

Special Issue: “6th International Conference on Tunable Diode Laser Spectroscopy”

The Sixth International Conference on tunable diode laser spectroscopy, TDLS-2007, was held in Reims, France during the period 9–13 July 2007. The scientific sessions were held in the Centre des Congrès, 12 bd. du Général Leclerc, 51100 REIMS. The conference was organized by Connecticut College, New London, USA, the A.M. Prokhorov General Physics Institute, Russian Academy of Sciences, Moscow, Russia, and the Université de Reims Champagne-Ardenne, Reims, France.

The first published reports of laser action in lead salts appeared in the early nineteen sixties, highly reliable room temperature single mode near infrared diode lasers, developed for optical communication applications, became available during the nineteen nineties, and research interests began to shift to the near infrared spectral region due to the availability of these new reliable and inexpensive sources. Room temperature quantum cascade lasers, developed using near infrared laser materials with unique engineered structures, also became available commercially in early two thousand. These meetings record the progress which has been made in the technical development of semi-conductor lasers and their applications in fundamental research as well as low cost applications of the technology. The theme of this particular meeting focused on new developments in laser technology, especially developments with quantum cascade lasers, novel molecular spectroscopic research and applications of these lasers, as well as research results obtained using near infrared lasers originally developed for optical communications.

TDLS-2007 featured a special International Atomic Energy Agency (IAEA) safeguards session “Challenges and Technology Needs” presentation by Dr. Manfred Zendel (M.Zendel@iaea.org) of the IAEA as well as a presentation concerning the applicability of tunable diode laser spectroscopy in addressing international safeguards by Dr. Natacha Peter (npeter@canberra-abq.com) of Canberra Albuquerque, Inc. Finally an IAEA-TDL working group meeting was held to discuss progress toward addressing issues discussed above.

In 1993 A.I. Nadezhdinskii and A.W. Mantz decided it would be beneficial to laser developers and to molecular spectroscopists to organize a small meeting in which scientists representing both interests were active participants. The first meeting, TDLS-95, was held in Moscow in July of 1995. The second meeting, TDLS-98, was also held in Moscow in July 1998. The third and fourth meetings were held in Zermatt, Switzerland in July 2001 and July 2003. The fifth meeting, TDLS-2005, was held in Florence, Italy in July 2005. Collections of papers presented during these meetings were published in *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, in volume 52A(8), in July 1996, in volume 55A(10), in September 1999, in volume 58A(11) in September 2002, in volume 60A(11) in December 2004, and in volume 63A(5) in April 2006.

The International Advisory Committee for TDLS-2007 consisted of C. Camy-Peyret (France), A.R.W. McKellar (Canada), H. Uehara (Japan), Volker Ebert (Germany), F. Tittel (USA), and Mark Allen (USA). The committee recommended a list of invited speakers which formed the scientific core of the program for the conference. A number of contributed papers were presented in short 15 minute talks and in a series of poster sessions intended to foster informal and more detailed discussions among authors and other participants. Referees for the manuscripts appearing in this issue were selected by the International Advisory Committee from participants in the conference as well as other experts, and thanks are due to each of them for the thorough job they have done.

The conference was officially organized under the auspices of the A.M. Prokhorov General Physics Institute, the Russian Academy of Sciences and Connecticut College, New London, CT and the Université de Reims Champagne-Ardenne, Reims, France with local organization provided primarily by Professor Claude Thiébeaux,

G.S.M.A., Université de Reims Champagne-Ardenne. The conference received much needed financial support from eight benefactors and 12 sponsors. We are very grateful to our benefactors as follows: Conseil Régional de Champagne-Ardenne, Council Municipal de la ville de Reims, Canberra Albuquerque, European Office of Aerospace Research and Development, Air Force Office of Scientific Research Laboratory, Ministère de la Défense (Direction Générale pour l'Armement), Centre National de la Recherche Scientifique, Conseil Général de la Marne, and the Université de Reims Champagne-Ardenne.

Our sponsors were

- Aculight Corporation, USA
- Aerodyne Research, Inc., Billerica, MA, USA
- Alpes Lasers SA, Neuchâtel, Switzerland
- BFi OPTILAS,
- Connecticut College, New London, CT, USA
- EKIPS Technologies, Norman, Oklahoma, USA
- IDIL
- Laser Components Group
- LASER 2000 SASGroup, Munich, Germany
- MELE Associates
- Nanoplus GmbH, Gerbrunn, Germany
- Norsk Elektro Optikk AS, Norway
- Opton Laser International

Without the financial support from the above groups, this meeting would not have been possible.

We benefited greatly from the work of Laurie Schaeffer, our web page designer, Stacey Lion (New London), Nadya Mekulova and Sergey Malugin (Moscow), and the local organizing committee composed of Prof. Claude Thiébeaux, Dr. Virginie Zeninari and Prof. Bertrand Parvitte. These people did all the hard work of registration, organization and printing of the book of abstracts, accommodating international guests, arranging a very interesting cultural program, a spouses' program, and they dealt with local problems and unforeseen difficulties which somehow arise when a meeting of this type is organized. Participants and spouses were comfortably housed in hotels throughout Reims.

A total of 137 participants attended the conference, and a total of nine invited lectures, 11 short oral presentations and 102 posters were presented over a four day period. These were presented by representatives from Austria, Belgium, Canada, China, Finland, France, Germany, Ireland, Italy, Japan, The Netherlands, New Zealand, Norway, South Korea, Scotland, Sweden, Switzerland, Russia, UK, and USA.

It is the first time that selected papers of the TDLS conference are published in a special issue of Applied Physics B with guest editor Markus W. Sigrist (ETH Zurich). Our special thanks go to Editor-in-Chief Frank Träger and Jutta Kaisig (University of Kassel) as well as Marina Litterer (Springer, Heidelberg) and Susanne Bauer (LE-Tex) for their outstanding support and very efficient electronic processing of the manuscripts for this Applied Physics B special issue.

The next meeting, TDLS-2009 will be held on July 13–17 in Zermatt, Switzerland.

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