These concurrent sessions are grouped across two pages. Please review both pages for complete session information.

10:30–12:15
SLWB • Slow/Fast Light Systems
Holger Schmidt, Univ. of California at Santa Cruz, USA, Presider

SLWB1 • 10:30 Invited

Dynamic Manipulations of Light Pulses in an Optically Dense Coherent Medium, *Irina Novikova[1]; [1] College of William and Mary, USA.* We present experimental and theoretical studies of EIT-based quantum memory that go beyond three-level system and account for enhanced nonlinear interactions at high optical depth.

SLWB2 • 11:00

Magnetically Induced Simultaneous Slow and Fast Light by Phase Control, *Bin Luo[1], Hong Guo[1]; [1]School of Electronics Engineering and Computer Science, Peking Univ., China.* Λ-type atom coupled by additional driving light and radio frequency (RF) field can generate controllable simultaneous slow and fast light at two frequencies. Distortions by radiative dampings are discussed and compensation method is suggested.

SLWB3 • 11:15

Designer Media and Pulses for Optimally Long-Lived and Reversible Energy Storage, *Scott Glasgow[1]; [1]Brigham Young Univ., USA.* Given a dielectric resonance structure and geometry, we outline design of pulses stored most reversibly. Given a pulse and medium geometry, we outline design of a resonance structure for most reversible pulse storage.

SLWB4 • 11:30

Simplified Brillouin fiber slow light systems in loss regime using step current modulation, *Sanghoon Chin[1], Luc Thévenaz[1]; [1]Ecole Polytechnique Federale de Lausanne, Switzerland.* We propose a simple technique to realize Brillouin slow light in nearly transparent regime. A current-modulated semiconductor laser by a step function is used as Brillouin pump to generate a Brillouin loss doublet.

SLWB5 • 11:45

Noise Figure of Slow Light Cascaded SOA based Microwave Photonic Phase Shifters, *Juan Lloret[1], Juan Sancho[1], Ivana Gasulla[1], Francisco Ramos[1], Salvador Sales[1], José Capmany[1]; [1]iTE Research Inst., Spain.* The noise figure of Slow and Fast Light Microwave Photonic phase shifters made up by SOA followed by optical filtering stages is experimentally evaluated. Noise figure results show compression when adding the third cascaded stage.

10:30–12:30
SWB • Biochemical Sensors II
Tomoyuki Yoshie, Duke Univ. USA, Presider

SWB1 • 10:30 Invited

Photonic Crystal Biosensor Chip for Label-Free Detection of Bacteria, *Martin Kristensen[1], Asger Krüger[1], Nathaniel Groothoff[1], Jaime García-Rupérez[2], Veronica Toccafondo[2], Javier García-Castelló[2], Maria Jose Bañuls[2], Sergio Peransi-Llopis[2], Angel Maquieira[2]; [1]ASE and IFA, Aarhus University, Denmark; [2]UPV, Spain.* Narrow polarization-mixing resonances in planar photonic crystals are studied as candidate components for label-free refractive index sensors for detecting bacteria causing sepsis through the identification of DNA strands.

SWB2 • 11:00

Crossed-polarization Analysis of Guided Modes in Photonic Crystal Slab Biosensors, *Ryan D. Schilling[1,2], Deniz Aydin[1,2], Hooman Akhavan[1], Mohamed El Beheiry[2], Ofer Levi[1,2]; [1]Institute of Biomaterials and Biomedical Engineering, University of Toronto, Canada; [2]Edward S. Rogers Sr. Department of Electrical and Computer Engineering, University of Toronto, Canada.* We present the crossed-polarization analysis of guided resonance modes in photonic crystal slab biosensors. A good agreement between experimental resonance peaks and theoretical modeling is presented, revealing high-Q values in these biosensors.

SWB3 • 11:15

Optical Resonance Sensing in Surface Bloch Modes on Woodpile Photonic Crystals, *Shu-Yu Su[1], Lingling Tang[1], Tomoyuki Yoshie[1]; [1]ECE, Duke University, USA.* Low loss and high sensitivity are confirmed in surface Bloch modes on (100) and (001) dielectric woodpile photonic crystals. A flat-top (100) woodpile surface is also designed for optical resonance sensing.

SWB4 • 11:30

Photonic Crystal Sensor for monitoring the vibration of a laser beam, *Andy Y. Fuh[1]; [1]Physics, National Cheng Kung Univ., Taiwan.* Photonic crystals based on polymer dispersed loquid crystals are fabricated using continuous multi-exposures of two-beam interference. It can be applied for use as a beam-vibration sensor for laser beams. Details are reported.

SWB5 • 11:45

Sensing Technique for the Development of Real-time and Low-cost Biosensors Using Photonic Bandgap Structures, *Jaime Garcia-Ruperez[1], Javier Garcia-Castello[1], Veronica Toccafondo[1], Antoine Brimont[1]; [1]Nanophotonics Technology Center, Universidad Politecnica Valencia, Spain.* We present experimental sensing results achieved using a novel technique based on the use of photonic bandgap structures where only the output power from a broadband source is monitored, providing a real-time and low-cost system.

10:30–12:15
SOWB • Hollow Core Fibers
Liang Dong, Clemson Univ., USA, Presider

SOWB1 • 10:30 Invited

Low Loss Antiresonant Hollow core Fibres, *Francesco Poletti[1], J. R. Hayes[1], D. J. Richardson[1]; [1]Optoelecotrnics Research Centre, Southampton University, UK.* We study the loss mechanisms in novel antiresonant hollow-core fibres and demonstrate the importance of optimising the air-cladding thickness and reducing the node size. Based on these rules we fabricate fibres with wide-bandwidth and low-loss.

SOWB2 • 11:00

Stimulated Rotational Raman Scattering in a Deuterium-filled Hollow-Core Photonic Bandgap Fiber, *Charlotte Falk[1,2], Jan Hald[1], Karsten Rottwitt[2], Jan C. Petersen[1]; [1]Danish Fundamental Metrology, Denmark; [2]DTU Fotonik, Denmark.* Pure rotational stimulated Raman scattering is generated in a 10 m hollow-core photonic bandgap fiber filled with deuterium at 20 bar. About 50% of the transmitted power is converted to the first Stokes line.

SOWB3 • 11:15

Confinement Loss of Tube Lattice and Kagome Fibers *Luca Vincetti[1], Valerio Setti[1], Maurizio Zoboli[1]; [1]Information Engineering, University of Modena and Reggio Emilia, Italy.* Confinement loss of two kinds of broad band hollow core fibers, the tube lattice fibers and the kagomé fibers, are numerically investigated and compared.

SOWB4 • 11:30

Hollow-Core Fiber for Transmission of CO2 Laser Radiation, *Alexey Kosolapov[1], Andrey Pryamikov[1], Alexander Biriukov[1], Maxim Astapovich[1], Vladimir Shiryaev[2], Gennady Snopatin[2], Victor Plotnichenko[1], Mikhail Churbanov[2], Evgeny Dianov[1]; [1]Fiber Optics Research Center of RAS, Russian Federation; [2]Institute of Chemistry of High-Purity Substances, Russian Federation.* A new, technologically simple structure of hollow-core optical fiber is proposed; the propagation of CO2 laser radiation in a hollow-core chalcogenide glass fiber is demonstrated.

SOWB5 • 11:45 Invited

Gas Raman Lasers in Hollow-core Fibers, *Fetah Benabid[1]; [1]University of Bath, UK.* We review the recent progress on hollow-core photonic crystal fibers and its integrated form of photonic microcells in both their design and fabrication and in their applications in Raman fibre lasers.

Sessions continue on page 43.