
– *laser systems and their applications (Session E),*
– *noncoherent UV and VUV sources (Session F),*
– *laser output conversion (Session G).*

The conference was supported by the Russian Academy of Sciences, Siberian Branch of the Russian Academy of Sciences, SPIE Russian Chapter, International Science and Technology Center, Tomsk Innovation Center of Laser Technologies, Laser Association, Surgut State University, and TOPAZ Research and Innovation Enterprise.

The conference involved more than 160 participants from Russia, USA, Germany, France, Bulgaria, Yugoslavia, Iran, Kazakhstan, Netherlands, South Korea, and Switzerland, who presented more than 60 oral and 140 poster reports. In addition, about 50 students of Tomsk universities took part in the conference.

During the conference, the participants had a possibility to visit research laboratories of the Institute of High-Current Electronics SB RAS, the Institute of Atmospheric Optics SB RAS, Tomsk State University, and Siberian Physical-Technical Institute.

This year, the conference was supported, for the first time, by the International Science and Technology Center. The support allowed the conference to involve additional participants from the Russian Federation and to improve its organization due to the modern presentation equipment, synchronous translation, a possibility of meeting the participants in the Tolmachevo International Airport (Novosibirsk), etc.

In 2004, some reports will be published in *Proceedings of SPIE* (vol. 5483), and the reports presented at the conference in Russian are published in this issue of *Atmospheric and Oceanic Optics*.

Let us review briefly the reports presented at the conference.

The **Plenary Session** on 15th of September incorporated papers devoted to the urgent problems of development of pulsed lasers and spontaneous emission sources, as well as their applications. The session was opened with the lecture by A.N. Soldatov (Tomsk State University) devoted to the history of starting the first laser in Tomsk and the review of investigations of Tomsk scientists in quantum electronics.

The report on the processes of discharge formation and generation of electron beams in dense gases (S.I. Yakovlenko, General Physics Institute RAS, Moscow) has attracted considerable attention. A.A. Sinyanskii (VNIIEF, Russian Federal Nuclear Center, Sarov) told about multichannel nuclear-pumped quasi-continuous laser setups developed in VNIIEF. U. Kogelschatz (ABB Corporate Research, Switzerland) presented an interesting paper "Excimer lamps: History, discharge physics, and industrial applications." The report "Non-self-sustained electric discharge in oxygen gas mixtures: singlet delta oxygen production for an oxygen–iodine laser" was presented by A.A. Kotkov (P.N. Lebedev Physical Institute RAS, Moscow). A.M. Razhev (Institute of Laser Physics SB RAS, Novosibirsk, Russia) reviewed the researches and the progress achieved in the development of discharge-pumped exciplex lasers and their application in ophthalmology. J. Wieser (Germany) presented the paper "Electron beam pumped ultraviolet light sources." V.F. Tarasenko reviewed the results obtained in the Laboratory of Optical Radiations of the Institute of High-

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Current Electronics SB RAS (Tomsk) for two years between the AMPL-01 and AMPL-03 conferences.

Session A. Gas and Plasma Lasers

That session incorporated 31 papers, including 9 oral ones. The distribution of the scientific interests to different types of lasers can be illustrated by the following statistics. Various aspects of excimer lasers were considered in 13 papers. Four papers dealt with laser effects in the atomic Xe, four papers were devoted to molecular CO_2 lasers, and 4 works considered chemical lasers. Two papers challenged the nitrogen lasers; plasma lasers were discussed in one paper, as well as an ionized argon laser, and two papers dealt with other media. To be noted is the considerable interest to the xenon laser, in particular, with nuclear pumping, and to non-chain chemical lasers.

So, it can be concluded that the investigations in the field of gas lasers have been intensely developed, and gas lasers are still beyond comparison in generation of short UV and VUV radiation.

Session B. Metal Vapor Lasers

The conference traditionally paid a considerable attention (about 30 works) to metal vapor lasers (MVLs) and their applications. Most papers, as usually, dealt with copper vapor lasers, but the number of papers addressing physics and chemistry of additives in the active medium, problems of salt injection of vapor, stabilization of the medium physical and chemical composition, and physics of longitudinal energy-tense repetitively pulsed discharge has increased significantly.

G.G. Petrash and K.I. Zemskov (P.N. Lebedev Physical Institute, Moscow) considered a possibility of the pulsed inversion in the processes of the ion-ion recombination, H. Latifi (Laser Research Institute, Teheran, Iran) reported the results of research into the effect of the longitudinal magnetic field on the characteristics of a CuBr laser, M.A. Kazaryan with colleagues (RPE "Istok," Fryazino, P.N. Lebedev Physical Institute, Moscow) reported the development of commercial sealed-off copper vapor lasers with the mean output power higher than 100 W from one active element at a possible service life no less than 2000 hours. Further enhancement of the output characteristics requires solving the thyratron problem and developing new circuit designs. V.M. Klimkin (Institute of Atmospheric Optics SB RAS, Tomsk) has exemplified the repeated contraction of the discharge in metal vapor lasers. Injection of vapor into the discharge by placing a metal directly on the surface of the discharge channel is not optimal – the metal should be placed so that the vapor density in the channel is lower than the equilibrium level. O.O. Prusakov with co-authors (Rostov State University) presented a self-consistent mathematical model of a recombination laser and predicted a possibility of lasing at new lines of the strontium ion. N.A. Yudin (Institute of Semiconductor Physics SB RAS, Novosibirsk) informed the auditory about his study of the effect of the prepulse electron concentration on the efficiency of a copper vapor laser. V.V. Tatur with co-authors (Institute for Optical Monitoring SB RAS, Tomsk) has studied the CuBr laser in the circuit with bipolar transistor power supply. V.M. Klimkin and V.G. Sokovikov (Institute of Atmospheric Optics SB RAS, Tomsk) have addressed the pulsed laser IR transitions in the spectra of strontium, thulium, and ytterbium, which cannot be attributed to the **r–m** schemes. They have put forward the hypothesis that these transitions are excited by the resonant pulsed radiation of atoms through the molecular component of vapor. G.S. Evtushenko with colleagues (Institute of Atmospheric Optics SB RAS, Tomsk) presented the results of investigation of the **r–m** transitions in lead at discharge excitation in $PbBr_2$ vapor and the effect of H_2 additives into the CuBr–Ne laser mixture. V.A. Gerasimov with co-authors (Institute of Atmospheric Optics SB RAS, Tomsk) has investigated the laser transitions in thulium, erbium, and mixtures of rare-earth elements, which can and cannot be attributed to the **r–m** schemes. The paper by T.M. Gorbunova with co-authors (Tomsk State University) discussed the results of investigation of laser transitions in the triplet system of strontium atomic terms. A.N. Soldatov with colleagues (Tomsk State University) reported the development of the strontium vapor laser with the total output power higher than 5 W in the IR spectral region. V.A. Gerasimov with colleagues (Institute of Atmospheric Optics SB RAS, Tomsk) informed the auditory about the effect of the recovery of the service life of the metal laser gas discharge tubes upon exterior heating. V.G. Sokovikov with colleagues (Institute of Atmospheric Optics SB RAS, Tomsk) reported the observed lasing effects at triplet transitions of the mercury atom upon propagation of the radiation with the doubled and overall frequencies of the Cu laser through a cell filled with the mercury vapor.

Session C. Dye Lasers and Photoprocesses in Complex Organic Molecules

The interest to the photoprocesses proceeding in complex organic molecules is caused by new applications of solid-state materials based on these molecules in opto-electronic systems and devices

(light emitting diodes, emitters of optical radiation, microlasers, various devices in telecommunication systems). Urgent problems are the development and creation of diverse thermally stable organic molecules efficiently emitting in the solid state under optical and electrical excitation. Complex molecular systems with the transfer of electronic excitation energy, luminescent polymers, and solid solutions of organic molecules in various matrices can be considered as such molecules.

R.T. Kuznetsova (Siberian Physical-Technical Institute, Tomsk) in her report considered photostability features of laser dyes at the pump power density up to 300 MW/cm^2. It was shown that the laser photostability and the quantum yield of laser dye phototransformations depend on the intensity and polarization of the pump radiation.

The two-photon induced luminescence in organic dye drops in high-power light fields was considered in the report by A.A. Zemlyanov (Institute of Atmospheric Optics SB RAS, Tomsk) and V.A. Donchenko with co-authors (Siberian Physical-Technical Institute, Tomsk). A considerable interest was attracted to the report by A.V. Kukhto with co-authors (Institute of Atomic and Molecular Physics, Minsk, Belarus; Chuvash State University, Cheboksary, Russia) devoted to energy conversion in the laser dye vapor under the electron beam excitation. The studies of such kind are needed for search for organic molecules fluorescing under excitation by the electrical current.

The properties of organic molecules in thin films were treated in the report by A.O. Bulanov with co-authors (Institute of Physical and Organic Chemistry, Rostov). They presented the results of investigation into the photochromic properties of idolinospiran in polymer matrices and polydisperse films. The photochromic properties manifesting themselves in the solid phase are characterized by a high value of free energy of activation of the thermal ring-opening reaction.

Complex molecular systems like bifluorophores are promising for new applications, therefore the reports devoted to the subject by G.V. Mayer, V.Ya. Artyukhov (Siberian Physical-Technical Institute, Tomsk State University) and V.I. Yuzhakov with co-authors (Moscow State University) have attracted a considerable interest.

Some reports presented the results of investigation of photoprocesses in organic molecules by quantum chemical methods (V.Ya. Artyukhov, N.Yu. Vasil'eva, O.K. Bazyl', and others (Siberian Physical-Technical Institute, Tomsk)).

In the report by I.V. Sokolova, O.N. Tchaikovskaya, V.A. Svetlichnyi, N.B. Sultimova, and others, photoprocesses in organic environmental toxicants were studied and a method has been proposed for their optical diagnostics and decomposition.

To be noted is the active participation of young scientists (E.I. Sinchenko, V.A. Svetlichnyi, N.B. Sultimova, N.E. Kovalskaya, O.V. Dolgova, V.A. Pomogaev, A.V. Firyulina, S.V. Nikolaev, O.V. Vusovich, E.A. Vostrikova, P.P. Mizin, N.S. Savenkova, A.V. Vasil'ev), who, hopefully, will contribute appreciably to solution of scientific problems for further development of laser technologies.

Session D. Physical Processes in Gas Lasers

This session involved 37 reports, among them 8 oral ones. Most reports treated the problem of electron beam generation: the electron emission mechanism, electron runaway conditions, measurement technologies, setup design, etc. S.I. Yakovlenko and A.N. Tkachev (General Physics Institute RAS, Moscow) have analyzed the mechanism of electron runaway and the role of the effect in the gas breakdown. Three reports by A.N. Maltsev with co-authors (Institute of Atmospheric Optics SB RAS, Tomsk) presented the results of investigation into generation of high-current subrelativistic electron beams in gases. The subrelativistic electron beams were obtained experimentally in gas discharges of different types: the corona discharge, the discharge sliding on a surface, and their combination. V.F. Tarasenko and V.M. Orlovskii (Institute of High-Current Electronics SB RAS, Tomsk) presented the experimental results on generation of the electron beam in gases at the atmospheric pressure and e-beam output through a foil into the space behind the anode. G.V. Kolbychev with co-authors (Institute of Atmospheric Optics SB RAS, Tomsk) reported new effects occurring in the breakdown of gas-filled gaps. A.R. Sorokin (Institute of Semiconductor Physics SB RAS, Novosibirsk) set out his view of the mechanism of electron emission in the open discharge. V.S. Korolev, V.N. Kukharev, and E.V. Sharabarin (Institute of Atmospheric Optics SB RAS, Tomsk) revealed the peculiarities in the design of a chamber, an accelerator, and capacitors for obtaining the pulsed gas discharge in dense gases.

Some reports were devoted to X-ray and gamma-ray lasers. Two reports by A.N. Soldatov, L.V. Gorchakov, A.V. Stebeneva, A.G. Filonov (Tomsk State University) considered the atomic strontium laser. V.M. Klimkin (Institute of Atmospheric Optics SB RAS, Tomsk) presented a new look at the physics of inversion in the Eu ion laser.

Session E. Laser Systems and Their Applications

This session incorporated 13 oral and 23 poster reports. In general, the subjects of the reports were rather wide and included the issues of laser separation of isotopes, as well as modernization and creation of new laser systems for medicine and industry. Several reports were devoted to new effects in the laser radiation interaction with matter.

The plenary session was opened by A.N. Soldatov, who, on behalf of the Tomsk State University, Vanderbilt University (USA), and the Pulslight Company (Bulgaria), has set out the report "A sealed-off strontium-vapor laser." He told about investigations into the SrI and SrII vapor laser, which resulted in creation of the sealed-off laser operating at $\lambda = 6.45$ μm and intended for laser surgery. The pilot laser of this type is now in use in the USA in experiments on tissue ablation.

Yu.P. Meshalkin (Institute of Physiology SB RAMS, Novosibirsk) presented the report "Femtosecond laser complex for medical and biological research," in which he described the femtosecond laser system itself and the results of studying the interaction of femtosecond laser radiation with biological tissues–photosensitizers and dyes in polymer and gelatinous matrices.

M.A. Kazaryan (P.N. Lebedev Physical Institute RAS, Moscow), on behalf of the colleagues from the State Research and Production Corporation "Istok" (Fryazino) and the State Unitary Enterprise RSIC REI (Istra), set out the report "Development and construction of the industrial copper, gold, and admixture lasers on the basis of the active elements of a Kulon series." The report summarized the results of development of a medium-power copper, gold, and mixed copper–gold commercial laser and gave the data about the achieved basic characteristics of the self-heated sealed-off active elements of the Kulon series, as well as the testing data on their service life.

V.V. Osipov (Institute of Electrophysics UB RAS, Ekaterinburg) in the report "Features of development of the laser plume from the graphite target" considered the results of experimental modeling and numerical simulation of the dynamics of a plasma plume generated by the CO_2 laser radiation.

Voluminous results of application of lasers, especially, metal vapor lasers, in oncology have been presented in reports by V.A. Evtushenko "Photodynamic therapy of experimental tumors with Au vapor lasers," O.V. Cheremisina "A comparative evaluation of efficiency of different methods of treating pretumoral changes of bronchial epithelium by clinical-immunological data," M.V. Vusik "The influence of laser radiation on the factors of protective mucosal barrier and quality of patients life after operation for gastric cancer." The results reported were obtained in the Cancer Research Institute (Tomsk) with the laser equipment designed in the Tomsk State University.

V.E. Prokopiev (Institute of High-Current Electronics SB RAS, Tomsk) and V.V. Udut (Institute of Pharmacology SB RAMS, Tomsk) discussed spectroscopic characteristics of human biological tissues in normal and pathological states, primary acceptors in the region of the transmission window for the visible electromagnetic radiation, photophysical processes of their interaction, and positive therapeutic effects and revealed the coincidence of their optimum with the intensity maximum (in the photon number) of the Planck distribution curve of the solar radiation at 632.7 nm wavelength.

A.V. Fedenev with co-authors (Institute of High-Current Electronics SB RAS, Tomsk) in the report "Laser test of adhesion of thin metal films" elucidated the issues of diagnostics of surface defects and determination of adhesion of thin metal films using Xe and XeCl lasers.

The report by V.N. Tishchenko with co-authors (Institute of Laser Physics SB RAS, Novosibirsk) was devoted to the study of new properties of the optical pulsating discharge (OPD) in gas, generated by periodic laser radiation at the pulse repetition frequency of ten kilohertz in comparison with a single laser spark or continuous optical discharge. The OPD properties discussed in the report significantly extend the applications of high-power lasers. The conversion mechanism of laser radiation into quasistationary waves is also of interest for acoustics and explosion physics as a new approach to generation of low-frequency waves using point low-energy sources.

V.M. Klimkin (Institute of Atmospheric Optics SB RAS, Tomsk) has considered the promises of binary gas mixtures (like He–Ne mixture) for excitation by longitudinal repetitively pulsed discharges using the effect of the automatic discharge decontraction.

The scientific results presented within this session allow one to hope for wide potentiality of applied researches in the fields related to laser physics.

Session F. Noncoherent UV and VUV Sources

This session consisted of 7 oral and 28 poster reports, and about one third of all reports were presented by the research teams co-operating within the joint project aimed at development of

noncoherent UV and VUV sources, largely, excilamps and metal-vapor sources of radiation. The following research fields have been represented in the subjects of this session:

– modeling of processes in working media of excilamps;
– development of noncoherent radiation sources;
– application of excilamps in scientific researches.

A.M. Boichenko and S.I. Yakovlenko (General Physics Institute RAS, Moscow) presented several reports devoted to modeling of processes in the working media of excilamps. A.N. Tkachev and S.I. Yakovlenko (General Physics Institute RAS, Moscow) analyzed the breakdown of a cylindrical gap in an effective excilamp with the cathode of a small curvature radius.

G.A. Zvereva and G.N. Volkova (State Optical Institute, St. Petersburg) reported the results on modeling of a barrier discharge in Xe + I_2 and Kr + I_2 mixtures. The efficiency calculated for the B–X transitions of XeI* and KrI* dimers amounted, respectively, to 22 and 20%.

A.V. Karelin (Institute of the Earth's Magnetism, Ionosphere, and Radio Wave Propagation RAS, Troitsk) gave the comparative results of numerical simulation of the VUV sources based on He–H_2 and Ne–H_2 media excited by the open discharge and the electron beam.

Development of the noncoherent UV sources was addressed in several reports. In the experimental paper "The VUV dimer spectrum excited at solid krypton," N.G. Gerasimov, B.E. Krylov (State Optical Institute, St. Petersburg), and H. Reinhold (Institute of Physics, Uppsala, Sweden) presented the VUV spectra of solid krypton dimers located on the surface of condensed krypton in the DC discharge. It was shown that the intensity of the VUV radiation nonlinearly depended on the length of the discharge channel, and the gain in the discharge was estimated as 0.04 cm^{-1}.

The report by S. Bhosle, G. Zissis, and J.J. Damelincourt (Université Paul Sabatier, Toulouse, France) "Ignition voltage of a Ne/Xe dielectric barrier discharge lamp" examined the effect of the pressure and the composition of the working two-component Xe/Ne mixture on the discharge ignition voltage at excitation by the sine-wave voltage of 400 kHz frequency.

The report by A. Gortler, G. Kornfeld, R. Krucken, A. Morozov, F. Muhlberger, A. Peters, R. Steinhubl, A. Ulrich, J. Wieser, R. Zimmermann (TuiLaser, Industriestr. Germering; Electron Devices THALES, Ulm; TU-Munchen, Graching; GSF, Neuherberg, Germany) presented a new technology of the electron beam pumped UV light sources. The sources employ an electron gun, in which a beam of 10 to 20 keV electrons is formed. The beam passes through a thin (300 nm) and small (5×5 mm) ceramic (SiN_x) membrane into a dense gas generating the excimer radiation. The source is characterized by a small size. The recorded emission spectra in a wide region from 60 to 200 nm were demonstrated.

M.I. Lomaev with co-authors (Institute of High-Current Electronics SB RAS, Tomsk) in their report "Efficiency of radiation and peculiarities of discharge formation in barrier discharge KrCl and XeCl excilamps" demonstrated the effect of the discharge form, excitation pulse duration, pulse repetition frequency, and the energy deposited into the discharge per one excitation pulse on the luminescence efficiency. The poster "Sealed-off excimer spontaneous UV and VUV radiation sources" (D.V. Shitz, M.V. Erofeev, M.I. Lomaev, E.A. Sosnin, and V.F. Tarasenko) reported the characteristics of sealed-off excilamps, namely, 5-W capacitive discharge excilamps at KrCl* (222 nm), XeCl* (308 nm), XeBr* (282 nm), XeI* (253 nm) molecules, the lamps at the atomic line of iodine I* (206 nm), and barrier lamps: 5-W Xe_2* excilamp (172 nm) and 100-W KrCl excilamp. The radiation sources are characterized by a simple design, high efficiency (up to 40%), FWHM from 2 to 8 nm, and the lifetime up to 2500 h. In addition, M.I. Lomaev presented the reports "VUV capacitive discharge lamps on halogens and their mixtures with inert gases" (together with A.A. Lisenko and V.F. Tarasenko) and "High-power radiation source of UV spontaneous radiation based on the discharge in inert gases" (together with D.V. Rybka, V.F. Tarasenko (Institute of High-Current Electronics SB RAS, Tomsk, Russia) and M. Krishnan, J. Thompson (Alameda Applied Sciences Corporation, San Leandro, USA)). The paper "High-power UV excilamps excited by a glow discharge" (G.L. Johnson, F.T. Wang, Lawrence Livermore National Laboratory, USA, and V.S. Skakun, V.F. Tarasenko, D.V. Shitz, Institute of High-Current Electronics SB RAS, Tomsk, Russia) reported the development and investigation of the highest-power glow discharge excilamps (mean output power of about 1.9 and 1.1 kW on XeCl* and KrCl* molecules, efficiency of about 20%).

Development and study of small-size KrCl, XeCl, and XeBr excilamps and a novel capacitive discharge KrBr excilamp was the subjects of the posters by M.V. Erofeev, E.A. Sosnin, V.F. Tarasenko, A.A. Lisenko (Institute of High-Current Electronics SB RAS, Tomsk) and N.L. Medvedev (Tomsk State University).

The tentative results of application of the radio frequency discharge (108 MHz) to excitation of excilamps of the spherical, planar, and coaxial types were presented in the poster by

A.I. Karapuzikov and A.A. Tkachenko (Institute of Laser Physics SB RAS, Novosibirsk) "RF discharge excilamps."

Several reports were devoted to new technologies based on noncoherent radiation sources.

I.E. Kieft with co-authors in the presentation "Micro-discharged treatment of cultured cells" (Eindhoven University of Technology, the Netherlands) demonstrated the effect of non-thermal plasma source (plasma needle) on CHO K1 fibroplasts and human epithelian NSCLC MR65 cells, as well as the advantages of this treatment method from the viewpoint of development of new equipment for fine surgery.

The attention of the auditory was attracted by the report by K.A. Boyarchuk, A.V. Karelin, and R.V. Shirokov (Institute of the Earth's Magnetism, Ionosphere, and Radio Wave Propagation RAS, Troitsk), in which they analyzed the promises of application of the narrow-band spontaneous radiation sources to clearing the atmospheric air. The kinetics of clearing of the model N_2–O_2–H_2O–CO_2–SO_2 mixture from nitrogen and sulfur oxides by the UV radiation was calculated. The KrCl excilamp with the power no lower than 100 W was shown to be the most promising for practical implementation of the method.

E.A. Sosnin (Institute of High-Current Electronics SB RAS, Tomsk) in his report "Capacitive discharge excilamps operational experience in various pilot processes" presented the results of investigation into the processes of photochemical decomposition of organic substances in aqueous solutions, the effect of the narrowband excilamp radiation on biological objects, and applications of excilamps in electrochemistry.

Session G. Laser Output Conversion. Optoelectronic Devices

This session incorporated 22 reports, including 8 oral ones. The report by M.B. Shpisel (Hyperboloid LLC, New York, USA) was devoted to the present-day status of non-laser light sources with high concentration of beam energy. The issues of acousto-optical control over an efficient UV source with the variable on-off time ratio were considered in the report by M.A. Kazaryan with co-authors (Physical Institute, Moscow; RPC Istok, Fryazino; Physical Technical Institute RAS, St. Petersburg, Russia). Optical properties of new nonlinear optical crystals $LiInSe_2$ and $AgGaGeS_4$, as well as frequency conversion processes in them were addressed in the reports by Yu.M. Andreev with co-authors (Institute for Optical Monitoring, Tomsk). The diurnal dynamics of the reference stars based on metal layers in the upper atmosphere was analyzed in the report by V.M. Klimkin (Institute of Atmospheric Optics SB RAS, Tomsk) with colleagues from Krasnoyarsk. V.P. Kochanov and Yu.B. Bogdanova (Institute of Atmospheric Optics SB RAS, Tomsk) presented the report devoted to stimulated Raman scattering in the field of intense radiation resonant to the Raman transition.

Round Table

The Conference was culminated with the Round Table session devoted to the development of laser technologies. In particular, the Chairman of the Organizing Committee, Professor V.F. Tarasenko told about the ISTC projects No. 1206 and No. 1270 accomplished due to cooperation between VNIIEF (Sarov), General Physics Institute RAS (Moscow) and the Institute of High-Current Electronics SB RAS (Tomsk). He also reviewed the rules for participation in the ISTC projects and new projects No. 2706 and No. 2869. Note that about 20 participants of the conference have already taken part in the ISTC projects or have been included in the list of participants of the new projects. In particular, three scientists from VNIIEF (A.A. Sinyanskii, S.P. Melnikov, and B.V. Lazhintsev), the conference participants and active participants of the ISTC projects, were involved in the discussion concerning preparation of new projects.

M.E. Levitskii, director of the TOPAZ Enterprise, told about the Tomsk Center of Laser Technologies, the innovation policy of the Administration of the Tomsk Region, and laser technologies applied in the TOPAZ Enterprise.

At the AMPL-03 final session held on September 19, the Russian and foreign scientists have noted a high scientific and organizational level of the conference, as well as the active participation of young scientists and postgraduate students. They expressed the hope for the next AMPL to be held in September of 2005 in Tomsk.

The additional information about AMPL can be found on the website: http://symp.iao.ru

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