

Special Events

Short Courses

Sunday, 29 January 2012, 12:30–19:00

See page 10 for more information.

Separate registration is required.

Sunday Evening Welcome Reception

19:00–20:30

Santiago Room and Courtyard

Please join us for a happy hour on Sunday Evening and share a few drinks with your colleagues to kick off the 2012 Laser Congress.

Joint Plenary Session I

Wednesday, 1 February 2012, 08:00–9:30

San Bernardo Ballroom

Frontiers of Disk Lasers

Fifteen years after first commercialization, the Thin Disk Laser covers a broad spectrum of applications. Nevertheless, a lot of challenges remain, e.g. further scaling of power and pulse energy or the search for different suitable laser materials.

Jochen Speiser; *Institute of Technical Physics, DLR, Germany*



Jochen Speiser is head of the Solid State Lasers and Nonlinear Optics group at the Institute of Technical Physics of DLR, a group working mainly on the development and adaptation of laser sources for application in aerospace as well as security and defence applications. He has been working on the numerical simulation of the thin disk laser since 2001, mainly on thermal modeling and on scaling limits due to amplified spontaneous emission. During the last years his focus was on concepts for power scaling of high brightness thin disk lasers to the 100 kW level. Recent activities also include concepts for high energy, high average power thin disk amplifiers. He is involved in several activities, including European projects, dealing with design analysis for laser systems with several kilojoule energy and 100 kW average power, partially based on thin disk design

Jochen Speiser received his diploma in physics from the University of Kaiserslautern, Germany, in 2001. Before joining DLR, he has been working in the laser development and laser optics department of the Institut fuer Strahlwerkzeuge (IFSW) at the University of Stuttgart, Germany for six years.

Wavelength and Coherent Beam Combining for High Brightness Sources

Beam combining of laser arrays with high efficiency and good beam quality for power and radiance scaling is a long-standing problem in laser technology. Recently, significant progress has been made using wavelength techniques and coherent techniques.

Tso Yee Fan; *MIT Lincoln Laboratory, USA*



Tso Yee (T. Y.) Fan is the Associate Leader of the Laser Technology and Applications Group at MIT Lincoln Laboratory, Lexington, MA. He joined MIT Lincoln Laboratory as a Staff Member in 1987. He is widely recognized for his pioneering work in diode-pumped solid-state lasers particularly the development of Yb:YAG lasers, in advances in cryogenic lasers for improving average-power scalability, in characterization of laser and nonlinear optical materials, and in advances in laser beam combining.

Dr. Fan is a Fellow of the Optical Society of America (OSA) and a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE). He received the 2009 MIT Lincoln Laboratory Technical Excellence Award for his work on Yb lasers, cryogenic lasers and laser beam combining. He served as an Elected Member of the IEEE/LEOS Board of Governors from 1994–1996 and was the Topical Editor, Lasers for *Optics Letters* from 1994–1999. He was Division Editor for the Lasers, Photonics, and Environmental Optics Division of *Applied Optics*. He has been on program committees of numerous conferences, including as Chair of the LEOS Annual Meeting and Chair of the OSA Topical Meeting on Advanced Solid-State Lasers.

Dr. Fan received the S. B. degrees electrical engineering and materials science and engineering from the Massachusetts Institute of Technology (MIT), Cambridge, MA, and the M. S. and Ph. D. degrees in electrical engineering from Stanford University, Stanford, CA.

Special Events continued

Joint Plenary Session II

Wednesday, 1 February 2012, 10:00-11:30

San Bernardo Ballroom

Pumping up the Pressure: Gas-Based Nonlinear Optics in Hollow Core Photonic Crystal Fibre

Single-mode hollow core PCF provides an ideal environment for studying pressure-controlled nonlinear interactions between laser light and gases. An recent success is the efficient generation of tunable deep-UV pulses from ~50fs, ~1uJ pulses at 800nm.

Philip Russell; *Max Planck Institute for the Science of Light, Germany*



Philip Russell is a Director at the Max-Planck Institute for the Science of Light in Erlangen, Germany and holds the Krupp Chair in Experimental Physics at the University of Erlangen-Nuremberg. He obtained his M.A. (1976) and D.Phil. (1979) degrees at the University of Oxford and subsequently worked in research laboratories and universities in France, Germany and the USA. Since 1976 his interests have ranged from the behaviour of light in periodically structured materials to nonlinear optics, waveguides and optical fibres. He is known as the inventor of photonic crystal fibres and the founder of the company BlazePhotonics Ltd. He is a Fellow of the Royal Society and the Optical Society of America (OSA) and has won several international awards for his research including the 2005 Körber Prize for European Science, the 2005 Thomas Young Prize of the Institute for Physics (UK) and the 2000 OSA Joseph Fraunhofer Award/Robert M. Burley Prize. He was a Director-At-Large of the Optical Society of America 2007-2009 and from 2005 to 2006 he was an IEEE-LEOS Distinguished Lecturer and the recipient of a Royal Society/Wolfson Research Merit Award.

Development and Application of Ultrafast Laser Spectroscopy for Combustion Sensing

Optical measurement techniques are powerful tools for detailed study of combustion chemistry and physics. Ultrafast (picosecond- and femtosecond-pulsed) lasers are driving the enhancement of existing diagnostic techniques and enabling the development of new measurement approaches.

James R. Gord; *Propulsion Directorate, Air Force Research Laboratory, USA*



Dr. James R. Gord, Principal Research Chemist with the Air Force Research Laboratory's Propulsion Directorate, leads the development and application of optical measurement techniques for advanced propulsion and fuel systems as Director of the Combustion and Laser Diagnostics Research Complex. His work has produced five patents, four book chapters, more than 130 peer-reviewed journal articles, and more than 675 conference papers and presentations, including more than 160 delivered upon invitation.

Dr. Gord studied at Miami University as a National Merit and Ohio Board of Regents Scholar, receiving a B.S. in chemistry with University and Departmental Honors in 1986. He performed his doctoral research at Purdue University with Prof. Ben S. Freiser through fellowships from the National Science Foundation and the American Chemical Society, receiving a Ph.D. in analytical chemistry with Highest Honors in 1990. Thereafter he pursued postdoctoral studies in chemical physics at the Joint Institute for Laboratory Astrophysics (JILA) with Prof. W. Carl Lineberger.

Dr. Gord joined the Air Force research team in 1991. In 2007 he was named a Fellow of the Optical Society of America. In 2005 he received AFRL's top honor when he was named an AFRL Fellow. Dr. Gord is a two-time winner of AFRL's Award for Outstanding Scientific and Technical Achievement (2004, 2001) and was named one of Dayton's 40 Superachievers Under 40 in 2004. He is also a three-time winner of the Propulsion Directorate's S. D. Heron Award (2010, 2005, 1999) for outstanding technical achievement. In 2001 he was named the Propulsion Directorate's Scientist of the Year. Dr. Gord has been named a Distinguished Alumnus of Purdue University, Miami University, and Miami East High School. He is a member of the American Chemical Society, the American Institute of Aeronautics and Astronautics (Associate Fellow), the American Institute of Physics, the American Society of Mechanical Engineers, the Combustion Institute, the Optical Society of America (Fellow), Phi Beta Kappa, Sigma Xi, and the Society for Applied Spectroscopy.