Asia Optical Fiber Communication and Optoelectronic Exposition & Conference (AOE)

Technical Conference: 30 October – 2 November 2008
Exposition: 31 October – 2 November 2008

Shanghai Expo Convention Center
Shanghai, China

Hotel Reservations
Standard Registration Deadline: 21 October 2008

General Chairs

Ekaterina Golovchenko, *Tyco Telecommunications, USA*
Sailing He, *Royal Inst. of Technology, Sweden; and Zhejiang Univ., China*

Program Chairs

John Bowers, *Univ. of California at Santa Barbara, USA*
Cees Ronda, *Philips Technologies GmbH Forschungslaboratorien, Germany*
Songlin Zhuang, *Chinese Academy of Engineering and Shanghai Univ. of Science and Technology, China*

Co-sponsors

Congratulations LEOS/OSA Student Presentation Award Winners

Selected by the AOE Technical Program Committee, the following student presentations were awarded with the LEOS/OSA Student Presentation Award. Winners were announced following the AOE conference in Shanghai and each winner will receive a $500 award check and a certificate of recognition.

High Peak Power Conversion and High Gain in Pulsed Cladding-Pumped Fiber Raman Amplifier, Junhua Ji; Optoelectronics Res. Ctr., Univ. of Southampton, UK.

Optical Phase Demodulation Using a Coherent Receiver with an Ultra-Compact Grating Beam Splitter, Chin-Hui Chen; Univ. of California at Santa Barbara, USA.

All-Optical Tunable Delay Line for Channel Selection in OTDM Demultiplexing, Alan Cheng, Dept. of Electronic Engineering and Ctr. for Advanced Res. in Photonics, Chinese Univ. of Hong Kong, Hong Kong.

Organically Modified Silica Nanoparticles with Photosensitizing Drugs Encapsulated for Photodynamic Therapy, Jun Qian; Ctr. for Optical and Electromagnetic Res., Joint Res. Ctr. of Photonics of the Royal Inst. of Technology (Sweden) and Zhejiang Univ., China.

The AOE Technical Conference – taking place in Shanghai, China, Oct. 30 – Nov. 2, 2008 – is the event that brings together important technical research and the dynamic Chinese marketplace.

Attend AOE to stay on top of advancements in critical technical areas.

The AOE technical conference features a full suite of plenary talks, invited talks, contributed talks and posters given by today's top international academic and industrial research leaders in their respective fields, including:

- Optical Fibers, Fiber Components and Subsystems.
- Optoelectronic Devices and Materials.
- Optical Sensors and Biophotonics.
- Displays, Solid-State Lighting, and Optoelectronics in Energy.

With a robust conference program, this event provides an ideal venue to catch up with new research directions, the latest technical breakthroughs and emerging new commercial applications of optoelectronics subsystems and technologies. Check back frequently for regular updates to the conference program.

Attend AOE to make global connections.

Participation in the AOE technical conference is of strategic importance for multi-national companies that want to develop relationships in the rapidly growing Chinese market. In addition to scientists and researchers from around the world, AOE presenters and attendees include many top Chinese decision-makers in government, local authorities, and those in business, finance and international development.

The AOE conference proceedings will be included in the **IEEE Xplore Digital Library** and **OSA's InfoBase**, which provides access to almost a third of the world's current electrical engineering and computer science literature. Your paper will be archived, indexed by INSPEC® and Ei Compendex, and made available to readers worldwide.

AOE 2008 Scope and Topics

Scope 1: Optical Fibers, Fiber Components and Subsystems

- Optical fibers and fiber devices
- Fiber designs to manage nonlinearities, chromatic dispersion and PMD
- Fiber gratings, filters and gain equalizers
- Fiber-based chromatic dispersion and PMD compensators
- Fiber amplifiers and fiber lasers
- Nonlinear fiber optics and all-optical fiber subsystems
- Photonic crystal fibers and devices
- RF and microwave fiber optics technology
- Microwave photonics subsystems
- Other novel fiber-based components and subsystems
- Optical subsystems such as ROADMs, subsystems for dispersion compensation and subsystems for optical signal processing

Scope 2: Optoelectronic Devices and Materials

- Semiconductor lasers, amplifiers, and photodetectors
- Optical modulators
- Transmitters and receivers for fiber and free-space links
- Silicon photonics and planar lightwave circuits
- Nanophotonics, plasmonics and metamaterials
- Photonic crystals and their applications
- Infrared and terahertz materials, emitters and detectors
- Optoelectronic integration and photonic integrated circuits
- Optical logic, memories and other functional devices
- Optical MEMS and applications
- Organic photonic devices
- Manufacturing, packaging and integrated module technologies

Scope 3: Optical Sensors and Biophotonics

- Fiber and waveguide optical sensors
- Environmental monitoring and LIDAR technologies
- Optical sensor systems and networks
- Biomedical diagnostics and sensing (nanoparticles)
- Optical coherence tomography and clinical applications
- Photon migration and diffuse optical imaging
- Tissue optics and spectroscopy
- Nonlinear optical microscopy
- Light-activated therapy
- Laser tweezers and trapping
- Micro- and opto-fluidic devices for biomedical applications
- Nanobiophotonics devices and technology
- Latest biophotonics technology and applications.

Scope 4: Displays, Solid-State Lighting, and Optoelectronics in Energy

- Flat panel displays (LEDs, PDPs, LEDs, OLEDs, FEDs, etc.)
- Active matrix display
- CRTs, VFDs, 3D displays, electronic paper
- Light valves/Spatial Light Modulators
- MEM (DMD, TMA, GLV, etc), LCOS and micro-displays
- Projection displays for HDTV
- Display drivers, interfaces and systems
- Manufacturing technology, reliability and testing
- New materials for LEDs and OLEDs
- High-power LEDs and packaging
- White light LEDs and semiconductor lighting
- Device physics, operating principles and applications of LEDs and OLEDs
- New technologies of solid state lighting
- Materials, components and packaging
- Optical design and modeling
- High-power lasers, laser equipments and applications
- Advances in solar cell materials and technologies
- Other Optoelectronics in energy.

General Chairs

Dr. Katya Golovchenko
Tyco Telecommunications. USA

Dr. Ekaterina Golovchenko is the senior technology strategist and director of transmission design group at Tyco Telecommunications. She received her Ph.D. in physics from the Russian Academy of Sciences in 1991 where she was engaged in research on fiber optics nonlinear effects and other fundamental aspects of the light transmission in fiber. She continued to pursue her research interests working as an Assistant Research Professor in University of Maryland in 1994-1997. In 1997 Dr. Golovchenko joined Tyco Telecommunications where she got engaged in development of transmission design of the undersea fiber optic systems. She is currently responsible for the development of the technical solutions supporting Tyco Telecommunication's offerings in the submarine systems markets. Besides the new system design she is also engaged in developing strategies for upgrade and re-configuration of the existing networks as well as exploratory and testing work related to the next generation product definition and testing.

Dr. Golovchenko is a senior member of IEEE; she has co-authored more than 100 technical publications, and holds several patents in the field of fiber optics communications. She has served on the IEEE LEOS Annual Meeting and OFC technical committees, as a LEOS Annual Meeting general chair, and as guest editor of JSTQE special issue on Optical Communications. She is currently serving as VP of conferences for IEEE LEOS and as program chair of OFC'08.

Professor Sailing He
Joint Research Center of Photonics of the Royal Institute of Technology (Sweden) and Zhejiang University (China)

Prof. Sailing He is currently a chief scientist for Joint Research Center of Photonics of the Royal Institute of Technology (Sweden) and Zhejiang University (China). After receiving his Ph.D. degree from the Royal Institute of Technology, he has worked at the Royal Institute of Technology (Stockholm, Sweden) as an assistant professor, an associate professor, and a full professor. Prof. He joined Zhejiang University (China) in 1999 as a “Chang-jiang project” professor appointed by the Ministry of Education of China. Prof. Sailing He also serves as chief scientist for the Joint Center for Optical Communications of Zhejiang University, Centre for Optical and Electromagnetic Research of Zhejiang University, and a “973 program” (Ministry of Science and Technologies, China). Prof. He has first-authored one monograph (Oxford University Press) and authored/co-authored about 300 papers in refereed international journals, and has been granted over 30 patents. Prof. He has given many invited talks and lectures in international meetings, including plenary talks in SPIE (International Society for Optical Engineering) Annual Meeting (San Diego, US, 2006) and APOC (Asia-Pacific Optical Communications) 2004. Prof. He has served as General Chair (or Co-chair) for a number of international conferences, as well as in Steering Committee, Scientific Advisory Board or Technical Program Committee for numerous international congress/conferences and journals. Prof. He is a Fellow of OSA (Optical Society of America).

Technical Program Chairs

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UC Santa Barbara. USA

Professor. Dr. Cees Ronda
Philips Technologies GmbH Forschungslaboratorien, Germany.

Professor Songlin Zhuang
Chinese Academy of Engineering, dean of College of Optical and Electric information, Engineering of Shanghai University of Science and Technology, the director of Shanghai Institute of Optical Instruments. China

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Professor Jian-Jun He, Zhejiang Univ., China (Co-chair)
Dr. Wen Liu, Accelink Technologies Inc., China (Co-chair)

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Professor Chinlon Lin, Nanyang Technological Univ., Singapore
Professor Ma Hui, Tsinghua Univ., China (Co-chair)
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4: Displays, Solid-State Lighting, and Optoelectronics in Energy
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Joint AOE/APOC Symposium on Broadband Access
Co-chairs:
Dr. Jianli Wang, Vice President, Fiberhome, China
Mr. Shoichi Hanatani, President, Asia-Pacific FTTH Council; Hitachi Ltd., Japan

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Professor Deng-Ke Yang, Kent State Univ., USA
Professor Ying Zhao, Nankai Univ., China

AOE Plenary Presentations

We are pleased to confirm the following plenary speakers for AOE 2008. The plenary sessions will take place on Friday, 31 October 2008. The final schedule of presentations will be available in August 2008.

Optical Networks–The Next Wave

Dr. Rod C. Alferness, *Chief Scientist, Bell Labs, Lucent Technologies, USA*

Rod C. Alferness is currently Chief Scientist, Bell Laboratories, Alcatel-Lucent. Prior to this position, Rod was the Bell Laboratories Research Senior Vice President. His previous position was the Bell Laboratories Optical Networking Research Senior Vice President. Rod also was the Chief Technical Officer and Advanced Technology and Architecture Vice-President of the Optical Networking Group, Lucent Technologies. Prior to that role, he was head of the Photonics Networks Research Department of Lucent Bell Laboratories, Holmdel, New Jersey.

Rod joined Bell Labs in 1976 after receiving a Ph.D. in physics from the University of Michigan where his thesis research, under the supervision of Professor Emmett Leith, concerned optical propagation in volume holograms. His early research at Bell Labs included the demonstration of novel waveguide electro-optic devices and circuits - including switch/modulators, polarization controllers, tunable filters - and their applications in high capacity lightwave transmission and switching systems. This research led to the early development of titanium diffused lithium niobate waveguide modulators that are now deployed as the high-speed signal-encoding engine in fiber optic transmission systems around the world. Dr. Alferness has also made contributions in photonic integrated circuits in InP, including widely tunable lasers, as well as in photonic switching systems and reconfigurable WDM (wavelength-division-multiplexed) optical networks. In the mid-90's, he was an originator and the Bell Labs Program Manager for the DARPA funded MONET project which demonstrated the feasibility of wavelength routed optical networks that are now being implemented for both backbone and metro networks. Dr. Alferness has authored over 100 papers, holds 35 patents and has authored five book chapters.

Dr. Alferness is a member of the National Academy of Engineering. He is a Fellow of the Optical Society of America and the IEEE Lasers and Electro-Optics Society (LEOS). Dr. Alferness received the 2005 IEEE Photonics Award. He has served as an elected member of the LEOS AdCom and was the President of IEEE LEOS in 1997. He was General Co-Chair of the 1994 Optical Fiber Communications Conference (OFC'94). Dr. Alferness has served as Associate Editor for Optics Letters and for Photonic Technology Letters. He has served on many IEEE and OSA committees, including fellows and awards committees. Dr. Alferness also currently serves on the European Conference on Optical Communication (ECOC) Executive Management Committee. He served as the Editor-in-Chief of the IEEE and OSA-sponsored Journal of Lightwave Technology from 1995-2000. He served as an elected member of the Optical Society of America Board of Directors from 2001-2003 and is currently the president-elect of OSA.

Progress of GaN-based Nonpolar/Semipolar Visible Light Emitting Devices

Shuji Nakamura, *Professor, Materials Department, University of California at Santa Barbara, USA*

Shuji Nakamura was born on May 22, 1954 in Ehime, Japan. He obtained B.E., M.S., and Ph.D. degrees in Electrical Engineering from the University of Tokushima, Japan in 1977, 1979, and 1994, respectively. He joined Nichia Chemical Industries Ltd in 1979. In 1988, he spent a year at the University of Florida as a visiting research associate. In 1989 he started the research of blue LEDs using group-III nitride materials. In 1993 and 1995 he developed the first group-III nitride-based blue/green LEDs. He also developed the first group-III nitride-based violet laser diodes (LDs) in 1995. He has received a number of awards, including: the Nishina Memorial Award (1996), MRS Medal Award (1997), IEEE

Jack A. Morton Award, the British Rank Prize (1998) and Benjamin Franklin Medal Award (2002). He was elected as the member of the US National Academy of Engineering (NAE) in 2003. Also, he received the Millennium Technology Prize in 2006. Since 2000, he is a professor of Materials Department of University of California Santa Barbara. He holds more than 100 patents and has published more than 200 papers in this field.

Laser Spectroscopy Applied to the Environmental and Medical Fields

Sune Svanberg, *Head of the Atomic Physics Division, Lund University and Director of the Lund Laser Centre, Sweden*

An overview of applied laser-based diagnostics as pursued at the Atomic Physics Division, Lund University, is given. The fields of application range from environmental monitoring including cultural heritage assessment to biomedical applications. General aspects of laser-based methods are non-intrusiveness, high spectral and spatial resolution, and data production in real-time. Different applications are frequently generically very similar irrespective of the particular context, which however, decides the spatial and temporal scales as well as the size of the optics employed. Thus, volcanic plume mapping by lidar and optical mammography are two manifestations of the same principle, as is fluorescence imaging of a human bronchus by an endoscope and the scanning of a cathedral using a fluorescence lidar system. Recent applications include remote laser-induced break-down spectroscopy (LIBS) and gas monitoring in scattering media (GASMAS).

Sune Svanberg is Head of the Atomic Physics Division, Lund University, and director of the Lund Laser Centre, Sweden. He got his PhD in optical resonance spectroscopy in 1972 from Goteborg University, Sweden, where he stayed on till 1980, when he moved to Lund University. He spent research periods at the Technical University Berlin, Columbia University, Stanford University and MIT. His research field is basic and applied laser spectroscopy, presently with the emphasis on environmental and medical applications. He has well over 500 scientific papers, several patents and helped in the formation of several spin-off companies. He is a member of several academies including the Royal Academy of Sciences, Stockholm, where he for 10 years served on the Nobel Committee for Physics. He has many prizes and award including the Quantum Electronics Award of the EPS, the Azko-Nobel Science Award, the Willis E. Lamb Medal and the Celsius Medal. He is honorary doctor or professor at several universities including Jilin University, Harbin Institute of Technology and Zhejiang University. He is also Einstein Professor with the Chinese Academy of Sciences. He served on the Board of Directors of the Optical Society of America, and is presently on the Board of the Swedish Research Council.

Applications of Optics in Solar Energy Industries

Dr. Zhengrong Shi, *Chairman of the Board of Directors, CEO, Suntech Power Holdings Co., Ltd., China*

Dr. Zhengrong Shi is Suntech’s founder, chairman of the board of directors and chief executive officer. Prior to founding Suntech in 2001, he was a research director and executive director of Pacific Solar Pty., Ltd., an Australian PV company engaged in the commercialization of next-generation thin film technology. From 1992 to 1995, he was a senior research scientist and the leader of the Thin Film Solar Cells Research Group in the Centre of Excellence for Photovoltaic Engineering at the University of New South Wales in Australia, the only government-sponsored PV industry research center in Australia.

Dr. Shi holds 11 patents in PV technologies and has published a number of articles and papers in PV-related scientific magazines and at conferences. Dr. Shi received a bachelor's degree in optical science from Chang Chun University of Science and Technology in China in 1983, a master's degree in laser physics from the Shanghai Institute of Optics and Fine Mechanics, the Chinese Academy of Sciences in 1986, and a Ph.D degree in electrical engineering from the University of New South Wales in Australia in 1992.

Awards and Milestones

October 2007 – Dr. Shi was named one of TIME magazine's 2007 "Heroes of the Environment"

September 20, 2007 – Dr. Shi was awarded selected as the Corporate Citizen of the Year for his contribution to the development of the solar industry at the China Business Leaders Awards 2007

August 8, 2006 – Dr. Shi was appointed as member of advisory board of NYSE.

May 25, 2006 – Dr. Shi was awarded the “Best Entrepreneur Prize” by the Southern California Asian Society.

December 14, 2005 – Suntech successfully completed its IPO on the New York Stock Exchange (NYSE) to become China’s first private high-tech company to list on a U.S. stock exchange, and the highest market value PV pure play company in the world.

October 2005 – Dr Shi was awarded the “PV-SEC Prize” at the International Photovoltaic Science and Engineering Conference in recognition of Dr. Shi’s contribution to the international PV industry.

AOE/APOC Joint Symposium on Broadband Access

Co-chairs:
Dr. Jianli Wang, *Vice President, Fiberhome, China*
Mr. Shoichi Hanatani, *President, Asia-Pacific FTTH Council; Hitachi Ltd., Japan*

FTTH has been well accepted as a future-proof access solution. In the past few years, great progress has been made in FTTH technologies and deployment. This symposium aims to share those progresses and the lessons we have learned. We will investigate the issues and problems we have in FTTH services and applications, technologies, product development, deployments, network operation and maintenance, regulations, etc. The symposium will invite FTTH experts from service providers, government, equipment vendors, fiber and cable providers, and universities. The preliminary list of invited speakers includes:

AOE/APOC Joint Symposium on Broadband Access

To Be Announced, *Greg Caltabiano; Teknovus, USA.*

To Be Announced, *Lynn D. Hutcheson; Ovum RHK, USA.*

R&D and First Commercial Service of WDM-PON, *Byung Whi Kim; ETRI, Republic of Korea.*

To Be Announced, *Guangcheng Li; Fiberhome, China.*

Long-Reach and High Split Ratio Passive Optical Networks, *David Piehler; Alphion, USA.*

To Be Announced, *Naoto Yoshimoto; NTT Access Network Service Labs, Japan.*

To Be Announced, *Chengliang Zhang; China Telecom Res. Inst., China.*

Topics include:

- FTTH market status, analysis and forecast;
- FTTH strategies;
- FTTH services and application scenarios;
- FTTH deployment experiences and lessons;
- FTTH fault diagnosis and maintenance;
- Progress in PON standards;
- FTTH networking technologies (10GEPON, GPON, WDM-PON, integrated OLT and Layer 3 switch, integrated home gateway and ONU, OCWDM-PON, etc);
- Low-cost FTTH devices and components, indoor fiber and cable.

AOE Workshop

Workshop on Commercialization of Photonics Technologies from Universities
Organizer: Prof. Dr. Wei Ping Huang, *McMaster Univ., Canada*

University research groups and laboratories play important roles in discovery, invention and development of enabling photonics technologies for a wide range of applications in our everyday life. Companies, entrepreneurs, investors, and governments around the world are making efforts to promote and realize commercialization of ideas and technologies from universities. This workshop will bring together the best minds from industry, government, university and capital communities to share their visions, business models, experiences and real life joys and pains in pushing from ideas of ivory towers to products and services of down-to-earth business.

SaL1, **Innovation China-UK: An Introduction,** *Mark Cranshaw, Project Manager, Innovation China UK (ICUK), UK*

SaL2, **Creating High Tech Spin-Outs from a University Environment,** *Professor David Payne, Optoelectronics Research Ctr., Univ. of Southampton, UK*

SaL3, **Commercialization of Optical Fiber Sensors for Application in Mine Safety,** *Dr. Tongyu Liu, CEO, Shandong Micro-Sensor Photonics Ltd. and Deputy Director, Laser Inst. of Shandong Acad. of Sciences, Jinan, China*

SaL4, **Funding Sources for Commercialisation Activities in Chinese HEI's,** *Speaker to be Announced, Shanghai Science and Technology Commission, China*

SaL5, **IPR Protection for International Joint R&D and Technology Transfer,** *Richard Lin, Partner, Fangda Partners, Shanghai, China*

SaL6, **Opportunities for Commercialisation in Wuhan, Optics Valley of China,** *Dexiu Huang, Huazhong University of Science and Technology, China*

AOE 2008 Tutorials

Scope 1: Optical Fibers, Fiber Components and Subsystems

Tutorial Speakers

SaA1, **Technologies and Subsystems for High Speed Transmission**, *Benny Mikkelsen; Mintera Corp., USA.*

SuP2, **Bend Insensitive Fiber Design Strategies**, *David Peckham; OFS Labs, USA.*

Scope 2: Optoelectronic Devices and Materials

Tutorial Speaker

SaH1, **Silicon Photonics: Opportunities and Challenges**, *Roel Baets, Dries Van Thourhout, Peter Bienstman, Gunther Roelkens, Pieter Dumon, Wim Bogaerts; IMEC-Ghent Univ., Belgium.*

Scope 3: Optical Sensors and Biophotonics

Tutorial Speakers

SuI1, **Advanced Fluorescence and Label-Free Live Cell Microscopy**, *Thomas Huser; Univ. of California at Davis, USA.*

SuM1, **Optical Coherence Tomography: Past, Present, and Future**, *Zhongping Chen; Univ. of California at Irvine, USA.*

AOE Invited Speakers

Scope 1: Optical Fibers, Fiber Components and Subsystems

FD5, **Fiber-Based Approaches for All-Optical Clock Recovery**, *Lawrence R. Chen; McGill Univ., Canada.*

FD6, **Optical Electrostatic MEMS for Wavelength Switching**, *Yuan Ma; Dalhousie Univ., Canada.*

SaA2, **640-Gb/s OTDM RZ-DQPSK Signal Enabling 2.4-Bit/s/Hz Spectral Efficiency and its Detection with an EAM-Based Receiver**, *Lothar Moeller[1], Yikai Su[2], Chongjin Xie[1], Jurgen Gripp[1], Xiang Liu[1], Roland Ryf[1]; [1]Bell Labs, Lucent Technologies, USA, [2]State Key Lab of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong Univ., China.*

SaB1, **High Power CW Pumped Supercontinuum Sources**, *B. A. Cumberland, A. B. Rulkov, J. C. Travers, S. V. Popov, J. R. Taylor; Imperial College London, UK.*

SaB2, **Fiber MOPAs with High Control and High Power**, *Johan Nilsson, S. Yoo, P. Dupriez, C. Farrell, M. S. Z. Abidin, J. Ji, J. -n. Maran, C. A. Codemard, Y. Jeong, J. K. Sahu, D. J. Richardson, D. N. Payne; Optoelectronics Res. Ctr., Univ. of Southampton, UK.*

SaE1, **Development of Long-Period Fiber Grating Coupling Devices**, *Kin Seng Chiang; City Univ. of Hong Kong, Hong Kong.*

SaF1, **Coherent Optical Communication**, *Guifang Li; Univ. of Central Florida, USA.*

SaF2, **High-Speed Vectorial Lightwave Modulation Techniques**, *Tetsuya Kawanishi; Natl. Inst. of Information and Communications Technology, Japan.*

SaG5, **Carbon Nanotube Based Mode-Locked Fiber Lasers**, *Shinji Yamashita; Univ. of Tokyo, Japan.*

SaJ6, **Fiber-Radio Antenna Feeding for MIMO Systems**, *Michael Sauer, Andrey Kobyakov; Corning Inc., USA.*

SaM1, **Diffraction-Resistant Light (Bessel Beams) from Optical Fibers**, *Siddharth Ramachandran; OFS Labs, USA.*

SuA1, **DPSK, DQPSK and Coherent Receivers for 40G and 100G Systems**, *Yannick K. Lize; Stratalight Communications, USA.*

SuA2, **High Spectral-Efficiency Mixed 10G/40G/100G Transmission**, *Xiang Liu, S. Chandrasekhar; Bell Labs, Alcatel-Lucent, USA.*

SuB1, **Recent Advances in Highly Nonlinear Microstructured Optical Fibers and Their Applications**, *David Richardson, F. Poletti, M. L. V. Tse, P. Horak, J. Y. Y. Leong, F. He, J. H. V. Price, X. Feng, H. N. Rutt, K. E. Frampton, W. H. Loh, S. Asimakis, P. Petropoulos; Optoelectronics Res. Ctr., Univ. of Southampton, UK.*

SuK1, **Recent Advances in Parametric Amplification and Processing**, *Stojan Radic, C. Bres; Univ. of California at San Diego, USA.*

SuP1, **Recent Developments in Optical Fiber Technology and Their Impact Opening New Application Spaces**, *Claudio Mazzali; Corning Inc, USA.*

Scope 2: Optoelectronic Devices and Materials

FG1, **High Speed Modulation of Optical Injection-Locked Semiconductor Lasers**, *Ming Wu; Univ. of California at Berkeley, USA.*

FG4, **High-Speed and High-Power InP Based Photodiode for the Applications of Microwave Photonics**, *Jin-Wei Shi, Y.-S. Wu, W.-Y. Chiu; Natl. Central Univ., Taiwan.*

SaC1, **Challenges and Trends in High Volume Optical Component and Transceiver Manufacturing**, *Near Margalit; Source Photonics, Inc., USA.*

SaC3, **Optoelectronic Devices Manufacturing in China**, *Zhangyong Huang; Beijing Univ. of Posts and Telecommunications, China.*

SaN1, **Monolithic Photonic Integrated Circuits for Long Haul Telecommunication Networks**, *Wei Chen; Infinera, USA.*

SaN6, **IIIV/SOI Heterogeneous Integration of Optoelectronic Devices**, *Liu Liu, Joris Van Campenhout, Günther Roelkens, Dries Van Thourhout, Roel Baets; Photonics Res. Group, Dept. of Information Technology, IMEC-Ghent Univ., Belgium.*

SuD1, **Recent Progress on Photonic Crystal Slow Light Devices**, *Toshihiko Baba[1,2]; [1]Yokohama Natl. Univ., Japan, [2]CREST, Japan Science and Technology Agency, Japan.*

SuD4, **On-Chip All-Optical Processing Based on Photonic Crystal Nanocavities**, *Masaya Notomi[1], A. Shinya[1], T. Tanabe[1], E. Kuramochi[1], H. Taniyama[1], S. Matsuo[2], T. Kakitsuka[2], T. Sato[2]; [1]NTT Basic Res. Labs, NTT Corp., Japan, [2]NTT Photonics Labs, NTT Corp., Japan.*

SuE1, **Photonic Integration in Silicon for High-Speed Applications**, *Ansheng Liu[1], Ling Liao[1], Yoel Chetrit[2], Juthika Basak[1], Hat Nguyen[1], Doron Rubin[2], Mario Paniccia[1]; [1]Intel Corp., USA, [2]Numonyx Israel Ltd., Israel.*

SuE2, **Advances and Trends in Si-Based Photonics**, *Jin-Zhong Yu, Xi Xiao, Yu Zhu, Qinzhong Huang, Xuejun Xu, Yuntao Li, Yude Yu; Inst. of Semiconductors, Chinese Acad. of Sciences, China.*

SuF1, **Photonic Integration for Optical Switching Applications**, *Daniel Blumenthal; Univ. of California at Santa Barbara, USA.*

SuF6, **Advances in InP Optical Modulators**, *Rob A. Griffin, A. C. Carter; Bookham, Inc., UK.*

SuG1, **High Fundamental Mode Power, High Speed InAlGaAs/AlGaAs 1310 and 1550-nm Wafer-Fused VCSELs,** *Alexei Sirbu[1], A. Mereuta[1], A. Caliman[1], V. Iakovlev[2], G. Suruceanu[2], E. Kapon[1,2]; [1]Swiss Federal Inst. of Technology, Switzerland, [2]BeamExpress S.A., Switzerland.*

SuG2, **Terahertz Quantum Cascade Lasers**, *Benjamin Williams; Univ. of California at Los Angeles, USA.*

SuL1, **Recent Progress on Silica-Based Planar Lightwave Circuits**, *Senichi Suzuki; NTT Photonics Labs, NTT Corp., Japan.*

SuL6, **Recent Progress on Polymer Photonics and Optical Interconnects**, *Xiaolong Wang[1], Ray Chen[2]; [1]Omega Optics, USA, [2]Univ. of Texas at Austin, USA.*

SuQ1, **Waveguide Optical Isolators for Integrated Optics**, *Tetsuya Mizumoto, Yuya Shoji, Ryouhei Takei, Kazumasa Sakurai; Tokyo Inst. of Technology, Japan.*

SuQ4, **Modelling Photonic Integrated Circuits Using TDTW**, *Dominic F. Gallagher; Photon Design, UK.*

Scope 3: Optical Sensors and Biophotonics

FH1, **Linear Polarization Different Imaging and its Potential Applications**, *Qiang Gao, Xiaoyu Jiang, Yonghong He, Hui Ma; Tsinghua Univ., China.*

FH2, **Random Access Two-Photon Microscope Based on Acousto-Optic Deflector**, *Shaoqun Zeng; Britton Chance Ctr. for Biomedical Photonics, Huazhong Univ of Science and Technology, China.*

FH3, **Taxol Induces Caspase-Independent Cytoplasmic Vacuolization and Cell Death**, *Tongsheng Chen; South China Normal Univ. of Life Sciences, China.*

SaD1, **Multifunctional Nanoparticle with Diagnosis and Therapeutics for Tumour**, *Xianggui Kong, Xiaomin Liu, Yajuan Sun, Yi Yu, Youlin Zhang; Chang Chun Inst. of Optics and Fine Mechanics and Physics, Chinese Acad. of Science, China.*

SaD2, **Micro-Optical Element Enabled New Applications in Optical Trapping, Sensing and Imaging**, *Larry X. Yuan, G. G. Mu; Inst. of Modern Optics, Nanyang Technological Univ., Singapore.*

SaI1, **Drug Discovery Biology Leading Biophotonics**, *Ye Fang, Ann Ferrie, Gary Li, Joydeep Lahiri; Corning, Inc., USA.*

SaI2, **Correlating Cellular Metabolic Status with the Lifetime of Autofluorescence from NADH**, *Vladimir Gukassyan, Po-Yen Lin, Fu-Jen Kao; Inst. of Biophotonics, Natl. Yang Ming Univ., Taiwan.*

SaP1, **Laser Trapping and Laser Interferometry for High-Bandwidth Micromechanical Probing of Biomaterials,** *Daisuke Mizuno[1,2], M. Atakhorrami[3], K. M. Addas[4], J. X. Tang[5], G. H. Koenderink[6], Fredrick C. MacKintosh[1], Christoph Schmidt[1,7]; [1]Dept. of Physics and Astronomy, Vrije Univ., Netherlands, [2]Organization for the Promotion of Advanced Res., Kyushu Univ., Japan, [3]Philips Res., Netherlands, [4]American Univ. in Cairo, Egypt, [5]Dept. of Physics, Brown Univ., USA, [6]FOM Inst. AMOLF, Netherlands, [7]Dept. of Physics and Astronomy, Georg-August Univ., Germany.*

SaP2, **Can Optically Driven Micromachines be Useful in Biomedicine? Optical Tweezers at Work**, *Halina Rubinsztein-Dunlop, Theodor Asavei, Simon Parkin, Alex Stilgoe, Vincent Loke, Timo Nieminen, Norman Heckenberg; Univ. of Queensland, Australia.*

SaP3, **Probe Biological Dynamics of Single Microbial Cells Using Optical Trapping and Raman Spectroscopy**, *Shu-Shi Huang[1], Gui-wen Wang[1], Lixin Peng[1], Yong-qing Li[2]; [1]Biophysics Lab, Guangxi Acad. of Sciences, China, [2]East Carolina Univ., USA.*

SaP4, **Intracellular Manipulation Using Nonlinear Excitation**, *Wataru Watanabe; Natl. Inst. of Advanced Industrial Science and Technology, Japan.*

SuH1, **Femtosecond Laser Integration for Biophotonic Applications: A "Magic Brush" in the Micro/Nano-World**, *Ya Cheng[1], Jian Xu[1], Zhizhan Xu[1], Koji Sugioka[2], Katsumi Midorikawa[2]; [1]State Key Lab of High Field Laser Physics, Shanghai Inst. of Optics and Fine Mechanics, China, [2]RIKEN, The Inst. of Physical and Chemical Res., Japan.*

SuI2, **Visualizing Cellular Heterogeneity**, *Kristin Sott, Emma Eriksson, Mattias Goksör; Univ. of Gothenburg, Sweden.*

SuI3, **Fluorescence Lifetime Techniques in Multimodal Tissue Diagnostic Platform**, *Laura Marcu; Univ. of California at Davis, USA.*

SuM2, **High Resolution Endoscopic Optical Coherence Tomography Driven by a Hollow Ultrasonic Motor**, *Ping Xue, Jianan Li; Tsinghua Univ., China.*

SuN1, **Diagnostics and Treatment of Tumours Using Laser Techniques**, *Katarina Svanberg; Lund Univ., Sweden.*

SuN2, **Bionic Vision: Current Progress and Future Challenge**, *QiuShi Ren, KaiJie Wu, XiaoHong Sui, LiMing Li, Xinyu Chai; Shanghai Jiao Tong Univ., China.*

SuN3, **Studying Leukemia Metastasis by *in vivo* Imaging and Flow Cytometer**, *Xunbin Wei, Yun Chen, Yan Li, Li Zhang, Guangda Liu; Inst. of Biomedical Sciences, Fudan Univ., China.*

Scope 4: Displays, Solid-State Lighting and Optoelectronics in Energy

FE1, **Exciton Migration in Organic LEDs and Solar Cells**, *Mark Thompson, Chao Wu, Peter Djurovich, M. Dolores Perez; Univ. of Southern California, USA.*

FE2, **Controllable Light Utilization in Silicon-Based Thin Film Solar Cells**, *Ying Zhao, Peizhuan Chen, Xiaodan Zhang, Ning Cai, Xinhua Geng, Shaozhen Xiong; Nankai Univ., China.*

FE3, **Influence of Germanium on Silicon Wafers Used for Solar Cells**, *Deren Yang; Zhejiang Univ., China.*

FE4, **Exploring Low Temperature ZnO Nanowires in Display and Solar Cell Applications**, *Xiao-Wei Sun; Nanyang Technological Univ., Singapore.*

SaO1, **Mass Production of Optoelectronic Devices for Solid State Lighting (SSL) by MOCVD**, *M. Heuken; AIXTRON AG, Germany.*

SaO2, **LED**, *Y. Luo; Tsinghua Univ., China.*

SaO3, **GaN Based Active Matrix Light Emitting Diode Array by Flip-Chip Technology**, *Zhao Jun Liu, Chi Wing Keung, Kei May Lau; Hong Kong Univ. of Science and Technology, Hong Kong.*

SaO4, **Developing Bright and Color-Saturated Quantum Dot Light Emitting Diodes towards Next Generation Displays and Solid-State Lighting**, *Jian Xu[1], Zhanao Tan[1], Ting Zhu[1], Fan Zhang[1], Brittany Hedrick[1], Shawn Pickering[1], An Cheng[1], Myo Thein[1], Andrew Y. Wang[2], Qingjiang Sun[3], Yongfang Li[3]; [1]Pennsylvania State Univ., USA, [2]Ocean NanoTech LLC, USA, [3]Chinese Acad. of Sciences, China.*

SuJ1, **UV-Curable Liquid Crystal for a Retarder**, *Hiroshi Hasebe, Yasuhiro Kuwana, Hidetoshi Nakata, Osamu Yamazaki, Kiyofumi Takeuchi, Haruyoshi Takatsu; DIC Corp., Japan.*

SuJ2, **New Field Sequential Color Displays with Transient LCD Modes**, *Y. W. Li, Hoi-Sing Kwok; Hong Kong Univ. of Science and Technology, Hong Kong.*

SuJ3, **Orthoconic Antiferroelectric Liquid Crystals as a Material for Display Application,** *Zbigniew Raszewski[1], X. W. Sun[2], Pawel Perkowski[1], W. Piecek[1], J. Zielinski[1], R. Dabrowski[1], E. Nowinowski-Kruszelnicki[1], J. Kedzierski[1]; [1]Military Univ. of Technology, Poland, [2]Nanyang Technological Univ., Singapore.*

SuJ4, **Periodically Poled Optical Nonlinear Crystals for Laser Display Applications**, *Chang-Qing Xu; McMaster Univ., Canada.*

SuO1, **Photoluminescent Flexible Displays**, *Kyung Cheol Choi, Seung Hun Kim, Cheol Jang, Kuk Joo Kim, Sung-Il Ahn; KAIST, Republic of Korea.*

SuO2, **The Structure Optimization for High-Efficiency White Organic Light-Emitting Diodes**, *Ji Hoon Seo, Y. K. Kim; Hongik Univ., Republic of Korea.*

SuO3, **Boundary Image-Sticking Phenomena in AC Plasma Display Panel**, *Heung-Sik Tae[1], Choon-Sang Park[1], Jae Kwang Lim[1], Jeong-Hyun Seo[2], Bhum Jae Shin[3]; [1]Kyungpook Natl. Univ., Republic of Korea, [2]Incheon Univ., Republic of Korea, [3]Sejong Univ., Republic of Korea.*

SuO4, **High Efficiency and Compact Lasers for Laser Projection Display**, *Yong Bi[1], Bin Wang[1], Yan Qi[1], Boxia Yan[1], Shaowei Chu[2], Tiejia Wu[2], Ying Zhang[3], Wei Yan[3], Haitao Min[3], Zhenqing Tian[3]; [1]Acad. of Opto-Electronics, Chinese Acad. of Sciences, China, [2]Graduate Univ. of Chinese Acad. of Sciences, China, [3]Phoebus Vision Opto-Electronics Technology Ltd, China.*

AOE Short Courses

Two short courses will be offered during AOE 2008 on Thursday, 30 October 2008 from 3:00 p.m. – 6:00 p.m. Short Courses are an excellent opportunity to learn about new products, cutting-edge technology and vital information at the forefront of the industry.

Advanced Optical Modulation and 100-Gb/s Transmission

NOTE NEW DATE AND TIME: Friday, 31 October, 2:00 p.m.–5:00 p.m.
Peter J. Winzer, *Bell Laboratories, Alcatel-Lucent, USA*

Course Description
The course will give an overview of advanced modulation and detection strategies in the context of digital optically-routed networking at high speeds (100 Gb/s) and supporting high transport capacities (many Tb/s).

In a time where proven digital communication concepts from radio-frequency engineering are significantly impacting optical transmission systems, we will highlight important similarities and differences between radio and fiber systems and point at the resulting implications for optical network design. We will review, on an intuitive level, some key concepts of digital communications, such as the exploitation of signal space orthogonality for modulation and multiplexing. These basic concepts will serve as corner stones for the understanding of practically relevant modulation and detection techniques in next-generation 100-Gb/s systems. We will review important candidate modulation and detection schemes for 100-Gb/s transmission systems and discuss recent experiments that highlight the state of the art in 100-Gb/s transmission technologies.

Benefits and Learning Objectives
This course should enable you to:

- understand the general concepts of digital modulation, detection, and multiplexing
- appreciate the impairments found in optical networking and understand key differences between radio and optical systems
- understand the drivers for 100-Gb/s transport systems and the technological options at hand
- gain a feeling for the current state of high-speed advanced modulation and detection technologies
- identify problems, benefits, and open research issues in the context of advanced optical modulation and detection

Intended Audience
The course is intended for researchers and technologists at all levels who want to understand modulation and detection options in advanced optically-routed networks and, based on this understanding, be able to assess future 100-Gb/s optical transport methods. Some general prior knowledge of optical transport systems and/or digital communication techniques will be helpful (but not absolutely required) to follow most aspects of this course.

Instructor Biography
Peter J. Winzer received his M.S. and Ph.D. degrees in electrical/communications engineering from the Vienna University of Technology, Vienna, Austria in 1996 and 1998, respectively. His academic work, largely supported by the European Space Agency (ESA), was related to the analysis and modeling of space-borne Doppler wind lidar and highly sensitive free-space optical communication systems. In this context, he specialized on advanced digital optical modulation formats and high-sensitivity optical receivers using coherent and direct detection. In 2000 he joined Bell Labs (Holmdel, NJ, USA), focusing on high-bandwidth fiber-optic communication systems, including Raman amplification, optical modulation formats, advanced optical receiver concepts, and digital signal processing techniques for 10 and 40 Gb/s.

Since 2005 he has been working on 100-Gb/s optical transmission, where his team has set several laboratory records and has demonstrated the first field trial of live 100G video traffic over an operational carrier network.

Dr. Winzer has widely published in peer-reviewed journals, conferences, and edited books, and holds several patents in optical communications, lidar, and data networking. As a member of OSA and IEEE, he is actively involved in organizing conferences and workshops, including ECOC, OFC, CLEO, and LEOS, and serves as an elected member of the LEOS board of governors (BoG).

Organic Light Emitting Devices: High Efficiency Monochromatic and White Emission

Thursday, 30 October, 3:00 p.m.–6:00 p.m.
Mark E. Thompson; *Univ. of Southern California, USA*

Course Description
Organic light emitting devices (OLEDs) have been studied for over 30 years and are currently being incorporated into commercial displays. The device structure is fairly simple, consisting of a few molecular or polymeric layers, sandwiched between anode and cathode materials. With optimal materials and device architecture choices, the turn-on voltages can be 2-3 V, with efficiencies of monochromatic devices reaching 100% (internal efficiency). White light emitting devices have been reported to have power efficiencies of > 80 lum/W.

In this Short Course I will describe the basic structure of the materials in OLEDs and the device properties. With an understanding of the basic functioning of an OLED, I will move on to talk about the principal loss mechanism that existed in the late 1990's, which involves a spin statistical problem that limits the efficiency to 25%. The use of a novel set of emitting materials circumvented this problem, increasing the OLED efficiencies for 25% to 100%.

I will discuss the evolution of these dopants, give a detailed picture of their unique photophysical properties and describe how they are used to generate highly efficient monochromatic and white emitting OLEDs.

Benefits and Learning Objectives
This course should enable you to:

- understand simple and complex OLED designs
- understand the basic mechanism of thermoluminescence in organic materials
- understand the basic mechanism of carrier transport in organic materials
- design efficient monochromatic and white OLEDs
- predict emission colors form heavy metal phosphors
- understand the significance of the various performance metrics used for characterizing OLED efficiency and color quality

Intended Audience
The expected audience is a technically trained one that has not had extensive experience working with OLEDs.

Instructor Biography
Dr. Mark E. Thompson is Professor of Chemistry and Materials Science at the University of Southern California. He received his B.S. degree in chemistry in 1980 (U.C. Berkeley) and his Ph.D. in chemistry in 1985 (California Institute of Technology). He spent two years as a S.E.R.C. fellow in the Inorganic Chemistry laboratory at Oxford University. Prof. Thompson took a position in the chemistry department at Princeton University in 1987, as an assistant professor. In 1995 he moved his research team to the University of Southern California, where he is currently a Professor of Chemistry and Chair of the Chemistry Department. He currently has over 200 papers in print and over 70 US patents. His research interests involve the optical and optoelectronic properties of molecular materials and devices, particularly organic LEDs and solar cells, as well as nanoscale materials, catalysis and biosensors. He has won a number of awards, including the MRS Medal, given by the Materials Research Society, and the Jan Rachman Prize for Outstanding Achievement in Flat Panel Displays, given by the Society for Information Display.

Asia Optical Fiber Communication and Optoelectronic Exposition & Conference (AOE) — Agenda of Sessions

	Room 2	Room 4AB	Room 4C	Room 5A	Room 5B
Thursday, 30 October 2008					
09.00–20.00	**Registration Open**				
15.00–18.00	**SHORT COURSES:** **Advanced Optical Modulation and 100-Gb/s Transmission, Peter J. Winzer, Bell Labs, Alcatel-Lucent, USA** **Organic Light Emitting Devices: High Efficiency Monochromatic and White Emission, Mark E. Thompson, Univ. of Southern California, USA** *Locations to Be Announced*				
Friday, 31 October 2008					
09.00–17.00	**Registration Open**				
09.30–11.00	**FA • Plenary Session I,** *Room 7F*				
11.00–11.30	**Tea Break,** *Exhibit Hall*				
11.30–13.00	**FB • Plenary Session II,** *Room 7F*				
13.00–14.00	**Lunch Break**				
14.00–16.00	**FC • Joint APOC/AOE Symposium on Broadband Access I**	**FD • Transmission and Subsystem Technologies**	**FE • Solar Cells**		
16.00–16.30	**Tea Break,** *Exhibit Hall*				
16.30–18.00	**FF • Joint APOC/AOE Symposium on Broadband Access II** (ends at 18.30)	**FG • High Speed Components**	**FH • Imaging Applications of Biophotonics I**		
18.00–19.00	**Cocktail Hour,** *Location to Be Announced*				
19.00–21.00	**Conference Banquet,** *Location to Be Announced*				

	Room 2	Room 4AB	Room 4C	Room 5A	Room 5B
Saturday, 1 November 2008					
09.00–17.00	**Registration Open**				
09.00–10.30	**SaA • High Capacity Systems and Technologies I** (ends at 10.45)	**SaB • Fiber Lasers and Sources I**	**SaC • Manufacturing Technologies** (ends at 10.15)	**SaD • Probes, Sensors and Assays I**	**SaE • Fiber Gratings**
10.30–11.00	**Tea Break,** *Exhibit Hall*				
11.00–12.30	**SaF • High Capacity Systems and Technologies II**	**SaG • Fiber Lasers and Sources II**	**SaH • Silicon Photonics I**	**SaI • Probes, Sensors and Assays II**	**SaJ • Radio over Fiber and Radio Frequency Optics** (ends at 12.45)
12.30–13.15	**Lunch Break**				
13.15–14.30	**SaK • AOE Poster Session,** *Exhibit Hall*				
14.30–16.00	**Exhibit Only Time,** *Exhibit Hall*				
16.00–16.30	**Tea Break,** *Exhibit Hall*				
16.30–18.30	**SaL • Workshop on Commercialization of Photonics Technologies from Universities** (ends at 19.00)	**SaM • New Fiber Designs and Fiber Devices**	**SaN • Photonic Integration I**	**SaO • Solid-State Lighting**	**SaP • Optical Trapping and Manipulation**
Sunday, 2 November 2008					
09.00–17.00	**Registration Open**				
09.00–10.30	**SuA • High Capacity Systems and Technologies III**	**SuB • Microstructure Fibers**	**SuC • Probes, Sensors and Assays III**	**SuD • Nanophotonics**	**SuE • Silicon Photonics II**
10.30–11.00	**Tea Break,** *Exhibit Hall*				
11.00–13.00	**SuF • Optical Switching and Applications**	**SuG • VCSEL, QCL and Optical Devices**	**SuH • Probes, Sensors and Assays IV** (ends at 12.30)	**SuI • Imaging Applications of Biophotonics II**	**SuJ • LCD**
13.00–14.30	**Lunch Break**				
14.30–16.30	**SuK • Optical Amplifiers and Nonlinear Effects**	**SuL • Photonic Integration II and Optical Interconnects**	**SuM • Optical Coherence Tomography**	**SuN • Medical Diagnostics and Therapy**	**SuO • Emissive Displays**
16.30–17.00	**Tea Break,** *Exhibit Hall*				
17.00–18.30	**SuP • New Fiber Designs**	**SuQ • Optical Components and Modeling**	**SuR • Probes, Sensors and Assays V**		

09.00–17.00 Registration Open

Room 7F

09.30–11.00
FA • Plenary Session I
Sailing He[1,2]; [1]Royal Inst. of Technology, Sweden, [2]Zhejiang Univ., China, Presider

FA1 • 09.30
Optical Networks—The Next Wave, *Dr. Rod C. Alferness, Chief Scientist, Bell Labs, Alcatel-Lucent, USA.*

Driven by increased high-bandwidth traffic, including video, the reduction in the last mile bottleneck resulting from ubiquitous DSL and growing fiber-to-the-home connections and an increasing global digital population, the demand and deployment of long haul and, especially, metro WDM optical networks is experiencing substantial growth. We provide a view of the research directions and activities that will be essential to innovate the cost-effective optical networks needed to meet this growing global appetite for information-intensive services.

Rod C. Alferness is currently Chief Scientist at Bell Laboratories, Alcatel-Lucent. Prior to this position, Rod was the Bell Laboratories Research Senior Vice President. His previous position was the Bell Laboratories Optical Networking Research Senior Vice President. Rod also was the Chief Technical Officer and Advanced Technology and Architecture Vice-President of the Optical Networking Group, Lucent Technologies. Prior to that role, he was head of the Photonics Networks Research Department of Lucent Bell Laboratories, Holmdel, New Jersey.

Rod joined Bell Labs in 1976 after receiving a Ph.D. in physics from the University of Michigan where his thesis research, under the supervision of Professor Emmett Leith, concerned optical propagation in volume holograms. His early research at Bell Labs included the demonstration of novel waveguide electro-optic devices and circuits—including switch/modulators, polarization controllers, tunable filters— and their applications in high capacity lightwave transmission and switching systems. This research led to the early development of titanium diffused lithium niobate waveguide modulators that are now deployed as the high-speed signal-encoding engine in fiber optic transmission systems around the world. Dr. Alferness has also made contributions in photonic integrated circuits in InP, including widely tunable lasers, as well as in photonic switching systems and reconfigurable WDM (wavelength-division-multiplexed) optical networks. In the mid-90's, he was an originator and the Bell Labs Program Manager for the DARPA funded MONET project which demonstrated the feasibility of wavelength routed optical networks that are now being implemented for both backbone and metro networks. Dr. Alferness has authored over 100 papers, holds 35 patents and has authored five book chapters.

Dr. Alferness is a member of the National Academy of Engineering. He is a Fellow of The Optical Society and the IEEE Lasers and Electro-Optics Society (LEOS). Dr. Alferness received the 2005 IEEE Photonics Award. He has served as an elected member of the LEOS AdCom and was the President of IEEE LEOS in 1997. He was General Co-Chair of the 1994 Optical Fiber Communications Conference (OFC'94). Dr. Alferness has served as Associate Editor for Optics Letters and for Photonic Technology Letters. He has served on many IEEE and OSA committees, including fellows and awards committees. Dr. Alferness also currently serves on the European Conference on Optical Communication (ECOC) Executive Management Committee. He served as the Editor-in-Chief of the IEEE and OSA-sponsored Journal of Lightwave Technology from 1995-2000. He served as an elected member of The Optical Society Board of Directors from 2001-2003 and is currently the president-elect of The Optical Society.

FA2 • 10.15
Laser Spectroscopy Applied to the Environmental and Medical Fields, *Prof. Sune Svanberg, Head of Atomic Physics Division, Lund Inst. and Director of the Lund Laser Ctr., Sweden.*

An overview of applied laser-based diagnostics as pursued at the Atomic Physics Division, Lund University, is given. The fields of application range from environmental monitoring including cultural heritage assessment to biomedical applications. General aspects of laser-based methods are non-intrusiveness, high spectral and spatial resolution, and data production in real-time. Different applications are frequently generically very similar irrespective of the particular context, which however, decides the spatial and temporal scales as well as the size of the optics employed. Thus, volcanic plume mapping by lidar and optical mammography are two manifestations of the same principle, as is fluorescence imaging of a human bronchus by an endoscope and the scanning of a cathedral using a fluorescence lidar system. Recent applications include remote laser-induced break-down spectroscopy (LIBS) and gas monitoring in scattering media (GASMAS).

Sune Svanberg is Head of the Atomic Physics Division, Lund University, and director of the Lund Laser Centre, Sweden. He received his PhD in optical resonance spectroscopy in 1972 from Goteborg University, Sweden, where he stayed on until 1980, when he moved to Lund University. He spent research periods at the Technical University Berlin, Columbia University, Stanford University and MIT. His research field is basic and applied laser spectroscopy, presently with the emphasis on environmental and medical applications. He has well over 500 scientific papers, several patents and helped in the formation of several spin-off companies. He is a member of several academies including the Royal Academy of Sciences, Stockholm, where he for 10 years served on the Nobel Committee for Physics. He has many prizes and awards including the Quantum Electronics Award of the EPS, the Azko-Nobel Science Award, the Willis E. Lamb Medal and the Celsius Medal. He is an honorary doctor or professor at several universities including Jilin University, Harbin Institute of Technology and Zhejiang University. He is also an Einstein Professor with the Chinese Academy of Sciences. He served on the Board of Directors of The Optical Society, and is presently on the Board of the Swedish Research Council.

11.00–11.30 Tea Break, *Exhibit Hall*

Room 7F

11.30–13.00
FB • Plenary Session II
John Bowers; Univ. of California at Santa Barbara, USA, Presider

FB1 • 11.30
Progress of GaN-Based Nonpolar/Semipolar Visible Light Emitting Devices, *Prof. Shuji Nakamura, Materials Dept., Univ. of California at Santa Barbara, USA.*

Shuji Nakamura was born on May 22, 1954 in Ehime, Japan. He obtained B.E., M.S., and Ph.D. degrees in Electrical Engineering from the University of Tokushima, Japan in 1977, 1979, and 1994, respectively. He joined Nichia Chemical Industries Ltd in 1979. In 1988, he spent a year at the University of Florida as a visiting research associate. In 1989 he started the research of blue LEDs using group-III nitride materials. In 1993 and 1995 he developed the first group-III nitride-based blue/green LEDs. He also developed the first group-III nitride-based violet laser diodes (LDs) in 1995. He has received a number of awards, including the Nishina Memorial Award (1996), MRS Medal Award (1997), IEEE Jack A. Morton Award, the British Rank Prize (1998) and Benjamin Franklin Medal Award (2002). He was elected as the member of the US National Academy of Engineering (NAE) in 2003. Also, he received the Millennium Technology Prize in 2006. Since 2000, he is a professor of Materials Department of University of California at Santa Barbara. He holds more than 100 patents and has published more than 200 papers in this field.

FB2 • 12.15
Applications of Optics in Solar Energy Industries, *Dr. Zhengrong Shi, Chairman of the Board of Directors, CEO, Suntech Power Holdings Co., Ltd., China.*

Dr. Zhengrong Shi is Suntech's founder, chairman of the board of directors and chief executive officer. Prior to founding Suntech in 2001, he was a research director and executive director of Pacific Solar Pty., Ltd., an Australian PV company engaged in the commercialization of next-generation thin film technology. From 1992 to 1995, he was a senior research scientist and the leader of the Thin Film Solar Cells Research Group in the Centre of Excellence for Photovoltaic Engineering at the University of New South Wales in Australia, the only government-sponsored PV industry research center in Australia.

Dr. Shi holds 11 patents in PV technologies and has published a number of articles and papers in PV-related scientific magazines and at conferences. Dr. Shi received a bachelor's degree in optical science from Chang Chun University of Science and Technology in China in 1983, a master's degree in laser physics from the Shanghai Institute of Optics and Fine Mechanics, the Chinese Academy of Sciences in 1986, and a Ph.D degree in electrical engineering from the University of New South Wales in Australia in 1992.

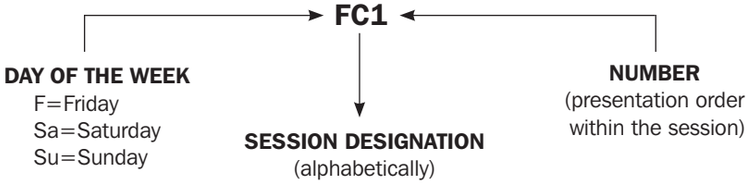
Explanation of Session Codes

The first part of the code designates the day of the week (Friday=F, Saturday=Sa, Sunday=Su).

The next part indicates the session within the particular day the talk is being given. Each day begins with the letter A and continues alphabetically.

The number on the end of the code signals the position of the talk within the session (first, second, third, etc.).

For example, a presentation numbered FC1 indicates that this paper is being presented on Friday during the 3rd session (C) and that it is the first paper presented in session FC.



13.00–14.00 Lunch Break

Room 2

14.00–16.00
FC • Joint APOC/AOE Symposium on Broadband Access I
Jianli Wang; Fiberhome, China, Presider

FC1 • 14.00 Invited
Global FTTH Market Trend, *Lynn D. Hutcheson; Ovum RHK, USA.* By mid 2008 the number of FTTH and FTTB connections exceeded 33 million. The majority of deployments have been Ethernet point-to-point and GEPON. There has been a small amount of WDM-PON deployed and now GPON is starting to take off. This presentation will take a look at the current status and what the future holds for FTTH deployments.

FC2 • 14.30 Invited
FTTH in China, *Chengliang Zhang; China Telecom Res. Inst., China.* Abstract not available.

Room 4AB

14.00–16.00
FD • Transmission and Subsystem Technologies
Bengt-Erik Olsson; Ericsson AB, Sweden, Presider

FD1 • 14.00
Dispersion Slope Compensation Using EDC and FEC in a 24x10 Gb/s 7800 km Fiber Transmission System, *Kailu Gao, Zhan Fu, G. Wang, Zhongqi Pan; Univ. of Louisiana at Lafayette, USA.* We compared EDC and FEC for dispersion slope compensation in a 24x10-Gb/s 7800 km WDM system. The simulation results show FEC has better performance at lower dispersion and EDC is better for large accumulated dispersion.

FD2 • 14.15
Simultaneous Wavelength Multicasting and Data Format Conversion Based on Cascaded Four-Wave Mixing, *Gao Ying, Shiming Gao, Sailing He; Ctr. for Optical and Electromagnetic Res., State Key Lab of Modern Optical Instrumentation, Zhejiang Univ., China.* A novel wavelength multicasting is presented by using cascaded four-wave-mixing. Multiple wavelength multicast channels are experimentally achieved and the NRZ data format is converted to RZ format simultaneously.

FD3 • 14.30
Optical Modulation Formats by Combination of Two Time-Delayed Orthogonally Polarized Double Sideband Modulated Signals, *Mikel Sagues[1], Jose Mora[2], Salvador Sales[2], Alayn Loayssa[1], Jose Capmany[2]; [1]Univ. Publica de Navarra, Spain, [2]Univ. Politécnica de Valencia, Spain.* We introduce a novel technique to generate optical single sideband, optical double sideband with suppressed carrier and optical single sideband with suppressed carrier modulated signals, based on the combination of two time-delayed orthogonally polarized signals.

FD4 • 14.45
Experimental Study on the Impact of Spectrum Slicing on Pulsewidth, *Bo Wang, Guiling Wu, Jianping Chen, Xinwan Li; State Key Lab of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong Univ., China.* We experimentally study the impact of spectrum slicing on pulsewidth for the generation of multi-wavelength pulses. Pulse broadening caused by spectral filtering and dispersion is analyzed and compared.

Room 4C

14.00–16.00
FE • Solar Cells
Hoi-Sing Kwok; Hong Kong Univ. of Science and Technology, Hong Kong, Presider

FE1 • 14.00 Invited
Exciton Migration in Organic LEDs and Solar Cells, *Mark Thompson, Chao Wu, Peter Djurovich, M. Dolores Perez; Univ. of Southern California, USA.* Triplet exciton migration is a very important process for both organic LEDs and photovoltaics. We have explored a number of new materials in both OLEDs and OPVs and examined triplet exciton migration in these solids.

FE2 • 14.30 Invited
Controllable Light Utilization in Silicon-Based Thin Film Solar Cells, *Ying Zhao, Peizhuan Chen, Xiaodan Zhang, Ning Cai, Xinhua Geng, Shaozhen Xiong; Nankai Univ., China.* Controllable light utilization in silicon-based-thin-film solar cells with a DBR structure have been simulated. A experimental model cells constructed by a-Si pin/ZnO (~70nm)/P^+μc-Si(20nm) were verified. The ratio of I_{sc} increment can be reached to 14.1%.

Room 2

FC3 • 15.00 Invited
EPON's Readiness for Full-Service Mass Deployment and 10G EPON's Availability, *Greg Caltabiano; Teknovus, USA.* Only four years have passed since the standardization of 1Gbps EPON by the IEEE. Yet by year-end, there will be more than 15 million fiber-based subscribers worldwide, with China and Japan leading the world. Recently, CCSA has approved 2Gbps EPON and the IEEE is putting the finishing touches on the 10G EPON standard. We provide an assessment of EPON's readiness for full service mass deployment from various aspects, ranging from standard maturity to product availability; from supply chain and eco-system to interoperability; from QoS for multiple service SLAs to proven CapEx and OpEx savings; and from smooth upgradability to 2G and 10G to seamless coexistence of 1G/2G and 10G for investment protection and easy management. We will discuss our plans for delivery of 10G EPON with our common service delivery platform across all speeds.

FC4 • 15.30 Invited
Full Service Support of FTTH, *Keng Li; Fiberhome, China.* Abstract not available.

Room 4AB

FD5 • 15.00 Invited
Fiber-Based Approaches for All-Optical Clock Recovery, *Lawrence R. Chen; McGill Univ., Canada.* We discuss two fiber-based approaches for all-optical clock recovery. The first exploits the buffering capability of the temporal Talbot effect and the second is based on a fiber laser and nonlinear optical loop mirror.

FD6 • 15.30 Invited
Optical Electrostatic MEMS for Wavelength Switching, *Yuan Ma; Dalhousie Univ., Canada.* An electrostatic micromirror is designed and fabricated using a standard MicroElectroMechanical Systems (MEMS) process. Active control approaches are proposed for driving actuation to eliminate micromirror "pull-in" achieving enhanced device performance and functionality.

Room 4C

FE3 • 15.00 Invited
Influence of Germanium on Silicon Wafers Used for Solar Cells, *Deren Yang; Zhejiang Univ., China.* Germanium was doped into multicrystalline silicon (mc-Si) used for solar cells. The distribution of Ge in crystallline ingots has been investigated. It was found that Ge could interact with interstitial oxygen atoms to enhance on the formation of as-grown oxygen precipitates, has an influence on the behaviours of silicon wafers.

FE4 • 15.30 Invited
Exploring Low Temperature ZnO Nanowires in Display and Solar Cell Applications, *Xiao-Wei Sun; Nanyang Technological Univ., Singapore.* We report an electrochromic (EC) e-paper used a viologen-modified ZnO nanowire array as the EC electrode with fast switching, high coloration efficiency and good stability, and an efficient surface-conduction triode FE based on ZnO nanotetrapods.

16.00–16.30 Tea Break, *Exhibit Hall*

16.30–18.30
FF • Joint APOC/AOE Symposium on Broadband Access II: Key Optical Technologies for Next Generation FTTH
Shoichi Hanatani; Hitachi, Ltd., Japan, Presider

16.30–16.35
Opening Remarks
Shoichi Hanatani; Hitachi, Ltd., Japan

FF1 • 16.35 Invited
10G-PON, *Naoto Yoshimoto; NTT Access Network Service Labs, Japan.* Abstract not available.

FF2 • 16.55 Invited
R&D and First Commercial Service of WDM-PON, *Byung Whi Kim; ETRI, Republic of Korea.* We address the WDM-PON technologies under R&D in Korea for recent years. Presented are the three schemes of Gigabit WDM-PON, all of which are ready for commercial deployment. Good features in WDM-PON are discussed.

16.30–18.00
FG • High Speed Components
Liu Liu; Photonics Res. Group, Ghent Univ.-IMEC, Belgium, Presider

FG1 • 16.30 Invited
High Speed Modulation of Optical Injection-Locked Semiconductor Lasers, *Ming Wu; Univ. of California at Berkeley, USA.* We review the recent advances in optical injection-locked lasers, focusing on the enhanced resonance frequencies (> 100 GHz) and 3dB bandwidth (> 80 GHz). Physical parameters governing the dynamic performance will be discussed.

FG2 • 17.00
New All-Optical XOR Logic Circuit Suppressing Influence of Temporal Misalignment between Data Streams, *Yukihiro Goto, Tetsuro Yabu, Masaharu Ohashi; Osaka Prefecture Univ., Japan.* We propose a new all-optical XOR circuit, which can suppress influence of temporal misalignment between two data streams. Successful XOR output for the temporal misalignment data is obtained in our present circuit.

16.30–18.00
FH • Imaging Applications of Biophotonics I
Hui Ma; Tsinghua Univ., China, Presider

FH1 • 16.30 Invited
Linear Polarization Different Imaging and its Potential Applications, *Qiang Gao, Xiaoyu Jiang, Yonghong He, Hui Ma; Tsinghua Univ., China.* We demonstrate a linear polarization difference imaging technique which is insensitive to both sample orientation and polarization angle. Various tests show its potential applications in medical diagnosis.

FH2 • 17.00 Invited
Random Access Two-Photon Microscope Based on Acousto-Optic Deflector, *Shaoqun Zeng; Britton Chance Ctr. for Biomedical Photonics, Huazhong Univ of Science and Technology, China.* Based on this dispersion compensated AOD scanner, a random scanning two-photon microscope has been implemented to provide fast and flexible imaging rate with higher signal to noise ratio.

Room 2

FF3 • 17.15 Invited

Long-Reach and High Split Ratio Passive Optical Networks, *David Piehler; Alphion, USA.* Optical amplification extends the capabilities of PON networks to address new applications and architectures. This paper reviews the optical amplification in legacy, presently deployed and next-generation PONs.

17.40–18.25
Panel Discussion: "A Challenge to FTTH"

Moderator: *Shoichi Hanatani; Hitachi, Ltd., Japan*

Panelists:
Naoto Yoshimoto; NTT Access Network Service Labs, Japan
Byung Whi Kim; ETRI, Republic of Korea
David Piehler; Alphion, USA
Lynn D. Hutcheson; Ovum RHK, USA
Chengliang Zhang; China Telecom Res. Inst., China

18.25–18.30
Closing Remarks
Shoichi Hanatani; Hitachi, Ltd., Japan

Room 4AB

FG3 • 17.15

Impact of the Semiconductor Optical Pre-Amplifier in the Performance of the 100 GbE 4x25-Gb/s 40-km PHY under Different Transmitter Conditions, *Ramon Gutierrez-Castrejon[1], Marcus Duelk[2]; [1]Univ. Nacional de Mexico Autónoma (UNAM), Mexico, [2]Exalos A.G., Switzerland.* The impact of an SOA in the performance of the 100 Gigabit Ethernet 40-km link is analyzed through detailed simulations. The SOA nonlinear response and OSNR degradation set 6 dB as minimum transmitter extinction ratio.

FG4 • 17.30 Invited

High-Speed and High-Power InP Based Photodiode for the Applications of Microwave Photonics, *Jin-Wei Shi, Y.-S. Wu, W.-Y. Chiu; Natl. Central Univ., Taiwan.* In this paper we reviewed our recent work about InP based high-speed and high-power photodiodes with evanescently-coupled and vertical-illuminated structures and their application to W or V-band microwave photonic.

Room 4C

FH3 • 17.30 Invited

Taxol Induces Caspase-Independent Cytoplasmic Vacuolization and Cell Death, *Tongsheng Chen; South China Normal Univ. of Life Sciences, China.* We for the first time used fluorescence technology to study and find the taxol-induced caspases-independent cytoplasm vacuolization and cell death resembling paraptosis in through ER and mitochondria swelling at single living ASTC-a-1 cell level.

18.00–19.00 Cocktail Hour, *Location to Be Announced*

19.00–21.00 Conference Banquet, *Location to Be Announced*

09.00–17:00 Registration Open

Room 2

09.00–10.45
SaA • High Capacity Systems and Technologies I
Yikai Su; Shanghai Jiao Tong Univ., China, Presider

SaA1 • 09.00 Tutorial
Technologies and Subsystems for High Speed Transmission, *Benny Mikkelsen; Mintera Corp., USA.* We discuss key technologies for current 40G transmission systems and future 100G systems. In particular, we discuss designs and implementations of transmitter and receivers for high speed transmission, including a comparison of different modulation formats.

Benny Mikkelsen is the founder of Mintera Corporation, a provider of 40G subsystems for long-haul and regional networks. As Vice President of Systems and Technology, he is leading Mintera's effort on next generation technologies and product strategy. Before founding Mintera in 2000, he was with Bell Laboratories, Lucent Technologies where his research included ultra high speed optical transmission and all-optical regeneration systems. Benny Mikkelsen has more than 20 years of experience in optical communication. He has authored or co-authored more than two hundred papers. Benny Mikkelsen holds M.Sc. and Ph.D. degrees in Electrical Engineering from the Technical University of Denmark.

Room 4AB

09.00–10.30
SaB • Fiber Lasers and Sources I
Chris Xu; Cornell Univ., USA, Presider

SaB1 • 09.00 Invited
High Power CW Pumped Supercontinuum Sources, *B. A. Cumberland, A. B. Rulkov, J. C. Travers, S. V. Popov, J. R. Taylor; Imperial College London, UK.* Integration of optimized photonic crystal fibres with high power fibre lasers has allowed supercontinuum generation to the visible using cw infrared pumps, achieving spectral power densities exceeding 100mW/nm in the ir.

SaB2 • 09.30 Invited
Fiber MOPAs with High Control and High Power, *Johan Nilsson, S. Yoo, P. Dupriez, C. Farrell, M. S. Z. Abidin, J. Ji, J. -N. Maran, C. A. Codemard, Y. Jeong, J. K. Sahu, D. J. Richardson, D. N. Payne; Optoelectronics Res. Ctr., Univ. of Southampton, UK.* High power fiber sources have reached several kilowatts of output power, and are now leading contenders for many applications. Important attractions include control, efficiency, manufacturability, and reliability. We will exemplify opportunities and limitations for these revolutionary sources.

Room 4C

09.00–10.15
SaC • Manufacturing Technologies
Wen Liu, Sr.; Accelink Ltd., China, Presider

SaC1 • 09.00 Invited
Challenges and Trends in High Volume Optical Component and Transceiver Manufacturing, *Near Margalit; Source Photonics, Inc., USA.* Optical transceiver manufacturing often requires a vertically integrated manufacturing process, joining optoelectronic chip manufacturing, optical sub-assembly manufacturing, and final transceiver integration. In this presentation we will go over the challenges and strategies for a multi-level transceiver manufacturing.

SaC2 • 09.30
High Thermal-Stable 25GHz Interleaver, *Fan Chen, Zhenli Wen, Tengda Du, Dongsheng Han, Fahua Lan, Kevin Zhang; Finisar Inc., China.* Genetic algorithm and Monte Carlo method were combined to enhance the design of interleaver in terms of the practical process capabilities consideration. Eventually, a flat-top and thermal-stable 25GHz interleaver with excellent wavelength accuracy was implemented.

SaC3 • 09.45 Invited
Optoelectronic Devices Manufacturing in China, *Zhangyong Huang; Beijing Univ. of Posts and Telecommunications, China.* Through the analysis on development status of Chinese technology and capability of optoelectronic devices, the advantage and disadvantage of Chinese optoelectronic industry has been discussed in three sections as chips, packaging and transceiver.

Room 5A

09.00–10.30
SaD • Probes, Sensors and Assays I
Hui Ma; Tsinghua Univ., China, Presider

SaD1 • 09.00 Invited
Multifunctional Nanoparticle with Diagnosis and Therapeutics for Tumour, *Xianggui Kong, Xiaomin Liu, Yajuan Sun, Yi Yu, Youlin Zhang; Chang Chun Inst. of Optics and Fine Mechanics and Physics, Chinese Acad. of Science, China.* The nanoparticle luminescence upconversion nanoparticle with highly effective upconversion luminescence is synthesized and assembled with the molecules of antibodies and photosensitizer for the early diagnosis and therapy of tumour.

SaD2 • 09.30 Invited
Micro-Optical Element Enabled New Applications in Optical Trapping, Sensing and Imaging, *Larry X. Yuan, G. G. Mu; Inst. of Modern Optics, Nanyang Technological Univ., Singapore.* We report on recent development of micro-optical element enabled applications with enhancement in optical sorting of biological cells, novel surface plasmon resonance (SPR) sensing and imaging assisted by optical vortices and radially polarized beams.

Room 5B

09.00–10.30
SaE • Fiber Gratings
Dexiu Huang; Huazhong Univ. of Science and Technology, China, Presider

SaE1 • 09.00 Invited
Development of Long-Period Fiber Grating Coupling Devices, *Kin Seng Chiang; City Univ. of Hong Kong, Hong Kong.* This paper reviews the progress in the development of a new class of optical fiber couplers, which are based on light coupling between parallel long-period gratings formed in fibers or waveguides.

SaE2 • 09.30
Large Blue Shift on Post-Fabrication Resonance Wavelength Adjustment of Long-Period Fiber Gratings, *Katsumi Morishita, Eijun Hirao; Osaka Electro-Communication Univ., Japan.* It was shown that the glass structure relaxed more slowly than the residual stress with decreasing heating temperature and the blue shift of resonance wavelengths caused by the residual stress relaxation appeared more largely.

SaE3 • 09.45
Temperature Dependent Mode Transition in High Refractive Index Coated Long Period Gratings, *Haimei Luo, Xinwan Li, Shaoshi Wang, Xiang Wang, Jianpang Chen; Dept. of Electronic Engineering, Shanghai Jiao Tong Univ., China.* Nano-scale HRI Liquid crystal (LC) coatings are evenly smeared along LPGs. The transition between cladding modes and overlay modes occurs when refractive index of LC layer is changed from 1.477 to 1.515 by increasing temperature.

Room 2

SaA2 • 10.00 Invited

640-Gb/s OTDM RZ-DQPSK Signal Enabling 2.4-Bit/s/Hz Spectral Efficiency and its Detection with an EAM-Based Receiver, *Lothar Moeller[1], Yikai Su[2], Chongjin Xie[1], Jurgen Gripp[1], Xiang Liu[1], Roland Ryf[1]; [1]Bell Labs, Lucent Technologies, USA, [2]State Key Lab of Advanced Optical Communication Systems and Networks, Shanghai Jiao Tong Univ., China.* We demonstrate a 640-Gb/s single-channel OTDM RZ-DQPSK signaling with spectral efficiencies of 2.4 bit/s/Hz and up to 3.2 bit/s/Hz. The demonstrated data rate is the highest to date detected with an electro-absorption modulator based receiver.

SaA3 • 10.30

QPSK Transmitter Based on Optical Amplitude Modulation of Electrically Generated QPSK Signal, *Bengt-Erik Olsson[1], Mats Sköld[2]; [1]Ericsson AB, Sweden, [2]Chalmers Univ. of Technology, Sweden.* An optical QPSK transmitter based on optical amplitude modulation of an electrical QPSK signal with subsequent optical filtering is demonstrated with 10.7 Gbaud (21.4 Gbit/s) RZ-DQPSK data.

Room 4AB

SaB3 • 10.00

High Peak Power Conversion and High Gain in Pulsed Cladding-Pumped Fiber Raman Amplifier, *Junhua Ji, Christophe Codemard, Jayanta Sahu, Morten Ibsen, Johan Nilsson; Optoelectronics Res. Ctr., Univ. of Southampton, UK.* We demonstrate an efficient high peak power pulsed cladding-pumped fiber Raman amplifier. The output Stokes peak power is 211W. The peak power conversion efficiency exceeds 75% and the on-off peak gain is nearly 65dB.

SaB4 • 10.15

Generation of Optical Comb Frequency Signal with High Spectral Flatness Using Two Cascaded Optical Modulators, *Qingjiang Chang, Junming Gao, Yikai Su; State Key Lab of Advanced Optical Communication Systems and Networks, Dept. of Electronic Engineering, Shanghai Jiao Tong Univ., China.* We experimentally demonstrate a new scheme to generate comb frequency signal showing high spectral flatness with low driving power based on two cascaded optical modulators.

Room 4C

Room 5A

SaD3 • 10.00

Study of Membrane Dynamics with Biophotonic Techniques, *Huawen Wu[1,2], Thomas Huser[2], Atul Parikh[1,2], Yin Yeh[1,2]; [1]Dept. of Applied Science, Univ. of California at Davis, USA, [2]NSF Ctr. for Biophotonics Science and Technology, Univ. of California at Davis, USA.* Membrane dynamics plays an essential role for cellular processes. Here we demonstrate the application of several biophotonic techniques, such as advanced fluorescence microscopy and laser spectroscopy, to study some fundamental membrane biology problems.

SaD4 • 10.15

Study on Enhancement of Fluorescence with Gold Nanorods, *Xin Li, Jun Qian, Qiuqiang Zhan, Ming Wei, Li Jiang, Sailing He; Ctr. for Optical and Electromagnetic Res., Zhejiang Univ., China.* Enhancement of fluorescence of streptavidin conjugated with gold nanorods (GNRs) was observed. The impact of GNRs with different surface plasmon resonance bands and different concentrations to the efficiency of the fluorescence enhancement was studied.

Room 5B

SaE4 • 10.00

The Response of High Refractive Index Coated Long Period Fiber Gratings to Temperature Based on Liquid Crystal, *Shaoshi Wang, Xinwan Li, Haimei Luo, Jianping Chen; State Key Lab on Fiber Optic Local Area Communication Networks and Advanced Optical Communication System, Shanghai Jiaotong Univ., China.* We study the response of high refractive index coated LPFG to temperature based on liquid crystal. The maximum shift of the resonant wavelength of LPFG is about 8nm when temperature is between 58°C and 60°C.

SaE5 • 10.15

Numerical Analysis of Multimode-Coupled Equations and its Application to Modulated Fiber Bragg Gratings, *Fatemeh Abrishamian, Shinya Sato, Masaaki Imai; Muroran Inst. of Technology, Japan.* An efficient numerical method is proposed to solve multimode-coupled equations with two points boundary conditions. This method is very applicable for simulation of any types of fiber Bragg gratings modulated by long period gratings.

10.30–11.00 Tea Break, *Exhibit Hall*

Room 2

11.00–12.30
SaF • High Capacity Systems and Technologies II
Guifang Li; Univ. of Central Florida, USA, Presider

SaF1 • 11.00 Invited
Coherent Optical Communication, *Guifang Li; Univ. of Central Florida, USA.* Recent progress in coherent optical communication technology will be discussed. Experimental results focusing on high spectral efficiency transmission as well as linear and nonlinear impairment compensation in WDM systems will be presented.

SaF2 • 11.30 Invited
High-Speed Vectorial Lightwave Modulation Techniques, *Tetsuya Kawanishi; Natl. Inst. of Information and Communications Technology, Japan.* We describe high-speed vectorial modulation techniques for high-capacity transmission systems. Integrated parallel Mach-Zehnder modulators can achieve various types of lightwave modulation, such as differential quadrature phase shift keying, quadrature amplitude modulation.

Room 4AB

11.00–12.30
SaG • Fiber Lasers and Sources II
David Payne; Univ. of Southampton, UK, Presider

SaG1 • 11.00
Single-Longitudinal-Mode Erbium-Doped Fiber Laser Based on a Fiber-Bragg-Grating Pair, *Daru Chen, Weisheng Liu, Hongyan Fu, Yizhen Wei, Sailing He; Ctr. for Optical and Electromagnetic Res., Zhejiang Univ., China.* A single-longitudinal-mode erbium-doped fiber laser based on a fiber-Bragg-grating pair formed by two standard fiber Bragg gratings is proposed. Both single-wavelength and dual-wavelength single-longitudinal-mode lasing for the proposed fiber laser have been demonstrated.

SaG2 • 11.15
Photonic Crystal Fiber Based Multi-Wavelength Brillouin-Erbium Laser, *Mohd Narizee Mohd Nasir, Zulfadzli Yusoff, Mohammed Haydar Al-Mansoori, Hairul Azhar Abdul Rashid, Pankaj Kumar Choudhury; Multimedia Univ., Malaysia.* An efficient multi-wavelength Brillouin-erbium photonic crystal fiber (PCF) laser with Fabry-Perot cavity design is presented. Up to 14 output channels with good signal to noise ratio could be generated with only 100 m of PCF.

SaG3 • 11.30
Tunable Nonlinear-Polarization-Rotation Based Multiwavelength Fiber Laser with In-Line Fiber Filter, *Zuxing Zhang[1,2], Zhiqing Ye[1], Kun Xu[2], Jian Wu[2], Yiyou Nie[1], Jintong Lin[2]; [1]Key Lab of Photoelectron and Communications of Jiangxi Province, Jiangxi Normal Univ., China, [2]Key Lab of Optical Communication and Lightwave Technologies (Ministry of Education), Beijing Univ. of Posts and Telecommunications, China.* Multiwavelength fiber laser based on nonlinear-polarization-rotation (NPR) has been demonstrated. The intensity-depended loss induced by NPR can effectively alleviate mode competition. Using the in-line birefringence fiber filter, the laser wavelength can be finely tuned.

Room 4C

11.00–12.30
SaH • Silicon Photonics I
Alexei Sirbu; Swiss Federal Inst. of Technology, Switzerland, Presider

SaH1 • 11.00 Tutorial
Silicon Photonics: Opportunities and Challenges, *Roel Baets, Dries Van Thourhout, Peter Bienstman, Gunther Roelkens, Pieter Dumon, Wim Bogaerts; Ghent Univ., IMEC, Belgium.* The tutorial will provide a broad introduction to the field of silicon photonics, with emphasis on the major opportunities and challenges encountered when applying silicon technology for photonic integrated circuits.

Roel Baets is full professor at Ghent University and leads the Photonics Research Group, which is associated with IMEC. With about 250 journal publications, as well as about 15 patents, he has made contributions to research on semiconductor laser diodes, passive guided wave and grating devices and to the design and fabrication of photonic ICs, both in III-V semiconductors and in silicon. He has been granted several scientific prizes and is a Fellow of the IEEE.

Roel Baets is coordinator of the European Network of Excellence ePIXnet and of the European "Erasmus Mundus" Master of Science in Photonics program.

Room 5A

11.00–12.30
SaI • Probes, Sensors and Assays II
Chinlon Lin; Nanyang Technological Univ., Singapore, Presider

SaI1 • 11.00 Invited
Drug Discovery Biology Leading Biophotonics, *Ye Fang, Ann Ferrie, Gary Li, Joydeep Lahiri; Corning, Inc., USA.* Discussed are enabling biophotonic technologies that provide *in vivo* like information earlier in drug discovery. The development of resonant waveguide sensor based high-throughput screening platform and utilization for studying signaling in cells will be described.

SaI2 • 11.30 Invited
Correlating Cellular Metabolic Status with the Lifetime of Autofluorescence from NADH, *Vladimir Gukassyan, Po-Yen Lin, Fu-Jen Kao; Inst. of Biophotonics, Natl. Yang Ming Univ., Taiwan.* FLIM/FRET, one of the most effective tools in addressing cellular molecular dynamics in living cells and organisms, is applied to autofluorescence from cellular NADH to reveal the metabolic status of cells.

Room 5B

11.00–12.45
SaJ • Radio over Fiber and Radio Frequency Optics
Mable Fok; Princeton Univ., USA, Presider

SaJ1 • 11.00
Generation of 60-GHz Optical Millimeter-Wave and 20-GHz Channel-Spaced Optical Multicarrier Using Two Cascaded 10-GHz Modulators, *Qingjiang Chang, Tong Ye, Junming Gao, Yikai Su; State Key Lab of Advanced Optical Communication Systems and Networks, Dept. of Electronic Engineering, Shanghai Jiao Tong Univ., China.* We propose and experimentally demonstrate the generation of 60-GHz optical millimeter-wave and 20-GHz channel-spaced optical multicarrier using two cascaded 10-GHz single-drive Mach-Zehnder modulators.

SaJ2 • 11.15
Simultaneous Dual RF Beam Reception of an X-Band Phased Array Antenna Utilizing Highly Dispersive Photonic Crystal Fiber Based True-Time-Delay, *Harish Subbaraman[1], Maggie Yihong Chen[2], Ray T. Chen[1]; [1]Univ. of Texas at Austin, USA, [2]Omega Optics, Inc, USA.* We report dual RF beam reception of an X-band phased array antenna using photonic crystal fiber based delay network. We accurately detect RF signals at 8.4GHz and 12GHz coming from -7.4 and -21.2 degrees respectively.

SaJ3 • 11.30
Tunable Single-Bandpass Microwave Photonic Filters with High Q Factor or Flat-Top Shape Based on Cascaded Optical Structures, *Kun Zhu, Haiyan Ou, Ying Hu, Hongyan Fu; Ctr. for Optical and Electromagnetic Res., Zhejiang Univ., China.* A tunable single-bandpass microwave photonic filter with high Q factor or flat-top shape is proposed and experimentally demonstrated. The filtering response with variable shape is achieved by carefully matching the transfer functions of two cascaded structures.

Room 2

SaF3 • 12.00
Electro-Optical Subcarrier Modulation Transmitter for 100 GbE DWDM Transport, *Bengt-Erik Olsson, Arne Alping; Ericsson AB, Sweden.* The concept of a novel optical subcarrier modulation (SCM) transmitter is presented and evaluated. Operation at 7 and 14 Gbaud using QPSK and 16-QAM modulation is experimentally demonstrated.

SaF4 • 12.15
A 40 GHz Pulse Train Generation by Pulse Repetition-Rate Quadruplication Using a Fiber Fabry-Perot Interferometer, *Wanyong Luan, Wook-Jin Seo, Dongsun Seo; Dept. of Electronics, Myongji Univ., Republic of Korea.* We demonstrate a simple method to generate 40 GHz pulse train by spectral filtering of a 10 GHz pulse source using a fiber Fabry-Perot interferometer (FFPI).

Room 4AB

SaG4 • 11.45
18-nm, 10-GHz Continuously Wavelength-Tunable Pulse Generation by Compensated Dispersion Tuning in a Mode-Locked SOA Ring Laser, *Gordon K. P. Lei[1], Mable P. Fok[2], Chester Shu[1]; [1]Chinese Univ. of Hong Kong, Hong Kong, [2]Princeton Univ., USA.* We generate a 10-GHz electrically tunable optical pulsed source using compensated dispersion tuning in a mode-locked SOA ring laser. A continuous tuning range of 18 nm is obtained.

SaG5 • 12.00 Invited
Carbon Nanotube Based Mode-Locked Fiber Lasers, *Shinji Yamashita; Univ. of Tokyo, Japan.* We review our studies on passively mode-locked fiber lasers using carbon nanotube (CNT) based saturable absorbers (SA). CNT-based SA offers several key advantages such as: ultra-fast response, robustness, tunability of wavelength, and compatibility to fibers.

Room 4C

SaH2 • 12.00
Optimization of Nanoscale Silicon Waveguide Fabrication, *Yao Chen[1,2], Junbo Feng[1], Zhiping Zhou[1,3,4], Jun Yu[2], Christopher J. Summers[5], David S. Citrin[4,6]; [1]Wuhan Natl. Lab for Optoelectronics, Huazhong Univ. of Science and Technology, China, [2]Dept. of Electronic Science and Technology, Huazhong Univ. of Science and Technology, China, [3]Peking Univ., China, [4]School of Electrical and Computer Engineering, Georgia Tech, USA, [5]School of Materials Science and Engineering, Georgia Tech, USA, [6]Georgia Tech Lorraine, France.* A simple and effective technique was developed to improve the nanoscale silicon waveguide fabrication. 40 nanometer features with smooth and vertical sidewall are demonstrated. With this technique, nanoscale silicon grating coupler was obtained.

SaH3 • 12.15
Characteristics of Fano Filters Based on Transferred Silicon Nanomembranes on Glass and Plastic Substrates, *Hongjun Yang[1], Li Chen[1], Zexuan Qiang[1], Huiqing Pang[2], Zhenqiang Ma[2], Weidong Zhou[1]; [1]Univ. of Texas at Arlington, USA, [2]Univ. of Wisconsin-Madison, USA.* We report the measured characteristics of optical filters based on Fano resonances in patterned single crystalline silicon nanomembranes, transferred onto glass and plastic substrates. The observed angle dependent transmission and waveguiding effects are also reported.

Room 5A

SaI3 • 12.00
Ultra-Compact Parallel Label-Free Biosensors Based on Concentric Micro-Ring Resonators in Silicon-on-Insulator, *Xiaohui Li[1], Ziyang Zhang[2], Shenying Qin[3], Min Qiu[2], Yikai Su[1]; [1]State Key Lab of Advanced Optical Communication Systems and Networks, Dept. of Electronic Engineering, Shanghai Jiao Tong Univ., China, [2]Lab of Optics, Photonics and Quantum Electronics, Dept. of Microelectronics and Applied Physics, Royal Inst. of Technology (KTH), Sweden, [3]Bio-X Life Science Res. Ctr., Shanghai Jiao Tong Univ., China.* We propose an ultra-compact, label-free, parallel detection method by using an array of micro-ring resonators. Simulations of concentric micro-ring resonators with different parameters show that the device is suitable for such bio-sensing purpose.

SaI4 • 12.15
Biomolecular Recognition Based on Localized Surface Plasmon Resonance of Immobilized Gold Nanorods, *Li Jiang, Xin Li, Qiuqiang Zhan, Jun Qian; Ctr. for Optical and Electromagnetic Res., Zhejiang Univ., China.* A sensitive biosensor based on localized surface plasmon resonance of gold nanorods is fabricated to detect streptavidin. Gold nanorods are immobilized on glass through BSA-biotin instead of chemisorbed method. The detection limit is 1 μM.

Room 5B

SaJ4 • 11.45
Tunable and Reconfigurable Multi-Tap Microwave Photonic Filter with Negative Coefficients Based on a Single Laser Diode, *Haiyan Ou, Kun Zhu, Ying Hu, Sailing He; Ctr. for Optical and Electromagnetic Res., Zhejiang Univ., China.* By implementing a phase modulator and a Mach-Zehnder modulator (MZM), a tunable and reconfigurable multi-tap microwave photonic filter with negative coefficients based on a single laser diode is proposed and experimentally demonstrated.

SaJ5 • 12.00
A System Design of the RoF of WiMAX with DFB Lasers and 1.7GHz Parabolic Grid Antennas, *Koyu Chinen; Okinawa Natl. College of Technology, Japan.* A system design model to achieve lower RCE in the RoF of the WiMAX is experimentally derived. It is important to design the the RoF of the WiMAX network using longer optical link.

SaJ6 • 12.15 Invited
Fiber-Radio Antenna Feeding for MIMO Systems, *Michael Sauer, Andrey Kobyakov; Corning Inc., USA.* We analyze the performance of MIMO-systems fed by fiber-radio links and show that separation of MIMO antennas increases the overall coverage area and increases throughput. The requirements on the optical radio feeding system are discussed.

12.30–13.15 Lunch Break

Exhibit Hall

13.15–14.30
SaK • AOE Poster Session

SaK1
A Novel Fiber Length Measurement Technology Based on an Asymmetric Interferomter Incorporating an Electron-Optic Modulator, *Bobo Gu, Bin Zhou; Ctr. for Optical and Electromagnetic Res., Joint Res. Ctr. of Optical Communications of Zhejiang Univ., China.* A novel single-model fiber length measurement technology based on asymmetric Sagnac interferometer combining an electron-optic modulator (EOM) is proposed. A high resolution and large dynamic range performance is investigated theoretically and experimentally.

SaK2
Fabrication and Characteristics of Yb^{3+}-Doped Silica Optical Fibers, *Jing Wang[1,2], Jian Li[1,2], Peng Liu[1,2,3], Xiang Qiao Mao[1], Lin Wang[1], Li Song Liu[1], Jian Peng[1], Chen Fang Zhang[1], Kai Zheng[1], Huai Wei[1], Yong Jun Fu[1], Feng Ping Yan[1], Ti Gang Ning[1], Wei Jian[1]; [1]Inst. of Lightwave Technology, Beijing Jiaotong Univ., China, [2]Key Lab of All Optical Network and Advanced Telecommunication Network of EMC, Beijing Jiaotong Univ., China, [3]Physics Dept., Xing Tai College, China.* A kind of highly Yb^{3+}-doped fiber was fabricated. The best temperatures of deposition pass and sensitive presintering pass were presented; the absorption of it achieved 594dB/m at 976nm and its background loss was only 0.1dB/m.

SaK3
Tuning Sensitivity of Liquid Refractive Index Sensor Based on Side-Polishing Fiber Bragg Gratings, *Chuen-Lin Tien, Tzu-Chung Cheng, Chun-Chia Chang, Yu-Zong Cheng, Wen-Fung Liu; Feng Chia Univ., Taiwan.* A tuning sensitivity of side-polished fiber Bragg grating sensors for measuring liquid refractive index is presented. Experimental results show the variation of liquid refractive index as a function of reflection intensity of the surrounding medium.

SaK4
Optical and Thermal Analysis for a Modified Flip-Chip Light Emitted Diode, *Chuen-Ching Wang[1], Wen-Ren Yang[1], Jin-Jia Chen[1], Wei-Wen Shih[1], I-Ju Wang[1], Tsung-Yi Guo[1], Kwang-Long Huang[2]; [1]Dept. of Electrical Engineering, Changhua Univ. of Education, Taiwan, [2]Graduate Inst. of Electrooptic Engineering, Mingdao Univ., Taiwan.* The proposed design for modified flip-chip LED (Light Emitting Diode) has average coupling efficiency of 49.6% for misalignment of 0.4~3 mm. The designed ambient environment also improves the thermal efficiency by factor of 1.6.

SaK5
Optimal Length and Maximum-Spin-Rate for Polarization Transformation in Increscent-Spinning Birefringent Fiber, *Zhi-Dong Shi, Min-Ning Ji, Ye Bai, Ming-Jia Li, Hua Chen; Key Lab of Specialty Fiber Optics and Optical Access Network, Shanghai Univ., China.* The polarization transformation of increscent-spinning birefringent fiber with different length and different maximum-spin-rate is simulated and discussed. Some matching condition is found to give out the optimal performance for compact size of all-fiber polarization transformer.

SaK6
A Narrow-Line-Width Multi-Wavelength Erbium-Doped Fiber Laser Using Arrayed-Waveguide Gratings, *Jian Li[1,2], Jing Wang[1,2], Peng Liu[1,2,3], Wei Wei Jiang[1,2], Jing Jing Zheng[1,2], Ti Gang Ning[1,2], Shui Sheng Jian[1,2]; [1]Inst. of Lightwave Technology, Beijing Jiaotong Univ., China, [2]Key Lab of All Optical Network and Advanced Telecommunication Network of EMC, Beijing Jiaotong Univ., China, [3]Physics Dept., Xing Tai College, China.* A simple multi-wavelength erbium-doped fiber laser with narrow-line-width lasing output was proposed and demonstrated using FBGs and AWG. Wavelength competition was naturally prevented in this kind of laser by using AWG in the linear-cavity.

SaK7
The Low Cost Hybrid CWDM/DWDM-TDM-PON System for NEXT FTTH, *Young-Bok Choi, Soo-Jin Park; Korea Telecom Infra Lab, Republic of Korea.* We propose a low cost Hybrid CWDM/DWDM-TDM PON architecture which employs colorless modulator in ONT. We fabricated Hybrid CWDM/DWDM-TDM-PON system. And transmission characteristics of the proposed network were measured and the results are presented.

SaK8
Supercontinuum Generation in Optical Tapered Fibers and Photonic Crystal Fibers, *Lixiao Wei, Bin Zhang, Jinrong Tian, Yanrong Song; College of Applied Sciences, Beijing Univ. of Technology, China.* We present supercontinuum generation in 10cm-long tapered fiber and photonic crystal fiber by 130fs ultrashort laser pulses. The output spectra are obtained in the both cases. The differences of output spectra of them are compared and analyzed.

SaK9
Parametric Relation of Equivalent Models for Birefringent Fiber in Longitudinal Magnetic Field, *Ye Bai, Zhi-Dong Shi, Shu Liu, Ming-Jia Li, Hua Chen; Key Lab of Specialty Fiber Optics and Optical Access Network, Shanghai Univ., China.* For linear birefringent fiber immersed in magnetic field, the parametric relations of equivalent models with different cascaded order of retarder and rotator have been deduced and compared with its intrinsic linear birefringence and Faraday rotation.

SaK10
A Hi-Bi Photonic Bandgap Fiber with Squeezed Modified Honeycomb Lattice, *Yueye Xiao; Inst. of Fiber Res., Shanghai Univ., China.*A highly birefringent photonic bandgap fiber with squeezed modified honeycomb lattice is proposed. Numerical results reveal that the phase birefringence of the PBGF could reach 0.01, two orders higher than conventional PMFs.

SaK11
Fabrication and Measurement of Quarter Wave Plate Made by Holey Birefringent Fiber, *Zhi-Dong Shi, Min-Ning Ji, Ming-Jia Li, Ye Bai, Hua Chen; Key Lab of Specialty Fiber Optics and Optical Access Network, Shanghai Univ., China.* Some compact samples of fiber-optic quarter wave plate have been made up by holey birefringent fiber. The temperature instability and wavelength sensitivity of these samples are measured and compared with those of conventional birefringent fiber.

SaK12
A Novel Optical QPSK Modulation Scheme for Millimeter-Wave Radio-Over-Fiber System, *Zheyun Zhou, Rujian Lin, Jiajun Ye; Shanghai Univ., China.* This paper presents a novel and low cost optical QPSK scheme for mmRoF system to produce the 58.5GHz mm-wave QPSK signal by using two dual-electrode MZMs for both QPSK signal and continuous phase modulation.

SaK13
Demonstration of Quadrature-Intensity-Modulation-Based Phase-Shifted Optical Quantization, *Xin Fu, Hongming Zhang, Zhuangqian Zhang, Minyu Yao; Tsinghua Univ., China.* An improved Phase-Shifted Optical Quantization system is demonstrated based on quadrature intensity modulation and non-interferometric light combination. This improved system features simple control and high precision of phase-shifts.

SaK14
A Novel EDFA Configuration Employing Dynamic Gain Tilt Controller, *Yan Chen, Rujian Lin; Key Lab of Specialty Fiber Optics and Optical Access Network, Shanghai Univ., China.* Dynamic gain tilt controller is employed in a novel EDFA scheme to compensate for dynamic gain tilt. Simulation shows the flat gain in C band is above 20dB and the noise factor is below 6dB.

SaK15
Polarization Transforming Performance of Increscent Spinning Birefringent Fiber with Extension Lead and Different Input Polarization State, *Ye Bai, Zhi-Dong Shi, Ming-Jia Li, Hua Chen; Key Lab of Specialty Fiber Optics and Optical Access Network, Shanghai Univ., China.* The polarization transformation of increscent-spinning birefringent fiber with extension lead is simulated. Periodical fluctuation in extension lead, optimal input polarization orientation and nonlinearly degradation with imperfection of input polarization state have been found and discussed.

SaK16
A Novel OSNR Monitoring Technique Based on Cascaded Long-Period Fiber Grating with Optically Tunable Phase Shifter, *Sie-Wook Jeon, Chang-Soo Park; Gwangju Inst. of Science and Technology, Republic of Korea.* OSNR monitoring technique from 10-Gb/s NRZ-OOK and DPSK signal using a cascaded long-period fiber grating with a phase shifter demonstrated. The monitoring error is within 0.5ps, and this scheme is not affected by the PMD.

SaK17
Single-Passband Microwave Photonic Filter with Negative Taps Based on a Mach-Zehnder Interferometer and a Phase Modulator, *Hongyan Fu, Kun Zhu, Haiyan Ou, Sailing He; Zhejiang Univ., China.* A microwave photonic filter based on a Mach-Zehnder interferometer (MZI) and a phase modulator is presented, and the experimental results show the suppressed baseband resonance and an extinction ratio of up to ~20dB.

Exhibit Hall

SaK18
Spontaneous Generation of Spiral Modes due to Evanescent Coupling between Two Optical Fibre Ring Arrays, *Hiroyuki Yoshida, Noriaki Tsukada; Hiroshima Inst. of Technology, Japan.* Coupling dynamics between two circular optical fibre arrays imposed on the periodic boundary phase conditions is investigated. Various spiral modes are spontaneously induced in the individual fibre arrays by the coupling.

SaK19
A Novel Resource-Based Cycle Protection Approach in WDM Optical Network, *Bin Li[1], Kuei-Jen Lee[2]; [1]Key Lab of Optical Communication and Lightwave Technologies, Ministry of Education, Beijing Univ. of Posts and Telecommunications, China, [2]Dept. of Communication Engineering, Oriental Inst. of Technology, Taiwan.* In order to settle the restriction of the wavelength continuities in WDM optical network, a novel resource pre-configuring strategy utilizing straddle link is proposed, it can be suitable for either dynamical or static traffic environment.

SaK20
Linewidth Investigation for Costas Loop Phase-Diversity Homodyne Detection in Digital Coherent Detection System, *Yuji Hayami, Fuminori Imai, Katsushi Iwashita; Kochi Univ. of Technology, Japan.* Narrow linewidth optical sources are required to realize high performance optical digital coherent detection systems. We have experimentally investigated the Costas loop parameters in phase-diversity homodyne and achieved synchronous detection with broad linewidth optical sources.

SaK21
Novel Optical Transmitter Using Organic Substrate for Optical Interconnection, *Hwekyung Kim, Young-Min Im; Korea Electronics Technology Inst., Republic of Korea.* We fabricated a novel optical transmitter using organic substrate for optical interconnection. VCSEL was attached onto the sidewall of organic substrate for butt coupling. It showed a clear eye diagram of 2.5Gbps optical transmission.

SaK22
Modeling of Light Propagation, Amplification and Generation in Nonlinear Media Using "Color" Transfer Matrix, *Pawel Szczepanski[1,2], Tomasz P. Osuch[1], Marta Buryk[1], Zbigniew Jaroszewicz[1,3]; [1]Natl. Inst. of Telecommunications, Poland, [2]Warsaw Univ. of Technology, Poland, [3]Inst. of Applied Optics, Poland.* In this paper we describe method of analysis of light propagation, amplification and generation in nonlinear homogenous and stratified media based on generalized transfer matrix method. Examples of Raman amplification and laser generation are shown.

SaK23
Quality Factor Enhancement in Slow Light Nanopillar Waveguide, *Yang Zhu[1], Huaxiang Yi[1], Zhiping Zhou[1,2,3]; [1]Wuhan Natl. Lab for Optoelectronics, Huazhong Univ. of Science and Technology, China, [2]State Key Lab on Advanced Optical Communication Systems and Networks, Peking Univ., China, [3]School of Electrical and Computer Engineering, Georgia Tech, USA.* Quality (Q) factor enhancement in slow light nanopillar waveguide is investigated by using FDTD method. The Q factor of a F-P resonator enhanced significantly with light group velocity of *c/24.6* is presented.

SaK24
Effects of Quantum-Well Displacement on Optical Frequency Response of a Transistor Laser, *Hassan Kaatuzian, Iman Taghavi, Mohammad Danaie; Amirkabir Univ. of Technology, Islamic Republic of Iran.* We report analysis of a quantum-well (QW) Transistor Laser using a charge control model for modifying QW location through base. The analysis shows significant enhancement in bandwidth due to moving the QW toward emitter base junction.

SaK25
Time-Reversal Operation of Wave Propagation Dynamics in Optical Waveguide Arrays, *Noriaki Tsukada, Hiroyuki Yoshida; Hiroshima Inst. of Technology, Japan.* By imposing staggered phase-imprinting on alternate waveguides at the distance $z=z_p$ in waveguide arrays, the input wave front can be perfectly recovered at $z=2z_p$ due to the time-reversal operation.

SaK26
Integrated Waveguide Grating Using Impurity Induced Quantum Well Intermixing, *Ramesh K. Sonkar, Utpal Das; Indian Inst. of Technology, India.* This paper presents the work on InGaAsP/InP multi quantum well impurity intermixed waveguide grating suitable for CWDM wavelength range. A channel bandwidth of 13nm and cross-talk in between -5dB to -10dB is obtained.

SaK27
Broad-Angle Polarization Beam Splitter Using an Ultra-Low Permittivity Material, *Yuan Zhang[1], Yi Jin[2], Wei Xue[1], S. He[2]; [1]Dept. of Photo-electronics Engineering, School of Information Science and Technology, Beijing Inst. of Technology, China, [2]Joint Res. Ctr. of Photonics of the Royal Inst. of Technology (Sweden) and Zhejiang Univ., China.* We design a broad-angle polarization beam splitter consisting of alternating layers of dielectric and ultra-low permittivity material. Within wide range of incident angles, it shows high transmissivity for one polarization while high reflectivity for another.

SaK28
Experimental Demonstration on PPLN-Based 40 Gbit/s All-Optical NRZ-to-CSRZ, NRZ-to-RZ, and NRZ-DPSK-to-RZ-DPSK Format Conversions, *Jian Wang, Junqiang Sun, Qizhen Sun, Xinliang Zhang, Dexiu Huang; Huazhong Univ. of Science and Technology, China.* We report the first experimental demonstration on 40 Gbit/s all-optical format conversions from NRZ to CSRZ, from NRZ to RZ, and from NRZ-DPSK to RZ-DPSK by using a periodically poled lithium niobate (PPLN) waveguide.

SaK29
Liquid Lens: An Advancement in Optical Communications, *Shawn P. Casey; DeVry Univ. at North Brunswick, USA.* "Liquid lens" technologies promise significant advancements in machine vision and optical communications systems. Adaptations for machine vision, human vision correction, and optical communications are used to exemplify the versatile nature of this technology.

SaK30
Design of High Transmission Broadband 90-Degree Bend by Reducing Field Mismatch at Corner for Two-Dimensional Cubic Photonic Crystals, *Yih-Bin Lin, Jia-Sheng Lin, Rei-Shin Chen, Cheng-Ru Li; Dept. of Electrical Engineering, Lunghwa Univ. of Science and Technology, Taiwan.* A simple design of 90 degree bend is proposed for cubic photonic crystals. Corner section of bend is modified to have more symmetric guiding field. The transmission efficiencies are above 96% for the bandgap spectrum.

SaK31
Improved Multilayered Structure With Appropriate Interface Termination to Enhance the Imaging Resolution in the Infrared and Optical Canalization Regime, *Xuan Li[1], Yi Jin[2]; [1]Div. of Electromagnetic Engineering, School of Electrical Engineering, Royal Inst. of Technology, Sweden, [2]Zhejiang Univ., China.* Improved structure and appropriate surface termination are utilized to enhance dramatically the subwavelength imaging resolution of a multilayered positive-negative permittivity structure with real material loss and operating in the infrared or optical canalization regime.

SaK32
The Effect of the Intrinsic Layer on Reliability of Nitride-Based p-i-n Photodetectors, *Yu-Zung Chiou[1], Y. G. Lin[1], T. K. Ko[2]; [1]Dept. of Electronics Engineering, Southern Taiwan Univ., Taiwan,[2]Epistar Corp., Taiwan.* By means of 0.25 μm, 0.4 μm and 0.5 μm-thick i-GaN layers, we have successfully proved the reliability of nitride-based p-i-n photodetectors (PDs) was highly sensitive to the thickness of intrinsic GaN layers.

Exhibit Hall

SaK33
The Optimal Design of GaAs/GaAlAs Asymmetric Coupled Quantum Well for Electro-Optical Modulator, *Zhi Xin Xu; Zhejiang Univ. of Science and Technology, China.* Based on perfect work condition for electro-optical switch, the structure of a GaAs/GaAlAs asymmetric coupled quantum-well is optimized, consequently the optimized coupled quantum well has a large electric field induced refractive index change.

SaK34
High-Speed Characteristics of VCSELs and RCE-PDs Based on Intracavity Contacted Structure, *Young Min Song[1], Bong Kyu Jeong[1], Byung Hoon Na[1], Ki Soo Chang[2], Yong Tak Lee[1]; [1]Gwangju Inst. of Science and Technology, Republic of Korea, [2]Korea Basic Science Inst., Republic of Korea.* VCSELs and RCE-PDs based on intracavity contacted structure are demonstrated for high-speed operation. The maximum 3dB bandwidth of VCSELs and RCE-PDs are 13.1GHz and 9GHz, respectively, making these devices suitable for 10Gbps bi-directional optical interconnects.

SaK35
ZnO Nanorods/P3HT Nanocomposite Film Light Emitting Diodes, *Chun-Yu Lee[1], Jing-Shun Huang[1], Sheng-Hao Hsu[2], Wei-Fang Su[3], Ching-Fuh Lin[4]; [1]Graduate Inst. of Photonics and Optoelectronics, Natl. Taiwan Univ., Taiwan, [2]Inst. of Polymer Science and Engineering, Natl. Taiwan Univ., Taiwan,[3]Dept. of Materials Science Engineering, Ctr. for Condensed Matter Sciences, Natl. Taiwan Univ., Taiwan, [4]Graduate Inst. of Photonics and Optoelectronics, Graduate Inst. of Electronics Engineering and Dept. of Electrical Engineering, Natl. Taiwan Univ., Taiwan.* We report electroluminescence from ZnO nanorod-based devices prepared by the hydrothermal method. The devices composed of ZnO nanorods and P3HT, in which ZnO acts as an n-type material and P3HT acts as a p-type material.

SaK36
Finite Element Analysis of MEMS Based Fabry-Perot Optical Filter with Electrostatic Actuation, *Lei Wei[1], Xuyuan Chen[2,3]; [1]DTU Fotonik, Dept. of Photonics Engineering, Technical Univ. of Denmark, Denmark, [2]Inst. for Microsystem Technology (IMST), Vestfold Univ. College, Norway, [3]SAH MEMS Res. Ctr., Xiamen Univ., China.* Mechanical properties and tuning ability of MEMS based Fabry-Perot optical filter with electrostatic actuation are investigated. The simulation results demonstrate that the fringing field influence should be taken into account in structure design and modeling.

SaK37
On the Existence and Stability of Small Amplitude Solitons on a Pedestal Pertaining to Negative Index Materials, *Ancemma Joseph, K. Porsezian; Pondicherry Univ., India.* We analyze the existence of small amplitude dark-antidark pair solitons on the background of a continuous wave in the dynamical equation for modulated short pulses propagating in negative index material and examine their stability.

SaK38
Integrated MQW Intermixed InGaAsP/InP Waveguide Photodiodes, *Tathagata Bhowmick, Utpal Das; Indian Inst. of Technology Kanpur, India.* InGaAsP/InP multi quantum well impurity intermixed waveguide photodiodes suitable for CWDM wavelength range is presented which has a transit time limited bandwidth of 86GHz with maximum efficiency of 22% and insertion loss of 0.4-23dB.

SaK39
The Effects of TiO_2 Buffer Layer on the Properties of Flexible ITO Thin Films, *Xia Fan, Yu Zhi-Nong, Li Yu-Qiong, Zhao Zhi-Wei; Dept. of Optical Engineering, Beijing Inst. of Technology, China.* With TiO_2 buffer layer added, the properties of Indium-Tin Oxide (ITO) thin films deposited on PET substrates can be efficiently improved. The resistivity of the film reduced, visible transmittance increased and the mechanical property optimized.

SaK40
Anomalous Propagations of Electromagnetic Waves in Uniaxial Metamaterials with a Unique Dispersion Relation, *Weixing Shu, Hailu Luo, Zhixiang Tang, Yanhong Zou, Shuangchun Wen, Dianyuan Fan; Key Lab for Micro/Nano Optoelectronic Devices of Ministry of Education, School of Computer and Communication, Hunan Univ., China.* We investigate the propagation of electromagnetic waves in the uniaxial metamaterial with a unique dispersion relation. We show that the refraction behaviors of two eigenmodes are always opposite to each other, leading to potential applications.

SaK41
Monolithically Integrated FTTH Diplexer Using Bi-Level Etched 2x2 Optical Coupler, *Li Zhang, Lei Wang, Jian-Jun He; Ctr. for Integrated Optoelectronics, State Key Lab of Modern Optical Instrumentation, Zhejiang Univ., China.* A novel design of monolithically integrated diplexers for FTTH applications is presented. A bi-level etched asymmetrical 2x2 optical coupler is analyzed for efficient couplings of both upstream and downstream signals.

SaK42
All-Optical 40 Gbit/s Multicasting XOR Logic Gate for NRZ-DPSK Signals, *Jian Wang, Junqiang Sun, Qizhen Sun, Xinliang Zhang, Dexiu Huang; Huazhong Univ. of Science and Technology, China.* We experimentally demonstrate all-optical 40 Gbit/s multicasting XOR logic gate for NRZ-DPSK signals by using non-degenerate four-wave mixing (FWM) in a highly linear fiber (HNLF). Triple-channel XOR outputs are simultaneously achieved in the experiment.

SaK43
Characteristics Improvement of an Integrated HBT Cascode Opto-Electronic Mixer, *Hassan Kaatuzian, Hadi Dehghan Nayeri; Amir Kabir Univ. of Iran, Islamic Republic of Iran.* We will analyze an integrated opto-electronic mixer, consisting of two InP/GaInAs HBT, in a cascode configuration. A new HBT with modified physical structure will be proposed and simulated to improve frequency characteristics of cascode mixer.

SaK44
A Coal Mine Security Monitoring System Based on Multiplexed Fibre Bragg Grating Sensors and Coherence-Multiplexing Technique, *Tianhao Xia, Bin Zhou, Weisheng Liu, Zuguang Guan; Ctr. for Optical and Electromagnetic Res., State Key Lab for Modem Optical Instrumentation, Zhejiang Univ., China.* An FBG sensing system for coal mine security monitoring is proposed in this paper. It works over a Spatial-division-multiplexing/coherence-multiplexing network to realize quasi-distributed sensing. Methane concentration, strain, and temperature are measured in the experiment.

SaK45
Sound Pressure Sensors Based on Fiber Gratings, *Chin-Hsing Cheng, Chin-Yu Chang, Wen-Fung Liu; Dept. of Electrical Engineering, Feng Chia Univ., Taiwan.* The optical fiber sensor based on fiber Bragg gratings for measuring sound pressure levels is proposed in this paper and a long-period grating can be used for detecting the power variation of sound pressure levels.

SaK46
Optical Characteristics of Bending Multimode Superstructure Fiber Gratings, *Wen-Fung Liu[1], Hao-Jan Sheng[2], Lung Ai[3], Hsin-Wen Peng[1], Sheau-Shong Bor[1]; [1]Dept. of Electrical Engineering, Feng Chia Univ., Taiwan, [2]Graduate Inst. of Electrical and Communications Engineering, Feng-Chia Univ., Taiwan, [3]Dept. of Electrical Engineering, Chung Cheng Inst. of Technology, Natl. Defense Univ., Taiwan.* The dispersion characteristics of bending superstructure fiber gratings written in multi-mode fibers are investigated. The group time delay in multimode superstructure fiber gratings can be tuned more easily than superstructure gratings in single mode fiber.

SaK47
Tunable Dispersion by Bending Side-Polished Single-Mode Superstructure Fiber Gratings, *Hao-Jan Sheng[1], Wen-Fung Liu[2], Lung Ai[3], Hsin-Wen Peng[2], Sheau-Shong Bor[2], Chuen-Lin Tien[2]; [1]Graduate Inst. of Electrical and Communications Engineering, Feng-Chia Univ., Taiwan, [2]Dept. of Electrical Engineering, Feng Chia Univ., Taiwan, [3]Dept. of Electrical Engineering, Chung Cheng Inst. of Technology, Natl. Defense Univ., Taiwan.* The optical dispersion phenomena in a side-polished single-mode superstructure fiber grating including group velocity delay, chromatic dispersion are investigated by applying different bending curvatures. This device provides applications in optical fiber communications or fiber sensors.

SaK48
Fabry-Perot Type High Temperature Fiber Sensor Implemented by Cascading Two Fiber Cavities, *Hae Young Choi, Kwan Seob Park, Seong Jun Park, Un-Chul Paek, Byeong Ha Lee; Gwangju Inst. of Science and Technology, Republic of Korea.* The Fabry-Perot high temperature sensor formed with double cavities is proposed. The spectrum was measured at several temperatures and analyzed in its Fourier domain. The proposed device can utilize as a precise high temperature sensor.

Exhibit Hall

SaK49
Improvement of Light Trapping Effect Using the Configuration of Subwavelength-Structured Optical Disc, *Hsi-Fu Shih[1], Shang-Jung Hsieh[1], Wen-Yih Liao[2], Jung-Po Chen[2], Ming-Chia Li[2]; [1]Natl. ChungHsing Univ., Taiwan, [2]Electronics and Optoelectronics Res. Labs, Industrial Technology Res. Inst., Taiwan.* The subwavelength structures in optical discs are applied to improve the light trapping effect for solar cell applications. With the proposed configuration, the reflection and absorption efficiencies can be effectively decreased and enhanced, respectively.

SaK50
The Electrical Stabilities of Flexible ITO Thin Films on Buffer Layer Coated PET, *Yu Zhi-nong, Xia Fan, Li Yuqiong, Xue Wei; Dept. of Optical Engineering, School of Information Science and Technology, Beijing Inst. of Technology, China.* The electrical stabilities of flexible ITO thin films on buffer layer coated PET were investigated. The results show that TiO_2 buffer layer can enhance the electrical stability of ITO films against bending stress most effectively.

SaK51
The Novel Design of Direct LED Backlight with Lens Caps and Parabolic Reflectors, *Kuang-Lung Huang[1], Jin-Jia Chen[2], Kai-Hung Cheng[2]; [1]Inst. of Electrophysics, MingDao Univ., Taiwan, [2]Dept. of Electrical Engineering, Natl. Changhua Univ. of Education, Taiwan.* A novel design of direct LED backlight is presented. The module is composed of white light LEDs, parabolic reflectors and novel lens caps. The predicted uniformity is up to 92%.

SaK52
The Prior Study of Fabrication of the Dual-View Display Used Micro-Prism Array Splitter by Using LIGA-Like Technology, *Chien-Yue Chen, Yan-Ching Lin, Tsung-Yen Hsieh; Natl. Yunlin Univ. of Science and Technology, Taiwan.* In this paper, the dual-view display used micro-prism array splitter we designed is initially fabricated by using the LIGA-like technology. The roughness of the prism surface is less than 1nm.

SaK53
Adaptive Integrated System Optical Design and Modeling, *Quanxin Ding, Hua Liu; Key Lab of Natl. Defense Science and Technology on Fire Control Technology, China.* Accelerated high level phase contrast theory is established. Global design adaptive concept, integrated principle, system strategy, spatiotemporal characteristics simulation and evaluation is studied. Accelerated system integrated technique especially on optical design and modeling is achieved.

SaK54
The Initial Design of Stereoscopic Image Splitter with Diffractive Blazed Grating, *Chien-Yue Chen, Wen-Cheng Hung, Han-Chiang Wu; Natl. Yunlin Univ. of Science and Technology, Taiwan.* A novel diffractive blazed grating is proposed for designing stereoscopy display that can effectively resolve the luminance-deficiency problem of traditional parallax barrier structure. We simulate the ray tracing by using the optical software ZEMAX.

SaK55
The Study of SiO_2,TiO_2's Effect to the Anti-Bending Properties of Flexible ITO Films, *Li Yuqiong, Yu Zhinong, Xue Wei, Xia Fan; Dept. of Optical Engineering, School of Information Science and Technology, Beijing Inst. of Technology, China.* The study found that SiO_2 is better than TiO_2 on the improvement of anti-bending radius to the ITO films, but is worse than TiO_2 on the improvement of anti-bending times to the ITO films.

SaK56
Layout Design of LEDs in an LED-Based Lighting System with a Conventional Fresnel Lens to Optimize the Illuminance and Uniformity by Using Genetic Algorithm and Tabu Search, *Wen-Gong Chen; Yung Ta Inst. of Technology and Commerce, Taiwan.* To let the conventional Fresnel lens be available to a lighting system with multiple LEDs, we develop an efficient Genetic Algorithm and Tabu Search to arrange LEDs' layout to optimize the system's illuminance and uniformity.

SaK57
A Fiber-and-LED Based Vehicle Headlamp, *Jin-Jia Chen[1], Kuang-Lung Huang[2], Po-Chun Lin[1], Kai-Hung Cheng[1]; [1]Natl. Changhua Univ. of Education, Taiwan, [2]Inst. of Electrophysics, Mingdao Univ., Taiwan.* A novel vehicle headlamp structure is presented. It delivers light rays from plural LEDs via a fiber to the headlamp to form a legal low-beam pattern with a predicted optical efficiency of 45%.

14.30–16.00 Exhibit Only Time, *Exhibit Hall*

16.00–16.30 Tea Break, *Exhibit Hall*

Room 2

16.30–19.00
SaL • Workshop on Commercialization of Photonics Technologies from Universities
Dr. Wei-Ping Huang, Professor, McMaster Univ., Canada, Presider
Mr. Mark Cranshaw, Project Manager, Innovation China-UK (ICUK), Univ. of Southampton, UK, Presider

SaL1 • 16.30 Invited
Innovation China-UK: An Introduction, *Mark Cranshaw, Project Manager, Innovation China UK (ICUK), UK*

SaL2 • 16.55 Invited
Creating High Tech Spin-Outs from a University Environment, *Professor David Payne, Optoelectronics Research Ctr., Univ. of Southampton, UK*

Room 4AB

16.30–18.30
SaM • New Fiber Designs and Fiber Devices
Tiejun Wang; Yangtze Optical Fiber and Cable Co., China, Presider

SaM1 • 16.30 Invited
Diffraction-Resistant Light (Bessel Beams) from Optical Fibers, *Siddharth Ramachandran; OFS Labs, USA.* We describe a new class of fiber devices whose output resembles Bessel beams. Such beams have a myriad of scientific and technological applications owing to their diffraction-free nature and their ability to navigate opaque obstructions.

SaM2 • 17.00
Reef Knot Microfiber Resonators, *Guillaume Vienne[1], Adrien Coillet[2], Philippe Grelu[2], Constantin Ledier[2], Johann Troles[3], Mohammed El Amraoui[2], Jean-Charles Jules[2], Frederic Smektala[2], Limin Tong[1]; [1]Zhejiang Univ., China, [2]Inst. Carnot de Bourgogne, Univ. de Bourgogne, France, [3]Sciences Chimiques de Rennes, Univ. de Rennes, France.* We propose a new way to realize a microresonator by making a reef knot with two microfibers. We demonstrate an all-silica reef knot resonator and discuss the first steps towards hybrid silica-chalcogenide resonators.

Room 4C

16.30–18.30
SaN • Photonic Integration I
Masaya Notomi; NTT Basic Res. Labs, Japan, Presider

SaN1 • 16.30 Invited
Monolithic Photonic Integrated Circuits for Long Haul Telecommunication Networks, *Wei Chen; Infinera, USA.* Photonics integrated circuits provide the scalability needed for the optical communication system to meet the ever increasing bandwidth demand. Active and passive PICs compliment each other in network functionalities with their respective strengths.

SaN2 • 17.00
High Performance Full-Band Tunable Product Evolution Based on the DSDBR Laser Platform, *Jinyu Mo[1], Steve Mayne[2], Lee Nelson[2], Qingxin Bu[1]; [1]Bookham Technology Co., Ltd, China, [2]Bookham Technology Co., Ltd, UK.* DSDBR laser platform is enabling a comprehensive range of tunable products which are fuelling the drive towards flexible, wavelength agile networks. Laser/Modulator integrated platforms offer further footprint, power, and cost reduction for next generation products.

Room 5A

16.30–18.30
SaO • Solid-State Lighting
Y. Luo; Tsinghua Univ., China, Presider

SaO1 • 16.30 Invited
Mass Production of Optoelectronic Devices for Solid State Lighting (SSL) by MOCVD, *M. Heuken; AIXTRON AG,Germany.* The advances in the SSL market demand a reduction of the Cost of Ownership of the MOCVD tool. We addressed this issue by developing two new reactor configurations for the Planetary Reactor and CRIUS Close-Coupled-Showerhead.

SaO2 • 17.00 Invited
LED, *Y. Luo; Tsinghua Univ., China.* Abstract not available.

Room 5B

16.30–18.30
SaP • Optical Trapping and Manipulation
Halina Rubinsztein-Dunlop; Univ. of Queensland, Australia, Presider

SaP1 • 16.30 Invited
Laser Trapping and Laser Interferometry for High-Bandwidth Micromechanical Probing of Biomaterials, *Daisuke Mizuno[1,2], M. Atakhorrami[3], K. M. Addas[4], J. X. Tang[5], G. H. Koenderink[6], Fredrick C. MacKintosh[1], Christoph Schmidt[1,7]; [1]Dept. of Physics and Astronomy, Vrije Univ., Netherlands, [2]Organization for the Promotion of Advanced Res., Kyushu Univ., Japan, [3]Philips Res., Netherlands, [4]American Univ. in Cairo, Egypt, [5]Dept. of Physics, Brown Univ., USA, [6]FOM Inst. AMOLF, Netherlands, [7]Dept. of Physics and Astronomy, Georg-August Univ., Germany.* We present techniques based on optical trapping of micron-sized particles as probes and detecting their motion with sub-nanometer accuracy at 100 kHz bandwidth that can measure viscoelastic properties of biomaterials and cells on micrometer scales.

SaP2 • 17.00 Invited
Can Optically Driven Micromachines be Useful in Biomedicine? Optical Tweezers at Work, *Halina Rubinsztein-Dunlop, Theodor Asavei, Simon Parkin, Alex Stilgoe, Vincent Loke, Timo Nieminen, Norman Heckenberg; Univ. of Queensland, Australia.* Optical forces and torques acting on microscopic objects that are trapped in tightly focused laser light promise flexible methods for investigating a broad range of biologically relevant problems.

Room 2

SaL3 • 17.20 Invited

Commercialization of Optical Fiber Sensors for Application in Mine Safety, *Dr. Tongyu Liu, CEO, Shandong Micro-Sensor Photonics Ltd. and Deputy Director, Laser Inst. of Shandong Acad. of Sciences, Jinan, China*

SaL4 • 17.45 Invited

Funding Sources for Commercialisation Activities in Chinese HEI's, *Speaker to be Announced, Shanghai Science and Technology Commission, China*

Room 4AB

SaM3 • 17.15

Slow and Fast Nonlinearities in Microfiber Resonators, *Aurélien Coillet[1], Philippe Grelu[1], Guillaume Vienne[2], Limin Tong[2]; [1]Inst. Carnot de Bourgogne, Univ. de Bourgogne, France, [2]Zhejiang Univ., China.* Nonlinear optical properties of microfiber resonators are investigated. A miniature optical resonator standing in air is realized out of silica microfibers, and measurements of the intensity transfer function show a wide variety of hysteresis cycles.

SaM4 • 17.30

Modal Noise in Cascaded Multimode Splitters, *Jerzy Siuzdak, Agata Sadkowska, Lukasz Maksymiuk, Grzegorz Stepniak; Warsaw Univ. of Technology, Poland.* The 'low frequency' modal noise was measured at the output of cascaded 2x2 multimode splitters. For high split ratios the measured values of signal-to-modal noise ratio were too low for data transmission.

SaM5 • 17.45

Nanosecond All-Fiber Polarization Switch, *Zhangwei Yu[1,2], R. Koch[1,3], Walter Margulis[1,3], O. Tarasenko[1,3], H. Knape[3], P. Y. Fonjallaz[1,3]; [1]Royal Inst. of Technology, Sweden, [2]Joint Res. Ctr. of Photonics of the Royal Inst. of Technology (Sweden) and Zhejiang Univ., China, [3]Acreo AB collaborating within Kista Photonics Res. Ctr., Sweden.* A novel all-fiber polarization switch was studied in a four-hole fiber with internal electrodes. Nanosecond full on-off switch with duration of 12.6 ns was obtained under the application of high voltage pulses.

Room 4C

SaN3 • 17.15

Optical Phase Demodulation Using a Coherent Receiver with an Ultra-Compact Grating Beam Splitter, *Chin-Hui Chen, Anand Ramaswamy, Jonathan Klamkin, Leif A. Johansson, John E. Bowers, Larry A. Coldren; Univ. of California at Santa Barbara, USA.* We describe the design and fabrication of an integrated coherent receiver incorporating a novel grating beam splitter for linear optical phase demodulation. The open loop behavior of the receiver is measured in a link experiment.

SaN4 • 17.30

Optical Gain Chips with Integrated Phase Sections for Full C-Band External Cavity Tunable Lasers, *Simarjeet S. Saini[1], Peter J. S. Heim[2]; [1]Univ. of Waterloo, Canada, [2]Covega Corp., USA.* An optical gain chip is demonstrated with an integrated phase-modulator for tunable external-cavity-lasers. Optical power greater than 40 mW and 2 pi phase change at current of less than 15 mA is achieved.

SaN5 • 17.45

Optimal Design of Silicon-on-Insulator Nano-Wire Waveguides for Broadband Wavelength Conversion, *Xingzhi Zhang, Shiming Gao, Sailing He; Zhejiang Univ., China.* The size of a silicon-on-insulator nano-wire waveguide is optimized for broadband wavelength conversion. A 3-dB conversion bandwidth of over 250nm is achieved through four-wave mixing in a 2.5-mm-long waveguide of size 425nm x 258nm.

Room 5A

SaO3 • 17.30 Invited

GaN Based Active Matrix Light Emitting Diode Array by Flip-Chip Technology, *Zhao Jun Liu, Chi Wing Keung, Kei May Lau; Hong Kong Univ. of Science and Technology, Hong Kong.* This paper reports the first GaN based active matrix light emitting diode (AMLED) array. The array, fabricated by CMOS compatible process and flip-chip technology, can control the LED pixel individually and exhibit excellent emission uniformity.

Room 5B

SaP3 • 17.30 Invited

Probe Biological Dynamics of Single Microbial Cells Using Optical Trapping and Raman Spectroscopy, *Shu-Shi Huang[1], Gui-wen Wang[1], Lixin Peng[1], Yong-qing Li[2]; [1]Biophysics Lab, Guangxi Acad. of Sciences, China, [2]East Carolina Univ., USA.* Cellular dynamics of nutrient-triggered germination of single bacterial spores and fermentation process of single yeast cells in an optical trap are probed with Raman spectroscopy.

Room 2

SaL5 • 18.10 Invited

IPR Protection for International Joint R&D and Technology Transfer, *Richard Lin, Partner, Fangda Partners, Shanghai, China*

SaL6 • 18.35 Invited

Title and Speaker to Be Announced

Room 4AB

SaM6 • 18.00

Design and Optimization of a 2x2 Half-Wave Optical Coupler, *Xufeng Lin, Dekun Liu, Jian-Jun He; Ctr. for Integrated Optoelectronics, State Key Lab of Modern Optical Instrumentation, Zhejiang Univ., China.* A three-waveguide directional coupler and a multimode waveguide coupler are investigated for realizing half-wave optical couplers which are useful for achieving high single-mode selectivity in coupled-cavity wavelength switchable lasers.

SaM7 • 18.15

Dual Core Fiber for Strain Sensing Applications, *Pichaya Pattanasattayavong, Vinyu Kultavewuti, Warit Thanopachai, Waleed S. Mohammed; Intl. School of Engineering, Chulalong Korn Univ., Thailand.* This paper presents modal analysis of dual core fiber and proposes the application of a combination of this fiber with standard single mode fiber in strain sensing through selectively exciting certain super modes.

Room 4C

SaN6 • 18.00 Invited

IIIV/SOI Heterogeneous Integration of Optoelectronic Devices, *Liu Liu, Joris Van Campenhout, Günther Roelkens, Dries Van Thourhout, Roel Baets; Photonics Res. Group, Dept. of Information Technology, Ghent-IMEC Univ., Belgium.* Based on a microdisk laser (MDL) structure by a IIIV/SOI heterogeneous integration platform, we introduce multi-wavelength laser sources, optical modulators, wavelength converters potentially for on-chip optical interconnect.

Room 5A

SaO4 • 18.00 Invited

Developing Bright and Color-Saturated Quantum Dot Light Emitting Diodes towards Next Generation Displays and Solid-State Lighting, *Jian Xu[1], Zhanao Tan[1], Ting Zhu[1], Fan Zhang[1], Brittany Hedrick[1], Shawn Pickering[1], An Cheng[1], Myo Thein[1], Andrew Y. Wang[2], Qingjiang Sun[3], Yongfang Li[3]; [1]Pennsylvania State Univ., USA, [2]Ocean NanoTech LLC, USA, [3]Chinese Acad. of Sciences, China.* We report in this conference of our recently developed red, orange, yellow, green and blue Quantum dot light-emitting diodes (Qdot-LEDs)-LEDs with high brightness, high efficiency, saturated color and long lifetime.

Room 5B

SaP4 • 18.00 Invited

Intracellular Manipulation Using Nonlinear Excitation, *Wataru Watanabe; Natl. Inst. of Advanced Industrial Science and Technology, Japan.* Nonlinear microscopy using near-infrared femtosecond laser pulses has potential applications in imaging and manipulation of intracellular organelles. I present intracellular surgery, selective tracking, and FRAP analysis of organelles in living cells using femtosecond lasers.

09.00–17.00 Registration Open

Room 2

09.00–10.30
SuA • High Capacity Systems and Technologies III
Philippe Grelu; Univ. de Bourgogne, France, Presider

SuA1 • 09.00 Invited
DPSK, DQPSK and Coherent Receivers for 40G and 100G Systems, *Yannick K. Lize; Stratalight Communications, USA.* DPSK, DQPSK and coherent QPSK are the leading modulation formats for next generation 40G and 100G optical communication links. In this paper we discuss the performance of the three formats under different receiver optimization.

SuA2 • 09.30 Invited
High Spectral-Efficiency Mixed 10G/40G/100G Transmission, *Xiang Liu, S. Chandrasekhar; Bell Labs, Alcatel-Lucent, USA.* We review current technologies that enable mixed 10G/40G transmission in a single DWDM system to achieve capacity upgrade, and discuss promising technologies and challenges for transmitting 100-Gb/s channels in the same system for further upgrade.

Room 4AB

09.00–10.30
SuB • Microstructure Fibers
Luis Zenteno; Corning Inc., USA, Presider

SuB1 • 09.00 Invited
Recent Advances in Highly Nonlinear Microstructured Optical Fibers and Their Applications, *David Richardson, F. Poletti, M. L. V. Tse, P. Horak, J. Y. Y. Leong, F. He, J. H. V. Price, X. Feng, H. N. Rutt, K. E. Frampton, W. H. Loh, S. Asimakis, P. Petropoulos; Optoelectronics Res. Ctr., Univ. of Southampton, UK.* Microstructured fiber technology offers the prospects of fibers with unique nonlinear and dispersive properties. We review the latest developments in the field and progress towards various application optimized fiber types.

SuB2 • 09.30
Air-Core Microstructure Fibers for Terahertz Transmission, *Sheng-shuo Huang, Chin-Ping Yu; Inst. of Electro-Optical Engineering, Natl. Sun Yat-Sen Univ., Taiwan.* We have theoretically investigated the propagation characteristics of air-core Teflon microstructure fibers by applying the finite-difference frequency-domain method. Efficient terahertz transmission can be achieved and the ARROW-based guiding mechanism is discussed.

Room 4C

09.00–10.30
SuC • Probes, Sensors and Assays III
Min Zhang; Tsinghua Univ., China, Presider

SuC1 • 09.00
Strain Sensor System Based on a High Finesse Fiber Bragg Grating Fabry-Perot Cavity, *Daru Chen, Weisheng Liu, Meng Jiang, Sailing He; Zhejiang Univ., China.* A high resolution strain sensor system based on a high finesse fiber Bragg grating Fabry-Perot cavity and a wavelength-swept single-longitudinal-mode laser diode is demonstrated. Wavelength demodulation is achieved by mapping wavelength measurement to time measurement.

SuC2 • 09.15
A Novel Multiplexing Technique for a Fiber Bragg Grating Sensor Array, *Bin Zhou, Weisheng Liu; Ctr. for Optical Electromagnetic Res., Zhejiang Univ., China.* A novel multiplexing technology was proposed for fiber Bragg grating (FBG) sensors. This technology is based on a frequency-shifted asymmetric Sagnac interferometer incorporating an acousto-optic modulator (AOM).

SuC3 • 09.30
Analysis of Tunable Ridge Bragg Grating by Fluid Flow, *Sawit Wattanapornmogkol[1], Mao Jen Wu[2], Alongkorn Pimpin[3], Waleed Soliman Mohammed[1]; [1]Intl. School of Engineering, Chulalongkorn Univ., Thailand, [2]Dept. of Optics and Photonics, Natl. Central Univ., Taiwan, [3]Dept. of Mechanical Engineering, Chulalongkorn Univ., Thailand.* An analysis on air flow velocity effect on transmitted wavelength of ridge grating structure for tunable filter and sensing applications. Spectral response analysis for temperature dependence of single mode structure on SOI substrate is demonstrated.

Room 5A

09.00–10.30
SuD • Nanophotonics
Ray Chen; Univ. of Texas at Austin, USA, Presider

SuD1 • 09.00 Invited
Recent Progress on Photonic Crystal Slow Light Devices, *Toshihiko Baba[1,2]; [1]Yokohama Natl. Univ., Japan, [2]CREST, Japan Science and Technology Agency, Japan.* Photonic crystal devices achieved ps slow light pulses with a group index of 42, delay-bandwidth product of 57, and tuning range of 27 ps. Optical nonlinearities enhanced by the slow light effect were also observed.

SuD2 • 09.30
A High Quality Factor Filter Based on Quasi-Ring Resonator Design in Two-Dimensional Photonic Crystal, *Yaw-Dong Wu, Jian-Jang Lee, Tien-Tsorng Shih, Jen-Wei Chien; Electronic Engineering of Natl. Kaoshiung Univ. of Applied Sciences, Taiwan.* In this paper, we proposed a photonic crystal ring-resonator (PCRR) based on a quasi-ring shape. The numerical results show that the PCRR is feasible to design a high quality filter for accurate wavelength control.

Room 5B

09.00–10.30
SuE • Silicon Photonics II
Ansheng Liu; Intel Corp., USA, Presider

SuE1 • 09.00 Invited
Photonic Integration in Silicon for High-Speed Applications, *Ansheng Liu[1], Ling Liao[1], Yoel Chetrit[2], Juthika Basak[1], Hat Nguyen[1], Doron Rubin[2], Mario Paniccia[1]; [1]Intel Corp., USA, [2]Numonyx Israel Ltd., Israel.* We review recent results of silicon photonic component research and photonic integration on silicon platform. In particular, we present a high-speed photonic integrated circuit that is capable of transmitting data at 200 Gb/s.

SuE2 • 09.30 Invited
Advances and Trends in Si-Based Photonics, *Jin-Zhong Yu, Xi Xiao, Yu Zhu, Qinzhong Huang, Xuejun Xu, Yuntao Li, Yude Yu; Inst. of Semiconductors, Chinese Acad. of Sciences, China.* Recent progresses of Si-based photonic devices are reviewed in the paper. The experimental results in our laboratory, including Si-based photodiode, SOI sub-micron waveguide, high rate optical switch and coupler with η of 25% are present.

Room 2

SuA3 • 10.00
All-Optical Tunable Delay Line for Channel Selection in OTDM Demultiplexing, *Alan Cheng[1], Mable P. Fok[2], Chester Shu[1]; [1]Dept. of Electronic Engineering and Ctr. for Advanced Res. in Photonics, Chinese Univ. of Hong Kong, Hong Kong, [2]Dept. of Electrical Engineering, Princeton Univ., USA.* We demonstrate 40-Gb/s OTDM demultiplexing using an all-optical tunable delay line and an electro-absorption modulator. The continuous fiber-optic delay for channel selection is realized using four-wave-mixing and wavelength-dependent group delay.

SuA4 • 10.15
Equalization of Direct Detected 100G Pol-Muxed Transmission with PMD Impairments, *Richard C. Younce, Julia Larikova; Tellabs, USA.* Polarization multiplexing is a key technology for 100G but performance is highly dependent on accumulated PMD. This paper quantifies PMD effects on directly detected pol-muxed signals with various equalization methods.

Room 4AB

SuB3 • 09.45
Nano Fiber with a Metal Clad, *Mahmood H. Farzad[1], Mojtaba Ranjbar[2], Hossein Mazaheri Far[1]; [1]Shiraz Univ., Islamic Republic of Iran, [2]Natl. Univ. of Singapore, Singapore.* We show that the propagated beams in the Silicon nano fiber with a Silver clad are localized at two metal-dielectric interfaces with a sub-wavelength diameter. We promise this nano fiber acts an optical sensor.

SuB4 • 10.00
Efficient Higher-Order Mode Filtering in Multimode Optical Fiber Based on an Optical Microwire, *Yongmin Jung, Gilberto Brambilla, David J. Richardson; Optoelectronic Res. Ctr., Univ. of Southampton, UK.* We report the use of an optical-microwire as an efficient tool to filter higher-order modes in multimode waveguides. Higher-order modes are effectively suppressed by controlling the transition taper profile and the diameter of the optical-microwire.

SuB5 • 10.15
A Dual-Function All-in-Fiber Device Based on Negative Dielectric Liquid Crystal Photonic Bandgap Fibers, *Lei Wei[1], Lars Eskildsen[1], Johannes Weirich[1], Lara Scolari[1], Thomas T. Alkeskjold[2], Anders Bjarklev[1]; [1]DTU Fotonik, Dept. of Photonics Engineering, Technical Univ. of Denmark, Denmark, [2]Crystal Fibre A/S, Denmark.* A dual-function all-in-fiber device based on negative dielectric liquid crystal photonic bandgap fibers is presented. This device can work both as an electrically tunable waveplate in the range 1520nm-1580nm, and as a polarimeter at 1310nm.

Room 4C

SuC4 • 09.45
Analysis of LPFG Sensitivity to External Refractive Index with Different Cladding Radius and Coupling Mode, *Xiang Wang, Xinwan Li, Haimei Luo, Jianping Chen; State Key Lab of Advanced Optical Communication Systems and Networks, Shanghai Jiaotong Univ., China.* A long period grating is eroded. Experimental results show that resonant wavelength shift of can be enhanced by choosing thinner cladding radius and higher order cladding mode. Analysis is given to explain the principle.

SuC5 • 10.00
Fabrication of Optofluidic Systems Using Isotropic Wet Etched Masters in <111> Silicon Wafer, *Liu Neng[1], Li Ming-yu[1], Kou Qing-li[2], He Jian-jun[1]; [1]Zhejiang Univ., China, [2]Lab de Photophysique Moléculaire,CNRS-Univ. Paris –Sud, France.* Low roughness relief structures have been fabricated using wet etching in <111> isotropic silicon wafer for use as masters for optofluidic systems with improvement in etching rate, roughness and pattern distortion compared with before.

SuC6 • 10.15
Dispersion of Bending Multimode Side-Polished Superstructure Fiber Gratings, *Hao-Jan Sheng[1], Wen-Fung Liu[2], Hong-Wei Chen[2], Hsin-Wen Peng[2], Chuen-Lin Tien[2]; [1]Graduate Inst. of Electrical and Communications Engineering, PhD Program, Feng Chia Univ., Taiwan, [2]Dept. of Electrical Engineering, Feng Chia Univ., Taiwan.* The group time delay of this device can be easily adjusted by different bending curvatures for applying in dispersion compensation of optical communications. As a bending sensor, sensitivity of side-polished MMF-SFG is better than SMF-SFG.

Room 5A

SuD3 • 09.45
Conjugating Quantum Dots onto Carbon Nanotubes in Both Hydrophilic and Hydrophobic Environment, *Yalun Wang, Linfang Qiao, Dan Wang, Jun Qian; Ctr. for Optical and Electromagnetic Res., Joint Res. Ctr. Of Photonics of the Royal Inst. of Technology (Sweden) and Zhejiang Univ., China.* We presented methods to conjugate quantum dots (QDs) onto carbon nanotubes (CNTs) in both hydrophilic and hydrophobic solutions, anticipating to improving the performance of polymer based solar cell.

SuD4 • 10.00 Invited
On-Chip All-Optical Processing Based on Photonic Crystal Nanocavities, *Masaya Notomi[1], A. Shinya[1], T. Tanabe[1], E. Kuramochi[1], H. Taniyama[1], S. Matsuo[2], T. Kakitsuka[2], T. Sato[2]; [1]NTT Basic Res. Labs, NTT Corp., Japan, [2]NTT Photonics Labs, NTT Corp., Japan.* In this study, we apply recently-developed photonic-crystal ultrahigh-*Q* nanocavities to on-chip all-optical control, including all-optical bistable nodes towards photonic RAM and all-optical logic, all-dielectric slow-light media, and novel adiabatic wavelength conversion.

Room 5B

SuE3 • 10.00
Performance of Ge/Si Receivers at 1310 nm, *Gadi Sarid[1], Rami Cohen[1], Eyal Ginsburg[1], Moshe Zadka[1], Yuval Saado[1], Rami Shniderman[1], Mike Morse[2], Olufemi I. Dosunmu[2], Tao Yin[2], Yimin Kang[2]; [1]Numonyx, Israel, [2]Intel Corp., USA.* Receiver measurements for Ge-on-Si normal incident, waveguide *PINs and APDs* at 1310 nm. Process details and testing results of sensitivity, gain BW product, capacitance and dark current.

SuE4 • 10.15
Etched Diffraction Grating Demultiplexer Based on Amorphous Silicon Nanowire Platform, *Ning Zhu[1,2], Jun Song[1,2], Lech Wosinski[1,2], Sailing He[1,2]; [1]Dept. of Microelectronics and Applied Physics, Royal Inst. of Technology (KTH), Sweden, [2]Joint Res. Ctr. of the Royal Inst. of Technology and Zhejiang Univ. (China), Sweden.* We present some theoretical and experimental results of Etched Diffraction Grating demultiplexer based on amorphous silicon nanowire platform, including issues with polarization sensitivity, diffraction efficiency and an application to triplexer.

10.30–11.00 Tea Break, *Exhibit Hall*

Room 2

11.00–13.00
SuF • Optical Switching and Applications
Jin-Wei Shi; Natl. Central Univ., Taiwan, Presider

SuF1 • 11.00 Invited
Photonic Integration for Optical Switching Applications, *Daniel Blumenthal; Univ. of California at Santa Barbara, USA.* We report on the latest advances in photonic integration of functions required for optical routing and switching in the LASOR project including wavelength conversion, packet forwarding, optical buffers, optical synchronizers, optical clock recovery and mode-locked lasers.

SuF2 • 11.30
All-Optical Transistor Operation Based on Bistability Principle in Nonlinear DFB GaInAsP-InP Waveguide: A Transient Perspective, *Yosia Yosia[1], Yoichi Akano[2], Kazuhiko Tamura[2], Tetsuya Mizumoto[2], Shum Ping[1]; [1]Nanyang Technological Univ., Singapore, [2]Tokyo Inst. of Technology, Japan.* All-optical transistor based on bistability principle in nonlinear DFB GaInAsP-InP waveguide was demonstrated experimentally. The unstable state is shown to play a crucial role in distinguishing probe transmission transient artifacts between switching and transistor mode.

Room 4AB

11.00–13.00
SuG • VCSEL, QCL and Optical Devices
Toshihiko Baba; Yokohama Natl. Univ., Japan, Presider

SuG1 • 11.00
UV Pulse Response Nonlinearity of Two Si Photodiodes, *Shao Yang, Darryl Keenan, Marla Dowell; NIST, USA.* We measured the pulse response nonlinearity of two silicon photodiodes at 193 and 248 nm with different measurement conditions. We found significant and varied nonlinearities. We discuss the cause of the nonlinear features.

SuG2 • 11.15 Invited
High Fundamental Mode Power, High Speed InAlGaAs/AlGaAs 1310 and 1550-nm Wafer-Fused VCSELs, *Alexei Sirbu[1], A. Mereuta[1], A. Caliman[1], V. Iakovlev[2], G. Suruceanu[2], E. Kapon[1,2]; [1]Swiss Federal Inst. of Technology, EPFL, Switzerland, [2]BeamExpress S.A., Switzerland.* InAlGaAs/AlGaAs-based wafer-fused long-wavelength VCSELs with tunnel junction injection emitting in the 1310-nm and 1550-nm bands show 6 mW at room temperature and 2.5 mW at 80°C single-mode output and high speed modulation capabilities of 10Gbps.

Room 4C

11.00–12.30
SuH • Probes, Sensors and Assays IV
Chinlon Lin; Nanyang Technological Univ., Singapore, Presider

SuH1 • 11.00 Invited
Femtosecond Laser Integration for Biophotonic Applications: A "Magic Brush" in the Micro/Nano-World, *Ya Cheng[1], Jian Xu[1], Zhizhan Xu[1], Koji Sugioka[2], Katsumi Midorikawa[2]; [1]State Key Lab of High Field Laser Physics, Shanghai Inst. of Optics and Fine Mechanics, China, [2]RIKEN, The Inst. of Physical and Chemical Res., Japan.* Femtosecond laser microfabrication presents unique capabilities for three-dimensional integration and microdevice manufacturing. Here, we review our work on the femtosecond laser integration of microfluidic and micro-electro-optical devices for biophotonic applications.

SuH2 • 11.30
Surface-Enhanced Raman-Scattering Biosensor on Nanoparticle Island Substrates for DNA Detection, *Wu Yuan, Ho-pui Ho, Rebecca Lee, Siu-Kai Kong; Chinese Univ. of Hong Kong, China.* We report a systematic study on the use of nano-sized silver island substrates and gold nano-particle labeling agents as a possible route for highly effective surface enhanced Raman spectrocopy of DNA.

Room 5A

11.00–13.00
SuI • Imaging Applications of Biophotonics II
Shaoqun Zeng; Huazhong Univ. of Science and Technology, China, Presider

SuI1 • 11.00 Tutorial
Advanced Fluorescence and Label-Free Live Cell Microscopy, *Thomas Huser; Univ. of California at Davis, USA.* I will review recent developments in live cell microscopy based on fluorescence microscopy, label-free nonlinear optical microscopy, and the use of novel optical labels with unique spectroscopic properties.

Thomas Huser is an Associate Professor in the Department of Internal Medicine at the University of California at Davis. He also serves as Chief Scientist for the NSF Center for Biophotonics Science and Technology at UC Davis. Until November 2005, he was a Group-leader for Biophotonics at Lawrence Livermore National Laboratory where he developed and applied novel nano-biophotonics tools for characterizing cells. Dr. Huser obtained his Ph.D. in Physics from the University of Basel, Switzerland, where he worked primarily on near-field optical microscopy. At UC Davis he applies label-free spectroscopy, imaging, and single molecule fluorescence microscopy to biological and medical problems at the single cell level.

Room 5B

11.00–13.00
SuJ • LCD
Xiao-Wei Sun; Nanyang Technological Univ., Singapore, Presider

SuJ1 • 11.00 Invited
UV-Curable Liquid Crystal for a Retarder, *Hiroshi Hasebe, Yasuhiro Kuwana, Hidetoshi Nakata, Osamu Yamazaki, Kiyofumi Takeuchi, Haruyoshi Takatsu; DIC Corp., Japan.* A liquid crystalline monomer is applicable to fabricate a retarder in which various types of liquid crystalline alignment are fixed. We have developed the monomer optimized for coating. Applications and materials are reviewed.

SuJ2 • 11.30 Invited
New Field Sequential Color Displays with Transient LCD Modes, *Y. W. Li, Hoi-Sing Kwok; Hong Kong Univ. of Science and Technology, Hong Kong.* A new configuration called stressed splay twist mode is proposed. By using the dynamic response, a field sequential color display is made. A QVGA FSC displays prototype is demonstrated.

Room 2

SuF3 • 11.45
DPSK Demodulation Using Mach-Zehnder Delay-Interferometer on Silicon-on-Insulator Integrated with Diffractive Grating Structure, *Xia Chen, Chao Li, Lin Xu, Hon Ki Tsang; Chinese Univ. of Hong Kong, Hong Kong.* A novel integrated waveguide grating is proposed for the dual functions of coupling light to fiber and as a variable split ratio splitter/combiner. A Mach-Zehnder delay-interferometer was fabricated using the grating coupler/splitter/combiner for DPSK demodulation.

SuF4 • 12.00
Dynamic Process of Wavelength Switching in V-Coupled-Cavity Semiconductor Laser, *Dekun Liu, Min Lou, Jian-Jun He; State Key Lab of Modern Optical Instrumentation, Zhejiang Univ., China.* The dynamic process of wavelength switching in a novel digitally tunable V-coupled-cavity semiconductor laser is analyzed. The dynamic side mode suppression ratio and the switching delay time are calculated to study the wavelength switching transients.

SuF5 • 12.15
Tailoring of Plasmonic Structures for Linear and Nonlinear Optical Application, *Heinrich Graener, Gerhard Seifert, Ahmet A. Ünal, Andrei Stalmashonak, Sabitha Mohan; Martin-Luther-Univ. Halle-Wittenberg, Germany.* We tailor the optical properties of metal-dielectric nanocomposites by modifying shape and concentration of embedded metal nanoparticles. In particular, we demonstrate novel nonlinear properties of layered material being sensitive to the propagation direction of light.

Room 4AB

SuG3 • 11.45 Invited
Terahertz Quantum Cascade Lasers, *Benjamin Williams; Univ. of California at Los Angeles, USA.* An overview of terahertz quantum cascade lasers based on resonant-phonon depopulation is presented. Limiting mechanisms for high-temperature operation are discussed.

SuG4 • 12.15
A Novel Single-Mode High-Power Low-Divergence-Angle Photonic Crystal VCSEL, *Anjin Liu, Hongwei Qu, Mingxin Xing, Wei Chen, Wenjun Zhou, Yejin Zhang, Lianghui Chen, Wanhua Zheng; Nano-Electronics Lab, Inst. of Semiconductors, Chinese Acad. of Sciences, China.* A novel GaAs-based 850 nm photonic crystal VCSEL is demonstrated. Output power of 3.5 mW with a side mode suppression ratio of 30 dB is observed. The divergence angle is 4.2° at 20 mA.

Room 4C

SuH3 • 11.45
Coherent Optical Frequency Modulated Continuous-Wave for Interrogation of Long-Period-Grating Sensors, *Meng Jiang; Ctr. for Optical and Electromagnetic Res., Zhejiang Univ., China.* We proposed a novel real-time sensing scheme based on an alterant optical frequency modulated continuous-wave technique to multiplex long-period-grating (LPG) type sensors. A measurement of bending is demonstrated to verify good performances of the system.

SuH4 • 12.00
The Phase Sensation of Near-Field Optical Enhancement in a Metal Nanoparticle, *Hsing-Ying Lin, Chih-Han Chang, Chen-Han Huang, Cheng-Hsiang Lin, Hsiang-Chen Chui; Natl. Cheng Kung Univ., Taiwan.* Interferences between photon excitation and plasmon mediated re-radiation are revealed on a nanoparticle basis through NSOM. Results manifest the correlation of phase-response and size-dependent optical enhancement to control surface plasmon modes by means of nanostructures.

SuH5 • 12.15
A Study on the Gradient Refraction Index Effect of the Firefly's Ommatidium, *Kuei-Jen Lee[1], Cheng-Hao Ko[2], Bin Li[3]; [1] Dept. of Communication Engineering, Oriental Inst. of Technology, Taiwan, [2]Dept. of Electrical Engineering, Yuan Ze Univ., Taiwan, [3]Key Lab of Optical Communication and Lightwave Technologies, Ministry of Education, Beijing Univ. of Posts and Telecommunications, China.* We found the configuration of the 190 parabolic layers of the firefly's ommatidium are composed of alternate structures with only two periodic refractive indices. The GRIN waveguide is also revealed by the proposed configuration.

Room 5A

SuI2 • 12.00 Invited
Visualizing Cellular Heterogeneity, *Kristin Sott, Emma Eriksson, Mattias Goksör; Univ. of Gothenburg, Sweden.* Gene noise and cell-to-cell variations are essential for the survival of populations. Using optical manipulation and microfluidics for single-cell analysis, properties masked in classical ensemble techniques can thus be visualized.

Room 5B

SuJ3 • 12.00 Invited
Orthoconic Antiferroelectric Liquid Crystals as a Material for Display Application, *Zbigniew Raszewski[1], X. W. Sun[2], Pawel Perkowski[1], W. Piecek[1], J. Zielinski[1], R. Dabrowski[1], E. Nowinowski-Kruszelnicki[1], J. Kedzierski[1]; [1]Military Univ. of Technology, Poland, [2]Nanyang Technological Univ., Singapore.* Orthoconic AntiFerroelectric Smectic Liquid Crystals (OAFLC's) exhibiting 45° tilt angle are very perspective materials for display applications. Surfaced Stabilized OAFLC layer induces the excellent dark state.

Room 2

SuF6 • 12.30 Invited

Advances in InP Optical Modulators, *Rob A. Griffin, A. C. Carter; Bookham, Inc., UK.* The development of complex optical modulator structures based on InP technology is discussed for 40 Gb/s and 100 Gb/s transmission.

Room 4AB

SuG5 • 12.30

High-Temperature Distributed Feedback Quantum Cascade Lasers with Wide Tuning Range Wavelength, *Lin Wei, Yao Yao Li, Ai Zhen Li, Yong Gang Zhang; State Key Lab of Functional Materials for Informatics, Shanghai Inst. of Microsystem and Information Technology, Chinese Acad. of Sciences, China.* In this paper, high performance of distributed feedback quantum cascade lasers operation at 7.7μm and 8.4 μm have been investigated. The wavelength tuning range is 0.33μm, the highest operating temperature is 420K.

SuG6 • 12.45

Fast All Optical Modulation of Quantum Cascade Laser, *Gang Chen, Clyde G. Bethea, Rainer Martini; Stevens Inst. of Technology, USA.* Illuminating the quantum cascade laser front facet with femtosecond Ti:sapphire laser, fast modulations are observed in the laser current and optical emission at frequencies up to 2.87 GHz, limited by the testing equipment.

Room 4C

Room 5A

SuI3 • 12.30 Invited

Fluorescence Lifetime Techniques in Multimodal Tissue Diagnostic Platform, *Laura Marcu; Univ. of California at Davis, USA.* We report the development of a diagnostic system combining fluorescence lifetime spectroscopy and ultrasound backscatter microscopy and its application in diagnosis of tumors and atherosclerotic disease.

Room 5B

SuJ4 • 12.30 Invited

Periodically Poled Optical Nonlinear Crystals for Laser Display Applications, *Chang-Qing Xu; McMaster Univ., Canada.* In this paper, recent progress on the development of periodically poled lithium niobate (PPLN) crystals will be reviewed. Potential applications of the PP-crystals in the fields of laser display are discussed.

13.00–14.30 Lunch Break

Room 2

14.30–16.30
SuK • Optical Amplifiers and Nonlinear Effects
Tetsuya Kawanishi; Natl. Inst. of Information and Communications Technology, Japan, Presider

SuK1 • 14.30 Invited
Recent Advances in Parametric Amplification and Processing, *Stojan Radic, C. Bres; Univ. of California at San Diego, USA.* Recent advances in parametric processing are reviewed. All optical multicasting based on data driven pump parametric amplifier is used as used as example of scalable networking function provided by parametric platform.

SuK2 • 15.00
Weak Four Wave Mixing Products in Optical Waveguides–Sensitive Detection and Referencing to a Bulk Sample, *Anatoly Sherman, Erik Benkler, Harald R. Telle; Physikalisch-Techniche Bundesanstalt (PTB), Germany.* A novel method for sensitive measuring of waveguide third-order optical nonlinearities is demonstrated experimentally. Using a reference sample with well-known optical properties, fluctuations of laser pulse parameters like duration, contrast, and spectral shape are circumvented.

SuK3 • 15.15
Generation of Flat-Top Modulational Instability Gain in Highly Dispersive and Nonlinear Media, *A. B. Moubissi[1], Th. B. Ekogo[1], S. B. Yamgoue[1], J. P. Ngantcha[1], K. Nakkeeran[2], Krishnamoorhty Senthilnathan[3], Ailing Zhang[4]; [1]Univ. des Sciences et Techniques de Masuku, Gabon, [2]Univ. of Aberdeen, UK, [3]Hong Kong Polytechnic Univ., Hong Kong, [4]Tianjin Univ. of Technology, China.* We demonstrate the novel flat-top modulational instability gain for a wide range of modulation frequencies in the anomalous dispersion regime of highly dispersive and nonlinear media. All the analytical results are compared with numerical simulation.

Room 4AB

14.30–16.30
SuL • Photonic Integration II and Optical Interconnects
Wei Chen; Infinera Corp., USA, Presider

SuL1 • 14.30 Invited
Recent Progress on Silica-Based Planar Lightwave Circuits, *Senichi Suzuki; NTT Photonics Labs, NTT Corp., Japan.* Silica-based planar lightwave circuits (PLCs) with hybrid integration and assembly technologies have provided functional components. This paper reviews recent work on hybrid PLCs and their application to ROADM switches, advanced modulators and tunable dispersion compensators.

SuL2 • 15.00
High Speed 2×2 Optical Switch Based on the Carrier Injection, *Wei Qi, Hui Yu, Jianyi Yang, Minghua Wang, Xiaoqing Jiang; Zhejiang Univ., China.* A 2×2 optical switch is fabricated using the carrier injection effect of GaAs/AlGaAs material. At 1.55 μm, the extinction ratio exceeds 21dB for both TE and TM polarizations and the speed is less than 20ns.

SuL3 • 15.15
High-Density Optical Interconnect Based on Precisely Fabricated Mirror Attached Waveguide, *Hidetoshi Numata, Shigeru Nakagawa, Yoichi Taira; IBM Tokyo Res. Lab, Japan.* We present a high density optical interconnect based on precisely fabricated mirror attached waveguide on a printed circuit board. The structure, fabrication, and performance of 12-channel transmitter and receiver operating at 10 Gbps are presented.

Room 4C

14.30–16.30
SuM • Optical Coherence Tomography
Jianan Y. Qu; Hong Kong Univ. of Science and Technology, Hong Kong, Presider

SuM1 • 14.30 Tutorial
Optical Coherence Tomography: Past, Present, and Future, *Zhongping Chen; Univ. of California at Irvine, USA.* Optical coherence tomography (OCT) is an imaging technology that has found many clinical applications. Several key improvements resulted directly from advances in telecommunication field. This tutorial will review the principle of OCT and highlight recent advances.

Dr. Zhongping Chen is a Professor and Vice Chair of the Department of Biomedical Engineering at University of California at Irvine. He is a Co-Founder of OCT Medical Imaging Inc. Dr. Chen received his B.S. degree in Applied Physics from Shanghai Jiao Tong University in 1982, his M. S. degree in Electrical Engineering from Cornell University in 1987, and his Ph.D. degree in Applied Physics from Cornell University in 1993.

Room 5A

14.30–16.30
SuN • Medical Diagnostics and Therapy
Dennis L. Matthews; Univ. of California at Davis, USA, Presider

SuN1 • 14.30 Invited
Diagnostics and Treatment of Tumours Using Laser Techniques, *Katarina Svanberg; Lund Univ., Sweden.* Laser-induced fluorescence (LIF) is used for monitoring biomolecular changes in tissue under transformation from normal to dysplastic and cancerous tissue. Photodynamic therapy (PDT) is a selective therapy for local tumour eradication. Clinical examples of these techniques will be discussed.

SuN2 • 15.00 Invited
Bionic Vision: Current Progress and Future Challenge, *QiuShi Ren, KaiJie Wu, XiaoHong Sui, LiMing Li, Xinyu Chai; Shanghai Jiao Tong Univ., China.* Electrical stimulation of optic nerve with penetrating electrode array for visual prosthesis has been proposed by C-Sight. Some aspects of current progress are introduced, including penetrating microelectrode array, neural electrical stimulator, and *in-vivo* electrophysiological study.

Room 5B

14.30–16.30
SuO • Emissive Displays
Xiao-Wei Sun; Nanyang Technological Univ., Singapore, Presider

SuO1 • 14.30 Invited
Photoluminescent Flexible Displays, *Kyung Cheol Choi, Seung Hun Kim, Cheol Jang, Kuk Joo Kim, Sung-Il Ahn; KAIST, Republic of Korea.* A new emissive flexible display based on light emission from microplasma was proposed. The proposed display had adequate sustain margin and good flexibility, consequently, showed the feasibility of flexible displays for the next generation.

SuO2 • 15.00 Invited
The Structure Optimization for High-Efficiency White Organic Light-Emitting Diodes, *Ji Hoon Seo, Y. K. Kim; Hongik Univ., Republic of Korea.* We demonstrated the structure optimization for high-efficiency WOLEDs using CBEML with different functional materials or HCBS between emitting layers. The optimized WOLEDs characteristics showed the maximum EQE of 11.8%, the maximum LE of 25.29 cd/A.

Room 2

Room 4AB

Room 4C

Dr. Chen's research interests encompass the areas of biomedical photonics, microfabrication, biomaterials and biosensors. His research group has pioneered the development of functional optical coherence tomography, which simultaneously provides high resolution 3-D images of tissue structure, blood flow, and birefringence. He has published more than 100 peer-reviewed papers and review articles and holds a number of patents in the fields of biomaterials, biosensors, and biomedical imaging.

Dr. Chen is a Fellow of the American Institute of Medical and Biological Engineering (AIMBE) and a Fellow of the The Optical Society.

Room 5A

Room 5B

SuK4 • 15.30
Numerical Investigation on Soliton Pulse Propagation in Photonic Crystal Fiber, *R. Vasantha Jayakantha Raja, K. Porsezian; Pondicherry Univ., India.* By using numerical analysis, we investigate the dynamical behavior of fundamental soliton in solid core PCF using a generalised nonlinear Schrodinger equation. Finally, we compare the results with different designing parameters of PCF.

SuK5 • 15.45
Investigation of Fast Power Transient Control in Constant Power-Mode Terminal EDFAs for 40Gb/s Systems, *Brian Shia[1], Martin Williams[1], Aravanan Gurusami[1], Christopher Lin[1], Peter Wigley[1], Jimmy Wu[2]; [1]Avanex Corp., USA, [2]Avanex Communication Technologies Co. Ltd, China.* We demonstrate a simple and low-cost solution for fast power transient control in constant power-mode terminal EDFAs. Significant output power overshoot/undershoot reduction has been achieved with implementation of digital pump control.

SuL4 • 15.30
An Ultra-Compact Polarization Insensitive Directional Coupler, *Yaocheng Shi[1,2], Anand Srinivasan[2], Sailing He[1,2]; [1]Zhejiang Univ., China, [2]Royal Inst. of Technology (KTH), Sweden.* We investigate the lag-effect in the dry etching process. In one etch step, asymmetric waveguides can be fabricated. This special property can be utilized for the design of an ultra-compact polarization insensitive directional coupler.

SuL5 • 15.45
Theory and Practice of a Polarization Independent Reflective SOA for WDM-PON Applications, *Sareh Taebi, Simarjeet S. Saini; Univ. of Waterloo, Canada.* A theoretical model for the saturation-power of an RSOA is described and compared with that of an SOA. A 1.25 Gbps L-band RSOA is demonstrated with >20 dB gain, <1dB PDG and -1.7 dBm P_{sat}.

SuM2 • 15.30 Invited
High Resolution Endoscopic Optical Coherence Tomography Driven by a Hollow Ultrasonic Motor, *Ping Xue, Jianan Li; Tsinghua Univ., China.* Optical coherence tomography (OCT) is an emerging technology for micron-scale cross-sectional imaging of bio-tissue. This paper demonstrates an endoscopic OCT driven by a hollow ultrasonic motor (1mm in diameter) for high resolution circular scanning imaging.

SuN3 • 15.30 Invited
Studying Leukemia Metastasis by *in vivo* Imaging and Flow Cytometer, *Xunbin Wei, Yun Chen, Yan Li, Li Zhang, Guangda Liu; Inst. of Biomedical Sciences, Fudan Univ., China.* A recently developed "*in vivo* flow cytometer" and optical imaging are used to assess leukemic cell spreading and the circulation kinetics, as well as assess the effectiveness of the potential therapeutic interventions.

SuO3 • 15.30 Invited
Boundary Image-Sticking Phenomena in AC Plasma Display Panel, *Heung-Sik Tae[1], Choon-Sang Park[1], Jae Kwang Lim[1], Jeong-Hyun Seo[2], Bhum Jae Shin[3]; [1]Kyungpook Natl. Univ., Republic of Korea, [2]Incheon Univ., Republic of Korea, [3]Sejong Univ., Republic of Korea.* In this paper, the two kinds of solutions to remove a boundary image sticking of an ac plasma display panel are introduced.

Room 2

SuK6 • 16.00
Polarization Dependence of Raman Gain Efficiency Distribution in Single-Mode Fiber, *Yasuhiro Tsutsumi, Tetsuro Yabu, Masaharu Ohashi; Osaka Prefecture Univ., Japan.* Polarization dependence of Raman gain efficiency distribution in a single-mode fiber is investigated experimentally and theoretically. It is shown polarization states of signal and pump lights have an effect on Raman gain efficiency distribution.

SuK7 • 16.15
A Novel Model to Determine Fluorescence and Loss Coefficient in Doped Optical Fiber Used in WDM Transmission Systems, *Maryam Karimi[1], Faramarz E. Seraji[2]; [1]Physics Group, Razi Univ., Islamic Republic of Iran, [2]Iran Telecom Res. Ctr., Islamic Republic of Iran.* Characterization of fiber laser and amplifiers is a challenging research in optical communication networks. We proposed a novel model to evaluate absorption and emission cross-sections, and loss coefficients of doped optical fiber, simultaneously.

Room 4AB

SuL6 • 16.00 Invited
Recent Progress on Polymer Photonics and Optical Interconnects, *Xiaolong Wang[1], Ray Chen[2]; [1]Omega Optics, USA, [2]Univ. of Texas at Austin, USA.* We present the latest progress on polymer photonics and optical interconnects by introducing several innovative design concepts, such as hybrid silicon-polymer photonic crystal waveguide, domain inverted electro-optic polymer linear modulator, and bi-directional optical bus structure.

Room 4C

SuM3 • 16.00
Double Clad Fiber Devices for Combined OCT-FS System, *Seon Young Ryu[1], Jihoon Na[1], Hae Young Choi[1], Zhihua Ding[2], Byeong Ha Lee[1]; [1]Gwangju Inst. of Science and Technology, Republic of Korea, [2]Zhejiang Univ., China.* We demonstrate combined optical coherence tomography (OCT) and fluorescence spectroscopy (FS) system with the aid of double clad fiber devices. The simultaneous measurements of OCT and FS signals of a plant tissue are demonstrated.

SuM4 • 16.15
Using Plasmon-Resonant Gold Nanorods as Absorption Contrast Agents for Optical Coherence Tomography, *Ming Wei[1,2], Jun Qian[1,2], Qiuqiang Zhan[1,2], Xin Li[1,2], Fuhong Cai[1,2], Arash Gharibi[1,2], Sailing He[1,2]; [1]Ctr. for Optical and Electromagnetic Res., Zhejiang Univ., China, [2]Joint Res. Ctr. of Photonics of the Royal Inst. of Technology (Sweden) and Zhejiang Univ., China.* Plasmon-resonant gold nanorods were used as high absorption contrast agents for optical coherence tomography (OCT). It is shown that nanorods imaging, with resonance wavelengths overlapping OCT source, can provide more information than conventional OCT images.

Room 5A

SuN4 • 16.00
Organically Modified Silica Nanoparticles with Photosensitizing Drugs Encapsulated for Photodynamic Therapy, *Jun Qian, Arash Gharibi, Xin Li, Sailing He; Ctr. for Optical and Electromagnetic Res., Zhejiang Univ., Joint Res. Ctr. of Photonics of the Royal Inst. of Technology (Sweden) and Zhejiang Univ., China.* Organically modified silica nanoparticles, doped with photosensitizers, are synthesized, characterized and used for photodynamic therapy (PDT) of cancer. These nanoparticles were uptaken by tumor cells *in vitro* and the effect of photon-induced toxicity was demonstrated.

SuN5 • 16.15
Monte Carlo Simulation of Polarized Light Scattering in Anisotropic Medium, *Nan Zeng, Tianliang Yun, Wei Li, Hui Ma; Lab of Optical Imaging and Sensing, Graduate School at Shenzhen, Tsinghua Univ., China.* We present an anisotropic phantom composed of spherical and cylindrical structures, and apply the Monte Carlo program to simulate and analyze how to describe the fiber orientation distribution and tissue anisotropy by polarization imaging.

Room 5B

SuO4 • 16.00 Invited
High Efficiency and Compact Lasers for Laser Projection Display, *Yong Bi[1], Bin Wang[1], Yan Qi[1], Boxia Yan[1], Shaowei Chu[2], Tiejia Wu[2], Ying Zhang[3], Wei Yan[3], Haitao Min[3], Zhenqing Tian[3]; [1]Acad. of Opto-Electronics, Chinese Acad. of Sciences, China, [2]Graduate Univ. of Chinese Acad. of Sciences, China, [3]Phoebus Vision Opto-Electronics Technology Ltd, China.* Efficient and compact green lasers with intracavity frequency doubling were developed. Over 52% optical-optical efficiency with 1.3W output power was obtained, and the lifetime was over 10000 hours. Compact digital laser powers were also developed.

16.30–17.00 Tea Break, *Exhibit Hall*

Room 2

17.00–18.30
SuP • New Fiber Designs
Honghai Wang; Yangtze Optical Fiber and Cable Co., China, Presider

SuP1 • 17.00 Invited
Recent Developments in Optical Fiber Technology and Their Impact Opening New Application Spaces, *Claudio Mazzali; Corning Inc, USA.* New developments in glass and semiconductor technology are enabling new application spaces for optical fibers. Here we review some of these recent breakthroughs and how they are opening spaces not yet considered for optical transmission.

SuP2 • 17.30 Tutorial
Bend Insensitive Fiber Design Strategies, *David Peckham; OFS Labs, USA.* Robust bending sensitivity of optical fiber can enable its low cost deployment deep into the telecom network. We will discuss the bending loss of single mode optical fibers and design techniques to improve bending sensitivity.

Room 4AB

17.00–18.30
SuQ • Optical Components and Modeling
Suzuki Senichi; NTT Photonics Labs, NTT Corp., Japan, Presider

SuQ1 • 17.00 Invited
Waveguide Optical Isolators for Integrated Optics, *Tetsuya Mizumoto, Yuya Shoji, Ryouhei Takei, Kazumasa Sakurai; Tokyo Inst. of Technology, Japan.* Several approaches to realize the isolator integratable with active devices are described. The surface activated direct bonding technique is addressed as a key technology for integrating a magneto-optic material in semiconductor based photonic circuits.

SuQ2 • 17.30
GS-ES Mode Competition via Resonant Carrier Scattering in Quantum Dot Lasers, *Sheng Zhou[1], Xiangpu Zhang[1], Z. G. Lu[2]; [1]Concordia Univ., Canada, [2]Inst. for Microstructural Sciences, Natl. Res. Council Canada, Canada.* The resonant carrier scattering in quantum-dot lasers is proposed. The new rate equations including RCS effect is established. The calculations are in agreement with experiments and explain the phenomenon of GS and ES mode competition.

Room 4C

17.00–18.30
SuR • Probes, Sensors and Assays V
Hwa-yaw Tam; Hong Kong Polytechnic Univ., China, Presider

SuR1 • 17.00
Simultaneous Temperature and Strain Measurement with Enhanced Resolution up to 20 Times by Using a Compact Hybrid Optical Waveguide Bragg Grating, *Kaiming Zhou, Xianfeng Chen, David Webb, Lin Zhang, Ian Bennion; Photonics Res. Group, Aston Univ., UK.* A hybrid waveguide Bragg grating in optical fiber was fabricated and characterized, showing thermal responsivity of 211pm/°C. Proposed being used in fiber sensor, it demonstrates enhanced resolution by 20x and 2x for temperature and strain.

SuR2 • 17.15
LIDAR Technique for Remote Gas Analysis in Solid Scattering Media, *Zuguang Guan[1], Märta Lewender[1], Rasmus Grönlund[1,2], Hans Lundberg[1], Sune Svanberg[1]; [1]Lund Univ., Sweden, [2]SpectraCure AB, Sweden.* LIDAR techniques are used to measure gases in solid scattering media remotely, by analyzing the differential absorption observed in the multiple scattering light. The gas exchange (O_2/N_2) in polystyrene foam is monitored.

SuR3 • 17.30
Gas Analysis in Food Packages Using Tunable Diode Laser Spectroscopy, *Märta Lewender[1], Zuguang Guan[1], Linda Persson[1], Annika Olsson[2], Sune Svanberg[1]; [1]Atomic Physics Div., Lund Univ., Sweden, [2]Packaging Logistics Div., Lund Univ., Sweden.* Gas inside packed food is monitored by a technique named GASMAS, GAs in Scattering Media Absorption Spectroscopy. The sharp gas absorption line in contrast to the broadband bulk absorption enables gas detection *in situ*.

NOTES

Room 2

David W. Peckham received the BS and ME degrees in Electrical Engineering from the University of Florida. He started his career at the Bell Labs Transmission Media Laboratory in Norcross, GA in 1982 working on optical fiber measurement techniques. Since 1989 he has focused on the design, process development and commercialization of optical fibers for high capacity transmission systems at Bell Labs, Lucent Technologies and currently OFS. He received the 2002 OSA Engineering Excellence Award recognizing his contributions in the design and commercialization of fibers enabling high speed, wideband WDM networks. He is currently a CMTS/Research Fellow at OFS.

Room 4AB

SuQ3 • 17.45
An Efficient Standing-Wave Model for Simulation of λ/4 - Shifted DFB Lasers, *Yanping Xi, Xun Li, Wei-Ping Huang; McMaster Univ., Canada.* A standing-wave model based on "cold" cavity modes for simulating quarter-wavelength (λ/4) shifted DFB lasers is presented. This model is validated by benchmark results, and shown to be more efficient.

SuQ4 • 18.00 Invited
Modelling Photonic Integrated Circuits Using TDTW, *Dominic F. Gallagher; Photon Design, UK.* We present the development of a simulation tool based on the time domain travelling wave (TDTW) method for the modelling of active and passive photonic integrated circuits.

Room 4C

SuR4 • 17.45
Improving Optical Properties of Gold Nanorods Synthesized via the Effect of Electrolytes, *Qiuqiang Zhan, Jun Qian, Xin Li, Ming Wei, Sailing He; Ctr. for Optical and Electromagnetic Res., Joint Res. Ctr. of Photonics of the Royal Inst. of Technology (Sweden) and Zhejiang Univ., China.* We report an effective method to synthesize gold nanorods with tunable longitudinal extinction peak wavelength from 781 to 955 nm depending on the amount of NaCl added. Those as-prepared gold nanorods are helpful for bioimaging.

SuR5 • 18.00
Thermal Insensitive Optical Liquid Level Sensor Based on Excessively Tilted Fibre Bragg Grating, *Chengbo Mou, Kaiming Zhou, Lin Zhang, Ian Bennion; Photonics Res. Group, School of Engineering and Applied Science, Aston Univ., UK.* We demonstrate a liquid level sensor based on the surrounding medium refractive index (SRI) sensing using of an excessively tilted fibre Bragg grating (ETFBG). The sensor has low thermal cross sensitivity and high SRI responsivity.

SuR6 • 18.15
Gas Sensing Using Multi-Mode Diode Lasers in Combination with Correlation Spectroscopy, *Xiutao Lou[1], Gabriel Somesfalean[2], Zhiguo Zhang[1]; [1]Harbin Inst. of Technology, China, [2]Lund Inst. of Technology, Sweden.* A novel method for gas sensing by multi-mode diode lasers employing correlation spectroscopy is proposed. This method has been demonstrated on C_2H_2, CO_2 and O_2, representing the merits of long-term stability, low cost and ease-of-use.

NOTES

AOE Key to Authors and Presiders

(**Bold** denotes Presider or Presenting Author)

Asia Optical Fiber Communication and Optoelectronic Exposition & Conference (AOE) 2008

UPDATE SHEET

Location Update:

The **Cocktail Hour / Conference Banquet** will be held at the Lai Tian Hua Restaurant (Opposite Sheraton Hotel), 4th Floor, Maxdo Center, 8 Xingyi Road.

Plenary Updates:

The updated plenary schedule is:

9:30 a.m.–10:15 a.m.
FA1, Applications of Optics in Solar Energy Industries, *Dr. Zhengrong Shi, Chairman of the Board of Directors, CEO, Suntech Power Holdings Co., Ltd., China*

10:15 a.m.–11:00 a.m.
FA2, Laser Spectroscopy Applied to the Environmental and Medical Fields, *Prof. Sune Svanberg Head of the Atomic Physics Division, Lund Univ. and Director of the Lund Laser Ctr., Sweden*

11:30 a.m.–12:15 p.m.
FB1, Progress of GaN-Based Nonpolar/Semipolar Visible Light Emitting Devices, *Prof. Shuji Nakamura, Materials Dept., Univ. of California at Santa Barbara, USA*

12:15 p.m.–1:00 p.m.
FB2, Optical Networks--The Next Wave, *Dr. Rod C. Alferness; Chief Scientist, Bell Labs, Lucent Technologies, USA*

Author Updates:

SaK4: The author block should read as follows, *Chuen-Ching Wang[1], Wen-Ren Yang[1], Jin-Jia Chen[1], Wei-Wen Shih[1], I-Ju Wang[1], Tzong-Yih Guo[1], Kwang-Long Huang[2]; [1]Dept. of Electrical Engineering, Changhua Univ. of Education, Taiwan, [2]Graduate Inst. of Electrooptic Engineering, Mingdao Univ., Taiwan.*

SuJ2, New Field Sequential Color Displays with Transient LCD Modes, will be presented by *Y. W. Li; Hong Kong Univ. of Science and Technology, Hong Kong.*

SuP1, Recent Developments in Optical Fiber Technology and Their Impact Opening New Application Spaces, will be presented by *Ming-Jun Li, Corning Inc., USA.* The updated author block should read, *Claudio Mazzali, Ming-Jun Li; Corning Inc, USA.*

SuP2, Bend Insensitive Fiber Design Strategies, will be presented by *Jinkee Kim, OFS Labs, USA.* The updated author block should read, *Jinkee Kim, David Peckham; OFS Labs, USA.*

(continued on reverse)

Abstract Update:

SaL6, **Opportunities for Commercialisation in Wuhan, Optics Valley of China,** *Dexiu Huang, Huazhong University of Science and Technology, China.* Wuhan East Lake Hi-Tech. Development Zone, also named as "Wuhan. Optics Valley of China (OVC) ", is the Optoelectronic Base approved by Chinese Government. There are hundreds of optoelectronic industries in OVC. It covers the powerful lasers and their applications, fibers and cables, fiber communications equipments and devices. LED lighting devices, optical display and so on. There are 18 universities in OVC. Huazhong University of Sci.&Tech.(HUST), the one of the most famous universities in China, is located the core of OVC. This paper will introduce the cooperation between OVC and HUST. OVC can also provide the opportunities for transferring technical achievements from universities both China and overseas.

Presider Updates:

Xiaowei Sun, Nanyang Technological Univ., Singapore will preside over session **FE, Solar Cells** on Friday, October 31, from 2:00 p.m.–4:00 p.m.

Yikai Su, Shanghai Jiao Tong Univ., China will preside over session **SaJ, Radio over Fiber and Radio Frequency Optics** on Saturday, November 1 from 11:00 a.m. - 12:45 p.m.

Additional Acknowledgment:

The authors from paper **SaG3, Tunable Nonlinear-Polarization-Rotation Based Multiwavelength Fiber Laser with In-Line Fiber Filter,** would like to acknowledge the support from the NSFC under the grant 60807014.