Postdeadline Presentations

AF4A ● Postdeadline I: Tracks 1, 2 and 5

Conference Room 5BC
Friday, 14 November, 16:00-18:15
Presider: Shinji Yamashita; *The Univ. of Tokyo, Japan*

AF4A.1 ● 16:00

All-optical switching with switching gain in a hybrid III-V/silicon single nano-waveguide,

Y. Chen[1], Y. Lai[1], T. Chong[2], S. Ho[3]; *[1]Data Storage Institute, Singapore; [2]Singapore Univ. of Technology and Design, Singapore; [3]EECS Department, Northwestern Univ., USA.* We report the first experimental demonstration of all-optical switching gain in a single nanowaveguide device based on a hybrid silicon photonic integration platform. The switch features 6nm broadband operation, small device footprint and low sensitivity to fabrication error.

AF4A.2 ● 16:15

Tunable terahertz broadband phase-only modulator based on CdSe – CdS, Y.V. Grachev[1], S. Korfunenko[1], V.G. Bespalov[1]; *[1]Photonics and Optical Information Technology, ITMO Univ., Russia.* Paper presents tunable terahertz broadband phase-only modulator based on CdSe – CdS. It produces linear phase shift in broadband THz wave controlled by modulator illumination and bias voltage.

AF4A.3 ● 16:30

Terabaud Optical Sampling on a Chalcogenide Optical Chip, S. Lefrancois[1], Y. Paquot[1], B.J. Eggleton[1], H.C. Nguyen[2], D. Wang[2], S.Y. Set[2] , D. Choi[3], B. Luther-Davies[3], S.J. Madden[3]; *[1]Univ. of Sydney, Australia; [2]Alnair Labs Corporation, Japan; [3]Australia National Univ., Australia.* We demonstrate terabaud optical sampling by combining four-wave mixing in a chalcogenide chip with a long wavelength carbon nanotube modelocked fiber laser. System resolution is 320 fs, 150 fs lower than previous systems.

AF4A.4 ● 16:45

Finite Element Analysis of Tellurite Microstructured Fibre, S. Sriratanavaree[1], A. Rahman[1], D. Leung[1], Y. Ohishi[2] ; *[1]School of Engineering and Mathematical Sciences, City Univ. London, United Kingdom; [2]Toyota Technological Institute, Japan.* In this paper, interactions of acoustic modes with optical modes along with SBS frequency shift and the overlap between these modes for a Tellurite microstructured fibre are presented by using full vectorial finite element approach.

AF4A.5 ● 17:00

Performance enhancement of terahertz time-domain spectrometry, M. Osipova[1], Y.V. Grachev[1], V.G. Bespalov[1]; *[1]Photonics and Information Technologires, ITMO Univ., Russia.* This investigation presents a method of determining the frequency band of pulsed terahertz spectrometer for reliable research and technique for scan time decrease. Both methods lead to consistency and acceleration of data.

AF4A.6 ● 17:15

Superoxide flashes dominate mitochondrial lesion stimulated by femtosecond laser, Y. Wang[1], H. He[1], F. Shi[1], M. Hu[1], C. Wang[1]; *[1]Ultrafast Laser Laboratory, Tianjin Univ.,China.* Multiphoton excitation of femtosecond laser can induce reactive oxygen species bursts in single mitochondrion. Coordinating with mitochondrial permeability transition pores, such oxide bursts can activate the temperate/permanent mitochondrial lesion.

AF4A.7 ● 17:30

Magnetic core-shell nanoparticle enhanced SPR biosensor for immunoassay, G. Xiaowei[1]; *[1]School of Optoelectronic Information, Univ. of Electronic Science and Tec, China*. A magnetic-nanoparticle(Fe3O4@Au) enhanced SPR biosensor is presented. A large sensor response was measured in an immunoassay experiment detecting Interleukin 17A, which is 18 times higher than that for direct format and 3.5 fold higher than for traditional sandwich format

AF4A.8 ● 17:45

Mitochondrial recovery in mesenchymal stem cells after laser stimulation, F. Shi[1], H. He[1], Y. Wang[1], M. Hu[1], C. Wang[1]; *[1]TIanjin Univ., China.* Damaged mitochondria in stem cells have great repair ability when stimulated by femtosecond laser. Mitochondrial membrane potential, reactive oxygen species and mitochondrial permeability transition pores are involved in this process.

AF4A.9 ● 18:00

Surface Plasmon Resonance Sensors on the End Facets of Bare Single-mode Optical Fibers,
X. He[1], H. Yi[1], J. Long[1], T. Yang[1]; *[1]Shanghai Jiaotong Univ., China*. Plasmonic crystal cavity sensors on the end facets of bare single-mode optical fibers have been designed and fabricated. A record high quality factor of 90 and a figure of merit of 60 are reported.

AF4B ● Postdeadline II: Tracks 3 and 4

Conference Room 5DE
Friday, 14 November, 16:00-18:00
Presider: Frank Effenberger, *Huawei Technologies, USA*

***A*F4B.1 ● 16:00**

100.3-Tb/s(375×267.27-Gb/s) C- and L-band Transmission over 80-km SSMF Using DFT-S OFDM 128-QAM, M. Luo[1], C. Li[1], Q. Yang[1], Z. he[1], S. Yu[1], J. Xu[2], Z. Zhang[2]; *[1]State Key Laboratory of Optical Comm. Technologies and Networks, Wuhan Research Institute of Posts and Telecommunications, China; [2]Fiberhome Telecommunication Technologies Co.,LTD, China.* Using DFT-S OFDM 128-QAM modulation, we have successfully demonstrated 100.3-Tb/s (375×267.27-Gb/s) transmission over 80-km SSMF in the C- and L-bands with 25-GHz channel spacing. The spectral efficiency we achieved is as high as 10.7 bit/s/Hz.

AF4B.2 ● 16:15

Stable fiber delivery of millimeter wave signal by fast phase compensation system, X. Wang[1], D. Sun[1], Z. Liu[1], Y. Dong[1], W. Hu[1]; *[1]Shanghai Jiao Tong Univ., China.* We demonstrate a millimeter wave signal remote dissemination system, which transfers a phase-stabilized 300.045 GHz signal over 40 km optical fiber. The phase fluctuation induced by the separate path and optical fiber transmission is detected by dual-heterodyne phase error transfer and compensated with fast response acousto-optic frequency-shifter.

AF4B.3 ● 16:30

8x48 Transponder Aggregator Subsystem Using Silicon Switch Modules for Flexible Photonic Network, H. Takeshita[1], A. Tajima[1], T. Kato[1], T. Hino[1], K. Fukuchi[1], S. Yanagimachi[2], S. Nakamura[2]; *[1]NEC, Kawasaki, Japan; [2]NEC, Tsukuba, Japan.* We present 8x48 Transponder Aggregator subsystem using compact 8x8 silicon photonic switch modules and simple control circuit. Averaged optical insertion loss of 25.1 dB on all optical paths and 1.2-ms switching speed are achieved.

AF4B.4 ● 16:45

15 Tb/s Unrepeatered Transmission over 409.6 km using Distributed Raman Amplification and ROPA, D. Chang[1], W. Pelouch[1], P. Perrier[1], H.A. Fevrier[1], S. Ten[2], C. Towery[2], S. Makovejs[2] ;*[1]Xtera Communications Inc USA; [2]Corning Incorporated, USA*. 15 Tb/s (150 x 120 Gb/s) unrepeatered transmission is achieved over 409.6 km (68.2 dB), corresponding to a record capacity-reach product of 6.14 Pb/s-km. We also demonstrate channel growth from 10 to 150 waves within 61 nm amplification bandwidth.

AF4B.5 ● 17:00

Efficient Mobile Fronthaul Transmission of Multiple LTE-A Signals with 36.86-Gb/s CPRI-Equivalent Data Rate Using a Directly-Modulated Laser and Fiber Dispersion Mitigation,

X. Liu[1], F. Effenberger[1] , N. Chand[1], L. Zhou[2], H. Lin[2] ; *[1] Huawei Technologies, USA; [2]Huawei Technologies, China.* We experimentally demonstrate the transmission of six 100-MHz-bandwidth LTE-A-like mobile signals with 36.86-Gb/s CPRI-equivalent data rate, simultaneously supporting 5-carrier aggregation, 2×2 MIMO and 3 sectors, over a

40-km SSMF fronthaul using a single 1550-nm directly-modulated laser with a novel dispersion-penalty-mitigation technique.

AF4B.6 ● 17:15

First National High-Precision Time Synchronization Network with Sub-Microsecond Accuracy over Commercial Optical Networks for Wireless Applications, L. Han[1], H. Li[1], L. Wang[1], N. Hua[2], C. Hu[3], J. Wang[3], S. Liu[4], L. He[5], Z. Chen[6], Y. Xu[7] ; *[1] China Mobile Research Institute, China; [2]Tsinghua Univ., China; [3]China Academy of Telecommunication Research, China; [4]Huawei Technologies, China; [5]ZTE Corporation, China; [6]Fiberhome Telecommunication Technologies, China; [7]Alcatel Shanghai Bell Co.,Ltd, China.* This paper reports the first national time synchronization network over commercial optical networks with 1014-km 100G OTN and 13-hop PTN. An excellent accuracy of 224.8ns is realized in the trial for wireless applications.

AF4B.7 ● 17:30

Experimental Demonstration of Mode-Division-Multiplexing and Time-Division-Multiplexing Passive Optical Network, T. Hu[1], J. Li[1], P. Zhu[1], Y. He[1], Z. Li[1], Z. Chen[1], Q. Mo[2], Y. Ke[2], C. Du[2], Z. Liu[2] ; *[1]State Key Laboratory of Advanced Optical Communication Systems and Networks, Peking Univ., China; [2]Wuhan Research Institute of Posts and Telecommunications, China*. We propose and experimentally demonstrate for the first time mode-division-multiplexing and time-division-multiplexing passive optical network (MDM-TDM-PON). Both upstream and downstream transmissions with two individual linearly polarized (LP) spatial modes are investigated.

AF4B.8 ● 17:45

Demonstration of a Visible-Light Communication Link Employing High-Base Vector Beam Modulation/Demodulation, Y. Zhao[1], J. Du[1], S. Li[1], J. Liu[1], L. Zhu[1], J. Wang[1]; *[1]Wuhan National Laboratory for Optoelectr, China*. We present a novel communication link exploiting high-base vector beam modulation/demodulation. Using a single phase-only spatial light modulator, we generate arbitrary-order vector beams. 8-ary vector beam modulation/demodulation for visible-light communication is demonstrated in the experiment.