

# OASIS

2009  
March 16-17  
מרכז הירידים, ת"א

The 12<sup>th</sup> Meeting on Optical Engineering and Science in Israel  
הכינוס השניים עשר לאופטיקה, אלקטרואופטיקה והנדסה אופטית  
www.oasis.org.il

## Dear Friends and Colleagues,

Following the great success of the first renewed OASIS meetings, it gives us great pleasure to invite you to the 2nd OASIS meeting, which will be held in March 2009. This is actually the 12th meeting on optical engineering and science in Israel. The purpose of the meetings is to present the latest advances in the field of electro-optics worldwide, as well as be a showpiece for Israeli electro-optics and laser research and technologies. This meeting will focus on encouraging interdisciplinary research as well as international cooperation. The meeting will take place in Ganei Hatarucha over two days, with three parallel sessions each day. During the meeting we will present special awards to some of the pioneers of electro-optics in Israel. An exhibition of optical equipment and systems will take place on site – parallel to the sessions. I am counting on your help to make this again a very successful event.

With over ten thousand electro-optics professionals involved in six universities, four colleges and over 250 companies, optics has continued to grow into new fields and applications. Remarkably, the burst of the 2000 optical communications bubble did little to slow the growth of this industry in Israel. The program of the forthcoming meeting reflects some areas of traditional interest, such as Optical Communications, Optical Inspection, Optics in Medicine, Solar Cells and Remote Sensing as well as exciting developments in Homeland Security, Spatial Light Modulators, Displays, Illumination, Lasers, Non Linear Optics and Environmental Monitoring. Emerging new fields such as Quantum Optics, Micro-and Nano-Optics encompass novel discoveries, and are expected to rapidly permeate the industry. The target audience includes optical scientists and engineers working in these fields. We encourage students from all institutions of higher learning to participate in this meeting. It will expose them to the latest research and development, and help them interact with representatives of Academia and Industry. Looking forward to seeing you all at our second OASIS meeting.

Prof Abraham Katzir,  
Chairman, Organizing Committee

## Keynote Speakers

- Prof. Robert L. Byer, Stanford University, USA  
"Solid State Lasers: Future Challenges"
- Prof. Amnon Yariv, Caltech, USA -  
"Optical Phase Control and Its Manipulation"

## Invited Speakers

### 1 Optical Devices Communications

(Zeev Zalevsky - Bar Ilan University)

Dan Sadot, Ben-Gurion University, "Channel Capacity and Cost Effectiveness Enhancement Technique Using a Combined Time Division and Multilevel Modulation signals"

Dan Cojoc, CNR-INFM, National Laboratory TASC, Trieste, Italy, "Double view high resolution imaging of optically manipulated sample with multiple traps"

Mark Shtaiif, Tel-Aviv University, "Coherent optical communications systems under the effect of polarization dependent loss"

Meir Orenstein, Technion, "Two-photon device from quantum photonic communications"

Alan Willner, University of Southern California, USA, "Advanced System Functions in Optical Communications Using E-O Technologies"

Moshe Nazarathy, Technion, "Recent Advances in Coherent Optical OFDM High-Speed Transmission"

### 2 Displays and Spatial Light Modulators

(Uzi Efron - Ben-Gurion University)

Shin-Tson Wu, University of Central Florida USA, "Overview of Liquid Crystal Device technology"

Aaron J. Agrat, The Hebrew University, "Beam Steering in the Visible by Refractive Index Engineering of Electrooptical Substrates"

Joseph Rosen, Ben-Gurion University, "Incoherent Digital Holography"

Ibrahim Abdulhalim, Ben-Gurion University, "Spatial Light Modulators and Liquid Crystal Devices in Optical Imaging Systems"

Erez Ribak, The Technion Institute, "Imaging planets in other solar systems"

### 3 Optics in Medicine and Biology (Abraham Katzir - Tel-Aviv University)

Amiram Grinvald, Weizmann Institute of Science, Rehovot, "Retinal Function Optical Imaging: Imaging Blood Velocity, Fa - Like Images without any Contrast Agent, Functional Metabolic Signals and Oximetry"

Dvir Yelin, Technion, Institute of Technology, "Functional, Single - Fiber Endoscopy"

Ezra Maguen, American Eye Institute, Los Angeles, USA, "Nanotechnology and Delivery Systems To (or through) The Cornea"

### 4 Lasers and Applications (Itzhak Schnitzer - Rafael)

Eli Kapon, EPFL, Lausanne, Switzerland, "Recent developments in long wavelength VCSELs for communication and sensing applications"

Steven Jackel, E-O Div., Soreq, "Aberration-free amplification in high average-power rod-based lasers"

Daniel Majer, Optigo Systems Ltd., "High power quantum cascade lasers: A versatile semiconductor source for mid-infrared applications"

Adela Ben-Yakar, University of Texas, Austin, USA, "Femtosecond Laser Microsurgery Aiming at Advancing Both Biological Sciences and Clinical Practice"

### 5 Ultrafast Phenomena (Hagai Eisenberg - Hebrew University)

Rainer Kaltenbaek, University of Waterloo, Canada, "Chirped-pulse interferometry: 'quantum' interference with classical light"

Graciana Puentes, University of Oxford, U.K., "Things that go 'click' in the dark"

### 6 Non Linear Optics (Ady Arie - Tel-Aviv University)

Robert Boyd, University of Rochester, USA, "Quantum Imaging: Enhanced Image Formation Using Quantum States of Light"

Christian Pedersen, Risoe, Denmark, "Nonlinear optics using tapered diode lasers"

Moti Segev, Technion, "Nonlinear waves in photonic lattices"

### 7 Electro-Optics in Defense and Security (Itamar Shoshan - Elbit Systems Electro-optics Elop)

Zeev Zalevsky, Bar Ilan University, "Super - Resolved Imaging for Defense Applications"

Gabby Sarusi, Elbit Systems Electro-optics, Elop, "Imagery Intelligence from Air and Space"

Stanley Rotman, Ben Gurion University, "Multi-Dimensional Analysis of Spectral Imagery Data for Defense and Security"

Itamar Shoshan, Elbit Systems Electro-optics Elop, "Advanced Electro-Optic Sensors for Observation Systems"

### 8 Micro, Nano Optics and Periodic Structures (Erez Hasman - Technion)

Aaron Lewis, The Hebrew University of Jerusalem, "Investigating Plasmonic Propagation with Single and Multiprobe AFM/NSOM"

Carmel Rotschild and Mordechai Segev, Technion, "Complex Nonlinear Opto-Fluidity"

### 9 Quantum Optics (Nir Davidson - Weizmann Institute)

Jeff Steinhauer, Technion, "Density Engineering of an Oscillating Soliton / Vortex Ring in a Bose-Einstein Condensate"

Ehud Altman, Weizmann Institute, "Strongly correlated states of ultra-cold atoms"

Barak Dayan, Weizmann Institute, "Cavity QED with single atoms and chip-based micro-resonators"

Edvardas Narevicius, "Weizmann Institute Towards a single photon cooling of magnetically trapped molecules"

Avinoam Stern, Accubeat, "Instability Of Atomic Clocks"

John Howell, Rochester University, "Applications Of Slow And Stopped Light"

Avi Peer, Bar Ilan University, "Ultracold polar molecules - Why and how"

Ofer Firstenberg, Technion, "Diffusion, Diffraction, and Drift of Slow-Light in Vapor"

Eli Kapon, Lausanne, "Combining Quantum and Photonic Confinements: Physics, Technology, Applications"

### 10 Remote Sensing, Imaging and Lidars (Ariel Cohen - Hebrew University)

Norman S. Kopeika, A. Zilberman, E. Golbraikh, Ben Gurion University, "Imaging Through Non-Kolmogorov Turbulence"

Piero Bruscaioni, University of Florence, Italy, "Multiple Scattering by Non-Spherical Particles: Examples of Scattering by Chebishev Particles"

Ulrich G. Oppel, Sergei M. Prigarin and Martin Wengenmayer, Institute of Mathematics, University of Munich, Germany, "Polarized CCD Lidar Returns - From Clouds Of Nonspherical Particles And Broken Clouds"

Anatoli G. Borovoi, E. Naats and A. Cohen\*, Institute of Atmospheric Optics, Tomsk, Russia, "Hebrew University of Jerusalem, "Calculations of Space Lidar Signals from Cirrus Clouds"

Sergei M. Prigarin, Anatoli G. Borovoi, and Ulrich G. Oppel, Institute of Mathematics, University of Munich, Germany, "Contribution Of Multiple Scattering In Formation Of Halos For Crystal Clouds"

Georg Witt, and A. Cohen\*, University of Stockholm, Sweden and \*Dept. of Atmospheric Sciences, Hebrew University, Jerusalem, "The Alomar-European Site for Remote Sensing and Rocket Research of the Atmosphere and the Measurement of Polar Cirrus Clouds"

### 11 Electro Optics in Industry, Inspection and Vision (Dony Meshulach - Applied Materials, Israel)

Naor Wainer, Philips Medical Systems Technologies, "Fantastic voyage: a CT view of the human body"

Tsafir Kolatt, Applied Spectral Imaging, "Medicine and microscopy: through the biological looking glass"

Shmoolik Mangan, Applied Materials, Israel, "Challenges of reticle inspection in the days of extended DUV optical lithography"

Boaz Brill, Nova Measuring Instruments, "Challenges of optical CD metrology"

Yigal Katzir, Orbotech, "Laser scanning maskless lithography system for fabricating printed circuit boards"

### 12 Solar Cells (Jeffrey Gordon, Uzi Efron - Ben-Gurion University)

David Cahen, Weizmann Institute of Science, "Solar Cells, Quo Vadis?"

Jeffrey Gordon, Ben-Gurion University, "Maximum performance optics for concentrator photovoltaics"

Arie Zaban, Bar-Ilan University, "Dye-Sensitized Solar Cells for Low Cost Multi-Bandgap Photovoltaics"

Naftali Eisenberg, Jerusalem College of Technology, "Silicon Photovoltaic's, Past and Future or from Space to Terrestrial"

Eugene Katz, Ben-Gurion University, "Organic Photovoltaics, Efficiency and Stability Challenges"

Yossi Rosenwaks, Tel-Aviv University, "Characterizing the Electrical Properties of Grain Boundaries in Photovoltaic Materials"

Gitti Frey, Technion, "Self-Organized Light-Harvesting Materials for Photovoltaics"



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