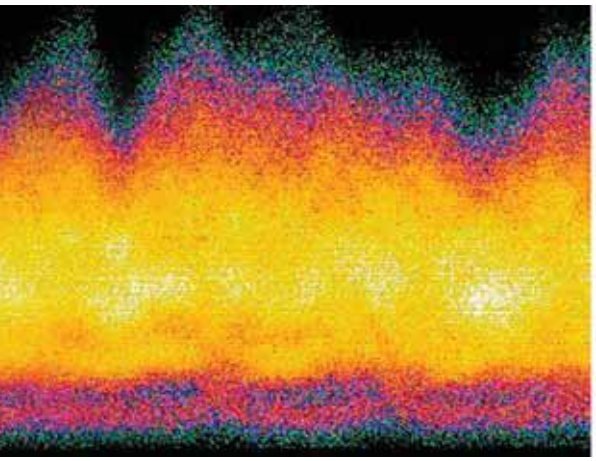
Technical Program

SPIE APOC

Asia-Pacific Optical Communications

26–30 October 2008
Zhejiang International Conference Center
Hangzhou, China



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

Cooperating Organizations:

Zhejiang Optical Society
Hangzhou Municipal Government
Municipal Government of Fuyang City

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Lars Thylén,
Joint Research Center of Photonics of the Royal Institute of Technology (Sweden) and Zhejiang University (China)

Wei Yang,
Zhejiang University (China)

Bingkun Zhou,
Tsinghua University (China)

Welcome To APOC 2008!

It is our great pleasure to welcome you to 8th SPIE Asia-Pacific Optical Communications (APOC), one of the world's major conferences in the field of optical communications. APOC 2008 is taking place in the Hangzhou region, situated in the fast-developing "Changjiang Triangle" - the strongest economic region in China. The conference is organized by the Chinese Optical Society, SPIE and the Joint Research Center of Photonics of the Royal Institute of Technology (Sweden) and Zhejiang University. APOC 2008 will also include an industry exhibition.

On October 27, APOC 2008 will feature a half day of plenary presentations, given by executives and experts from the optical communications and telecom communities. The staging of half-day plenary presentations has been a very successful trademark of APOC.

You will hear 625 best invited and contributed papers by many of the world's most prominent researchers from academia and industry. Three workshops will be given: 1) Photonics for Sustainable Development, 2) Challenges, Opportunities and Complementarities in Photonics and Electronics for Next-generation Systems and Networks and 3) Challenges in Optical Network Deployment and Services Rollout. All workshops are given on Sunday, October 26th. One complimentary short course on the hot topic of Nanophotonics Devices for Optical Communications will be given, also on Sunday.

A full-day Industry Forum with emphasis on Chinese and international business and market developments will enable you to learn from telecom executives and technical managers about new business opportunities. The APOC Technical Program Committee is pleased to continue the selection of the Best Student Paper Awards, which will be given to students who are first authors and presenters of exceptional contributed talks. One winner each will be selected for the four subject areas of the conference.

A Welcome Reception will be held for all conference attendees on Monday October 27. The Impression West Lake performance-a unique show in Hangzhou will be organized on Tuesday October 28, and a banquet on Wednesday October 29. On Friday October 31, interested attendees may visit Fuyang City and participate in a post-conference satellite Industry Forum. The visits and the industry forum will be sponsored by the Fuyang government, with an excursion tour to Thousand-Islands Lake.

Enjoy your stay in Hangzhou, the city which is also called "paradise on earth". Hangzhou has throughout history been also known as a city of learning and is today home of one of China's highest ranking universities, Zhejiang University (ZJU). ZJU is also where optical engineering in China was born with the establishment of the Laboratory of Optical Instrumentation in 1952. Fuyang City, the "Optical Valley" of Zhejiang province, is home to several large Chinese fiber-optic cable and component manufacturers and is only about a 45-minute drive away.

We welcome your participation in this important international event and are looking forward to meeting you at APOC 2008 in beautiful and historic Hangzhou!

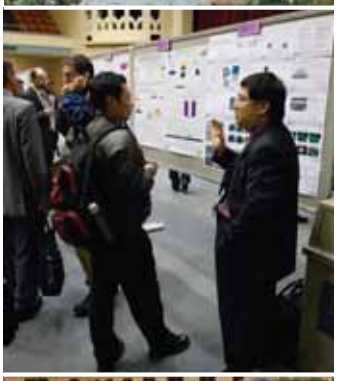
Right cover image courtesy of GA Tech.

Contents

SPIE would like to express its deepest appreciation to the symposium chairs, conference chairs, program committees, and session chairs who have so generously given of their time and advice to make this symposium possible.

The symposium, like our other conferences and activities, would not be possible without the dedicated contribution of our participants and members. This program is based on commitments received up to the time of publication and is subject to change without notice.

Free
EXHIBITION
27–29 OCTOBER 2008



Daily Schedule

Sunday 26 October	Monday 27 October	Tuesday 28 October	Wednesday 29 October	Thursday 30 October
Course, p.17 **Nanophotonics Devices for Optical Communications** *(Thylén, Marcinkevičius)*, 9.00 to 12.00, p.	**Plenary Session,** p.12 **Plenary Presentations:** • **Challenges of Optical Broadband Network** *(Wu)* • **Nanophotonic Devices** *(Bimberg)* • **Photonic Challenges Toward Future Broadband Society** *(Itaya)* • **Technologies for a Renaissance in Long-Distance Optical Communications** *(Tkach)*	**Industry Forum,** p.14 **Industry For Presentations:** • **Xiongyan Tang,** CNC Labs. • **Chen Jie,** ZTE Corp. • **Patrick Leisching,** Nokia siemens Netowrks • **Xulei Sang,** Alcatel-Lucent Shanghai Bell • **Peter Boland,** Xtera Communications • **T. J. Xia,** DMTS, Verizon • **Matt Walker,** OVUM RHK • **Ted Chang,** StrataLight Communications • **Stan Lumish,** Lumish Technology Consulting • **David Payne,** Univ. of Southampton • **Bardia Pezeshki,** Santur Corp. • **Michael Minneman,** dBM Optics, Inc.		
Workshops, p.18-26 **Workshop I: Challenges, Opportunities and Complementarities in Photonics and Electronics for Next-generation Systems and Networks** *(Chiaroni, Shieh, Tucker)* 9.00 to 17.30, p.18 **Workshop II: Challenges on Optical Network Deployment and Services Rollout** *(Liu, Wosinska, Yang)* 8.30 to 12.15, p.22 **Workshop III: Photonics and Sustainable Development** *(Andersson, Chen)* 14.00 to 17.00, p.25				
	Technical Conferences, p.28-57 7134 **Passive Components and Fiber-based Devices V** *(Li)* 7135 **Optoelectronic Materials and Devices III** *(Luo)* 7136 **Optical Transmission, Switching, and Subsystems VI** *(Kitayama)* p 7137 **Network Architectures, Management, and Applications VI** *(Hu)* p.			
	Welcome Reception **Welcome Reception,** 18.00 to 20.30 Convention Center, 3rd Floor Restaurant, p.3	**Tour** **Impression West Lake Show,** 20.00 to 21.15, p.3	**Banquet** **APOC Banquet and Best Student Paper Award,** 18.00 to 21.00, p.3	
	Exhibition APOC 2008 will feature an industry exhibition **Room: Middle Gate Hall**			
	10.15 to 17.00	9.00 to 17.00	9.00 to 17.00	

Conference Location

APOC 2008 will be held at Zhejiang International Convention Center which is located beside the West Lake, and within the provincial administrative district.

Official Language

The official language of the conference presentations is English.

Coffee/Tea Break

Coffee/Tea will be served during the morning and afternoon breaks. Please check the individual technical conference listings for exact times.

Registration Information

- Full conference registration fees include admission to all conference sessions, panels, forum, poster sessions, and coffee/tea breaks. Also included is a CD-ROM volumes of Proceedings of SPIE.
- Courses are complimentary.

Poster Presentations

Room: Multi-function Room

Wednesday, October 29 . . . . . 12.30 to 14.00

Poster authors will begin displaying posters after 12.00 Wednesday morning. The poster session, with authors present at their posters, will be held Wednesday from 12.30 to 14.00.

Poster presentations are listed at the end of the conference program, p. 52-57.

Exhibition

Room: Middle Gate Hall

APOC 2008 will feature an industry exhibition.

Monday, October 27 . . . . . 10.15 to 17.00

Tuesday-Wednesday, October 28-29 . . . . . 09.00 to 17.00

Conference Proceedings

Manuscripts will be reviewed by the technical subcommittee co-chairs and selected experts. Conference proceedings will be published in English and available after the symposium. SPIE Proceedings are indexed in INSPEC, Ei Compendex, Physics Abstracts, Chemical Abstracts, International Aerospace Abstracts, Index to Scientific and Technical Proceedings, and NASA Astrophysical Data System.

Impression West Lake Show

Tuesday, October 28 . . . . . 20.00 to 21.15

Don't miss this exciting show. The evening features a large-scale night performance held on the lakefront, near Quyuan Garden and Yanggong Causewaylet. Directed by the arguably best-ever Chinese moviemaker, Yimou Zhang. There are hundreds of dancers performing in a sequence of episodes.

The Impression West Lake Show is related to an ancient local Chinese story of White Snake.

Fee is $30 per person, purchase tickets onsite at registration. Shuttles depart from the Convention Center and conference hotels at 19.30 hrs. More details will be provided onsite.

APOC Banquet, and Best Student Paper Award

Wednesday, 29 October

Huazhongcheng Ou Xiang Ju Restaurant
(beside Leifeng Pagoda)

Time: 18.00 to 21.00
Shuttle leaves Convention Center at 17.30
Total Fee: $50

Banquet fee not included with registration. Please reserve and pay in advance at the Registration Desk.

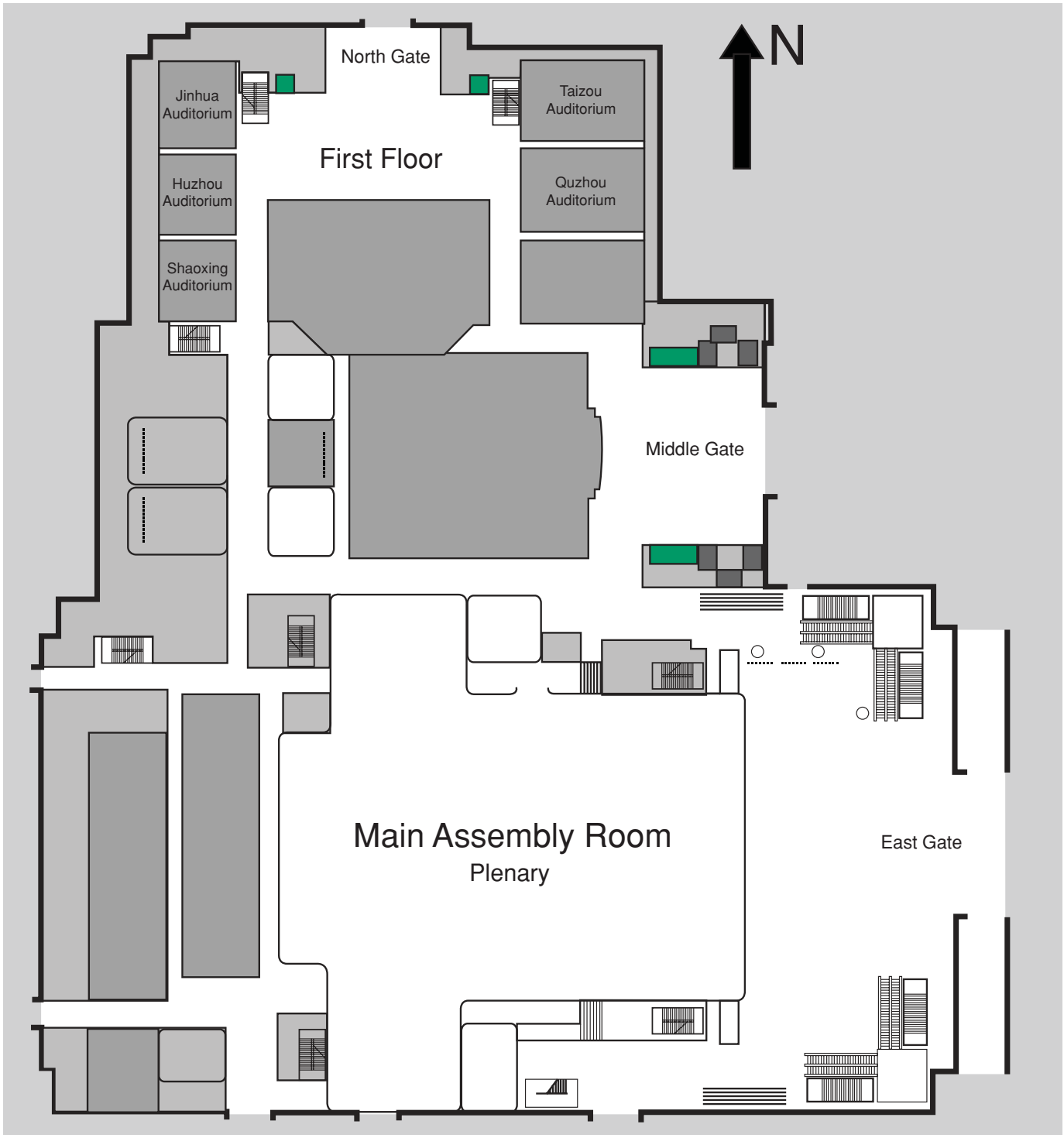
Best Student Paper Award Sponsored by RSOFT Design Group

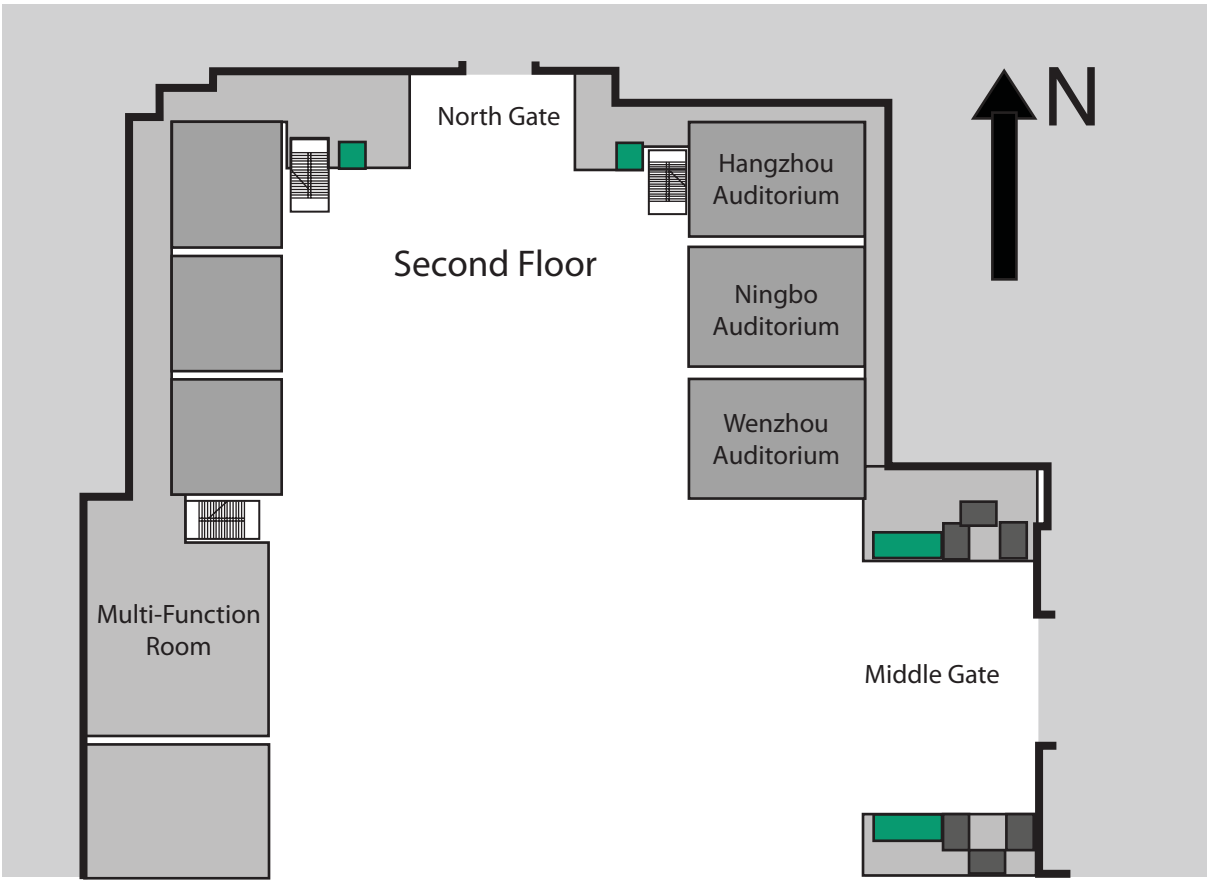
Excursions and One-Day Tours

Register for tours onsite at Registration.

Several scenic tours will be organized, including West Lake Southern Bank Tour (Six Harmonies Pagoda,Tiger Spring, Viewing Fish in Flowery Pond, Nine Creeks and Eighteen Gullies, Orioles Singing in the Willows, West Lake Heaven and Earth, Lingshan Hill Illusion, Three Caves at Rosy Cloud, Evening Bell Ringing at Nanping Hill), West Lake Northern Bank Tour (Jade Spring, China Tea Museum, Three Pools Mirroring the Moon, Peak Flying from Afar in Lingyin, Solitary Hill, Yue Fei's Temple, Autumn Moon Over the Calm Lake, Spring Dawn at Su Causeway, Tea at Dragon Well, Lingering Snow on the Broken Bridge), and Thousand Islands Lake excursion.

Floor Plan


North Gate
Jinhua Auditorium
Taizou Auditorium
First Floor
Huzhou Auditorium
Quzhou Auditorium
Shaoxing Auditorium
N
Middle Gate
Main Assembly Room
Plenary
East Gate


North Gate
Second Floor
Hangzhou Auditorium
Ningbo Auditorium
Wenzhou Auditorium
Multi-Function Room
Middle Gate
N

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Bingkun Zhou, Tsinghua Univ. (China)

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Joint Research Center of Photonics

Cooperating Organizations:

Zhejiang Optical Society
Hangzhou Municipal Government
Municipal Government of Fuyang City

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Conference 7134

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Conference 7135

Optoelectronic Materials and Devices III

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Conference 7136

Optical Transmission, Switching, and Subsystems VI

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Kim Roberts, Nortel Networks Ltd. (Canada)

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Conference 7137

Network Architectures, Management, and Applications VI

Conference Chair:

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Program-at-a-Glance

	Conference 7134 Passive Components and Fiber-based Devices V		Conference 7135 Optoelectronic Materials and Devices III	
	Room: Taizhou Auditorium	Room: Jinhua Auditorium	Room: Quzhou Auditorium	Room: Huzhou Auditorium
	Concurrent Running Sessions			
Monday 27 October				
08.30 to 09.15	APOC 2008 Welcome from the General Chairs			
09.15 to 10.15	**Plenary Session**			
10.15 to 10.45	Coffee/Tea Break			
10.45 to 11.45	**Plenary Session**			
11.45 to 13.00	Lunch Break			
13.15 to 15.00	**SESSION 1a** Photonic Crystal Fibers I	**SESSION 1b** Fiber Lasers and Amplifiers	**SESSION 1a** Photonic Integration I	**SESSION 1b** Nano Photonics I
15.00 to 15.30	Coffee/Tea Break			
15.30 to 17.30	**SESSION 2a** Optical Fibers I	**SESSION 2b** Fiber Bragg Gratings	**SESSION 2a** Wide Bandgap Semiconductor Devices I	**SESSION 2b** Novel Active Devices I
Tuesday 28 October				
8.30 to 10.00	**SESSION 3a** Best Student Paper Session	**SESSION 3b** Optical Components I	**SESSION 3a** Best Student Paper Session	**SESSION 3b** Novel Active Devices II
10.00 to 10.30	Coffee/Tea Break			
10.30 to 12.00	**SESSION 4a** Specialty Fibers	**SESSION 4b** Optical Components II	**SESSION 4a** Photonic Integration II	**SESSION 4b** Nano Photonics II
12.00 to 13.30	Lunch Break			
13.45 to 15.00	**SESSION 5a** Photonic Crystal Fibers II	**SESSION 5b** Optical Buffer and Signal Processing	**SESSION 5a** Nonlinear Photonics	**SESSION 5b** Novel Active Devices III
15.00 to 15.30	Coffee/Tea Break			
15.30 to 17.30	**SESSION 6a** Optical Fibers II	**SESSION 6b** Silicon Photonics	**SESSION 6a** Optical Switches and Modulators I	**SESSION 6b** Si Photonics
Wednesday 29 October				
08.30 to 10.00	**SESSION 7a** Nonlinear Signal Processing	**SESSION 7b** Optical Switches	**SESSION 7a** Photonic Integration III	**SESSION 7b** Novel Active Devices IV
10.00 to 10.30	Coffee/Tea Break			
10.30 to 12.00	**SESSION 8a** Polarization Effects	**SESSION 8b** Fiber Sensors	**SESSION 8a** Wide Bandgap Semiconductor Devices II	**SESSION 8b** Nano Photonics III
11.45 to 13.30	Lunch Break			
13.30 to 15.00	**SESSION 9a** Fiber Lasers	**SESSION 9b** Optical Devices	**SESSION 9a** Optical Switches and Modulators II	**SESSION 9b** Novel Active Devices V
14.45 to 15.30	Coffee/Tea Break			
15.30 to 17.30	**SESSION 10a** Microstructured Fibers	**SESSION 10b** Fiber Ring Lasers	**SESSION 10a** Fiber and Waveguide I	**SESSION 10b** Nanophotonics IV

Conference 7136 Optical Transmission, Switching, and Subsystems VI		Conference 7137 Network Architectures, Management, and Applications VI	
Room: Hangzhou Auditorium	Room: Ningbo Auditorium	Room: Wenzhou Auditorium	Room: Shaoxing Auditorium
Concurrent Running Sessions			
APOC 2008 Welcome from the General Chairs			
Plenary Session			
Plenary Session			
Lunch Break			
SESSION 1a Network Elements I	**SESSION 1b** Nonlinear Optics	**SESSION 1a** Broadband Access I	**SESSION 1b** Optical Transport Network
Coffee/Tea Break			
SESSION 2a Advanced Networks	**SESSION 2b** Modulation Formats	**SESSION 2a** FTTX	**SESSION 2b** WDM Network I
SESSION 3a Best Student Paper Session	**SESSION 3b** Optical Monitoring and Compensation I	**SESSION 3a** Best Student Paper Session	**SESSION 3b** Optical Network for Broadband Service
Coffee/Tea Break			
SESSION 4a OCDMA	**SESSION 4b** Signal Theory	**SESSION 4a** WDM-PON	**SESSION 4b** Carrier Ethernet
Lunch Break			
SESSION 5a Transmission Systems	**SESSION 5b** Optical Signal Processing I	**SESSION 5a** Optical Grid I	**SESSION 5b** WDM Network II
Coffee/Tea Break			
SESSION 6a RoF and Wireless Networks I	**SESSION 6b** 100 Gbps Systems	**SESSION 6a** Metro Network	**SESSION 6b** Dynamic Optical Network
SESSION 7a Access Networks	**SESSION 7b** OXC, ROADM, and Switching Elements	**SESSION 7a** Broadband Access II	**SESSION 7b** Network Survivability I
Coffee/Tea Break			
SESSION 8a Advanced Research Trends	**SESSION 8b** Disperion and PMD compensation	**SESSION 8a** Future Optical Network	**SESSION 8b** Network Design
Lunch Break			
SESSION 9a Electronic Processing	**SESSION 9b** Network Elements II	**SESSION 9a** Scalable Optical Network	**SESSION 9b** GMPLS/ASON
Coffee/Tea Break			
SESSION 10a Light Generators	**SESSION 10b** WDM Transmission and Modulation Formats	**SESSION 10a** Optical Grid II	**SESSION 10b** Network Survivability II

Program-at-a-Glance

Thursday 30 October	Conference 7134 Passive Components and Fiber-based Devices V — Room: Taizhou Auditorium	Conference 7134 Passive Components and Fiber-based Devices V — Room: Jinhua Auditorium	Conference 7135 Optoelectronic Materials and Devices III — Room: Quzhou Auditorium
	Concurrent Running Sessions		
08.30 to 10.00	**SESSION 11a** Optical Filters	**SESSION 11b** Fiber Gratings	**SESSION 11** Fiber and Waveguide II
10.00 to 10.30	Coffee/Tea Break		
10.30 to 11.45	**SESSION 12** Nonlinear Effects		**SESSION 12** Wide Bandgap Semiconductor Devices III

Concurrent Running Sessions

Conference 7136

Optical Transmission, Switching, and Subsystems VI

Room: Hangzhou Auditorium

SESSION 11a
RoF and Wireless Networks II

Room: Ningbo Auditorium

SESSION 11b
Optical Signal Processing II

Conference 7137

Network Architectures, Management, and Applications VI

Room: Wenzhou Auditorium

SESSION 11
Routing and Wavelength Assignment

Coffee/Tea Break

SESSION 12a
High-speed Transmission Systems

SESSION 12b
Optical Monitoring and Compensation II

SESSION 12
Optical Switching and Routing

Plenary Presenations

Monday 27 October · 08.30 to 11.45 hrs.

Main Assembly Room

Chairs:

Lars Thylén,
Joint Research Ctr. of Photonics of the Royal Institute of Technology (Sweden) and Zhejiang Univ. (China)

Wei Yang,
Zhejiang Univ. (China)

Bingkun Zhou,
Tsinghua Univ. (China)

08.30 **Opening Ceremony and Welcome from APOC 2008 General Chairs**

09.15 **Challenges of Optical Broadband Network**
Hequan Wu, Chinese Academy of Engineering (China)

09.45 **Nanophotonic Devices**
Dieter Bimberg, Technische Univ. Berlin (Germany)

10.15 Coffee/Tea Break

10.45 **Photonic Challenges Toward Future Broadband Society**
Yoshio Itaya, NTT Communications (Japan)

11.15 **Technologies for a Renaissance in Long-Distance Optical Communications**
Robert W. Tkach, Bell Labs. Alcatel-Lucent, Crawford Hill (USA)

08.30: **Opening Ceremony and Welcome by Chairs**

09.15: **Challenges of Optical Broadband Network**

Hequan Wu,
Chinese Academy of Engineering (China)

Abstract: The development situation of network services is firstly reviewed in this presentation. The evolution features of network services with IP, broadband, streaming, P2P (Peer to Peer) and mobility are described. The presentation analyses extension trend on network bandwidth demand. The challenges on optical broadband network are discussed from network architecture, switching system, trunk transmission system, and access network aspects. Relative issues with optical broadband network development are also involved such as path scheduling across difference carriers and business model as well as regulations, especially overlapping responsible for supervision of communications and broadcast administrations have been restricted broadband popularization. Finally, the presentation also gives a brief overview of representative projects within research activities on broadband network in China including the CNGI (China's Next Internet Demonstration Project).

Biography: Hequan Wu graduated from Wuhan Post and Telecommunications Institute in 1964. He was Vice-President and Chief Engineer of China Academy of Telecommunications Technology in 1997-2003. He has undertaken to develop the optical fibre transmission system and broadband network and manage R&D projects. He takes charge to study the development strategy on NGN and NGI as well as new generation broadband wireless mobile network in recent years. He was elected the academician and Vice-President of Chinese Academy of Engineering (CAE) respectively in 1999 and 2002. He is currently assigned as Vice-Director of Advisory Committee for State Informatization of China. He is Vice-Director of an Executive Council of China Institute of Communications (CIC) and Chinese Institute of Electronics (CIE), respectively. He also takes on Director of Experts Committee of China's Next Generation Internet (CNGI) project. He was a senior member of IEEE.

09.45: **Nanophotonic Devices**

Dieter Bimberg,
Technische Univ. Berlin (Germany)

Abstract: Universal self-organization and self-ordering effects at surfaces of semiconductors lead to the formation of coherent zero-dimensional clusters called quantum dots (QDs). The electronic and optical properties of QDs, being smaller than the de-Broglie-wavelength in all three directions of space are closer to those of atoms in a dielectric cage than of solids. Their delta-function-like energy eigenstates are only twofold (spin) degenerate. All few particle excitonic states are strongly Coulomb correlated. Their energies depend on shape and size of the dots, such that positive or negative biexciton binding energies or fine-structure splitting caused by exchange interaction appear. Consequently, single QDs present the most practical possible basis of emitters of single polarized photons (Q-bit emitters) on demand or entangled photons via the biexciton-exciton cascade for future quantum cryptography and communication systems. Many QDs as active materials are extremely promising for novel opto-electronic devices, like edge and surface emitting lasers, amplifiers with properties going far beyond devices based on higher dimensional systems. Semiconductor nanotechnologies transform presently to enabling technologies for new economies. It is expected that first commercialization of nanophotonic devices and systems will appear soon. High bit rate and secure quantum cryptographic systems, nano-flash memories, or ultra-high speed nanophotonic devices for future optical interconnects, the Terabus, and 100 Gbit/s Ethernet might present some of the first fields of applications of nanophotonic devices.

Biography: Dieter Bimberg received the Diploma in physics and the Ph.D. degree from Goethe University, Frankfurt, in 1968 and 1971, respectively. From 1972 to 1979 he held a Principal Scientist position at the Max Planck-Institute for Solid State Research in Grenoble/France and Stuttgart. In 1979 he was appointed as Professor of Electrical Engineering, Technical University of Aachen. Since 1981 he holds the Chair of Applied Solid State Physics at Technical University of Berlin. He was elected in 1990 and successively reelected as Excecutive Director of the Solid State Physics Institute at TU Berlin. Since 2004 he is director of the Center of Nanophotonics at TU Berlin. In 2006 he was elected as chairman of the board of the German National Centers of Excellence of Nanotechnologies. His honors include the Russian State Prize in Science and Technology 2001, in 2004 his election to the German Academy of Natural Sciences Leopoldina and as Fellow of the American Physical Society, and the Max-Born-Award and Medal 2006 awarded jointly by IoP and DPG. He has authored more than 900 papers, patents, and books resulting in more than 17000 citations worldwide. His research interests include the growth and physics of nanostructures and nanophotonic devices, ultrahigh speed photonic devices for the future Terabus, single photon emitters for quantum cryptography and ultimate nanomemories based on quantum dots.

10.15: Coffee/Tea Break

10.45: **Photonic Challenges Toward Future Broadband Society**

Yoshio Itaya,
NTT Communications (Japan)

Abstract: The rapid progress in information communications technology (ICT) has brought about significant changes in the structure of society including the convergence of services, an expansion of business, and globalization. These changes have been supported by the increasing availability of broadband services. The total number of DSL, cable and FTTH subscribers in Japan had reached almost 28 million by the end of September 2007. The number of FTTH subscribers alone had exceeded 11.3 million. This implies that super-high-speed broadband access has made deep inroads into many aspects of our daily lives. The increase in broadband access has promoted the use of the Internet thus leading to the rapid growth of Internet traffic. The total download traffic of broadband access users in Japan was estimated to be 700 Gb/s as of May 2007. Major reasons for this growth are the rise in the use of peer-to-peer file exchange applications and the increasing popularity of video viewing sites. We must establish a network that is both simple and accessible. In addition, there is a growing need for high quality services that are both secure and flexible, and this will drive the transition from telephony to a secure fully IP-based network. A secure fully IP network has four features; (1) an open interface that provides interconnection with various providers and the joint creation of services, (2) high quality service support applications that require high communication quality, (3) security functions such as identification and authentification to provide protection from spoofing and attacks, and (4) high reliability by providing redundancy, controlling traffic and giving priority. This secure IP network can be used as the infrastructure for a wide range of social, business and individual services. Photonic technology is the key to creating secure broadband networks. An 80-channel×10 Gbit/s WDM system with a capacity close to 1 Tbit/s is currently being operated in a long haul network. Moreover, 40 Gb/s optical transport network systems have already been installed commercially. Recently, phase shift keying (PSK) and a multilevel modulation format have been extensively investigated with a view to increasing the transmission capacity. The standardization of the 100 Gbit/s Ethernet interface (100 GbE) is under way. In metropolitan areas, the network has a fiber-ring configuration and a reconfigurable optical add/drop multiplexer (ROADM) as a node. The ROADM provides flexibility in terms of path provisioning and scalability. Research on optical burst switching and optical packet switching has accelerated in response to traffic growth. This talk will review innovative network technologies and their applications.

Biography: Yoshio Itaya received B.S., M.S., and PhD degrees in electronics engineering from Tokyo Institute of Technology, Tokyo, Japan, in 1976, 1978, and 1981, respectively. In 1981, he joined the Nippon Telegraph and Telephone Public Corporation, where he engaged in research on semiconductor lasers for optical fiber communications. He was a Visiting Researcher in the Integrated Optics Group of the Heinrich Hertz Institute, Berlin, Germany from 1983 to 1984. From 1997 to 1999, he was dispatched to NTT Electronics Corporation as a Technical Manager, and he developed laser diodes and modulators. From 2003 to 2004, he was an International Fellow at the Stanford Research Institute, California, USA. In 2004, he was appointed Director of NTT Photonics Labs. and managed research on optical devices, packages and modules for optical network systems. He is now Executive Director of the NTT Science and Core Technology Laboratory Group, and is responsible for directing NTT's leading edge technology and advanced research. He is a member of the Institute of Electronics, Information and Communication Engineers (IEICE) and the Japan Society of Applied Physics, and a Fellow of the IEEE.

11.15: **Technologies for a Renaissance in Long-Distance Optical Communications**

Robert W. Tkach,
Bell Labs. Alcatel-Lucent, Crawford Hill (USA)

Abstract: Since the collapse of the market for optical communications equipment at the beginning of the millennium, there has been diminished interest and investment in technologies for long-distance optical transmission. This is largely a result of the large capacities afforded by wavelength-division multiplexed systems. The systems deployed early in the decade had capacities comparable to the total network traffic. This situation is about to change. Those systems are becoming full now, and growth in traffic indicates that capacity of systems will become a crucial factor in the years ahead. This talk will examine these trends, project the sorts of systems needed in the next decade, and discuss the technologies that will enable them.

Biography: Robert W. Tkach is Director of the Transmission Systems and Networks Research department at Bell Laboratories, Alcatel-Lucent, Crawford Hill Location. His research has involved dispersion management, optical amplification, optical networking, and high-speed DWDM transmission systems. Prior to joining Bell Laboratories, he has been: Chief Technical Officer of Celion Networks, Division Manager of the Lightwave Networks Research Division at AT&T Labs, and a Distinguished Member of Technical Staff at AT&T Bell Laboratories. He has served as Chair of the Optical Fiber Communications Conference (OFC) Steering Committee and on the IEEE LEOS Board of Governors. He has been General Co-Chair of OFC, Vice-President of the Optical Internetworking Forum, and Associate Editor of the Journal of Lightwave Technology. He has received the Thomas Alva Edison Patent Award from the Research and Development Council of New Jersey and is a Fellow of the Optical Society of America, the IEEE, and AT&T. In 2008, he received the John Tyndall Award jointly presented by the OSA and IEEE-LEOS.

Industry Forum

Tuesday 28 October • 08.45 to 17.30 hrs.

Multi-function Room

Chairs:

Jinyi Pan, Nokia Siemens Networks (China)

Qian Mao, Fiberhome Group (China)

Herwig Zech, Nokia Siemens Networks (China)

08.45 to 9.00	**Welcome Remarks by Chairs**
9.00 to 9.30	**Xiongyan Tang,** Deputy Chief Engineer, CNC (China)
9.30 to 10.00	**Chen Jie,** ZTE (China) *Building the Intelligence WDM Network*
10.00 to 10.30	Coffee/Tea Break
10.30 to 11.00	**Patrick Leisching,** Head of Portfolio Management, IP-Transport, Nokia Siemens Networks *Evolution of Energy Efficiency in Optical Packet Transport Networks*
11.00 to 11.30	**T. J. Xia,** DMTS, Verizon (USA) *Advanced Fiber Connectivity and Switching Forum*
11.30 to 12.00	**Peter Boland,** Xtera Communications (USA) *Enhancing Capacity on Long Haul and Submarine Systems*
12.00 to 13.30	Lunch Break
13.30 to 14.00	**Xulei Sang,** Vice President, OPD, Wireline Group, Alcatel-Lucent Shanghai Bell (China)
14.00 to 14.30	**Matt Walker,** Senior Analyst, Network Infrastructure, OVUM RHK *Packet-Optical Convergence in Asia-Pacific*
14.30 to 15.00	**Ted Chang,** Director of Business Development, Stratalight Communications (USA) *Deploying 100Gb/s Wavelengths Using 10Gb/s Engineering Rules*
15.00 to 15.30	Coffee/Tea Break
15.30 to 16.00	**Stan Lumish,** Lumish Technology and Consulting LLC (USA) *Advances in Optical Networking Components*
16.00 to 16.30	**David Payne,** Univ. of Southampton (United Kingdom)
16.30 to 17.00	**Bardia Pezeshki,** Founder/CTO, Santur Corp. (USA) *DFB Laser Arrays for Tunable Lasers and Parallel Data Communications*
17.00 to 17.30	**Michael Minneman,** President, dBM Optics (USA) *Evolving Optical Testing Technology and Its Linkage to Advances in Network*

Telecom carriers, systems and component vendors, and representatives of government ministries from China and around the world will participate in this important forum.

Cosponsored by:

Scope of Industry Forum:

The rapid growth in telecom services and subscribers in China and other parts of the Asia Pacific Region has resulted in an urgent need to develop a powerful information network infrastructure which provides integrated access to high speed Internet, data, voice and video services at reasonable costs.

As at previous APOC conferences, an Industry Forum is being organized at APOC 2008 that will address some of the specific challenges faced by content providers, network operators, system houses and component vendors. Emphasis is being placed on hearing the opinions of industry leaders and technical experts from China, and on comparing their views with those of international experts on how to evolve the core, metro and access networks with low-cost multi-service platforms.

This Industry Forum will provide a valuable opportunity for industry executives and technical marketing professionals from China to meet and network among themselves as well as with their international colleagues, and to discuss developments in the evolution of the information infrastructure of tomorrow.

A post-conference satellite Industry forum will be held on October 31 in Fuyang city (about 45-minutes drive from Hangzhou), sponsored by the municipal government of Fuyang. For more information about the forum (and Thousand-Island Lake tour on Nov. 1), please visit the Fuyang Photonics booth at the exhibition.

08.45: **Welcome Remarks by Chairs**

9.00 to 9.30: **Xiongyan Tang, Deputy Chief Engineer, CNC (China)**

09.30: **Building the Intelligence WDM Network**

Chen Jie, Chief Engineer Transmission Product Line, ZTE

Abstract: The development of Internet and broadband access triggers the explosive growth in data services. A more flexible and powerful WDM network with large capacity, different granularities of services, intelligent control is necessary to meet the development requirements.

Biography: Dr. Chen Jie joined ZTE in 1998. He has been engaged in R&D and product planning of optical network. Now he is the chief engineer of ZTE's Transmission Product Line.

09.30: Coffee/Tea Break

10.30: **Evolution of Energy Efficiency in Optical Packet Transport Networks**

Patrick Leisching,
Head of Portfolio Management, IP-Transport,
Nokia Siemens Networks

Abstract: The energy per transported bit in an end-to-end packet transport network will become one of the major KPIs for operator efficiency: the energy cost is increasing by 5% per year and the number of transported packets by 50% p.a. whereas the current improvement rate in energy efficiency per bit is much lower.
In global context, today ICT equipment is estimated to be responsible for approx. 4% of the world wide power consumption with a trend to double within the next 10-15 years if the current energy trends are not changed drastically. Currently, the access power consumption scales with the number of end-users, the metro and core network part with the number of packets transported, in absolute numbers the access packet transportation requires roughly 10 times more than all metro and core equipment in field.

This presentation will provide insight in the main trends for access, metro and core networks if traffic growth continues at a rate of 50% over next 10-15 years. It will extrapolate the total network power consumption without corrective actions and highlight what can be achieved with proposed countermeasures. Special attention will be paid to the role of network architecture and use of layer 0/1, layer 2 and layer 3 technologies for packet transport. The latest industry trends and research directions to cope with the above prospects will be highlighted.

Biography: Dr. Patrick Leisching is currently Head of Portfolio Management for the Nokia Siemens Networks business unit IP-transport for connectivity infrastructure and solutions. In 1997 he ramped-up research on fiber optical transmission at the Max-Born-Institute in Berlin. Joining SIEMENS in 1998 he was responsible for the advanced research program KOMNET developing future configurable OADM concepts. After being in charge from 1999-2003 for DWDM product development programs he took over the lead of the optical system development department in 2004 and was coordinating the german research project EIBONE. In 2006 he was responsible for the program management of radio access products and with the start of the joint venture of Nokia Siemens Networks in 2007 became portfolio manager for all connectivity infrastructure products including WDM/Microwave, SDH, ATM/Ethernet switches and IP routers.

Dr. Leisching holds a diploma degree in physics from Technical University of Munich and a PhD degree from RWTH Aachen in electrical engineering. He is a Feodor-Lynen Fellow from the Alexander von Humboldt foundation and the Ecole Polytechnique/CNRS in Paris.

11.00: **Advanced Fiber Connectivity and Switching Forum**

T.J. Xia,
|DMTS, Verizon (USA)

11.30: **Enhancing Capacity on Long Haul and Submarine Systems**

Peter Boland,
Chief Technology Officer,
Xtera Communications (USA)

Abstract: In the last 5 years the need for bandwidth on submarine and long haul transmission systems has increased dramatically. To respond to the demand many operators are building new systems. However a much lower cost alternative is to apply new technology to upgrade the capacity of existing systems or on shorter systems (500km) elimination the need for in repeaters altogether.

This talk will look at the advances in transponder and system design that make it possible to increase the capacity on existing systems by up to a factor of 2. It will also look at the use of RAMAN technology to increase the capacity of existing unrepeatered systems and extend the reach of new unrepeatered systems to over 500km.

Biography: Peter Boland joined Xtera in January 2008. As the CTO he works with the executive team to set the strategic direction of the global product portfolio as well as leading the multi-site engineering team to develop the product set to meet the evolving customer requirements. Peter is based in UK and has the additional responsibility for growing the business in Europe.

Peter has worked in both large and small companies. Prior to his role in Xtera he was the SVP of Engineering for FLAG Telecom responsible for building their Global submarine network. He also spent more than 20 years with Nortel in a wide variety of roles including Research and Development, network planning, sales, marketing and business development.

13.30: **To be announced**

Xulei Sang, Vice President, OPD, Wireline Group, Alcatel-Lucent Shanghai Bell (China)

14.00: **Packet-Optical Convergence in Asia-Pacific**

Matt Walker,
Senior Analyst, Network Infrastructure,
OVUM RHK

Abstract: The much-hyped convergence of the packet and optical worlds is underway, globally and within Asia-Pacific. There are a number of improving options for enabling Ethernet to replace SDH/SONET as a network layer. Yet this transition is just one part of carriers' NGN transformations, which typically involve network, service, and business/process overhauls. These NGN initiatives still face skepticism among carriers that see clear upfront costs but unclear longer-term gains. Packet-optical convergence itself is in its early days: standards, products, architectures, and costs are all unsettled. Organizational inertia within both carriers and vendors also slows change. This presentation will address the real prospects for packet-optical convergence within carrier networks in the AP region.

Biography: Based in Asia since 2001, Matt Walker is a senior analyst in Ovum's Network Infrastructure practice, with a regional focus on Asia-Pacific. He has 13 years of experience in the telecoms industry, and has covered the optical networks sector since 2000. His current work covers such topics as carrier Ethernet, packet-optical convergence, mobile backhaul, global fiber networks, FTTx, IPTV/VoD, carrier capex/opex, emerging market business models, and climate change in the ICT industry. Prior to initiating RHK's Asian research in 2000, Matt's work focused on fixed-line competition, regulatory, and financial issues. He is often quoted in the press and is a frequent speaker at industry events. Before joining RHK in 1998, Matt worked as an economist for Exeter Associates, a consultancy specializing in telecommunications regulation. Matt received his M.S. in Applied Economics/Public Policy Analysis and B.A. in Political Science from the University of Rochester in 1995 and 1994, respectively.

14.30: **Deploying 100Gb/s Wavelengths Using 10Gb/s Engineering Rules**

Ted Chang, Director of Business Development, Stratalight Communications (USA)

Abstract: As we now start to explore feasible technologies for 100Gb/s optical transport, driven by 100GE port availability on core IP routers, the carrier challenge remains the same: 100Gb/s links should be deployable over existing 10Gb/s DWDM systems using 10Gb/s link engineering rules.
To meet this challenge, optical transport technology must evolve to yet another level of complexity/maturity in both modulation formats and adaptive compensation techniques.
The optical industry is not a pioneer of new ideas in modulation schemes and coding theory, we will always be followers. However, we do have the responsibility of developing the highest capacity "modems" to carry the core backbone traffic of the Internet. As such, the key to our success will be to analyze the pros and cons of advanced modulation/coding techniques and balance this with the practical limitations of high speed electronics processing speed and the challenges of real world optical layer impairments.
This talk will present a view on what advanced technologies are likely candidates to support 100GE optical IP transport over existing 10Gb/s DWDM systems, using 10Gb/s link engineering rules.

Biography: Ted is Director of Business Development at Stratalight Communications. He is responsible for promoting 40/100Gbs transport technologies, and managing all Stratalight business activities in the Asia region. Ted has more than 20 years of experience in the telecom product development and marketing. Prior to current position, he helped the development of several advanced SONE/SDH MSTP and WDM products at ZTE USA, Inc, and Fujitsu Network Communications. Ted received his B.S. in EE from National Taiwan University and M.S. in EECS from Arizona State University in 1986. Ted holds four US patents in high speed transmission system design.

15.30: **Advances in Optical Networking Components**

Stan Lumish,
Lumish Technology and Consulting LLC (USA)

Abstract: We used to be satisfied with written letters and simple telephone calls to make and maintain remote interpersonal, and business, connections. Now video is king. YouTube, MySpace, Youku, Nico Nico Douga, Cyworld, etc, all are social networking sites popular solely due to their video content. In addition, numerous worldwide video on demand (VoD) options are becoming available. It is not clarity of voice that is advertised, but bandwidth speed that differentiates the service offering. Optical networks, from the core, to the home, are the enablers for these capabilities. This presentation will review some of these macro-factors and give an update to some of the most exciting advances in optical networking components.

Biography: Dr. Lumish began his career at AT&T Bell Labs, after receiving his PhD in Electrical Engineering from State University of New York at Stony Brook in 1982. Dr. Lumish held numerous management positions with AT&T Network Systems and Lucent Technologies, where he received the prestigious Bell Labs Fellow award for his work on Dense WDM systems. Dr. Lumish joined JDS Uniphase in February 2000 as Vice President, Network Product Applications and subsequently also led the R&D efforts of the Transmission Subsystems Group. From July 2002 to June 2003 he was President of the Optical Layer group. He then became the CTO for JDSU where he was responsible for technology strategy across communications, commercial, and consumer markets. Currently, Dr. Lumish continues to serve JDSU as a consultant on intellectual property.
Dr. Lumish is a member of Eta Kappa Nu, Tau Beta Pi, Sigma Xi, OSA and a senior member of the IEEE. He is on the board of Chiral Photonics, Inc, is a member of the External Advisory Board of the Tyndall National Institute and is on the Editorial Advisory Board of Lightwave Magazine.

16.00: **To be announced**

David Payne, Univ. of Southampton (United Kingdom)

16.30: **DFB Laser Arrays for Tunable Lasers and Parallel Data Communications**

Bardia Pezeshki,
Founder/CTO, Santur Corp. (USA)

Abstract: The integration of multiple lasers with different characteristics on the same semiconductor chip allows for very high performance tunable lasers as well as new low cost architectures for parallel data links. For applications in tunable lasers, we describe our geometry of laser array with MEMS switch than can cover a 53nm tuning range with high spectral purity. In parallel data links, the laser arrays are operated simultaneously and deliver multiple 10Gb/s channels.

Biography: Bardia obtained his Ph.D. in electrical engineering from Stanford University in 1991, with a graduate thesis on vertical cavity modulators. He has previously managed an optoelectronics group at IBM T.J. Watson Research Center and ran the R&D group at SDL Inc, now part of JDS Uniphase. Bardia started Santur in 2000 to commercialize new tunable laser architectures. He currently serves as CTO and manages new development programs.

17.00: **Evolving Optical Testing Technology and its Linkage to Advances in Network Performance**

Michael Minneman,
President, dBm Optics, Inc. (USA)

Abstract: Performance at the network level is critically dependent on the performance of the optical components within that network. Key to ascertaining this performance is development of new technology to meet the needs of the rapidly developing technology of those components and subsystems. We will investigate key elements of recently developed technologies, and additional developments that we should expect over the next few years, with a special emphasis on passive components. We will also explore the challenges for China to become a substantive supplier in this TM&M market.

Biography: Mr. Minneman is CEO of Global Test, a nascent Test, Measurement and Metrology company. He also serves as President of dBm Optics, a Testing company specializing in optical component testing solutions. He has served in technical executive positions at several TM&M companies, including Keithley Instruments, ILX Lightwave, Montam and Fluke. He holds numerous patents in electronic and optical measurement technology, and has also served as a director for a number of companies.

Nanophotonics Devices for Optical Communications

Sunday 26 October • 09.00 to 12.00 hrs. • *Ningbo Auditorium*

A complimentary course will be given by Prof. Lars Thylén of the Joint Research Ctr. of Photonics of the Royal Institute of Technology (Sweden) and Zhejiang Univ. (China) and Saulius Marcinkevičius of the Royal Institute of Technology (Sweden) on Sunday morning, 26 October. Course participants need only pay $5 to cover the cost of the course notes.

Instructors:

Lars Thylén,
Joint Research Ctr. of Photonics of the Royal Institute of Technology (Sweden) and Zhejiang Univ. (China)

Saulius Marcinkevičius,
Royal Institute of Technology (Sweden)

Nanophotonics has emerged as an important research field in the past few years, fueled by the progress in silicon photonics and high index contrast materials, improved lithography, plasmonics and nanofabrication methods and by the quest for ever smaller device footprint as well as for novel phenomena offered by nanophotonics interactions. This is a development that in some ways parallels that in integrated electronics (but lagging it by several decades). The applications of nanophotonics span a wide field, from sensors and biophotonics to telecom, but in many cases the same device technology can be used as a generic platform. One workable definition of nanophotonics is: "engineering the flow of optical frequency electromagnetic radiation in dimensions, or with function enabling feature sizes, much smaller than the vacuum wavelength". Examples of the latter are photonic crystals, where dimensional tolerances are crucial, as well as quantum dots. Example of the former is high index contrast devices and plasmonics devices (at the expense of large losses).

The concept of nanophotonics is inseparable from the optical near fields, since subwavelength size densely-packed nanophotonics components can not be addressed by the far field radiation. Instead, light can be delivered and collected via near field using near-field optical probes. Such probes, mounted in a scanning near-field optical microscope (SNOM), allow studying near field effects and operation of nanophotonics components. SNOM is used for characterization of photonic and nanophotonics devices.

The main types of the SNOM, including apertured and apertureless devices will be discussed, as will different configurations of probes. Near field-matter interaction, as well as interaction of nanostructures, such as quantum dots via near fields, play a central role in nanophotonic device operation. The interaction principles will be discussed along with concepts for nanophotonic devices, such as quantum dot emitters, switches, detectors, filters, resonators and plasmonic waveguides, which are elements of nanophotonic "integrated circuits". For the plasmonic waveguides, the course will include a discussion on target performance for these in terms of lateral field penetration, effective index (the higher the shorter resonators, as an example), losses, waveguide Q values (e g > 20000 required for telecom applications), all this in view of present state of the art.

Nanophotonics opens up new vistas for devices, in telecom and other fields and offers a possibility to pursue the hitherto rapid development of integration density, as described by a "Moore's" law for integrated photonics that will be presented. The requirements for such a continued development will be elaborated on.

Lars Thylén received the M. Sc. degree in Electrical Engineering and the Ph. D. degree in Applied Physics in 1972 and 1982, respectively, both from the Royal Institute of Technology (KTH) in Stockholm. From 1973 to 1982 he was with SRA Communications, working in the areas of digital electronics, digital image processing, diffraction optics and optical signal processing. From 1976 to 1982 he held a research position at the Institute of Optical Research, Stockholm, where he was engaged in research in integrated and guided wave optics, notably waveguide theory, RF spectrum analysis, and optical signal processing. In 1982 he joined Ericsson, heading a group doing research in the area of integrated photonics in lithium niobate and semiconductors and its applications to optical communications and switching. In 1985 to 1986 and in 2007 he was a visiting scientist with the Department of Electrical Engineering and Computer Sciences at the University of California, Berkeley and in the spring of 2008 at HP Laboratories, Palo Alto. He has also been a visiting scientist with the Optical Sciences Center at the University of Arizona, Tucson and in the fall of 2001 at the University of California at Santa Barbara, working on applications of quantum optics. In 1987, he was appointed adjoint professor at the Department of Microwave Engineering, Royal Institute of Technology, Stockholm. Prof Thylen was active in the inception, planning and running of the EU RACE I OSCAR project as well the pioneering RACE II MWTN (Multiwavelength transport network) project and ACTS METON project, and has given a number of invited papers on these projects. Since 1992, he is a professor at the department of Microelectronics and Applied Physics, KTH, heading the Laboratory of Photonics and Microwave Engineering. From 1992 to 1997 he was a consultant to Ericsson. From 1999 to 2002 he was program director of the Swedish Photonics Research program, supported by the Swedish Foundation for Strategic Research, and comprising KTH and Chalmers University photonics research. From 2003 to 2007 he was director of the Strategic Research Center in Photonics at KTH, funded by the Swedish Foundation for Strategic Research. Prof Thylen was active in the inception and planning of the Kista Photonics Research Center, implementing a coordinated photonics research effort in the Stockholm area. He is also one of two Chief Scientists of the Joint Research Center of Photonics of the Royal Institute of Technology and Zhejiang University (PR China), formed in 2003.

He was a co-founder of Optillion AB, a startup in the area of 10 Gb/s+ Ethernet transceivers, and is a co-founder and board member of PhoXtal Communications AB, a transceiver company. He is CEO of a Chinese start up, Fuyang Photonics, a consulting company.
Current research interests include nanophotonics, high density integrated photonics, devices for photonic switching and high speed modulation, quantum optics as well as the physics involved in electronic and photonic switching operations.

Prof Thylén has authored or co-authored more than 200 journal papers and conference contributions as well as several book chapters and has been granted approximately 20 patents. He has served on program committees for major optics conferences such as European Conference on Optical Communications, ECOC, and Optical Fiber Communications, OFC, and on a large number of OSA and IEEE conferences. He has further served as program chair and general chair for the 1995 and 1997 OSA Topical Meetings on Photonics in Switching, respectively. He was general cochair and technical program committee chair of ECOC 2004 in Stockholm and is general chair for the 2008 Asia Pacific Optical Communications Conference in China.

Prof Thylén is a member of the Optical Society of America and of the IEEE as well as a member of the Royal Swedish Academy of Engineering Sciences.

Saulius Marcinkevičius received the M. Sc. degree in Physics from Vilnius University and Ph. D. degree in Semiconductor Physics in 1981 from Semiconductor Physics Institute in Vilnius, Lithuania. During 1986 – 1992 he was working as a research associate at the Semiconductor Physics Institute in the area of semiconductor optics. In 1992, he moved to the Royal Institute of Technology in Stockholm, Sweden, where he has stayed ever since having positions as a guest researcher, researcher and associate professor at the Departments of Physics, and Microelectronics and Applied Physics. Since 1993, he has been working on various topics of ultrafast semiconductor spectroscopy. He has authored or co-authored about 120 journal papers, over a hundred conference contributions and a book chapter. His current research interests include ultrafast and near field spectroscopy in semiconductor nanostructures, physics of wide band gap nitride light emitting devices, and quantum optics effects, such as electromagnetically induced transparency.

Workshop on Challenges, Opportunities, and Complementarities in Photonics and Electronics for Next-generation Systems and Networks

Sunday 26 October • 9.00 to 17.30 hrs. • *Hangzhou Auditorium*

Chairs:

Dominique Chiaroni,
Alcatel-Lucent/Bell Labs (France)

William Shieh,
The Univ. of Melbourne (Australia)

Rodney S. Tucker,
The Univ. of Melbourne (Australia)

To cover different aspects this workshop will be divided into two complementary parts: (i) Optical Networks, Systems and Processing Technologies, Component, and Optical Functions, and (ii) Electronic Digital Signal Processing for Enhancing Transmission Robustness.

(i) Optical Networks, Systems and Processing Technologies, Component, and Optical Functions

With the capacity increase predicted for the next decade, it becomes urgent to propose alternatives to the current telecommunication network models to make systems more robust, less expensive and more powerful. In parallel to the capacity increase, the access network imposes new time constraints by offering new real time applications requiring new approaches to manage the QoS. To manage these aspects, it is important to focus on a novel generation of systems and networks, with a small latency, while offering ultra-high capacities at a lower cost. Optics is a potential technology to reach these objectives. For real time applications, buffer limited network concepts exploiting for example the optical transparency can offer these features. For ultra-high capacity systems, a WDM technology, for example, could play also an important role.

A further issue of growing importance is related to the fact that when the volume of traffic on the Internet grows, there is an upward pressure on the capacity of electronic routers in the core and metro networks. This pressure translates to increasing power consumption in routers and increasing equipment footprints. The combined problems of delivering large quantities of power to core switching nodes, and extracting the associated heat, are becoming more significant, stimulating a renewed interest in the changing roles of photonics and electronics in switching and routing.

The objective of this part of the workshop is then to identify where optics can provide a real techno-economic advantage with respect to pure electronic systems, judged from the criteria above. This part of the workshop will address specific topics to identify new opportunities for the optical technology, including the roles of photonics and electronics in switching and routing, considering capacity, scalability, footprint and energy consumption.

Recognized experts will highlight new challenges, and present research perspectives, to draw a picture of a potential research roadmap for the next decade, from components, to systems and networks, paving the way for the next generation of Internet.

(ii) Electronic Digital Signal Processing for Enhancing Transmission Robustness

Many exciting competing electronic signal processing techniques have emerged in response to the forthcoming 100 Gb/s high-speed optical networks. Among them, we have witnessed the resurgence of coherent optical communication systems, which has been dormant for a decade. We have also seen the emergence of optical orthogonal frequency-division multiplexing (OFDM) techniques being applied to a broad range of optical networks. This part of the workshop will discuss various competing electronic digital signal processing techniques and their ensuing impact on the optical networks and systems.

Workshop Program · 9.00 to 12.00 hrs.

Part 1: Optical Networks, Systems and Processing Technologies, Component, and Optical Functions

9.00: Opening Remarks

9.20 to 10.00: Access and Metro Optical Networks

9.20: **The European FP7 ALPHA Project: Perspectives in Home and Access Networking**

Mikhail Popov,
ACREO (Sweden)

Abstract: The ALPHA consortium, consisting of European telecom operators, system vendors, research institutes and universities, addresses the challenges of building the future access and in-building networks with support for the transport of 2G/3G/B3G -based services. The state-of-the-art and perspectives of in-building/home and access networking will be presented in this talk.

Biography: Mikhail Popov received the M.Sc. degree (with honours) in Electrical Engineering in 1995 from the St. Petersburg Electrotechnical University and the Ph.D. degree in Electromagnetic Theory in 2002 from the Royal Institute of Technology (KTH), Stockholm, Sweden. In 2001, he joined the Photonics Department (now Netlab) of Acreo AB. Currently, Dr. Popov is active in research and development of next generation access and in-building networks. His research interests also include Ethernet, ASON/GMPLS, and general data and control plane issues in networks. He has authored and co-authored more than 40 papers on electromagnetic theory and optical communications. Dr. Popov is the co-ordinator for the EU-funded Large-Scale Integrating project ALPHA - “Architectures for fLexible Photonic Home and Access networks”.

9.40: **The French RNRT ECOFRAME Project: Packet Technology Perspectives in Metro Networks**

Dominique Chiaroni,
Alcatel-Lucent/Bell Labs. (France)

Abstract: Last results of the ECOFRAME project will be presented, targeting a packet ring metro networks. Performance aspects and physical design are the focus.

Biography: Dominique Chiaroni was born in Ajaccio, Corsica (France), in April 27th, 1962. He is graduated in Mechanics (IUT d'Aix-en-Provence), Thermal sciences & Physics (Maitrise at the Université de Corse), and in Optics and Microwaves where he received his diploma of Engineer in 1990 from the Institut National des Télécommunications d'Evry. Engaged in 1990 by Alcatel CIT, he worked mainly on optical switching and processing technologies and related systems and networks. He actively participated in many European and National projects like : RACE ATMOS (1992-1995), ACTS KEOPS (1995-1998), ACTS REPEAT (1999-2001), IST DAVID (2000- 2003) , FP7 ALPHA (2008-2011) and leaded national projects : RNRT ROM (1999-2001), RNRT ROM-EO (2003-2005), RNRT ECOFRAME (2007-2010). He is currently strongly involved in different new systems and networks concepts for the access, the metro and the backbone areas. Chair or co-chair of International conference or workshops he has been and is a regular member of the technical international committees: LEOS, OPNetTec, ONDM, APOC, PIS and HPSR. He is author and co-author of more than 150 publications and patents including numerous invited papers and Tutorials, and contributions in books.

10.00 to 10.30 · Coffee/Tea Break

10.30 to 11.30 · Key Technologies for Optical Networks

10.30: **Next Generation of Optical Packet Switch Routers Based on Multi-color Packets**

Naoya Wada,
NICT (Japan)

Abstract: Recent progress of colored optical packet switching technology is shown. A colored optical packet switch prototype with 640 Gbit/s/port capacity, wide-band optical buffering and all-optical label processing is demonstrated. Some important related technologies are also demonstrated.

Biography: Dr. Naoya Wada received the B.E., M.E., and Dr. Eng. degrees in electronics from Hokkaido University, Sapporo, Japan, in 1991, 1993, and 1996, respectively. In 1996, he joined the Communications Research Laboratory (CRL), Ministry of Posts and Telecommunications, Tokyo, Japan. He is currently a Senior Researcher of the National Institute of Information and Communications Technology (NICT), Tokyo, Japan. Since April 2006, he has been project reader of Photonic Node Project and research manager of the Photonic Network Group.

His current research interests are in the area of photonic networks and optical communication technologies, such as optical packet switching (OPS) network, optical processing, and optical code-division multiple access (OCDMA) system. He has published more than 50 papers in refereed journals and more than 150 papers in refereed international conferences.

Dr. Wada received the 1999 Young Engineer Award from the Institute of Electronics, Information and Communication Engineers of Japan, and the 2005 Young Researcher Award from the Ministry of Education, Culture, Sports, Science and Technology. He is a member of IEEE Comsoc, IEEE LEOS, the Institute of Electronics, Information and Communication Engineers (IEICE), the Japan Society of Applied Physics (JSAP), and the Optical Society of Japan (OSJ).

10.50: **Advanced Optoelectronic Technologies for Asynchronous Optical Packet Switching**

Tatsushi Nakahara, R. Urata, H. Takenouchi, and R. Takahashi,
NTT Photonics Labs. (Japan)

Abstract: We present all-optical and optoelectronic technologies for optical packet switching (OPS), which enable a compact, low power photonic router that can handle high-speed asynchronous optical packets.

Biography: Tatsushi Nakahara received the B.E. and M.E. degrees in applied physics from the University of Tokyo, Tokyo, Japan. In 1990, He joined NTT Opto-electronics (now Photonics) Laboratories, Kanagawa, Japan, where he was initially engaged in research on quantum-well modulators, integration of vertical-cavity surface-emitting lasers with electronic logic circuits, and their application to optical signal processing. He is now engaged in research on high-speed optical-packet processing technologies for photonic packet-switched router based on hybrid opto-electronic approach. He is a member of the Optical Society of America (OSA) and the Japan Society of Applied Physics (JSAP).

11.10: **All-optical RAM-based Buffer for Packet Switch**

Ken-ichi Kitayama,
Univ. of Osaka (Japan)

Abstract: All-optical RAM buffer will be presented by focusing on PhC bit memory device, its optical interface, buffer design as well as the packet switching performance.

Biography: Ken-ichi Kitayama joined the NTT Laboratory in 1976. In 1995, he joined the Communications Research Laboratory (Presently NICT). Since 1999, he has been the Professor of the Department of Electrical, Electronic and Information Engineering, Osaka University. His research interests are in photonic networks, optical signal processings, OCDMA, and radio-over-fiber. He has published over 230 papers in refereed journals and holds more than 30 patents. He currently serves on the Editorial Boards of the IEEE Photonics Technology Letters, IEEE Transactions on Communications, Optical Switching and Networking as the Associate Editors. He is the Fellow of IEEE.

11.30 to 12.00 · Panel Discussion

12.00 to 14.00 · Lunch Break

Part 2: Electronic Digital Signal Processing for Enhancing Transmission Robustness

14.00 to 15.05 · Invited Talks

Opening Remarks
William Shieh,
The Univ. of Melbourne

14.05: Digital Coherent Receivers: Challenges and Opportunities for Enhancing Transmission Robustness

Seb Savory,
Univ. College London (United Kingdom)

Biography: Seb Savory received the MA, MEng and PhD degrees in Engineering from Cambridge University and the MSc(Maths) degree in Mathematics from the Open University. He has worked on a wide range of problems in optical communications, including components (cables, fibers, and Bragg gratings), subsystems (digital signal processing, coherent detection, and optical PMD compensation), and WDM transmission systems. His interest in optical communications began in 1991, when he joined Standard Telecommunications Laboratories, Harlow, U.K. (now Nortel), prior to being sponsored though his undergraduate and postgraduate studies by Nortel. On completion of his PhD in 2000, he joined Nortel's Laboratories full-time where his research into digital signal processing and advanced optical transmission systems lead to nine patents. In 2005, he joined University College London (UCL), where he was awarded a Leverhulme Trust Early Career Fellowship. On completion of his fellowship he was subsequently appointed to a lectureship in 2007, where his research within UCL's Optical Networks Group, is currently focused on digital coherent receivers. Dr Savory is an Associate Editor for IEEE Photonic Technology Letters, a Technical Committee member for OFC, and has authored/co-authored 40 journal and conference papers.

14.25: Digital Compensation of the Optical Line: Pre-distortion Tx & Coherent Rx

Kim Roberts,
Nortel (Canada)

Abstract: Precompensation and coherent postcompensation mitigate many of the depredations of the optical line. Fiber loss, and consequential amplifier noise, remains the major issue.

Biography: Kim Roberts has been doing research to develop radical solutions, in the areas of optical transmission and high capacity packet connections, since 1984. Products that Kim initiated have generated billions of dollars in revenue. He has been granted 84 US patents while at the Nortel labs in Edmonton, Ottawa, and Harlow UK.

14.45: Phase Estimation and Polarization Control for Coherent QPSK Transmission with DFB Lasers

Sebastian Hoffmann, T. Pfau, V. Herath, O. Adamczyk, M. El-Darawy, R. Peveling, C.Wördehoff, R. Noé,
Univ. Paderborn (Germany)

Abstract: In order to employ cost-efficient DFB Lasers for Coherent Optical transmission with advaced modulation formats like QPSK, it is necessary to estimate the intradyne receiver carrier phase. An improvement of the phase estimator proposed by Viterbi & Viterbi is presented with simulation results and experimental results from an FPGA implementation. For higher bit rates, also polarization multiplex with a fast compensation control algorithm was implemented and succesfully combined with the phase estimator.

Biography: Sebastian Hoffmann was born in Bielefeld, Germany, in 1969. After studies at the University of Waterloo (Ontario, Canada) and Universität Paderborn (Germany), he received the Dipl.-Ing. degree in electrical engineering and information technology and also the Dipl.-Wirt.-Ing. in management and electrical engineering from Universität Paderborn. He has been a member of the research group of Prof. Noé for several years and recently finished his doctoral studies with a thesis on hardwareefficient signal processing for coherent optical QPSK transmission. In this context, the first realtime digital synchronous QPSK transmission with DFB lasers was realized in 2006.

15.05 · Coffee/Tea Break

15.30 to 16.30 · Invited Talks

15.30: System-Level Aspects of High-Speed Digital Coherent Detection: Promises and Challenges

Xiang Liu,
Alcatel-Lucent Bell Labs.

Biography: Xiang Liu received his Ph.D. degree in applied physics from Cornell University in 2000. Since joining Bell Labs as a Member of Technical Staff in 2000, Dr. Liu has been primarily working on high-speed optical communication technologies including advanced modulation formats and detection schemes, fiber nonlinearity and dispersion management, and PMD mitigation. He has authored/co-authored more than 140 journal and conference papers, and holds over 30 international patents. He is a senior member of the IEEE and a member of the OSA.

15.50: **Optical OFDM for High-Speed Transmission without Dispersion Compensation**

Itsuro Morita,
KDDI (Japan)

Abstract: Orthogonal frequency division multiplexing (OFDM) is an attractive modulation format that recently received a lot of attention. The main advantage of optical OFDM is that it can cope with large amount of inter symbol interference (ISI), caused for instance by chromatic dispersion and polarization mode dispersion. In this paper, coherent optical OFDM (CO-OFDM) is discussed for high-speed long-haul fiber-optic transmission systems. With CO-OFDM, 50 GHz-spaced 10 x 121.9 Gb/s transmission over 1,000 km of SSMF is achieved without any dispersion compensation fiber. In this experiment, 8 QAM subcarrier modulation and polarization division multiplexing are used which confines the spectrum of the 121.9 Gb/s OFDM signal within a 22.8 GHz optical bandwidth.

Biography: Itsuro Morita received the B.E., M.E. and Dr. Eng. degrees in electronics engineering from Tokyo Institute of Technology, Tokyo, Japan, in 1990, 1992 and 2005, respectively. He joined Kokusai Denshin Denwa (KDD) Company Ltd. (currently KDDI Corporation), Tokyo, Japan in 1992 and since 1994 he has been working at their Research and Development Laboratories. He has been engaged in research on long-distance and high-speed optical communication systems. In 1998, he was on leave at Stanford University, CA. Dr. Morita received the Young Engineer Award from the Institute of Electronics, Information and Communication Engineers (IEICE) of Japan in 1998.

16.10: **No-Guard-Interval PDM CO-OFDM Transmission for 100 Gbps/Channel DWDM Transport**

Eiichi Yamada,
NTT (Japan)

Biography: Eiichi Yamada received the B.E. and M.E. degrees in electrical engineering from Kyoto University, Kyoto, Japan in 1987 and 1989, respectively. In 1989, he joined NTT Corporation where he researched optical soliton transmission. He is now engaged in the research and development of high-speed optical communications.

He received the Best Paper Award from the Institute of Electronics, Information and Communication Engineers (IEICE) of Japan in 1994. He is a member of IEICE, the Japan Society of Applied Physics (JSAP), and IEEE/LEOS.

16.30 to 17.30 · Panel Discussion

Workshop on Challenges on Optical Network Deployment and Services Rollout

Sunday October 26 • 8.30 to 12.30 hrs. • *Wenzhou Auditorium*

Chairs:

Shoa-Kai Liu,
Rustic Canyon Partners

Lena Wosinska,
Royal Institute of Technology (Sweden)

Dongxiao Yang, Zhejiang Univ. (China)

As the global carriers are deploying 40G ULH backbone network, packet based regional and metro network, the triple play FTTX access network, capacity-rich submarine system, WiMax, and 3G mobile broadband networks, the underlying of deployment is a myriad of existing and new applications that are driving communication network growth. The explosive increase of capacity demand has been driven by e.g. triple-play services, Internet video, mobile TV streaming, online search, and enterprise data services etc, which cause tremendous challenges on both demand and supply sides.

The theme of this workshop will highlight critical issues and challenges that impact the rollout of existing and future optical network deployment and services. Topics include review of optical networking architectural options, technology selection choices with review of advantages and disadvantages, network planning with migration and associated interoperability issues, technology deployment status, enabling critical successful business drivers and services, and discussion of other emerging and new optical networking technology and their demands from both industrial and academic research perspectives.

Invited experts from carriers, system and subsystem providers, universities and research institutions will present challenges requiring immediate network enhancements and will highlight much-needed research to support development of new technologies and products. Invited speakers will also review possible approaches and their shortcomings that demand optimal solutions. We expect lively interaction amongst speakers and audiences; we all will expound on important challenging issues to facilitate further product development and research efforts.

Topics include:

- **Transport network challenges for meeting new service demands**
- **The deployment challenges for enabling broadband fixed mobile convergence**
- **Uncertainties in network planning and deployment**
- **Deployment challenges of metro and broadband access networks**
- **Designing and deployment of next generation networks enabling new video services such as HDTV, SDTV, VOD, and billions of user-generated video streams**
- **New services requiring enhanced transport and switching systems**
- **Global network survivability challenges**
- **Backbone network design and business requirements for 100G-technology deployment**
- **System and subsystem requirements for 40G/100G wavelength transport, switching and routing**
- **Balancing performance and cost for proper selection of XPON technologies**
- **Burgeoning optical networking technologies including their demands**

Workshop Program

8.30 to 10.00 Invited Talks

8.30: **Carrier Innovation: Driving Force for Next Generation Optical Networks**

T. J. Xia,
Verizon Communications

Biography: Dr. Tiejun (TJ) Xia is an expert in photonic technologies and optical communications. He is Distinguished Member of Technical Staff with Verizon Communications where his responsibility is network technology development. In 2007 Dr. Xia led the industry's first 100G field trial with live traffic. Dr. Xia is also Adjunct Professor in the School of ECS at University of Texas at Dallas and Mentor Advisor at STARTech Early Ventures. He is co-founder of Advanced Fiber Connectivity & Switching Forum. Recently he served as Director for Network Technology Development at Chorum Technologies, where he managed advanced R&D activities for photonic system development. Prior to Chorum, he worked with MCI Communications for next generation optical transmission technologies. Before joining MCI he was a research faculty member in Department of Electrical Engineering, University of Michigan, where he accomplished one of the earliest 100G test beds. Dr. Xia holds his Ph.D. degree in Physics (Nonlinear Optics) from University of Central Florida, M.S. degree in Laser Physics from Zhejiang University, China, and B.S. degree in Space Physics from University of Science and Technology of China. He has published more than 90 technical papers and holds more than 30 granted or pending U.S. patents.

8.45: **From 40G Modulation to 100G Implementation: Where the High-speed Optical Transport Market will Go Next**

Niall Robinson,
Mintera Corp.

Biography: Niall Robinson is Mintera's Vice President of Product Marketing, with responsibilities encompassing market development, product management and marketing communications. For the last eighteen years Niall has been heavily involved in guiding leading edge technologies and solutions into the marketplace.

Most recently at Optovia Corporation, Niall was the Vice President responsible for strategic product management and market development for Optovia's range of optical amplifier solutions. Prior to Optovia, Niall was Director, Product Planning for Nortel's ultra-long haul product portfolio, joining Nortel through the acquisition of Qtera.

Niall also spent five years at MCI (now Verizon) with responsibility for identifying next generation optical technologies covering all aspects of the backbone network. In this role Niall worked with many equipment and technology companies to mature solutions into products ready for deployment.

He began his career as a research engineer at STC in Harlow, UK (also acquired by Nortel) with research focused on terrestrial and submarine amplifier technologies and designs.

Niall holds a Bachelor of Engineering degree in Electrical and Electronic Engineering from the University of Newcastle upon Tyne and a Master's degree in Microwaves and Optoelectronics from University College London.

9.00: **When and How TDM Died: The Challenges in the Metro Transport Network Transition**

Jin-Yi Pan,
Nokia Siemens Networks

Biography: Dr. Jin-Yi Pan, currently hold the position of the CTO, Nokia Siemens Networks (NSN) Transport Systems, Ltd. (Shanghai), and head of System Product Line Management Next Generation Metro, IPT of NSN.

Nokia Networks and Siemens Networks have merged in April 1st, 2007, where he leads the Next Gen. Metro global product strategy and cross products solutions. Before that, Dr. Pan became the CTO and executive vice president of Siemens Optra Communication Technologies, Shanghai in Oct. 2006, through Siemens acquisition of Photonic Bridges. From 2003 to the Siemens acquisition of Photonic Bridges, Dr. Pan is the investor, CTO and Executive vice president of Photonic Bridges where he was responsible for the overall technology strategy, product definition, marketing and communications. He was instrumental in rapidly moving advanced optical and networking technologies into products developed by Photonic Bridges, led the company's global marketing effort.

Prior to joining Photonic Bridges, Dr. Pan was the Co-founder and Vice President of System Architecture at Sorrento Networks, Inc. which was successfully listed on NASDAQ in 2001. In Sorrento Networks, Dr. Pan led company R&D set up, the next generation products development and supported the global product marketing. Prior to the entrepreneur life, He has held the positions of senior research scientist at the Nokia Research Center and MTS (Member of Technical Staff) at AT&T Bell Labs/ Bellcore (now Telecordia Technologies) where he worked on advanced optical networking projects.

Dr. Pan holds 12 patents and has published numerous technical papers on optical systems. Dr. Pan is frequently invited to speech major international conferences and forums. He received his Ph. D. and Masters degrees in Electrical Engineering from City University of New York and a Bachelor degree in Optics and Optical Engineering from Zhejiang University of China.

9.15: **Hybrid IP/MPLS and Real-time Network Architecture for Telco IPTV Infrastructure and Legacy Migration**

Bengt Hellstrom, Net Insight AB (Sweden)

Biography: Bengt Hellstrom has a Master of Science degree in Physics from the Royal Institute of Technology in Stockholm, Sweden. Bengt joined Net Insight in 2004 as Director of Product Marketing and in June 2008 moved to Singapore assuming responsibility for business development in the APAC region. Prior to joining Net Insight Bengt was co-founder and Senior Director Marketing of optical start-up Q2 Labs. Bengt has a long background from the optical communications industry including positions at Cisco and Ericsson in the areas of product management, marketing, pre-sales, and systems engineering.

9.30 to 10.00 Panel Discussion and Q&A

10.00: Coffee/Tea Break

10.30 to 12.00 Invited Talks

10.30: **Dynamism of FTTH Deployment in Asia-Pacific**

Shoichi Hanatani, Hitachi Communication Technologies, Ltd. (Japan)

10.45: **Overview of Japanese FTTH Market and Lessons Learned**

Yukihiro Fujimoto,
NTT (Japan)

Abstract: FTTH market has been expanding very rapidly in Japan. The number of FTTH user has exceeded 12 million. Japanese broadband access market is shifting from ADSL to FTTH. In particular, transtion from ADSL service to FTTH service is remarkable in NTT. This presentation first gives an overview of Japanese FTTH market. NTT is offering triple play service on FTTH. In March of 2008, NTT started to provide the NGN service on FTTH. Typical FTTH application will be introduced.

Lessons learned from massive FTTH rollout will be also presented. NTT has developed several technologies for FTTH rollout. Key technologies that enabled massive FTTH service offering will be addressed. This presentation also discusses the technologies for the future.

Biography: Mr. Fujimoto joined NTT Telecommunication Networks Labs in 1990 where he had studied the fiber optic access network including optical access systems, cables and deployment scenarios. During 1997 – 1998, he stayed Lucent Technologies Bell lab (now a part of Alcatel- Lucent) in the Netherlands Huizen as a guest researcher to develop Pai-PON system, which is a STM-PON optical access system for telephony services. After finishing the commercial development of Pai-PON system, he had engaged to develop IEEE802.3ah specifications and GE-PON system for the commercial FTTH in NTT. Currently, he studies FTTH network enhancements and the next generation optical access.

11.00: **FTTX and its Deployment in China**

Jianli Wang,
Fiberhome Telecommunications, Inc. (China)

Biography: Jianli Wang, Deputy CTO of WRI (Wuhan Research Institute of Post and Telecomm), assistant president of Fiberhome Telecommunications and general manager of Broadband Division. He obtained his Ph D. from Beijing University of Posts and Telecoms in 1992. From 1985 to 1989, he worked as an engineer on PDH optical communications in WRI; From 1992 to 1994, he worked as a post-doctoral fellow on jitter reduction of SDH systems in Qinghua University; From 1994 to 1996, he worked as a research fellow on broadband network architecture in Queen's University in Canada; From 1996 to1999, he worked with Nortel Networks in Canada as senior engineer, architect and team leader in research and development of ATM, IP over ATM, MPLS, and IP over DWDM. From 1999 to 2003, he worked with SS8 Networks as a senior architect and signaling product development director, where he led an R&D team doing VoIP and QoS research and development. In April 2003, he joined Fiberhome Technologies Group where he was leading a team responsible for the group's technology directions and high-level product planning. From 2007, he is an assistant president of Fiberhome Telecommunications Inc. and general manager of Broadband Division, responsible for technologies and product development of broadband access and next generation switch.

11.15: **Gigabit/s to the End User: Why, How, and When**

Mikhail Popov,
Acreo AB (Sweden)

Biography: Mikhail Popov received the M.Sc. degree (with honours) in Electrical Engineering in 1995 from the St. Petersburg Electrotechnical University and the Ph.D. degree in Electromagnetic Theory in 2002 from the Royal Institute of Technology (KTH), Stockholm, Sweden. In 2001, he joined the Photonics Department (now Netlab) of Acreo AB. Currently, Dr. Popov is active in research and development for next generation access and in-building networks with the focus on using the optical fibre. His research interests also include Ethernet, ASON/GMPLS, and general data and control plane issues in networks. He has authored and co-authored more than 40 papers on electromagnetic theory and optical communications. Dr. Popov is the co-ordinator for the EU-funded Large-Scale Integrating project ALPHA - "Architectures for fLexible Photonic Home and Access networks".

11.30: **EPON and GPON in the Age of 10G PON: Business Case and Technology**

Jess Li,
ZTE USA (USA)

Biography: Jess Li is a VP of ZTE USA responsible for planning, management and marketing of ZTE Broadband Access and Transport product portfolio for international markets. Dr. Li started his telecommunication career in Verizon Business unit, formerly MCI Communications, where he worked in the Advanced Technology group resolving network issues related to high speed optical transmission. Later part of his career was focused on enabling technology for the convergence of TDM and data networks. Before joining ZTE USA, Dr. Li was a product line manager in Fujitsu Network Communications, responsible for metro and access transport network products.

11.45: **Considerations on FTTX Mass Deployment**

Bo Wang,
China Telecom (China)

Biography: Mr. Wang Bo graduated from the Department of Electronic Engineering of Tsinghua University in 1998 with a Master's Degree. In 2004, he studied in Coventry University, UK, receiving a Master's Degree of Communications Management. Since 1998 when he joined China Telecom, he has been engaged in the research and project management on DSL access, fiber access, wireless access and home network. He also organized and participated in specifications formulation, equipments evaluation, new technologies trial and draft of technical strategies of China Telecom in the related fields. He has been assuming the vice director of Access Network Working Group of CCSA (China Communications Standards Association) since 2003. He is also the board member of FMCA (Fixed-Mobile Convergence Alliance).

12.00 to 12.30 · Panel Discussion

Workshop on Photonics and Sustainable Development

Sunday 26 October • 14.00 to 17.00 hrs. • *Wenzhou Auditorium*

Chairs:

Per O. Andersson, Ericsson Telecom AB (Sweden)

Lianghui Chen, Institute of Semiconductors (China)

The workshop will focus on business opportunities in Photonics created by the global attention to Sustainability.

The world is today rapidly assessing the threat to welfare and business caused by the multi-faceted challenges posed by global warming, ecosystem collapses and other (un-) sustainability issues. ICT – and thereby photonics as a critical key area—is expected to play a key role in mitigating these problems.

China, as a highly relevant example, has a strong attention to these problems as illustrated by the recently introduced energy law, but also—by means of its rapidly expanding ICT-industry and modernization—strong tools by which to approach the problems.

At the top-down level, many possibilities are identified, and at the bottom-up level, a vast number of technical solutions exist, but the combination is difficult, and the solutions must be evaluated in new ways, by means of e.g. Carbon Foot-printing, or Life Cycle Analysis, and the efficiency is yet unproven.

This workshop aims to illustrate some of the connections possible between existing technology areas and the emerging application area of sustainability, and introduce the participants to some of the new tools needed for evaluation of the results and efficiency of the solutions.

Topics include:

- **Introduction to ICT and Sustainability**
- **Solid state lighting**
- **Super-bandwidth communication for virtual presence**
- **Energy efficiency in telecommunication devices and systems**
- **Photovoltaics**
- **Real-time, high-definition, solid-image projectors**
- **Real-time holographics**
- **Telematics – (e.g. radio-fibre networks for automotive transport communications)**
- **Sensor networks and M2M communication for environmental monitoring**

Workshop Program

14.00 to 15.00 · Invited Talks

14.00: **Opening Remarks**

Dr. Per O. Andersson,
Sustainability Director, Ericsson AB (Sweden)

Abstract: Photonics has the unique property of being a key technology for a sustainable future in all its applications; in emission (for illumination and display), in absorption (photovoltaics), in transmission (for communication), and in remote sensing. In this workshop, the state-of-the art of several key fields is overviewed and discussed with respect to the role of photonics for sustainability and emerging business applications.

Biography: Dr. Per O. Andersson is Director of Sustainability at Ericsson's Group Function Strategy and Operational Excellence, responsible for strategies and business development in the area of sustainability and Ericsson's Environmental Management System.

Dr. Andersson has spent 25 years in optical communications research and development, the last 17 in Ericsson, where his area of work has ranged from fibre-optic transmission, access networks, and components and devices. He has also been responsible for standardisation activities and editor in ITU and ETSI. In recent years he has also held several senior management positions in R&D, supply, and product management. Recent work also includes effects of sustainability issues on telecoms. He is chair of the board of the Centre for Sustainable Communications at the Royal Institute of Technology in Stockholm.

14.30: **The Solar (R)evolution: Photovoltaic Solar Energy for Sustainability**

Wim C. Sinke,
Energy Research Ctr. of the Netherlands
(The Netherlands)

Abstract: Solar energy is essential to build the world's future sustainable energy supply system. Direct conversion of sunlight into electricity ('photons to electrons'), usually referred to as photovoltaic solar energy or PV, is a particularly elegant form of solar energy. It is modular, quiet and robust, and has a huge potential. PV devices (i.e., solar cells and modules) come in many different forms that vary greatly in performance and in degree of maturity. Applications range from consumer products and small-scale systems for rural use to building-integrated systems and large-scale power plants. From milliwatts to gigawatts using the same basic buildings blocks. The PV industry sector develops rapidly, surpassing even the most optimistic expectations and PV solar energy is now not only appreciated as a source of renewable energy, but also as a major commercial opportunity.

This presentation will provide an overview of history, state-of-the-art and expected future developments of solar cells, modules and systems in terms of science and technology, but also in terms of markets and application forms, economics, and sustainability-related aspects.

Biography: Prof. Dr. Wim C. Sinke (1955) studied experimental physics at Utrecht University, where he graduated in 1981. He received a doctor's degree from the same university in 1985 for a thesis entitled "New physical processes for silicon solar cells". From 1986 to 1987 he was a visiting scientist at the Hitachi Central Research Laboratory in Tokyo, where he worked on amorphous silicon. From 1987 to 1990 he was project leader solar cells at the FOM-Institute for Atomic and Molecular Physics in Amsterdam, and was involved again in crystalline silicon solar cells and in fundamental properties of amorphous silicon. In 1990 he joined the Energy research Centre of the Netherlands ECN to set up and lead a new group on photovoltaics. This group has grown to a size of over 80 people and covers a broad range of topics: crystalline silicon cells and modules (industrial process development), thin-film silicon, organic

and dye-sensitized cells, grid-connected and stand-alone systems. In 2003 he was assistant director of ECN, from 2004 on he is senior staff member Programme and Strategy in the unit Solar Energy.

Wim Sinke is a part-time professor at Utrecht University on "Science and Applications of Sustainable Energy Systems". He has received the "Jacob Kistemaker Award" of the Foundation for Fundamental Research on Matter (FOM) in 1992, the "NOZ-PV Award" of Novem in 1998 and the Royal Dutch/Shell Prize 1999 for his contributions to the science and technology of silicon and solar cells and for his role in the creation and development of the Dutch programme on R&D and implementation of photovoltaics. He is Executive Board member of the EU PV Technology Platform and chairman of its Working Group on Science, Technology & Applications.

15.00 to 15.30 · Coffee/Tea Break

15.30 to 16.30 · Invited Talks

15.30: **LED Street Lighting Technologies with High Human-eye Comfortability**

Yi Luo, et al.,
Tsinghua Univ., Beijing, (China)

Abstract: This paper reviews the latest progress in solid state lighting, especially in LED street lighting technologies. For fabrication human-eye comfortable LED street lighting sources, specific optical beam shaping systems with rectangular illumination distribution were designed based on non-imaging optics. Furthermore, thermal dissipation and high efficiency and reliability driving solutions were presented.

Biography: Yi Luo was born in Beijing, China, on February 22, 1960. He received the B. E. Degree in engineering from The Tsinghua University, Beijing, China, in 1983, The M. E. degree in electronic engineering with a thesis entitled "Studies on the shapes and orders of the gratings in distributed feedback semiconductor lasers" and the Ph. D. degree in electronic engineering with a dissertation entitled "Studies on gain-coupled distributed feedback semiconductor lasers" both from the University of Tokyo, Tokyo, Japan, in 1987 and 1990, respectively. He is one of the pioneers of the field of gain-coupled DFB semiconductor lasers. He is also the first to undertake research on monolithic integration of DFB lasers with electroabsorption modulators in China.

During Apr. 1990 to Mar. 1992, he was with the Optical Measurement Technology Development Company, Ltd., Tokyo, Japan. In 1992, he returned to Tsinghua University, Beijing, China and appointed as a lecturer of the Department of Electronic Engineering. Since the end of 1992, he has been a full professor of the same department. From 1997, He has also been the director of Sate Key Lab on Integrated Optoelectronics which is jointed by Tsinghua University, Semiconductor Institute of Chinese Academy of Sciences, and Jilin University.

His research interests are focusing on following fields:

(1) Distributed feedback (DFB) lasers including those with gain coupling and monolithic integration of DFB laser with other semiconductor optoelectronic devices.
(2) GaN based light emitting devices and electronic devices-especially, key technologies for solid state lighting.
(3) Materials growth technology using MOCVD and MBE.
(4) Devices fabrication technology such as dry etching, thin film deposition, annealing process, etc.
(5) Packaging technologies for high speed optoelectronic devices and solid state lighting such as DFB laser diode / electroabsorption modulator integrated transmitter and modules of white LEDs for lighting applications.

He has published more than 200 technical articles including more than 50 peer reviewed international journal papers and about 70 international conference papers. He also have more than 30 Japanese, America, and Chinese Patents.

16.00: **Sustainability and Communications**

Per O. Andersson,
Sustainability Director, Ericsson AB (Sweden)

Abstract: Commonly, ICT-systems in general are connected to sustainability issues by means of their energy consumption and e-waste – issues which today has a rapidly increasing attention. However, the recent analysis also illustrates that the positive impact from the application of ICT-technologies can e.g. offset 5-10 times as much CO2 as is consumed by the systems. In this presentation, the impact of communication systems on sustainability is overviewed in terms of the energy use, e-waste, and their application impact.

Biography: Dr. Per O. Andersson is Director of Sustainability at Ericsson's Group Function Strategy and Operational Excellence, responsible for strategies and business development in the area of sustainability and Ericsson's Environmental Management System. Dr. Andersson has spent 25 years in optical communications research and development, the last 17 in Ericsson, where his area of work has ranged from fibre-optic transmission, access networks, and components and devices. He has also been responsible for standardisation activities and editor in ITU and ETSI. In recent years he has also held several senior management positions in R&D, supply, and product management. Recent work also includes effects of sustainability issues on telecoms. He is chair of the board of the Centre for Sustainable Communications at the Royal Institute of Technology in Stockholm.

16.30 to 17.00 · Panel Discussion

A discussion on the applications of photonics to sustainability and its business opportunities.

AOE/APOC Joint Symposium on Broadband Access

Friday 31 October • 08.45 to 17.00 hrs.

Transportation will be provided for APOC attendees to travel to Shanghai for this joint symposium

Chairs:

Jianli Wang, Vice President, Fiberhome (China)

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:

Greg Caltabiano, Teknovus (USA)

Lynn Hutcheson, Ovum RHK (USA)

Byoung Whi Kim, ETRI, (Korea. Republic of)

Guangcheng Li, Fiberhome (China)

David Piehler, Alphion (USA)

Naoto Yoshimoto, NTT Access Network Service Labs. (Japan)

Chengliang Zhang, China Telecom Research Institute (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**

Conference 7134

Passive Components and Fiber-based Devices V

Monday-Thursday 27-30 October 2008
Proceedings of SPIE Vol. 7134

Conference 7135

Optoelectronic Materials and Devices III

Monday-Thursday 27-30 October 2008
Proceedings of SPIE Vol. 7135

Monday 27 October

Room: Taizhou Auditorium

Mon. 13.00 to 15.00

SESSION 1a
Photonic Crystal Fibers I

Session Chair: **Jes Broeng,** Crystal Fibre A/S (Denmark)

13.00: **Better photonic crystal fibers (Tutorial)**, Jonathan Knight, Univ. of Bath (United Kingdom) . . . . . .[7134-01]

13.45: **Novel highly negative dispersion photonic crystal fibers with central index dip**, Honglei Li, Shuqin Lou, Tieying Guo, Hong Fang, Weiguo Chen, Li-Wen Wang, Shuisheng Jian, Beijing Jiaotong Univ. (China . . . . . .[7134-02]

14.00: **Theoretical design of low-loss single-polarization single-mode microstructured polymer optical fiber,** Yani Zhang, Xi'an Institute of Optics and Precision Mechanics (China). . . . . .[7134-04]

14.15: **Photonic crystal fibers (Tutorial),** D. N. Payne, Univ. of Southampton (United Kingdom) . . . . . .[7134-05]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Jinhua Auditorium

Mon. 13.00 to 15.00

SESSION 1b
Fiber Lasers and Amplifiers

Session Chair: **Ji Wang,** Corning Inc. (USA)

13.00: **High-concentration erbium-doped fiber-based short cavity ring lasers**, Li Song Liu, Yongjun Fu, Jian Peng, Kai Zheng, Xiangqiao Mao, Huai Wei, Fengping Yan, Honglei Lei, Shuisheng Jian, Beijing Jiaotong Univ. (China) . . . . . .[7134-06]

13.15: **Temporal characteristics of a high-power erbium-doped fiber ring laser**, Ailing Zhang, Zhengrong Tong, Xiurong Ma, Xiufeng Yang, Tianjin Univ. of Technology (China); Kaliyaperumal Nakkeeran, Univ. of Aberdeen (United Kingdom) [7134-07]

13.30: **Radiation effect on EDFA for inter-satellite optical communication on low dose orbits**, Mi Li, Jing Ma, Liying Tan, Yanping Zhou, Siyuan Yu, Jianjie Yu, Chi Che, Chunlian Lu, Harbin Institute of Technology (China) . . . . . .[7134-08]

13.45: **Temperature dependence of fluorescence in erbium-doped silica fiber**, Jian Peng, Yongjun Fu, Li Song Liu, Fengping Yan, Huai Wei, XiangQiao Mao, Kai Zheng, Lin Wang, Shuisheng Jian, Institute of Lightwave Technology (China) . . . . . .[7134-09]

14.00: **Advanced topics on Er- and ErYb-doped fibers for fiber amplifiers and lasers** *(Invited Paper)*, Benyuan Zhu, OFS Fitel, LLC (United States) . . . . . .[7134-10]

14.30: **EDFA gain-flattening based on the cascade of step-changed LPGs**, Yang Ran, Jinan Univ. (China) and Consultant (China) and Consultant (China); Weiping Liu, Hongbin Huang, Shun'er Chen, Jinan Univ. (China); Weichong Du, Institute of Industry Technology (China) . . . . . .[7134-11]

14.45: **Enhanced gain and noise figure performance of high concentration co-doped phosphate fiber amplifiers**, Ali Rostami, Univ. of Tabriz (Iran) . . . . . .[7134-12]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Quzhou Auditorium

Mon. 13.15 to 15.00

SESSION 1a
Photonic Integration I

Session Chair: **Jian-Jun He,** Zhejiang Univ. (China)

13.15: **Hybrid integration for advanced photonic devices** *(Invited Paper)*,

Alistair J. Poustie, Ctr. for Integrated Photonics Ltd. (United Kingdom) . . [7135-01]

13.45: **Recent progress on arrayed waveguide grating multi/demultiplexers** *(Invited Paper)*,

Tsutomu Kitoh, Nippon Telegraph and Telephone Corp. (Japan) . . . . [7135-02]

14.15: **Using a micromolding process to fabricate polymeric wavelength filters**, Chi-Hsing Lin, Szu-Wei Lu, Wei-Ching Chuang, Wei-chih Hung, Yu-Tai Huang, Chi-Ting Ho, National Formosa Univ. (Taiwan China) . . . . . .[7135-03]

14.30: **Progress with the uncooled electroabsorption modulator integrated DFB laser** *(Invited Paper)*, Shigeki Makino, Kazunori Shinoda, Takeshi Kitatani, Takashi Shiota, Shigehisa Tanaka, Masahiro Aoki, Hitachi, Ltd. (Japan); Noriko Sasada, Kazuhiko Naoe, Opnext Japan, Inc. (Japan). . . . . .[7135-04]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Huzhou Auditorium

Mon. 13.00 to 15.00

SESSION 1b
Nano Photonics I

Session Chair: **Fumio Koyama,** Tokyo Institute of Technology (Japan)

13.00: **Mode behavior in microcavities** *(Invited Paper)*,

Yong-Zhen Huang, Yue-De Yang, Shi-Jiang Wang, Kai-Jun Che, Institute of Semiconductors (China) . . . . [7135-05]

13.30: **Proposal for tunable optical delay line using nanophotonic tools**, Ali Rostami, Univ. of Tabriz (Iran). . . . . .[7135-06]

13.45: **Dependence of the photoluminescence from silicon nanostructures on the size of silicon nanoparticles**, Wenge Ding, Wei Yu, Wenhao Qi, Guangsheng Fu, Hebei Univ. (China) . . . . . .[7135-07]

14.00: **Nano-mechanical tunable VCSEL using high contrast grating** *(Invited Paper)*,

Connie J. Chang-Hasnain, Univ. of California/ Berkeley (United States) . . . . [7135-08]

14.30: **Quantum-dot coupled tensile-strain quantum-well polarization insensitive semiconductor optical amplifier**, Lirong Huang, Pengfei Zhan, Shuping Fei, Dexiu Huang, Huazhong Univ. of Science and Technology (China) . . . . . .[7135-09]

14.45: **Size dependent phonon and exciton behaviors in ZnO quantum dots**, Kuo-Feng Lin, National Chiao Tung Univ. (Taiwan China) . .[7135-10]

Coffee/Tea Break. . . . .15.00 to 15.30

Conference 7136

Optical Transmission, Switching, and Subsystems VI

Monday-Thursday 27-30 October 2008
Proceedings of SPIE Vol. 7136

Conference 7137

Network Architectures, Management, and Applications VI

Monday-Thursday 27-30 October 2008
Proceedings of SPIE Vol. 7137

Monday 27 October

Room: Hangzhou Auditorium

Mon. 13.30 to 15.00

SESSION 1a
Network Elements I

Session Chair: **Michael H. Eiselt,** ADVA AG Optical Networking (Germany)

13.30: **10GHz all-opitcal packet clock recovery with ultrafast locking and unlocking time via XPM effect of the SOA**, Wenrui Wang, Jinlong Yu, Aixu Zhang, Litai Zhang, Bingchen Han, Hao Hu, Yang Jiang, Enze Yang, Tianjin Univ. (China) . . . . . .[7136-01]

13.45: **Performance of differential-phase-shift keying protocol applying 1310nm up-conversion single-photon detector**, Chenxu Feng, Rongzhen Jiao, Wenhan Zhang, Beijing Univ. of Posts and Telecommunications (China)[7136-02]

14.00: **40Gbps parallel optical module based on an advanced structure of optical coupling**, Fengman Liu, Institute of Semiconductors (China) . . .[7136-03]

14.15: **Tunable and reconfigurable microwave photonic filter implemented by cascaded Mach-Zehnder modulators and a dispersive medium**, Hongyan Fu, Haiyan Ou, Kun Zhu, Edvin Remb, Sailing He, Zhejiang Univ. (China) . . . . . .[7136-04]

14.30: **Modulation instability in the normal dispersion regions of photonic crystal fibers**, Chunying Chen, Hunan Univ. (China) .[7136-05]

14.45: **Mitigation of patterning effect in wavelength conversion by cascaded semiconductor optical amplifier and electroabsorption modulator**, Enbo Zhou, Huazhong Univ. of Science and Technology (China) and Technical Univ. of Denmark (Denmark); Xinliang Zhang, Huazhong Univ. of Science and Technology (China); Filip Öhman, Technical Univ. of Denmark (Denmark); Cheng Cheng, Huazhong Univ. of Science and Technology (China) and Technical Univ. of Denmark (Denmark); Jesper Mørk, Technical Univ. of Denmark (Denmark); Dexiu Huang, Huazhong Univ. of Science and Technology (China) . . . . . .[7136-06]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Ningbo Auditorium

Mon. 13.15 to 15.00

SESSION 1b
Nonlinear Optics

Session Chair: **Songnian Fu,** Nanyang Technological Univ. (Singapore)

13.15: **Dispersion induced RF power degradation in optical true time delay mplemented by broadband light source and dispersion element**, Peng Fang, Xiaoping Zheng, Tsinghua Univ. (China); Yabin Ye, CREATE-NET (Italy); Yili Guo, Hanyi Zhang, Tsinghua Univ. (China) . . . . .[7136-07]

13.30: **Pulse delay and advancement in ring resonator with mutual mode coupling**, Jing Wang, Kungliga Tekniska Högskolan (Sweden); Tao Wang, Qiang Li, Fangfei Liu, Yikai Su, Shanghai Jiao Tong Univ. (China); Min Qiu, Kungliga Tekniska Högskolan (Sweden) . . . . . .[7136-08]

13.45: **Phase-modulated signals through slow-light silicon microrings** *(Invited Paper)*,

Yikai Su, Shanghai Jiao Tong Univ. (China) . . . . [7136-09]

14.15: **Effects of loss and dispersion on fiber-based quantum key distribution system**, Shu Yang, Wei Liu, Yuhong Han, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7136-10]

14.30: **Chirped-pulse propagation and supercontinuum generation in photonic crystal fibres with double widely lying zero-dispersion wavelengths**, Jinggui Zhang, Hunan Univ. (China) . . . . . .[7136-11]

14.45: **All-optical frequency up-conversion and demultiplexing with a fiber-ring-based microwave photonic filter in an IM-DD radio-over-fiber System**, Kun Zhu, Haiyan Ou, Ying Hu, Hongyan Fu, Zhejiang Univ. (China); Sailing He, Zhejiang Univ. (China) and Kungliga Tekniska Högskolan (Sweden) . . . . . .[7136-12]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Wenzhou Auditorium

Mon. 13.30 to 15.00

SESSION 1a
Broadband Access I

Session Chair: **Lena Wosinska,** Kungliga Tekniska Högskolan (Sweden)

13.30: **Reliable architectures for next-generation broadband access networks (RANGBAN)** *(Invited Paper)*, Biswanath Mukherjee, Univ. of California, Davis (United States) . . . . . .[7137-01]

14.00: **A proposal of spare-free OLT architecture for PON systems**, Kazuho Ohara, Yukio Horiuchi, KDDI R&D Labs., Inc. (Japan). . . .[7137-02]

14.15: **Integration of EPON and WiMAX Networks: uplink scheduler design**, Ying Yan, Hao Yu, Danmarks Tekniske Univ. (Denmark) . .[7137-03]

14.30: **Design and implementation of scalable IPv4-IPv6 internetworking gateway**, Guo-sheng Zhu, Huazhong Univ. of Science and Technology (China), State Key Lab. for New Optical Communication Technologies and Networks (China) and Wuhan Research Institute of Posts and Telecommunications (China); Shaohua Yu, Wuhan Research Institute of Posts and Telecommunications (China) and State Key Lab. for New Optical Communication Technologies and Networks (China); Jinyou Dai, Huazhong Univ. of Science and Technology (China) and State Key Lab. for New Optical Communication Technologies and Networks (China) . . . . . .[7137-04]

14.45: **Research on optical access network remote management technology**, Wayne Wang, Zou Chen, Wenyi Luo, Wuhan Research Institute of Posts and Telecommunications (China) . . . . . .[7137-05]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Shaoxing Auditorium

Mon. 13.30 to 15.00

SESSION 1b
Optical Transport Network

Session Chair: **Martin Collier,** Dublin City Univ. (Ireland)

13.30: **Optical mesh network design for service providers** *(Keynote Paper)*,

Yali Liu, Verizon Business (Hong Kong, China) . . . . .[7137-72]

14.00: **Recent transport network development using ROADMs and 40 G transmission** (*Invited Paper)*, Kazuo Hagimoto, NTT Network Innovation Labs. (United States) . . . . . .[7137-08]

14.30: **Experimental performance evaluation of inter-domain path provisioning with multiple PCEs,** Shinya Ishida, Yohei Iizawa, Itaru Nishioka, Soichiro Araki, NEC Corp. (Japan). . . . . .[7137-06]

14.45: **Wavelength converter placement for dynamic traffic,** Jakob Buron, Sarah Ruepp, Henrik Wessing, Danmarks Tekniske Univ. (Denmark); Nicola Andriolli, Scuola Superiore Sant'Anna (Italy); Anna V. Manolova, Lars Dittmann, Danmarks Tekniske Univ. (Denmark) . .[7137-07]

Coffee/Tea Break. . . . .15.00 to 15.30

Conference 7134

Passive Components and Fiber-based Devices V

Monday-Thursday 27-30 October 2008
Proceedings of SPIE Vol. 7134

Conference 7135

Optoelectronic Materials and Devices III

Monday-Thursday 27-30 October 2008
Proceedings of SPIE Vol. 7135

Monday 27 October

Room: Taizhou Auditorium

Mon. 15.30 to 17.30

SESSION 2a
Optical Fibers I

Session Chair: **Xin Chen,** Corning Inc. (USA)

15.30: **Bend insensitive fiber requirements in MDU and FTTX** *(Invited Paper)*, David Z. Chen, Verizon (United States) . . . . [7134-13]

16.00: **Design and usage of non-zero dispersion shifted wideband transport (NZDWT) fiber**, Saurav Dutta, Sterlite Optical Technologies Ltd. (India) . . . . . .[7134-14]

16.15: **A novel optical fiber design strategy based on combination of GA and CD optimization methods**, Ali Rostami, Univ. of Tabriz (Iran). . . . . .[7134-15]

16.30: **Bend insensitive fibers for FTTH** *(Invited Paper)*,

Jinkee Kim, David W. Peckham, Robert L. Lingle, Jr., Alan H. McCurdy, Fengqing Wu, John M. Fini, Kariofilis Konstadinidis, Peter A. Weimann, OFS Fitel, LLC (United States) . . . . . .[7134-16]

17.00: **Increase of hydrogen resistance of optical fiber process through refractive index profile design**, Anand K. Pandey, Sterlite Optical Technologies Ltd. (India). . . . . .[7134-17]

17.15: **calculation of dispersion of the optical fiber doped with the InP nanoparticles**, Yuwen Duan, Xi Chen, Jin Wang, Ru Zhang, Beijing Univ. of Posts and Telecommunications (China)[7134-18]

Room: Jinhua Auditorium

Mon. 15.30 to 17.30

SESSION 2b
Fiber Bragg Gratings

Session Chair: **Yung-Jui Chen,** Univ. of Maryland, Baltimore County (USA)

15.30: **Effectively tunable dispersion compensation based on chirped fiber Bragg gratings using electroactive polymer**, Yongbo Dai, Harbin Institute of Technology (China) . . . . . .[7134-19]

15.45: **The design and fabrication of optical fiber Bragg grating filter with dual-bandpass pair by phase sampling and phase shifts**, Xia Li, Nanyang Technological Univ. (Singapore) . . . . . .[7134-20]

16.00: **Recent advances in the design and fabrication of high channel-count fiber Bragg gratings**

(Invited Paper), Hongpu Li, Ming Li, Shizuoka Univ. (Japan) . . . . [7134-21]

16.30: **Temperature insensitive packaging of FBG based on a flat diaphragm and an L-shaped lever**, Wentao Zhang, Yuliang Liu, Fang Li, Institute of Semiconductors (China) . . . . . .[7134-22]

16.45: **Spectral Self-imaging Phenomena in Binary Phase-Only Sampled Fiber Bragg Gratings**, Xiaojun Zhu, Yuling Lu, Chinhua Wang, Guiju Zhang, Minfu Zhao, Suzhou Univ. (China) . . . . . .[7134-23]

17.00: **Expression of Reflection-Peak Wavelengths of Arbitrary Chirped Grating and Sampling Fiber Bragg Gratings**, Yuling Lu, Suzhou Univ. (China) . . . . . .[7134-24]

17.15: **Research on fiber sensor demodulating technique using tilted fiber Bragg gratings**, Yinping Miao, Bo Liu, Nankai Univ. (China) . . . . . .[7134-25]

Room: Quzhou Auditorium

Mon. 15.30 to 17.30

SESSION 2a
Wide Bandgap Semiconductor Devices I

Session Chair: **Jian-Jun He,** Zhejiang Univ. (China)

15.30: **Design and characterization issues in GaN-based light emitting diodes** *(Invited Paper)*,

Jong-In Shim, Hanyang Univ. (Korea, Republic of) [7135-11]

16.00: **Reactive ion etching of ZnO using the H2/CH4 and H2/CH4/Ar mixtures**, Kuang-Po Hsueh, Vanung Univ. (Taiwan China) ; Ren-Jie Hou, Cheng-Huang Kuo, Chun-Ju Tun, National Central Univ. (Taiwan China) . . . . . .[7135-12]

16.15: **Receiving method of maritime light wireless communication based on LED beacons**, Na Zhu, Qi-duan Zhong, Jiang Zhu, Jiangsu Univ. (China) . . . . . .[7135-13]

16.30: **Analysis of the transmission spectra and the parameters extraction of the GaN-based films**, Li Chao, Xue Li, Jintong Xu, Xiangyang Li, Shanghai Institute of Technical Physics (China) . .[7135-14]

16.45: **Ti/Al/Ti/Au contacts to the n-type Al0.65Ga0.35N by KOH solution processing**, Ling Wang, Jie Chen, Shanghai Institute of Technical Physics (China) . . . . . .[7135-15]

17.00: **Growth of AlN single crystals by modified PVT**, Honglei Wu, Ruisheng Zheng, Shu Meng, Yuan Guo, Shenzhen Univ. (China) . . . . . .[7135-16]

17.15: **Influence of sputtering power on the properties of N-doped ZnO films**, Jinzhong Wang, Elangovan Elamurugu, The Ctr. of Materials Research (Portugal); Nuno Franco, Eduardo Alves, Instituto Tecnológico e Nuclear (Portugal); Ana Rego, Instituto Superior Técnico (Portugal); Rodrigo Martins, Elvira Fortunato, Univ. Nova de Lisboa (Portugal) . . . . . .[7135-17]

Room: Huzhou Auditorium

Mon. 15.30 to 17.30

SESSION 2b
Novel Active Devices I

Session Chair: **Connie J. Chang-Hasnain,** Univ. of California, Berkeley (USA)

15.30: **VCSELs: their 30 years history and new challenges** *(Invited Paper)*,

Fumio Koyama, Tokyo Institute of Technology (Japan) . . . . [7135-18]

16.00: **Growth of $BxGa_{1-x}As$, $B_xAl_{1-x}As$, and $B_xGa_{1-x-y}InyAs$ epilayers on (001)GaAs by LP-MOCVD**, Qi Wang, Beijing Univ. of Posts and Telecommunications (China)[7135-19]

16.15: **Numerical study of multi-longitudinal-mode dynamics of semiconductor ring lasers subject to ultra-short optical pulse injection**, Dan Lu, Univ. of Bristol (United Kingdom) and Beijing Jiaotong Univ. (China); Siyuan Yu, Univ. of Bristol (United Kingdom) . . . . . .[7135-20]

16.30: **Microfluidic photonic integrated circuits** *(Invited Paper)*, Yu-Hwa Lo, Univ. of California/San Diego (United States) . . . . .[7135-21]

17.00: **808nm high-power high-efficiency GaAsP/GaInP laser bars**, Ye Wang, Li Qin, Li-jun Wang, Changchun Institute of Optics, Fine Mechanics and Physics (China) . . . . . .[7135-22]

17.15: **Optical feedback assistant current-driven polarization switching of VCSELs**, Tsu-Chiang Yen, National Sun Yat-Sen Univ. (Taiwan China); Da-Long Cheng, Shu-Te Univ. (Taiwan China); Jin-Ing Tsai, Wang-Chuang Kuo, National Sun Yat-Sen Univ. (Taiwan China) . . . . . .[7135-23]

Conference 7136

Optical Transmission, Switching, and Subsystems VI

Monday-Thursday 27-30 October 2008
Proceedings of SPIE Vol. 7136

Conference 7137

Network Architectures, Management, and Applications VI

Monday-Thursday 27-30 October 2008
Proceedings of SPIE Vol. 7137

Monday 27 October

Room: Hangzhou Auditorium

Mon. 15.30 to 16.30

SESSION 2a
Advanced Networks

Session Chair: **Naoya Wada,** National Institute of Information and Communications Technology (Japan)

15.30: **Needle in the haystack: secure optical communication** *(Invited Paper)*, Guifang Li, College of Optics & Photonics/Univ. of Central Florida (United States). . . . .[7136-13]

16.00: **A hybrid analysis model of burst loss probability in optical burst switching networks**, Ping Zhang, Peking Univ. (China) [7136-14]

16.15: **Analysis of wavelength conversion policies in OBS scheduling algorithm**, Zichun Le, Minglei Fu, Zhejiang Univ. of Technology (China) . . . . . .[7136-16]

Room: Ningbo Auditorium

Mon. 15.30 to 17.15

SESSION 2b
Modulation Formats

Session Chair: **Yuichi Takushima,** Korea Advanced Institute of Science and Technology (Korea, Republic of)

15.30: **DPSK-3ASK transmission optimization by adapting modulation levels**, Michael H. Eiselt, Brian T. Teipen, ADVA AG Optical Networking (Germany). . . . .[7136-17]

15.45: **Extinction-ratio-limitation free orthogonal ASK/PolSK labeling by using Manchester coded payload**, Lei Cai, Shilin Xiao, Zhixin Liu, Shanghai Jiao Tong Univ. (China) . . . . . .[7136-18]

16.00: **Advanced modulation and coding technologies for ultra-high-speed optical communications by focussing on LDPC-coded modulations and their related system implementations** *(Invited Paper)*, Lei Xu, NEC Labs. America, Inc. (United States) . . . . . .[7136-19]

16.30: **A novel optical DPSK/PolSK orthogonal encoding method for all-optical label swapping**, Liuyan Han, Yili Guo, Hanyi Zhang, Tsinghua Univ. (China) . . . . . .[7136-20]

16.45: **The study of optical FSK modulation for 40-Gb/s WDM-PON network with centralized lightwave source**, Minghao Li, Nan Chi, Wei Hong, Wei Li, Dexiu Huang, Huazhong Univ. of Science and Technology (China) . . . . . .[7136-21]

17.00: **Phase regeneration of DPSK/DQPSK signals based on phase-sensitive amplification**, Xianfeng Tang, Lixia Xi, Xiaoguang Zhang, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7136-22]

Room: Wenzhou Auditorium

Mon. 15.30 to 17.00

SESSION 2a
FTTX

Session Chair: **Biswanath Mukherjee,** Univ. of California, Davis (USA)

15.30: **Novel FTTX access technologies** *(Invited Paper)*, Joshua Li, AFOT International Inc. (United States) . . . . . .[7137-11]

16.00: **Radio-over-fiber based architecture supporting simultaneous baseband, microwave and millimeter-wave band services at 1 Gb/s**, Muhammad Haider Raza, National Univ. of Science and Technology (Pakistan). . . . . .[7137-12]

16.15: **GPON system with user controlled port-ID assignment method**, Na Zhang, Hideya Yoshiuchi, Hitachi (China) Research & Development Corp. (China) .[7137-13]

16.30: **Limit beat-frequency noise by employing receive low-pass filter and earn extra power budget margin for dual-band RSOA-based WDM-PON**, Weilin Xie, Yi Dong, Qingyuan Lin, Yaohui Jin, Weisheng Hu, Shanghai Jiao Tong Univ. (China) . . . . . .[7137-14]

16.45: **Subcarrier demultiplexing using a tunable single resonance microwave photonic filter in radio-over-fiber system**, Ying Hu, Haiyan Ou, Kun Zhu, Hongyan Fu, Zhejiang Univ. (China) . . . . . .[7137-15]

Room: Shaoxing Auditorium

Mon. 15.30 to 17.00

SESSION 2b
WDM Network I

Session Chair: **Angela L. Chiu,** AT&T Labs. Research (USA)

15.30: **Capacity allocation for time-varying traffic in survivable WDM mesh networks**, Meng Wu, Tsinghua Univ. (China) . . . . . .[7137-16]

15.45: **A novel multi-granularity OXC architecture with minimum resource first assignment algorithm**, Xinbin Wu, Ming Xin, Hongwei Chen, Minghua Chen, Shizhong Xie, Tsinghua Univ. (China) . . . . . .[7137-17]

16.00: **Lambda utility project** *(Invited Paper)*,

Soichiro Araki, NEC Corp. (Japan) . . . . [7137-18]

16.30: **A study of self-adaptive transmission control architectures in impairment-aware transparent WDM networks**, Yongjun Liu, Lei Wang, Hua Zhang, Jia Ren, Jie Zhang, Wanyi Gu, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7137-19]

16.45: **Performance analysis and optimization of various MG-OXCs multi-granularity WDM optical networks based on waveband switching**, Yongmin Qi, Hangzhou Dianzi Univ. (China); Yi Zhu, The Univ. of Texas at Dallas (United States); Tianshu Wang, Xuefang Zhou, Sheng Qian, Qiliang Li, Hangzhou Dianzi Univ. (China) . . . . . .[7137-20]

Conference 7134

Passive Components and Fiber-based Devices V

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Conference 7135

Optoelectronic Materials and Devices III

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Tuesday 28 October

Room: Taizhou Auditorium

Tues. 08.30 to 10.00

SESSION 3a
Best Student Paper Session

Session Chair: **Ming-Jun Li,** Corning Inc. (USA)

08.30: **Continuously tunable microwave photonic filter based on high-birefringence linearly chirped grating**, Junqiang Zhou, Nanyang Technological Univ. (Singapore) and Consultant (Singapore) and Consultant (Singapore); Hui Dong, Sheel Aditya, Ping Shum, Xia Li, Songnian Fu, Ming L. Tang, Nanyang Technological Univ. (Singapore) . . . . . [7134-26]

08.45: **1.5um correlated photon pair generation in high nonlinear microstructure fiber**, Qiang Zhou, Wei Zhang, Xiao Li, Jierong Cheng, Yidong Huang, Jiangde Peng, Tsinghua Univ. (China) . . . . . [7134-27]

09.00: **Design of multimode interference coupled polymer rectangular ring resonators with air trench assisted mirrors**, Xiaobei Zhang, Univ. of Cambridge (United Kingdom) and Consultant (United Kingdom) and Consultant (United Kingdom); Nikolaos Bamiedakis, Joseph Beals, Richard V. Penty, Ian H. White, Univ. of Cambridge (United Kingdom); Xinliang Zhang, Dexiu Huang, Huazhong Univ. of Science and Technology (China) . . . . [7134-28]

09.15: **A novel strain sensor based on a pair of fiber Bragg grating comb filters**, Feifei Yin, Ye Zhang, Shizhong Xie, Tsinghua Univ. (China) . . . . . [7134-29]

09.30: **The cascadable recirculating buffer based on nonlinear polarization rotation in a semiconductor optical amplifier**, Mu Cheng, Chongqing Wu, Chao Song, Rui Zhao, Shuang Zhao, Qin Wang, Beijing Jiaotong Univ. (China) . . . . . [7134-30]

09.45: **Total internal reflection type echelle grating demultiplexer based on amorphous silicon nanowire platform**, Ning Zhu, Kungliga Tekniska Högskolan (Sweden) and Zhejiang Univ. (China); Jun Song, Lech Wosinski, Kungliga Tekniska Högskolan (Sweden); Sailing He, Zhejiang Univ. (China) . . [7134-31]

Coffee/Tea Break . . . . . 10.00 to 10.30

Room: Jinhua Auditorium

Tues. 08.30 to 10.00

SESSION 3b
Optical Components I

Session Chair: **Jinkee Kim,** OFS Fitel, LLC (USA)

08.30: **Integrated semiconductor optical amplifier-based switch matrices** *(Invited Paper)*,

Kevin A. Williams, A. Mejia Albores, T. de Vries, E. Smallbrugge, Y. S. Oei, M. K. Smit, R. Noetzel, Technische Univ. Eindhoven (Netherlands) [7134-32]

09.00: **Slot-based Athermal Silicon Arrayed-Waveguide Grating (AWG)**, Xiang Wang, Simiao Xiao, Weiwei Zheng, Fan Wang, Yinlei Hao, Xiaoqing Jiang, Minghua Wang, Jianyi Yang, Zhejiang Univ. (China) . . . . . [7134-33]

09.15: **Phenomenological model with application for polarization-sensitive semiconductor optical amplifiers**, Zhengyong Li, Beijing Jiaotong Univ. (China) and Consultant (China) and Consultant (China); Chongqing Wu, Beijing Jiaotong Univ. (China) . . . . . [7134-34]

09.30: **A new type of mode power characteristics of extremely short external cavity semiconductor laser**, Jia-Gui Wu, Zheng-Mao Wu, Guang-Qiong Xia, Xiao-Dong Lin, Tao Deng, Southwest Univ. (China) . . . . . [7134-35]

09.45: **Ultra-wideband pulse generation using Turbo-Switches**, Weiwei Zhang, Junqiang Sun, Cheng Cheng, Xinliang Zhang, Dexiu Huang, Huazhong Univ. of Science and Technology (China) . . . . . [7134-36]

Coffee/Tea Break . . . . . 10.00 to 10.30

Room: Quzhou Auditorium

Tues. 08.30 to 10.00

SESSION 3a
Best Student Paper Session

Session Chair: **Gustav Kalbe,** European Commission (Belgium)

08.30: **A six-port circulator based on multimode interference**, Haifeng Zhou, Zhejiang Univ. (China) [7135-24]

08.45: **Concentric silicon micro-ring resonators with enhanced transmission notch depth**, Xiaohui Li, Shanghai Jiao Tong Univ. (China) and Kungliga Tekniska Högskolan (Sweden) . . . . . [7135-25]

09.00: **Study of active width-reduced line-defect photonic crystal waveguides for high speed applications**, Yongbo Tang, Bowen Wang, Zhejiang Univ. (China) . . . . . [7135-26]

09.15: **Design and fabrication of visible/mid-infrared dual-band microfilter array**, Huafeng Liang, Jianjun Lai, Huazhong Univ. of Science and Technology (China) and Wuhan National Lab. for Optoelectronics (China); Zhiping Zhou, Huazhong Univ. of Science and Technology (China) and Georgia Institute of Technology (United States) . . . . . [7135-27]

09.30: **Phase shift of plasmons excited by slits in a metal film illuminated by oblique incident TM plane wave**, Guangyuan Li, Anshi Xu, Peking Univ. (China) . . . . . [7135-29]

09.45: **The Structural and Optical Properties of High-Al-Content AlInGaN Epilayers grown by RF-MBE**, Baozhu Wang, Hebei Univ. of Science and Technology (China) . . . . . [7135-109]

Coffee/Tea Break . . . . . 10.00 to 10.30

Room: Huzhou Auditorium

Tues. 08.30 to 10.00

SESSION 3b
Novel Active Devices II

Session Chair: **Yong-Zhen Huang,** Institute of Semiconductors (China)

08.30: **Ultra-wide temperature range operation of DFB lasers at 1310 nm and 1490 nm** *(Invited Paper)*, Dick T. R. Chen, Nong Chen, Wei Hsin, Steven B. Chen, Paul Chen, Archcom Technology Inc. USA (United States) . . . . . [7135-30]

09.00: **Highly efficient diode pumped solid state lasers using mixed vanadate crystals Nd:YxGd1-xVO4 for airborne laser communications**, Nils C. Fernelius, Air Force Research Lab. (United States); Suning Tang, Yuanji Tang, Crystal Research, Inc. (United States) . . . . . [7135-31]

09.15: **Ultrafast all-optical switching using intersubband transitions in InGaAs/AlAs/AlAsSb quantum wells** *(Invited Paper)*,

Hiroshi Ishikawa, National Institute of Advanced Industrial Science and Technology (Japan) . . . . [7135-32]

09.45: **A strained InGaAs/InAlAs coupled quantum well with polarization-independent large positive electro-refractive index change**, Zhixin Xu, Zhejiang Univ. of Science and Technology (China) . . . . . [7135-33]

Coffee/Tea Break . . . . . 10.00 to 10.30

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Room: Hangzhou Auditorium

Tues. 08.30 to 10.00

SESSION 3a
Best Student Paper Sessionj

Session Chair: **Xueyan Zheng,** Finisar Corp. (USA)

08.30: **High reflection tolerance of 1.25-Gb/s RSOA-based WDM PON employing spectrum-sliced ASE source**, Hyeon Chae Jeon, Keun-Yeong Cho, Yuichi Takushima, Yun-Chur Chung, Korea Advanced Institute of Science and Technology (Korea, Republic of). . . . . .[7136-23]

08.45: **Generation and transmission of 86 Gbit/s hybrid polarization-division multiplexed OOK/DPSK signal**, Lin Wu, Mingjin Li, Yazhi Luo, Fan Zhang, Zhangyuan Chen, Anshi Xu, Peking Univ. (China) . . .[7136-24]

09.00: **Comparison of the three schemes to generate optical mm-wave signal and wavelength reuse for upstream connection in the radio-over-fiber systems**, Lin Chen, Ze Dong, Jia Lu, Yazi Pi, Jing He, Hunan Univ. (China). . . . . .[7136-25]

09.15: **16 DWDM channels optoelectronic 3R NRZ-to-RZ regeneration based on single phase modulator**, Yu Yu, Univ. of Cambridge (United Kingdom) and Huazhong Univ. of Science and Technology (China); Xinliang Zhang, Huazhong Univ. of Science and Technology (China); Jose B. Rosas-Fernandez, Univ. of Cambridge (United Kingdom); Dexiu Huang, Huazhong Univ. of Science and Technology (China); Richard V. Penty, Ian White, Univ. of Cambridge (United Kingdom). . . . . .[7136-26]

09.30: **8×10 Gb/s data packets buffered in DLOB based on SOA**, Changyong Tian, Chongqing Wu, Beijing Jiaotong Univ. (China). . . . . .[7136-27]

09.45: **Simultaneous transmission of high-speed point-to-point data and double broadcast services in a WDM-PON system with source-free ONUs**, Qingjiang Chang, Shanghai Jiao Tong Univ. (China); Mingfang Huang, Georgia Institute of Technology (United States); Yikai Su, Shanghai Jiao Tong Univ. (China). . . . . .[7136-28]

Coffee/Tea Break. . . . .10.00 to 10.30

Room: Ningbo Auditorium

Tues. 08.30 to 10.30

SESSION 3b
Optical Monitoring and Compensation I

Session Chair: **Chao Lu,** The Hong Kong Polytechnic Univ. (Hong Kong, China)

08.30: **Enhancing PMD monitoring and compensation for DPSK and DQPSK signals using variable DGD modules**, Lianshan Yan, Southwest Jiaotong Univ. (China) . . . . .[7136-29]

08.45: **Monitoring techniques for phase and OSNR of DPSK/DQPSK signals** *(Invited Paper)*,

Yuichi Takushima, Hyeon-Yeong Choi, Yun-Chur Chung, Korea Advanced Institute of Science and Technology (South Korea) . . . . [7136-30]

09.15: **A high sensitive wavelength stability monitoring method using 90° optical hybrid**, Feng Yong, Wen He, Hanyi Zhang, Xiaoping Zheng, Tsinghua Univ. (China) . . . . .[7136-31]

09.30: **Ultra-high speed sampling optical techniques (tutorial)** *(Invited Paper)*,

Antonella Bogoni, Luca Potí, Consorzio Nazionale Interuniv. per le Telecomunicazioni (Italy) . . . . . [7136-32]

Coffee/Tea Break. . . . .10.30 to 11.00

Room: Wenzhou Auditorium

Tues. 08.30 to 10.00

SESSION 3a
Best Student Paper Session

Session Chair: **Ken-ichi Sato,** Nagoya Univ. (Japan)

08.30: **A novel joint scheduling algorithm for multiple services in 10G EPON**, Jiajia Chen, Kungliga Tekniska Högskolan (Sweden) and Zhejiang Univ. (China); Biao Chen, Zhejiang Univ. (China); Lena Wosinska, Kungliga Tekniska Högskolan (Sweden) . . . . . .[7137-21]

08.45: **Demonstration of time-wavelength co-allocation (TWCA) problem in novel dynamic wavelength scheduled WDM-PON for distributed computing applications**, Min Zhu, Wei Guo, Shanghai Jiao Tong Univ. (China) . . . . . .[7137-22]

09.00: **A postponement strategy for short lightpath teardown in wavelength-Routed WDM mesh networks under dynamic traffic**, Nan Hua, Tsinghua Univ. (China); Hao Buchta, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); Xiaoping Zheng, Hanyi Zhang, Bingkun Zhou, Tsinghua Univ. (China) . . . . .[7137-23]

09.15: **A metro-access integrated network with all-optical virtual private network function using DPSK/ASK modulation format**, Yue Tian, Shanghai Jiao Tong Univ. (China); Lufeng Leng, City College/CUNY (United States); Yikai Su, Shanghai Jiao Tong Univ. (China) . . . . . .[7137-24]

09.30: **Proposal of dynamic protection/restoration schemes for QoS support in Labelled Optical Burst Switching networks**, Yawei Yin, Shuli Chi, Jindan Shi, Jian Wu, Xiaobin Hong, Jintong Lin, Beijing Univ. of Posts and Telecommunications (China)[7137-25]

09.45: **A novel Re-modulation method in a WDM-PON to enhance extinction ratio with considering Rayleigh and Brillouin backscattering**, Bo Huang, Fudan Univ. (China); Liang Wang, Huazhong Univ. of Science and Technology (China); Yaoxiong Liang, Fudan Univ. (China); Hongxin Liu, Xue Wang, Dexiu Huang, Huazhong Univ. of Science and Technology (China); Nan Chi, Fudan Univ. (China) . . .[7137-26]

Coffee/Tea Break. . . . .10.00 to 10.30

Room: Shaoxing Auditorium

Tues. 08.30 to 10.00

SESSION 3b
Optical Network for Broadband Service

Session Chairs: **Feng Huang,** Lucent Technologies (China) Co., Ltd. (China), **Yihe Gao,** Shanghai Engineering Research Ctr. for Broadband Technologies and Applications (China)

08.30: **Server Vision: a new perspective for optical networks** *(Invited Paper)*,

Zhengbin Li, Peking Univ. (China) . . . . [7137-27]

09.00: **Optical service level agreement based on service plane of adaptive multiservice optical network**, Hualing Liu, Jie Zhang, Haibin Zhang, Ying Chen, Xiuzhong Chen, Lei Wang, Wanyi Gu, Xian Zhang, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7137-28]

09.15: **The study of self-adaptation service plane extension in next-generation optical network (NGON)**, Jijun Zhao, Weiwei Bian, Hebei Univ. of Engineering (China); Wenyu Zhao, China Academy of Telecommunication Research (China) . . . . . .[7137-29]

09.30: **Optical IP networks for broadband services** *(Invited Paper)*,

Masatoshi Suzuki, KDDI R&D Labs., Inc. (Japan) . . . . [7137-30]

Coffee/Tea Break. . . . .10.00 to 10.30

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Room: Taizhou Auditorium

Tues. 10.30 to 12.00

SESSION 4a
Specialty Fibers

Session Chair: **Baishi Wang,** Vytran LLC (USA)

10.30: **Specialty Fibers and Applications (Tutorial)**

(Invited Paper), Daniel A. Nolan, Ming-Jun Li, Corning Inc. (United States) . . . [7134-37]

11.30: **High bandwidth specialty optical fibers for data communications** *(Invited Paper)*,

Jie Li, Xiaoguang Sun, OFS Fitel, LLC (United States) . . . . [7134-38]

Lunch Break . . . . . 12.00 to 13.45

Room: Jinhua Auditorium

Tues. 10.30 to 12.00

SESSION 4b
Optical Components II

Session Chair: **Yi Sun,** OFS Fitel, LLC (USA)

10.30: **Linearity of the optical micro-resonator-based modulators**, Hooman Akhavan, Iran Univ. of Science and Technology (Iran). . . . . [7134-39]

10.45: **Design and fabrication of SU-8 polymer-based micro-racetrack resonators**, Daoxin Dai, Bo Yang, Liu Yang, Rui Hu, Zhen Sheng, Zhejiang Univ. (China) . . . . . [7134-40]

11.00: **Photosensitive terpolymer based on PFS:PFOA:GMA monomers for optical communications**, Moujoud Abderrafia, Yonsei Univ. (South Korea) . . . . . [7134-41]

11.15: **Properties of liquid inorganic-organic hybrid polymer optical waveguide materials**, Xui-You Han, Dalian Univ. of Technology (China) . . . . . [7134-42]

11.30: **Crosstalk between two nonparallel waveguides in AWG demultiplexer**, Fuyuan Guo, Lianhuang Li, Fujian Normal Univ. (China); Minghua Wang, Zhejiang Univ. (China) . . . . . [7134-43]

11.45: **All-optical wavelength conversions in PPLN waveguide with continuous and pulsed pumping**, Min Zhang, Mao-Tong Liu, Jian-Min Cui, Yu-Nan Sun, Beijing Institute of Technology (China) . . . . . [7134-44]

Lunch Break . . . . . 12.00 to 13.15

Room: Quzhou Auditorium

Tues. 10.30 to 11.45

SESSION 4a
Photonic Integration II

Session Chair: **Yong-Zhen Huang,** Institute of Semiconductors (China)

10.30: **Research on photonic components: the perspective of the European Commission** *(Invited Paper)*,

Gustav Kalbe, European Commission (Belgium) . . [7135-34]

11.00: **A novel integrated demultiplexing photodetector with an arc absorbing cavity**, Xingguang Zhou, Beijing Univ. of Posts and Telecommunications (China) . . . . . [7135-35]

11.15: **Integrated wavelength selective switch circuit based on microring resonator** *(Invited Paper)*,

Yasuo Kokubun, Yokohama National Univ. (Japan) . . . . [7135-36]

Lunch Break . . . . . 11.45 to 13.30

Room: Huzhou Auditorium

Tues. 10.30 to 11.30

SESSION 4b
Nano Photonics II

Session Chair: **Dick T. R. Chen,** Archcom Technology Inc. USA (USA)

10.30: **Semiconductor micro ring lasers** *(Invited Paper)*, Marc Sorel, Univ. of Glasgow (United Kingdom) . . . . . [7135-37]

11.00: **Preparation and transmission loss of the nanocrystal and polymer composite Bi4Ti3O12/PEK-c films**, Hongliang Yang, Wei Ji, Quan Ren, Fujun Zhang, Xinqiang Wang, Shandong Univ. (China). . . . [7135-38]

11.15: **Porous silicon-based photonic crystal optical devices for polarization band-pass filtering and sensing applications**, Xiao-yi Lü, Xi'an Jiaotong Univ. (China); Tao Xue, Zhen-hong Jia, Xinjiang Univ. (China) . . . . . [7135-40]

Lunch Break . . . . . 11.30 to 13.30

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Room: Hangzhou Auditorium

Tues. 10.30 to 12.00

SESSION 4a
OCDMA

Session Chair: **Lei Xu,** NEC Labs. America, Inc. (USA)

10.30: **New code structure for enhanced double weight (EDW) code for spectral amplitude coding OCDMA system**, Ali Z. Zahid, Feras N. Hasoon, Sahbudin Shaari, Univ. Kebangsaan Malaysia (Malaysia). . . . . .[7136-33]

10.45: **Impact of the unipolar family codes on the performances of the DS-OCDMA system**, Amel Farhat, Mourad Menif, Ecole Nationale d'Ingénieurs de Tunis (Tunisia); Catherine Lepers, Univ. des Sciences et Techniques de Lille I (France); Philippe Gallion, Ecole Nationale Supérieure des Télécommunications (France); Houria Rezig, Ecole Nationale d'Ingénieurs de Tunis (Tunisia) . . . . . .[7136-34]

11.00: **Advances of OCDM encoding/decoding techniques** *(Invited Paper)*,

Xu Wang, Heriot-Watt Univ. (United Kingdom) . . [7136-35]

11.30: **Performance analysis of successive interference cancellation with modified quadratic congruence and Hadamard codes for optical CDMA**, Tawfig A. Eltaif, Univ. Kebangsaan Malaysia (Malaysia); Hossam M. H. Shalaby, Alexandria Univ. (Egypt); Sahbudin B. H. Shaari, Univ. Kebangsaan Malaysia (Malaysia); Mohammad M. N. Hamarsheh, Multimedia Univ. (Malaysia).[7136-36]

11.45: **Experimental demonstration of a hybrid 1/2-dimentional en/decoding optical dode division multiple access system**, Changjian Guo, Jiajia Chen, Dawei Wang, Meng Jiang, Biao Chen, Zhejiang Univ. (China) . . . . . .[7136-37]

Lunch Break . . . . . .12.00 to 13.30

Room: Ningbo Auditorium

Tues. 11.00 to 12.30

SESSION 4b
Signal Theory

Session Chair: **Chao Lu,** The Hong Kong Polytechnic Univ. (Hong Kong, China)

11.00: **Research on the detection probability of multiband optical detection system**, Wei Hu, Ke Deng, Jing Zhang, Zhoushi Yao, Univ. of Electronic Science and Technology of China (China) . . . . . .[7136-38]

11.15: **Revisiting binary sequence length requirements for the accurate emulation of highly dispersive optical transmission systems**, Edouard Grellier, Jean-Christophe Antona, Sébastien Bigo, Alcatel Lucent (France); Alberto Bononi, Univ. degli Studi di Parma (Italy) . . . . . .[7136-39]

11.30: **Fundamental analysis on Shack-Hartmann wavefront sensor design**, Hongli Chen, Changhui Rao, Institute of Optics and Electronics (China) . . . . . .[7136-40]

11.45: **NLOS single scattering model in digital UV communication**, Yi Tang, Zhongliang Wu, Guoqiang Ni, Lijun Zhang, Beijing Institute of Technology (China) . . . . . .[7136-41]

12.00: **The effect of IP traffic on nonlinear effects in dynamical optical networks**, Junyao Mei, Huazhong Univ. of Science and Technology (China) . . . . . .[7136-42]

12.15: **Dual wavelength signals buffered in DLOB and its improvement by power equalization**, Changyong Tian, Chongqing Wu, Beijing Jiaotong Univ. (China) . . . . . .[7136-43]

Lunch Break . . . . . .12.30 to 13.30

Room: Wenzhou Auditorium

Tues. 10.30 to 11.45

SESSION 4a
WDM-PON

Session Chair: **Rujian Lin,** Shanghai Univ. (China)

10.30: **Performance analysis of OCDMA-WDM-PON system with chaotic logistic-map spread spectrum sequences**, Liwei Yang, Guochou Shou, Zongjue Qian, Yihong Hu, Beijing Univ. of Posts and Telecommunications (China); Tetsuya Miki, The Univ. of Electro-Communications (Japan). . .[7137-31]

10.45: **A WDM-PON architecture with NRZ/CW polarization multiplexed downstream and remodulated upstream using injection-locked FP laser**, Xinlin Li, Hong Cheng, Mingjin Li, Cheng Zhang, Weiwei Hu, Zhangyuan Chen, Peking Univ. (China) . . . . . .[7137-32]

11.00: **Proposal for wavelength division multiplexing passive optical access network (WDM-PON) using ring resonator**, Ali Rostami, Univ. of Tabriz (Iran). . . . . .[7137-33]

11.15: **WDM-PON: technology and application** *(Invited Paper)*, Yihe Gao, Shanghai Engineering Research Ctr. for Broadband Technologies and Applications (China). . . . . .[7137-34]

Lunch Break . . . . . .11.45 to 13.30

Room: Shaoxing Auditorium

Tues. 10.30 to 11.45

SESSION 4b
Carrier Ethernet

Session Chair: **Ann C. Von Lehman,** Telcordia Technologies, Inc. (USA)

10.30: **Carrier ethernet driven network architecture for enterprise optical networks** *(Invited Paper)*, Ashwin Gumaste, Massachusetts Institute of Technology (United States) . . . . . .[7137-35]

11.00: **Research on T-MPLS signaling mechanism with different resource reservation strategies**, Daiwei Tan, Bin Li, Shanguo Huang, Yongjun Zhang, Wanyi Gu, Beijing Univ. of Posts and Telecommunications (China)[7137-36]

11.15: **A rapid protection switching method in carrier ethernet ring networks**, Liang Yuan, Wuhan Research Institute of Posts and Telecommunications (China)[7137-37]

11.30: **A design of TDM in transport MPLS based on FPGA**, Zhihui Zhang, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7137-39]

Lunch Break . . . . . .11.45 to 13.30

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Room: Taizhou Auditorium

Tues. 13.45 to 15.00

SESSION 5a
Photonic Crystal Fibers II

Session Chair: **Jonathan C. Knight,** Univ. of Bath (United Kingdom)

13.45: **Photonic crystal fibers for industrial applications** *(Invited Paper)*, Jes Broeng, Crystal Fibre A/S (Denmark) . . . . . .[7134-45]

14.15: **Design of large negative dispersion photonic crystal fibers**, Honglei Li, Shuqin Lou, Hong Fang, Tieying Guo, Liwen Wang, Weiguo Chen, Shuisheng Jian, Beijing Jiaotong Univ. (China) . . . . .[7134-47]

14.30: **A linear step effective index model to study chromatic dispersion properties in high nonlinear photonic crystal fibers**, Desheng Zhang, Junjie Zhang, Qiuqin Sheng, Xiaoyi Dong, Nankai Univ. (China) . . . . . .[7134-48]

14.45: **Design of broadband dispersion-compensating microstructure fiber with large modal area**, Xia Zhang, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7134-49]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Jinhua Auditorium

Tues. 13.15 to 15.00

SESSION 5b
Optical Buffer and Signal Processing

Session Chair: **Jie Li,** OFS Fitel, LLC (USA)

13.15: **The Potential Optoelectronic Devices for the All-optical Signal Processing** *(Invited Paper)*, Dexiu Huang, Huazhong Univ. of Science and Technology (China). . .[7134-169]

13.45: **SBS slow light using a novel optical fiber doped with nanoparticles**, Ying Zhang, Peilin Lang, Ru Zhang, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7134-51]

14.00: **Design and implementation of optical buffer with networking applications** *(Invited Paper)*,

Ping Shum, Nanyang Technological Univ. (Singapore) . [7134-52]

14.30: **A novel programmable all-optical buffer for optical packet switching networks**, Yongjun Wang, Chongqing Wu, Yaping Wang, Beijing Jiaotong Univ. (China) . . . . .[7134-53]

14.45: **Wavelength and power dependence of optical delay system utilizing HNLFs and DCF**, Aiying Yang, Beijing Institute of Technology (China) . . . . . .[7134-54]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Quzhou Auditorium

Tues. 13.30 to 15.00

SESSION 5a
Nonlinear Photonics

Session Chair: **Min Qiu,** Kungliga Tekniska Högskolan (Sweden)

13.30: **Nonlinear optical properties of Nd^{3+}-doped heavy metal silicate glasses**, Song Zhaoyuan, Yanshan Univ. (China); Liu Xiaodong, Dalian Nationalities Univ. (China); Chen Yuee, Ying Han, Shirui Dong, Lantian Hou, Yanshan Univ. (China) .[7135-41]

13.45: **Preparation and luminescence properties of Eu^{3+}-doped cadmium aluminium silicate glasses**, Yue-e Chen, Zhaoyuan Song, Lantian Hou, Yanshan Univ. (China) . . . . . .[7135-42]

14.00: **Nonlinear phenomena analysis of tunable external cavity semiconductor laser with sampled fiber grating**, Xiaoying He, Yonglin Yu, De-Xiu Huang, Huazhong Univ. of Science and Technology (China); D. N. Wang, The Hong Kong Polytechnic Univ. (Hong Kong China); Shan Jiang, Huazhong Univ. of Science and Technology (China) . . . . . .[7135-43]

14.15: **LD-pumped all-solid-state yellow laser based on frequency-doubled self-Raman laser**, Zhichao Wang, Shenzhen Univ. (China) . . . . . .[7135-44]

14.30: **Second harmonic generation in periodically poled lithium niobate waveguide using femtosecond laser pulses**, Shuanggen Zhang, Jianghong Yao, Qing Shi, Zhangchao Huang, Jue Wang, Fuyun Lu, Nankai Univ. (China) . . . . . .[7135-45]

14.45: **The nonlinear optical performance of Ho^{3+}-doped borosilicate glass**, Jian Fu, Dalian Jiao Tong Univ. (China); Xiao-Dong Liu, Dalian Nationalities Univ. (China); Zhao-yuan Song, Yanshan Univ. (China) . . . . . .[7135-46]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Huzhou Auditorium

Tues. 13.30 to 14.45

SESSION 5b
Novel Active Devices III

Session Chair: **Mehdi Asghari,** Kotura, Inc. (USA)

13.30: **Frequency modulated lasers for high-speed and long-haul data transmission** *(Invited Paper)*,

Shinji Matsuo, Takaaki Kakitsuka, NTT Photonics Labs. (Japan) . . . . [7135-47]

14.00: **Single dye molecule laser via energy transfer mechanism**, Guangcun Shan, Wei Huang, Fudan Univ. (China) . . . . . .[7135-48]

14.15: **Quantum cascade lasers based on vertical and diagonal active regions**, Quankui Yang, Wolfgang Bronner, Frank Fuchs, Rolf Aidam, Christian Manz, Rainer Lösch, Nicola Schulz, Klaus Köhler, Joachim Wagner, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) . . . . . .[7135-49]

14.30: **A novel bottom-emitting one-dimensional VCSEL's array**, Jinjiang Cui, Yongqiang Ning, Te Li, Yan Zhang, Guangyu Liu, Xing Zhang, Zhenfu Wang, Jingjing Shi, Li Qin, Lijun Wang, Changchun Institute of Optics, Fine Mechanics and Physics (China) . . . . . .[7135-51]

Coffee/Tea Break. . . . .14.45 to 15.30

Conference 7136

Optical Transmission, Switching, and Subsystems VI

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Conference 7137

Network Architectures, Management, and Applications VI

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Tuesday 28 October

Room: Hangzhou Auditorium

Tues. 13.30 to 15.00

SESSION 5a
Transmission Systems

Session Chair: **Jean-Christophe Antona,** Alcatel-Lucent (France)

13.30: **Effect of laser frequency offset on optical minimum-shift keying transmission system**, Han Chen, Yi Dong, Hao He, Weisheng Hu, Shanghai Jiao Tong Univ. (China); Lemin Li, Univ. of Electronic Science and Technology of China (China) . . . . . .[7136-44]

13.45: **QAM gransmission system based on heterodyne optical detection using intermediate frequency carrier modulation**, Ran Zhu, Kun Xu, Ye Zhang, Yan Li, Jian Wu, Xiaobin Hong, Jintong Lin, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7136-45]

14.00: **Real-time measurements of 40 Gb/s coherent WDM systems** *(Invited Paper)*,

Kim Roberts, Nortel Networks (Canada). . . [7136-46]

14.30: **A method for optimizing optical duobinary transmission systems**, Shuai Wang, Xue Chen, Beijing Univ. of Posts and Telecommunications (China)[7136-47]

14.45: **Performance of optical ofdm system affected by the high peak-to-average power ratio**, Yonggang Li, Kun Qiu, Jing Zhang, Yu Zhou, Hongbo Zhang, Univ. of Electronic Science and Technology of China (China) . . . . . .[7136-48]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Ningbo Auditorium

Tues. 13.30 to 15.15

SESSION 5b
Optical Signal Processing I

Session Chair: **Andreas Umbach,** U2T Photonics AG (Germany)

13.30: **The all-optical flip-flop: state-of-the-art and perspectives** *(Invited Paper)*, Giancarlo Prati, Scuola Superiore Sant'Anna (Italy); Luca Potí, Antonella Bogoni, Consorzio Nazionale Interuniv. per le Telecomunicazioni (Italy) . .[7136-169]

14.00: **High Speed wavelength preserved 2R Regeneration Based on Filtering and Cross-Gain Compression in Semiconductor Optical Amplifiers**, Liang Wang, Huazhong Univ. of Science and Technology (China); Bo Huang, Fudan Univ. (China); Zhixue He, Huazhong Univ. of Science and Technology (China); Yaoxiong Liang, Fudan Univ. (China); Hongxing Liu, Xue Wang, Dexiu Huang, Huazhong Univ. of Science and Technology (China); Nan Chi, Fudan Univ. (China) . . .[7136-49]

14.15: **Performance analysis of an all-optical regenerator for DQPSK/QPSK based on phase-sensitive amplifiers**, Sen Shi, Juanjuan Yan, Lin An, Zheng Zheng, Beihang Univ. (China) . . . . . .[7136-50]

14.30: **Nonlinear inter-channel crosstalk compensation using pre-/post- signal processing in carrier phase locked WDM** *(Invited Paper)*,

Atsushi Takada, Etsushi Yamazaki, Fumikazu Inuzuka, Kazushige Yonenaga, NTT Corp. (Japan) . . . . [7136-51]

15.00: **Chromatic dispersion monitoring of DPSK signals using RF power detection**, Jian Zhao, Chao Lu, Zhaohui Li, Hwa-Yaw Tam, Ping-Kong A. Wai, The Hong Kong Polytechnic Univ. (Hong Kong China) . . . . . .[7136-52]

Coffee/Tea Break. . . . .15.15 to 15.45

Room: Wenzhou Auditorium

Tues. 13.30 to 15.00

SESSION 5a
Optical Grid I

Session Chair: **Jing Wu,** Communications Research Ctr. Canada (Canada)

13.30: **GRID computing and a role of photonic networks** *(Invited Paper)*, Tomorhiro Kudoh, National Institute of Advanced Industrial Science and Technology (Japan). . . . . .[7137-40]

14.00: **Dynamic QoS-based task scheduling with packing and partial cloning in optical grid**, Hui Yuan, Xiaobin Hong, Lei Liu, Jian Wu, Jintong Lin, Beijing Univ. of Posts and Telecommunications (China)[7137-41]

14.15: **Scheduling strategies for multiple optical grid applications based on scheduling span and fairness**, Chao Qin, Wei Guo, Weiqiang Sun, Yaohui Jin, Weisheng Hu, Shanghai Jiao Tong Univ. (China) . . . . . .[7137-42]

14.30: **Fault-tolerant policies for optical grid** *(Invited Paper)*,

Wei Guo, Shanghai Jiao Tong Univ. (China) . . . . [7137-43]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Shaoxing Auditorium

Tues. 13.30 to 15.00

SESSION 5b
WDM Network II

Session Chair: **Soichiro Araki,** NEC Corp. (Japan)

13.30: **Performance evaluation of a resource-efficient provisioning framework in service differentiated survivable WDM networks subject to wavelength-continuity constraint**, Wenda Ni, Qingshan Li, Tsinghua Univ. (China); Yabin Ye, CREATE-NET (Italy); Yanhe Li, Yili Guo, Hanyi Zhang, Xiaoping Zheng, Tsinghua Univ. (China) . . . . . .[7137-44]

13.45: **Traffic grooming with span constraints In WDM optical networks**, Fengqing Liu, Nanjing Univ. of Posts and Telecommunications (China); Qingji Zeng, Shanghai Jiao Tong Univ. (China); Heming Chen, Qian Chen, Hong Fan, Nanjing Univ. of Posts and Telecommunications (China)[7137-45]

14.00: **Routing, regenerator placement, and wavelength assignment in reconfigurable optical networks** *(Invited Paper, Presentation Only)*, Angela L. Chiu, AT&T Labs. Research (United States) . . . . . .[7137-46]

14.30: **A new evolutionary algorithm for traffic grooming in WDM mesh network**, Yi-Shi Han, Guangdong Univ. of Technology (China) .[7137-47]

14.45: **A signaling-based approach to implement self-adaptive transmission control in impairment-aware transparent WDM networks**, Xiangbo Wu, Lei Wang, Guanjun Gao, Yongjun Liu, Jie Zhang, Wanyi Gu, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7137-48]

Coffee/Tea Break. . . . .15.00 to 15.30

Conference 7134

Passive Components and Fiber-based Devices V

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Optoelectronic Materials and Devices III

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Room: Taizhou Auditorium

Tues. 15.30 to 17.30

SESSION 6a
Optical Fibers II

Session Chair: **Satoki Kawanishi,** NTT Basic Research Labs. (Japan)

15.30: **Mode coupling optimization for high power fiber lasers and devices** *(Invited Paper)*,

Baishi Wang, Eric W. Mies, Vytran LLC (United States) . . . . [7134-55]

16.00: **Improvements in fusion splicing dissimilar specialty fibers for dispersion managed**, Meichun Luo, Zhaoguo Ma, Liang Li, Huawei Technologies Co., Ltd. (China) . . . . . .[7134-56]

16.15: **Fabrication of Specialty Optical Fibers Using Flash Vaporization Method**, Borut Lenardic, Optacore d.o.o. (Slovenia); Herve Guillon, Samuel Bonnafous, KEMSTREAM (France); Miha Kveder, Optacore d.o.o. (Slovenia). .[7134-57]

16.30: **Advanced multimode fiber for high-speed interconnects** *(Invited Paper)*, Yi Sun, Robert Lingle, Jr., George Oulundsen, Alan McCurday, Durgesh S. Vaidya, OFS Fitel, LLC (United States). . .[7134-58]

17.00: **Research on mechanical performance of photosensitive fibre**, Xinwei Qian, Yangtze Optical Fibre and Cable Co., Ltd. (China) . . . . . .[7134-59]

17.15: **Research on the fiber's UV transmission performance influenced by the doping process**, Feng Tu, Wuhan National Lab. for Optoelectronics (China). . . .[7134-60]

Room: Jinhua Auditorium

Tues. 15.30 to 17.30

SESSION 6b
Silicon Photonics

Session Chair: **Kevin A. Williams,** Technische Univ. Eindhoven (Netherlands)

15.30: **Silicon nanophotonic waveguides and their applications** *(Invited Paper)*, Wim Bogaerts, Univ. Gent (Belgium) and Consultant (Belgium) and Consultant (Belgium); Liu Liu, Univ. Gent (Belgium); Shankar Kumar Selvaraja, IMEC (Belgium); Pieter Dumon, Dries Van Thourhout, Roel Baets, Univ. Gent (Belgium) . . . . . .[7134-61]

16.00: **Micro-resonator-based passive devices for optical interconnects on a silicon chip** *(Invited Paper)*, Andrew W. Poon, Xianshu Luo, Fang Xu, Hui Chen, Hong Kong Univ. of Science and Technology (Hong Kong China) . . . . . .[7134-62]

16.30: **Silicon photonics for advanced optical interconnect applications** *(Invited Paper)*, Yung-Jui Chen, Univ. of Maryland/Baltimore County (United States) . . . .[7134-63]

17.00: **Applications of nonlinear effects in silicon wire waveguides: all-optical modulation, wavelength conversion, and quantum entanglement** *(Invited Paper)*,

Koji Yamada, Tai Tsuchizawa, Toshifumi Watanabe, Hiroshi Fukuda, Hiroyuki Shinojima, Hidetaka Nishi, Hiroki Takesue, Takasumi Tanabe, Akihiko Shinya, Ei-ichi Kuramochi, Masaya Notomi, Yasuhiro Tokura, Sei-ichi Itabashi, Nippon Telegraph and Telephone Corp. (Japan). . . . . .[7134-64]

Room: Quzhou Auditorium

Tues. 15.30 to 17.15

SESSION 6a
Optical Switches and Modulators I

Session Chair: **Jianyi Yang,** Zhejiang Univ. (China)

15.30: **Transformation optics and invisibility cloaks** *(Invited Paper)*,

Min Qiu, Kungliga Tekniska Högskolan (Sweden) . . [7135-52]

16.00: **Investigating the effect of insertion loss due to Fresnel reflection at the lithium niobate air interfaces via the output characteristic curve of electro-optic modulation**, M. A. Sharif, Sr., B. Ghafari, Iran Univ. of Science and Technology (Iran) . . . . . .[7135-53]

16.15: **Linearization of periodic phase response for liquid crystal modulator**, Wenjian Jia, Yubo Li, Chen Li, Minghua Wang, Yang Jianyi, Zhejiang Univ. (China) . . . . .[7135-54]

16.30: **A novel wavelength switchable fiber ring laser**, Fei Wang, Chongqing Institute of Technology (China) . . . . . .[7135-55]

16.45: **Compact optical modulator based on carrier induced gain of an InP/InGaAsP microdisk cavity integrated on SOI**, Liu Liu, Joris Van Campenhout, Günther Roelkens, Univ. Gent (Belgium); Richard Soref, Air Force Research Lab. (United States); Dries Van Thourhout, Univ. Gent (Belgium); Pedro Rojo-Romeo, Philippe Regreny, Christian Seassal, Ecole Centrale de Lyon (France); Jean-Marc Fédéli, Commissariat à l'Energie Atomique (France); Roel Baets, Univ. Gent (Belgium) . . . . . .[7135-56]

17.00: **Reflection mechanism in the total-internal-reflection optical waveguide switch**, Wei Qi, Hui Yu, Jiate Zhao, Jianyi Yang, Minghua Wang, Xiaoqing Jiang, Zhejiang Univ. (China) . . . . . .[7135-58]

Room: Huzhou Auditorium

Tues. 15.30 to 17.15

SESSION 6b
Si Photonics

Session Chair: **Shinji Matsuo,** NTT Photonics Labs. (Japan)

15.30: **Integrated photonic beam former employing continuously tunable ring resonator-based delays in CMOS-compatible LPCVD waveguide technology** *(Invited Paper)*, Chris Roeloffzen, Arjan Meijerink, Leimeng Zhuang, David Marpaung, Wim C. van Etten, Univ. Twente (Netherlands); Rene G. Heideman, Arne Leinse, Marcel Hoekman, LioniX, BV (Netherlands) . . . . . .[7135-59]

16.00: **Terahertz wave dielectric properties of P-type silicon**, Jiusheng Li, China Jiliang Univ. (China) . . . . . .[7135-60]

16.15: **Integrated Si photonics, technology, and products** *(Invited Paper)*,

Mehdi Asghari, Kotura, Inc. (United States) . . . . [7135-61]

16.45: **The effect of argon ion implantation and preanodization argon ion implantation on photoluminescence of porous silicon**, Xiao-yi Lü, Xi'an Jiaotong Univ. (China); Tao Xue, Zhen-hong Jia, Xinjiang Univ. (China) . .[7135-62]

17.00: **100 mm integration of III-V and silicon-on-insulator wafers for the realization of distributed feedback silicon evanescent lasers**, Di Liang, Alexander W. Fang, John E. Bowers, Univ. of California/Santa Barbara (United States) . . . . . .[7135-163]

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Network Architectures, Management, and Applications VI

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Tuesday 28 October

Room: Hangzhou Auditorium

Tues. 15.30 to 17.15

SESSION 6a
RoF and Wireless Networks I

Session Chair: **Itsuro Morita,** KDDI R&D Labs., Inc. (Japan)

15.30: **Wavelength sharing in WDM passive optical networks** *(Invited Paper)*, Thomas E. Darcie, Univ. of Victoria (Canada) . . . . . [7136-53]

16.00: **DWDM analog radio-over-fiber/digital FTTH hybrid access networking and its enabling technologies** *(Invited Paper)*,

Kenichi Kitayama, Jose J. Vegas-Olmos, Osaka Univ. (Japan); Toshiaki Kuri, National Institute of Information and Communications Technology (Japan); Hiroyuki Toda, Doshisha Univ. (Japan). . . . . [7136-54]

16.30: **A radio-over-fiber system for simultaneous generation of wired and wireless services**, Lin Chen, Yazi Pi, Hunan Univ. (China) [7136-55]

16.45: **Performance demonstration of 300-km dispersion uncompensated transmission using tunable chirp-managed laser and EDC integratable into small-form-factor XFP** *(Invited Paper)*,

Xueyan Zheng, Finisar Corp. (United States); Frank Chang, Vitesse Semiconductor Corp. (United States) . . . . [7136-57]

Room: Ningbo Auditorium

Tues. 15.45 to 17.45

SESSION 6b
100 Gbps Systems

Session Chair: **Xinliang Zhang,** Huazhong Univ. of Science and Technology (China)

15.45: **Requirement of modulation bandwidth for 100Gb/s optical DQPSK transmission using one dual-drive Mach Zehnder modulator**, Dawei Liu, Yi Dong, Han Chen, Liangxing Wang, Shanghai Jiao Tong Univ. (China) . . . . [7136-58]

16.00: **Long-Haul 100Gb/s Coherent Transmission Experiments** *(Invited Paper)*,

Jean-Christophe Antona, Alcatel Lucent (France) . . . [7136-59]

16.30: **Performance study of a 100-Gb/s transmitter with high tolerance to chromatic dispersion and PMD**, Junming Gao, Yikai Su, Shanghai Jiao Tong Univ. (China) . . . . . [7136-60]

16.45: **Optical OFDM for high-speed transmission without dispersion compensation** *(Invited Paper)*,

Itsuro Morita, Sander L. Jansen, Hideaki Tanaka, KDDI R&D Labs., Inc. (Japan) . . . . [7136-61]

17.15: **100Gb/s transmission system implementation and optimization** *(Invited Paper)*,

Chao Lu, Zhaohui Li, Wenghong Chung, Y. F. Yang, L. H. Cheng, The Hong Kong Polytechnic Univ. (Hong Kong China); Xiaogeng Xu, Huawei Technologies Co., Ltd. (China); Hwa-Yaw Tam, Ping-Kong A. Wai, The Hong Kong Polytechnic Univ. (Hong Kong China); Q. J. Xiong, Huawei Technologies Co., Ltd. (China) . . . . . [7136-62]

Room: Wenzhou Auditorium

Tues. 15.30 to 17.00

SESSION 6a
Metro Network

Session Chair: **Kazuo Hagimoto,** NTT Network Innovation Labs. (Japan)

15.30: **Analysis of Reliability for multi-ring interconnection of RPR networks**, Jia Liu, Yong Li, Tsinghua Univ. (China) . . . . . [7137-49]

15.45: **Minimum capacity dimensioning in diff-serv-aware MPLS networks**, Rong Fang, Univ. of Electronic Science and Technology of China (China). . . . . [7137-50]

16.00: **PTN in metro network** *(Invited Paper)*, Feng Huang, Alcatel Shanghai Bell Co., Ltd. (China) . . . . . [7137-51]

16.30: **The research of MSTP service encapsulation based on SDH**, Xiang Yun, FiberHome Telecommunication Technologies Co., Ltd. (China) . . . . . [7137-52]

16.45: **Multi-modular optimal capacity algorithm for SDH mesh networks**, Ximo Ling, Univ. of Electronic Science and Technology of China (China). . . . . [7137-53]

Room: Shaoxing Auditorium

Tues. 15.30 to 16.45

SESSION 6b
Dynamic Optical Network

Session Chair: **Prof. Tibor Cinkler,** Budapest University of Technology and Economics (Hungary)

15.30: **Challenges in dynamic optical networking** *(Invited Paper)*, Ann C. Von Lehman, Telcordia Technologies, Inc. (United States) . . . . . [7137-54]

16.00: **Layer based approach for self organizing optical burst switching networks**, Asif Nawaz, Xiaobin Hong, Jian Wu, Jintong Lin, Beijing Univ. of Posts and Telecommunications (China) . . . . . [7137-55]

16.15: **Physical and functional awareness in optical networks** *(Invited Paper)*, Helio Waldman, Univ. Federal do ABC (Brazil) . . . [7137-57]

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Room: Taizhou Auditorium

Wed. 08.30 to 10.00

SESSION 7a
Nonlinear Signal Processing

Session Chair: **Gong-Ru Lin,** National Taiwan Univ. (Taiwan, China)

08.30: **Fiber-based nonlinear processing techniques for phase-modulated communication system** *(Invited Paper)*,

Chester Shu, The Chinese Univ. of Hong Kong (Hong Kong China); Mable P. Fok, Princeton Univ. (United States) . . . . [7134-65]

09.00: **A novel 80 km dispersion-compensation 8×100GHz comb-equalizer for fiber optical parametric amplifier**, Hui Cao D.V.M., Foshan Univ. (China)[7134-66]

09.15: **Four-wave mixing-based all-optical signal processing with pulsed signal input**, Xiaosheng Xiao, Ping Shum, Songnian Fu, Nanyang Technological Univ. (Singapore) . . . . . .[7134-67]

09.30: **Fiber stimulated Brillouin scattering-based microwave signal processing**, Shiming Gao, Ying Gao, Hongyan Fu, Zhejiang Univ. (China) . . . . . .[7134-68]

09.45: **Investigation of nonlinear optical loop mirror based optical thresholding for high speed OCDM system**, Xiaogang Chen, China Three Gorges Univ. (China); Dexiu Huang, Huazhong Univ. of Science and Technology (China) . . . . . .[7134-69]

Coffee/Tea Break. . . . .10.00 to 10.30

Room: Jinhua Auditorium

Wed. 08.30 to 10.00

SESSION 7b
Optical Switches

Session Chair: **Yunjiang Rao,** Univ. of Electronic Science and Technology of China (China)

08.30: **High-speed switching of a DFB grating in a twin-hole fibre**, Zhangwei Yu, Zhejiang Univ. (China) and Kungliga Tekniska Högskolan (Sweden); Pierre-Yves Fonjallaz, Kungliga Tekniska Högskolan (Sweden) and Acreo AB (Sweden); Walter Margulis, Oleksandr Tarasenko, Acreo AB (Sweden) and Kungliga Tekniska Högskolan (Sweden) . . . . . .[7134-70]

08.45: **Research on 1×2 all fiber high-speed magneto-optic switch**, Shaohan Lin, Zihua Weng, Minfeng Wang, Xu Chen, Jianjian Ruan, Xiamen Univ. (China) . . . . . .[7134-71]

09.00: **Analysis and design for ultrafast magneto-optic switch**, Xu Chen, Shaohan Lin, Zihua Weng, Xiamen Univ. (China) . . . . . .[7134-72]

09.15: **An all fiber tunable and switchable interleaver**, Xiurong Ma, Tianjin Univ. of Technology (China) . . . . . .[7134-73]

09.30: **Electro-optic polymer assisted optical switch based on silicon slot structure**, Simiao Xiao, Zhejiang Univ. (China) and Consultant (China) and Consultant (China); Fan Wang, Xiang Wang, Yinlei Hao, Xiaoqing Jiang, Minghua Wang, Jianyi Yang, Zhejiang Univ. (China) . . . . . .[7134-74]

09.45: **Ring-resonator-assisted optical switch with high extinction ratio**, Fan Wang, Haifeng Zhou, Xiang Wang, Simiao Xiao, Xiaoqing Jiang, Jianyi Yang, Minghua Wang, Zhejiang Univ. (China) . . . . . .[7134-75]

Coffee/Tea Break. . . . .10.00 to 10.30

Room: Quzhou Auditorium

Wed. 08.45 to 10.00

SESSION 7a
Photonic Integration III

Session Chair: **Jen-Inn Chyi,** National Central Univ. (Taiwan, China)

08.45: **40 Gb/s InGaAlAs EML** *(Invited Paper)*, Changzheng Sun, Tsinghua Univ. (China) . . . . .[7135-64]

09.15: **InP-based monolithically integrated 1310/1550nm diplexer/triplexer**, Christofer Silfvenius, Marcin Swillo, Erik Forsberg, PhoXtal Communications (Sweden); Nadeem Akram, Vestfold Univ. College (Norway); Marek Chacinski, Lars Thylén, Kungliga Tekniska Högskolan (Sweden) . . . . . .[7135-65]

09.30: **Integrated optical transceivers for access in InP** *(Invited Paper)*, Valery I. Tolstikhin, OneChip Photonics Inc. (Canada) . . . . . .[7135-66]

Coffee/Tea Break. . . . .10.00 to 10.30

Room: Huzhou Auditorium

Wed. 08.45 to 10.00

SESSION 7b
Novel Active Devices IV

Session Chair: **Siyuan Yu,** Univ. of Bristol (United Kingdom)

08.45: **Polarization-insensitive monolithically-integrated 8:1 SOA gate for photonic switching** *(Invited Paper)*,

Shinsuke Tanaka, Ken Morito, Fujitsu Labs., Ltd. (Japan) . . . . [7135-67]

09.15: **AlGaInAs quantum-well saturable absorbers for a diode-pumped passively Q-switched Nd:YVO_4 laser at 1064 nm**, S. C. Huang, H. L. Chang, Kuan-Wei Su, Yung-Fu Chen, K. F. Huang, National Chiao Tung Univ. (Taiwan China) . . . . . .[7135-68]

09.30: **Actively tuneable-coupled semiconductor ring laser based on two-section active vertical coupler structure**, Ruiying Zhang, Zhong Ren, Siyuan Yu, Univ. of Bristol (United Kingdom). . . . . .[7135-70]

09.45: **Twin-contact high brightness Tapered laser for high modulation efficiency high speed signal modulation**, Chi-Hang Kwok, Richard V. Penty, Ian H. White, Univ. of Cambridge (United Kingdom); Karl-Heinz Hasler, B. Sumpf, Götz Erbert, Ferdinand-Braun-Institut für Höchstfrequenztechnik (Germany) . . . . . .[7135-71]

Coffee/Tea Break. . . . .10.00 to 10.30

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Wed. 08.30 to 10.00

SESSION 7a
Access Networks

Session Chair: **Seb Savory,** Univ. College London (United Kingdom)

08.30: **Generation of multi-service wireless signals on one access point for radio over fiber systems**, Zhenhua Zhu, Xiaoping Zheng, Tsinghua Univ. (China); Yabin Ye, CREATE-NET (Italy); Yili Guo, Hanyi Zhang, Tsinghua Univ. (China) . . . . . [7136-63]

08.45: **Implementation of 40Gb/s converter for very short reach optical transmission system**, Jie Xu, Qingsheng Hu, Peng Miao, Bin Ren, Duo Xu, Southeast Univ. (China) . . . . . [7136-64]

09.00: **Access networks** *(Invited Paper)*, Ting Wang, NEC Labs. America, Inc. (United States) . . . . . [7136-65]

09.30: **Experimental demonstration of data remodulation on downstream ASK-DPSK signals for upstream transmission in WDM-PONs**, Jie Liu, Biao Chen, Changjian Guo, Zhejiang Univ. (China) . . . . . [7136-66]

09.45: **Performance improvement of bandwidth limited coherent time spreading OCDMA system employing DPSK format and turbo code**, Xiaogang Chen, China Three Gorges Univ. (China); Xiuhua Yuan, Huazhong Univ. of Science and Technology (China) . . . . . [7136-67]

Coffee/Tea Break . . . . . 10.00 to 10.45

Room: Ningbo Auditorium

Wed. 08.30 to 10.00

SESSION 7b
OXC, ROADM, and Switching Elements

Session Chair: **Xiang Liu,** Lucent Technologies/Bell Labs. (USA)

08.30: **A novel 1xN WSS module based on the MEMS technology**, Qianggao Hu, Accelink Technologies Co., Ltd. (China); Deming Liu, Huazhong Univ. of Science and Technology (China); Liping Sun, Xiaoping Wu, Accelink Technologies Co., Ltd. (China); Lu Zhang, Shandong Univ. (China); Fengfan Tang, Accelink Technologies Co., Ltd. (China) . . . . . [7136-68]

08.45: **Spectrally efficient 3.4bit/s/Hz waveband switching over wavelength-selective switch-based ROADM on 114 Gb/s PolMux-RZ-8PSK DWDM system**, Philip N. Ji, NEC Labs. America, Inc. (United States) . . . . . [7136-69]

09.00: **Ultra wide-band OPS system and related technologies** *(Invited Paper)*,

Naoya Wada, National Institute of Information and Communications Technology (Japan) . . . . [7136-70]

09.30: **All-optical switch based on nonlinear polarization rotation (NPR) in semiconductor optical amplifier (SOA)**, Guo Ning, Nanyang Technological Univ. (China) . [7136-71]

09.45: **A novel optical packet-switching scheme for erasing old label by using electro absorbtion modulator**, Lili Cheng, Hunan Univ. (China) . . . . . [7136-72]

Coffee/Tea Break . . . . . 10.00 to 10.30

Room: Wenzhou Auditorium

Wed. 08.30 to 10.00

SESSION 7a
Broadband Access II

Session Chair: **Wei Guo,** Shanghai Jiao Tong Univ.

08.30: **Multimode fibers with asymmetric impulse response for an improved shannon capacity**, Chi-Hang Kwok, Univ. of Cambridge (United Kingdom); David G. Cunningham, Avago Technologies Ltd. (United Kingdom); Ian H. White, Univ. of Cambridge (United Kingdom) . . . . . [7137-58]

08.45: **An approach for passive testing of SFSM-based systems**, Miao Lv, Xue Chen, Chenling Wang, Beijing Univ. of Posts and Telecommunications (China) [7137-59]

09.00: **Theoretic and experimental study on mm-wave radio over fiber system based on OFM** *(Invited Paper)*, Rujian Lin, Shanghai Univ. (China) . . . . . [7137-60]

09.30: **A novel EPON architecture for supporting direct communication between ONUs**, Liqian Wang, Xue Chen, Zhen Wang, Beijing Univ. of Posts and Telecommunications (China) [7137-61]

09.45: **A dynamic bandwidth allocation scheme for EPON**, Xiuyuan Li, Xiaojuan Wu, Wenming Li, Yuanyuan Zhang, Shandong Univ. (China) . . . . . [7137-62]

Coffee/Tea Break . . . . . 10.00 to 10.30

Room: Shaoxing Auditorium

Wed. 08.30 to 10.00

SESSION 7b
Network Survivability I

Session Chair: **Masatoshi Kagawa,** Oki Electric Industry Co., Ltd. (Japan)

08.30: **A new semi-ecosystem framework and descriptions for the multi-layer survivable optical Internet** *(Invited Paper)*, Keping Long, Univ. of Electronic Science and Technology of China (China) [7137-63]

09.00: **Catastrophe model construction and verification for network anomaly detection**, Jianren Lin, Univ. of Electronic Science and Technology of China (China) [7137-64]

09.15: **Non-adaptive fault diagnosis for low-degree networks via lightpath probing method**, Hang Zhang, Yanhe Li, Hanyi Zhang, Xiaoping Zheng, Tsinghua Univ. (China) . . . . . [7137-65]

09.30: **Coherent performance monitoring techniques for wavelength-routed networks** *(Invited Paper)*, Misha Brodsky, AT&T Labs (United States) . . . . . [7137-66]

Coffee/Tea Break . . . . . 10.00 to 10.30

Conference 7134

Passive Components and Fiber-based Devices V

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Optoelectronic Materials and Devices III

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Room: Taizhou Auditorium

Wed. 10.30 to 12.00

SESSION 8a
Polarization Effects

Session Chair: **Ping Shum,** Nanyang Technological Univ. (Singapore)

10.30: **Wide-band single polarization and polarization maintaining fibers with stress rods and air holes** *(Invited Paper)*,

Xin Chen, Ming-Jun Li, Joohyun Koh, Daniel A. Nolan, Corning Inc. (United States) . . . . [7134-76]

11.00: **Study on the performance of the stress area mismatched Panda erbium-doped polarization-maintaining fiber**, Taorong Gong, Fengping Yan, Lin Wang, Peng Liu, Peilin Tao, Beijing Jiaotong Univ. (China); Guanhong Wang, China Electric Power Research Institute (China); Shuisheng Jian, Beijing Jiaotong Univ. (China) . . . . .[7134-77]

11.15: **The least degrees of freedom required for a polarization controller in PMD compensator**, Xiaoguang Zhang, Gaoyan Duan, Lixia Xi, Beijing Univ. of Posts and Telecommunications (China)[7134-78]

11.30: **Investigation of Cross-polarization Modulation in SOA**, Shuang Zhao, Chongqing Wu, Beijing Jiaotong Univ. (China) . . . . .[7134-79]

11.45: **Polarization-induced phase noise in fiber optic Michelson interferometer with Faraday rotator mirrors**, Yuefeng Wu, Fang Li, Hao Xiao, Yuliang Liu, Institute of Semiconductors (China) . . .[7134-80]

Lunch Break . . . . . .12.00 to 13.30

Room: Jinhua Auditorium

Wed. 10.30 to 12.00

SESSION 8b
Fiber Sensors

Session Chair: **Yunqi Liu,** City Univ. of Hong Kong (Hong Kong, China)

10.30: **Temperature insensitive strain sensors based on high birefringence fiber loop mirror with a single fiber Bragg grating**, Haibin Zhou, Bo Liu, Yange Liu, Hua Sun, Yinping Miao, Jianhua Luo, Nankai Univ. (China) . . . . . .[7134-81]

10.45: **Raman-based distributed temperature sensor using a 1.66um ring type Q-switched fiber laser with adjustable pulsewidth**, Lei Zhang, Tsinghua Univ. (China) . . . . . .[7134-82]

11.00: **The research of multi-parameter sensor based on two-mode highly birefringent photonic crystal fibers**, Wen Ke, Rong Wang, Jingyuan Wang, Jianhua Li, The PLA Univ. of Science and Technology (China) . . . . . .[7134-83]

11.15: **Investigations of a Novel Mechanical Anti-aliasing Filtering Fiber-optic Hydrophone with a Cylindrical Helmholtz Resonator**, Zefeng Wang, Yongming Hu, National Univ. of Defense Technology (China) . . . . . .[7134-84]

11.30: **Analysis of a new fiber grating-based magnetic field measurement system**, Peng Hui, Nanjing Institute of Communication Engineering (China) . . . . . .[7134-85]

11.45: **Temperature dependence of the strain response of chemical composition gratings in optical fibers**, Guoyu Li, Bai-ou Guan, Dalian Univ. of Technology (China).[7134-86]

Lunch Break . . . . . .12.00 to 13.30

Room: Quzhou Auditorium

Wed. 10.30 to 11.45

SESSION 8a
Wide Bandgap Semiconductor Devices II

Session Chair: **Jianyi Yang,** Zhejiang Univ. (China)

10.30: **Light output enhancement of InGaN light-emitting diodes by patterning technologies** *(Invited Paper)*,

Jen-Inn Chyi, National Central Univ. (Taiwan, China) . . . . . [7135-72]

11.00: **A blue-violet enhanced BDJ photodetector and its application in the color measurement of RGB LEDs for solid-state lighting**, Kun Liang, Wi Li, Dejun Han, Beijing Normal Univ. (China) . . . . . .[7135-73]

11.15: **Strain relaxation characteristics of a single InGaN-based nanopillar fabricated by focused ion beam milling**, Peichen Yu, Min-An Tsai, Ching-Hua Chiu, Hao-Chung Kuo, National Chiao Tung Univ. (Taiwan, China); Yuh-Renn Wu, National Taiwan Univ. (Taiwan China) . . . . . .[7135-74]

11.30: **Epitaxial lateral overgrowth of GaN-based light emitting diodes on SiO_2 nanorod-array patterned sapphire substrates by MOCVD**, Ching-Hua Chiu, C.L. Chao, Ming-Hua Lo, Hao-Chung Kuo, Peichen Yu, Tien-Chang Lu, Shin-Chung Wang, National Chiao Tung Univ. (Taiwan China); Kei May Lau, Hong Kong Univ. of Science and Technology (Hong Kong China) . . . . . .[7135-75]

Lunch Break . . . . . .11.45 to 13.30

Room: Huzhou Auditorium

Wed. 10.30 to 11.30

SESSION 8b
Nano Photonics III

Session Chair: **Changzheng Sun,** Tsinghua Univ. (China)

10.30: **Digital photonic functions of semiconductor micro-ring lasers** *(Invited Paper)*, Siyuan Yu, Univ. of Bristol (United Kingdom) . . .[7135-76]

11.00: **Multiwavelength quantum-dot semiconductor fiber ring laser**, Z.G. Lu, J.R. Liu, National Research Council Canada (Canada); X.P. Zhang, Concordia Univ. (Canada); S. Raymond, P.J. Poole, P.J. Barrios, D. Poitras, S. Haffouz, Z. Wasilewski, National Research Council Canada (Canada) . . . . . .[7135-77]

11.15: **Synthesis of ultraviolet luminescent silicon nanocrystals by nanosecond pulsed laser ablation in water**, Wei Yu, Ligong Li, Shujie Wu, Hongye Zou, Guangsheng Fu, College of Physics Science and Technology (China) . . . . . .[7135-78]

14.30: **PCE-Based Distributed Reservation in Multi-domain Optical Network**, Bingli Guo, Shanguo Huang, Pei Luo, Bin Li, Wanyi Gu, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7137-09]

14.45: **Dynamic DWDM channel blocking/equalizing based on liquid crystal technology**, Zhangdi Huang, Yanqing Lu, Nanjing Univ. (China); Shuping Wang, Univ. of North Texas (United States). . . . . .[7137-10]

Lunch Break . . . . . .11.30 to 13.30

POSTER SESSION

12.30 to 14.00 · Room: Multi-function Room

The Poster Session, with authors present at their posters, will be held Wednesday from 12.30 to 14.00. Posters must be removed between 16.00-17.00. Posters not removed at this time will be considered unwanted and will be discarded. *See pages 52-57 for a complete list of poster papers.*

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Room: Hangzhou Auditorium

Wed. 10.30 to 12.15

SESSION 8a
Advanced Research Trends

Session Chair: **Yikai Su,** Shanghai Jiaotong Univ. (China)

10.30: **Millimeter waveband radio-over-fiber systems based on injection locked lasers** *(Invited Paper)*, Zhangyuan Chen, Peking Univ. (China) . . . . . .[7136-73]

11.00: **Strong slow light effect in densely doped erbium fibre**, Xioa-Jue Tang, Yan-Ling Xue, East China Normal Univ. (China) . . . . . .[7136-74]

11.15: **Fiber in Access Technologies and opportunities: network convergence covering the potentialities and the opportunities offered by of optical integration** *(Invited Paper)*,

Pierpaolo C. Ghiggino, Ericsson AB (Italy). . . . . [7136-75]

11.45: **Research forefronts in optical networking** *(Invited Paper)*,

Vincent W. S. Chan, Massachusetts Institute of Technology (United States) [7136-168]

Lunch Break . . . . . .12.15 to 13.30

Room: Ningbo Auditorium

Wed. 10.30 to 12.00

SESSION 8b
Disperion and PMD Compensation

Session Chair: **Min Qiu,** Kungliga Tekniska Högskolan (Sweden)

10.30: **Deterministic first-order and second-order polarization mode dispersion compensator using binary polarization switches**, Lianshan Yan, Southwest Jiaotong Univ. (China) . . . . . .[7136-76]

10.45: **Residual third-order dispersion compensation in femtosecond pulses transmission using a phase modulator**, Rui Zhang, Qian Liang, Yue Cai, Weiwei Hu, Zhangyuan Chen, Zhigang Zhang, Peking Univ. (China) [7136-77]

11.00: **PMD compensation and mitigation with new modulation formats in WDM systemPMD compensation and mitigation with new modulation formats in WDM system**, Ping Lu, Beijing Univ. of Posts and Telecommunications (China) and Beijing Univ. of Posts and Telecommunications (United States) and Beijing Univ. of Posts and Telecommunications (United States); Xiaoguang Zhang, Daya Jiang, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7136-78]

11.15: **The influence of PMD on the degree of polarization ellipsoid**, Gao-Yan Duan, Lixia Xi, Xiaoguang Zhang, Bojun Yang, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7136-79]

11.30: **PMD compensation in true time delay system using Faraday rotation mirror**, Yao Li, Zhenhua Zhu, Xiaoping Zheng, Tsinghua Univ. (China); Yabin Ye, CREATE-NET (Italy) . . . . . .[7136-80]

11.45: **Tunable chromatic dispersion compensation using chirp control based on XPM in a SOA**, Bingchen Han, Jinlong Yu, Aixu Zhang, Litai Zhang, Wenrui Wang, Yang Jiang, Enze Yang, Tianjin Univ. (China) . . . . . .[7136-81]

Lunch Break . . . . . .12.00 to 13.30

Room: Wenzhou Auditorium

Wed. 10.30 to 12.00

SESSION 8a
Future Optical Network

Session Chair: **Masatoshi Suzuki,** KDDI R&D Labs.,

10.30: **GMPLS inter-domain signaling and routing to control LSPs based on per-domain policy**, Shuichi Okamoto, Hongxiang Guo, Tomohiro Otani, KDDI R&D Labs., Inc. (Japan). . . . . .[7137-67]

10.45: **Resource assignment for sliding scheduled lightpath demands**, Rui Tang, Guoying Zhang, Haiyi Zhang, Research Institute of Telecommunication Technology (China) . . . . . .[7137-68]

11.00: **Advances in photonic networking technology and its impact on future networks** *(Invited Paper)*,

Ken-ichi Sato, Nagoya Univ. (Japan) . . . . [7137-69]

11.30: **A reliable and energy-efficient wave routing algorithm based on cluster for sensor networks**, Fei Wu, Yu Chen, Changsheng Xie, Huazhong Univ. of Science and Technology (China) . . . . . .[7137-70]

11.45: **A novel hybrid optical switching networks and its impact on TCP performance**, Yan Zhang, Sheng Wang, Ping Li, Univ. of Electronic Science and Technology of China (China). . . . . .[7137-71]

Lunch Break . . . . . .12.00 to 13.30

Room: Shaoxing Auditorium

Wed. 10.30 to 12.00

SESSION 8b
Network Design

Session Chair: **A. Gumaste,** Indian Institute of Technology, Bombay (India)

10.30: **PCE-based distributed reservation in multi-domain optical network,** Bingli Guo, Shanguo Huang, Pei Luo, Bin Li, Wanyi Gu, Beijing Univ. of Posts and Telecommunications (China)[7137-09]

10.45: **Dynamic DWDM channel blocking/equalizing based on liquid crystal technology,** Zhangdi Huang, Yanqing Lu, Nanjing Univ. (China); Shuping Wang, Univ. of North Texas (United States). . . . . .[7137-10]

11.00: **Analyzing and designing of reliable multicast based on FEC in distributed switch,** Ting Luo, Xueshun Wang, Wuhan FiberHome Networks Co., Ltd. (China) [7137-73]

11.15: **A pragmatic LDI operational model for Pakistan,** Zahir A. Mirza, Roshan Sheikh, IQRA Univ. (Pakistan) . . . . . .[7137-74]

11.30: **Network planning under uncertainties** *(Invited Paper)*,

Kwok-Shing Ho, Kwok-Wai Cheung, The Chinese Univ. of Hong Kong (Hong Kong China) . . . . [7137-75]

Lunch Break . . . . . .12.00 to 13.30

POSTER SESSION

12.30 to 14.00 · Room: Multi-function Room

The Poster Session, with authors present at their posters, will be held Wednesday from 12.30 to 14.00. Posters must be removed between 16.00-17.00. Posters not removed at this time will be considered unwanted and will be discarded. *See pages 52-57 for a complete list of poster papers.*

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Wed. 13.30 to 15.00

SESSION 9a
Fiber Lasers

Session Chair: **Benyuan Zhu,** OFS Fitel, LLC (USA)

13.30: **Fiber fuse in high-power optical fibers (invited)** *(Invited Paper)*, Ji Wang, Corning Inc. (United States) . . . . . [7134-87]

14.00: **Specialty fibers for fiber lasers** *(Invited Paper)*, Tomoharu Kitabayashi, Fujikura Ltd. (Japan) . . . . . [7134-88]

14.30: **Experimental investigation of double-clad Tm^{3+}-doped silica fiber amplifying at 1.99µm**, Yunjun Zhang, Harbin Institute of Technology (China) . . . . . [7134-89]

14.45: **High-power narrow-linewidth wavelength-tunable ytterbium-doped double-clad fibre lasers**, Yuanyuan Fan, Chenchun Ye, Caiyuan Wu, Zhiping Cai, Xiamen Univ. (China) . . . . . [7134-90]

Coffee/Tea Break . . . . . 15.00 to 15.30

Room: Jinhua Auditorium

Wed. 13.30 to 15.00

SESSION 9b
Optical Devices

Session Chair: **Andrew W. Poon,** Hong Kong Univ. of Science and Technology (Hong Kong, China)

13.30: **Transmission enhancement of a metallic slit by a nearby metallic nano-particle**, Yanxia Cui, Yi Jin, Yingran He, Sailing He, Zhejiang Univ. (China) . . . . . [7134-91]

13.45: **High-speed optical hold module in optical assisted ADC**, Xin Fu, Hongming Zhang, Minyu Yao, Tsinghua Univ. (China) . . . . . [7134-92]

14.00: **All-optical correlator based on 3×3 coupler with feedback for optical header processing**, Yaping Wang, Chongqing Wu, Beijing Jiaotong Univ. (China) . . . . . [7134-93]

14.15: **Liquid crystal modulator with ultra-wide dynamic range and adjustable driving voltage**, Xingjun Wang, Zhangdi Huang, Jing Feng, Xiangfei Chen, Yanqing Lu, Nanjing Univ. (China) . . . . . [7134-94]

14.30: **All-Optical Flip-Flop Based on the Optical Bistable Fabry-Perot Laser Diode With Fiber-Bragg-Grating External Cavity**, Zhen Feng, Chongqing Wu, Beijing Jiaotong Univ. (China) . . . . . [7134-95]

14.45: **Broadband optical directional full couplers based on Blackman function**, Chi-Feng Chen, Yun-Sheng Ku, National Central Univ. (Taiwan) . . . . . [7134-96]

Coffee/Tea Break . . . . . 15.00 to 15.30

Room: Quzhou Auditorium

Wed. 13.30 to 14.45

SESSION 9a
Optical Switches and Modulators II

Session Chair: **Changzheng Sun,** Tsinghua Univ. (China)

13.30: **Design and fabrication of 2×2 InP/InGaAsP optical switch**, Qiongfang Ma, Yong Qing Huang, Hui Huang, Changyi Yang, Xiao Min Ren, Beijing Univ. of Posts and Telecommunications (China)[7135-80]

13.45: **Rapidly tunable reconfigurable optical add/drop multiplexer based on electro-optic effect**, Kejia Li, Jie Jin, Zhuifeng Zhang, Chengang Lv, Xi Kong, Tianjin Univ. (China) . . . . . [7135-81]

14.00: **All-optical SOA-based wavelength converter assisted by optical filters with wide operation wavelength and large dynamic input power range**, Jingshi Li, Jin Wang, Andrej Marculescu, Philipp Vorreau, Zhenhao Zhang, Wolfgang Freude, Juerg Leuthold, Univ. Karlsruhe (Germany) . . . . . [7135-82]

14.15: **Degradation by the cross-polarization modulation of the conversion efficiency of a wavelength converter based on FWM in a SOA**, Milka del Carmen Acosta, Univ. de Sonora (Mexico); Ramón Maldonado, Horacio Soto-Ortiz, Ctr. de Investigación Científica y de Educación Superior de Ensenada (Mexico) . . . . . [7135-83]

14.30: **40 Gbit/s FSK all-optical wavelength conversion and NOT gate using periodically poled lithium niobate waveguides**, Jian Wang, Junqiang Sun, Huazhong Univ. of Science and Technology (China) . . . . . [7135-84]

Coffee/Tea Break . . . . 14.45 to 15.15

Room: Huzhou Auditorium

Wed. 13.30 to 15.00

SESSION 9b
Novel Active Devices V

Session Chair: **Alexandre M. Bratkovski,** Hewlett-Packard Labs. (USA)

13.30: **Nonreciprocal semiconductor optical waveguide devices** *(Invited Paper)*, Yoshiaki Nakano, The Univ. of Tokyo (Japan) . . . . . [7135-85]

14.00: **The characteristics of combined end-pumped and side-pumped solid-state laser**, Chenlin Du, Shuang-chen Ruan, Zhichao Wang, Yongqin Yu, Shenzhen Univ. (China) . . . . . [7135-86]

14.15: **Highly stable white light from ultraviolet laser diode**, Yun Xu, Haifeng Hu, Institute of Semiconductors (China); Weidong Zhuang, National Engineering Research Ctr. for Rare Earth Materials (China); Guofeng Song, Yuzhang Li, Lianghui Chen, Institute of Semiconductors (China) . . . [7135-87]

14.30: **High power diode laser stack with beam coupling**, Yuan-Yuan Gu, Lijun Wang, Changchun Institute of Optics, Fine Mechanics and Physics (China) . . . . . [7135-88]

14.45: **Gain spectrum and saturation characteristics of two-segment semiconductor optical amplifier**, Lirong Huang, Shenghui Yu, Dexiu Huang, Huazhong Univ. of Science and Technology (China) . . . . . [7135-89]

Coffee/Tea Break . . . . . 15.00 to 15.30

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Wed. 13.30 to 14.45

SESSION 9a
Electronic Processing

Session Chair: **Yikai Su,** Shanghai Jiaotong Univ. (China)

13.30: **Pattern sensitivity in electronic dispersion compensation using full optical-field reconstruction**, Jian Zhao, Mary Mccarthy, Tyndall National Institute (Ireland); Paul Gunning, BT Labs. (United Kingdom); Andrew Ellis, Tyndall National Institute (Ireland) . . . . . .[7136-82]

13.45: **Electronic signal processing in optical communications** *(Invited Paper)*,

Seb Savory, University College London (United Kingdom) . . [7136-83]

14.15: **Simple eye-closure penalty estimate for amplitude noise-degraded signals**, Terence R. Broderick, Sonia A. Boscolo, Aston Univ. (United Kingdom) . . . .[7136-84]

14.30: **Research on electronic dispersion Compensation for broad band multimode optical fiber link**, Xiaohui Zhang, Southeast Univ. (China) . . . . . .[7136-85]

Coffee/Tea Break. . . . .14.45 to 15.15

Room: Ningbo Auditorium

Wed. 13.30 to 15.00

SESSION 9b
Network Elements II

Session Chair: **Xueyan Zheng,** Finisar Corp. (USA)

13.30: **Design of sparse mesh for optical network on chip**, Huaxi Gu, Xidian Univ. (China); Jiang Xu, Hong Kong Univ. of Science and Technology (Hong Kong China); Zheng Wang, Xidian Univ. (China) . . . . . .[7136-86]

13.45: **Partial suspended microring resonator fabricated by focused ion beam on SOI**, Jie Tian, Min Qiu, Kungliga Tekniska Högskolan (Sweden) . . . . . .[7136-87]

14.00: **Slow light and its applications into all-optical networks** *(Invited Paper)*,

Lianshan Yan, Southwest Jiaotong Univ. (China) . . . . [7136-88]

14.30: **Experiment study on reducing SOA-induced crosstalk by CW light injection and dispersion management**, Aihong Guan, Hong-Liang Fu, Henan Univ. of Technology (China) . . . . . .[7136-89]

14.45: **The construction of a FBG-based hierarchical AOFSN with high reliability and scalability**, Mei-Li Peng, Chonbuk National Univ. (Korea, Republic of). . . . . .[7136-90]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Wenzhou Auditorium

Wed. 13.30 to 15.00

SESSION 9a
Scalable Optical Network

Session Chair: **Helio Waldman,** Univ. Federal do ABC (Brazil)

13.30: **Scalability of optical networks** *(Invited Paper)*, Martin Collier, Dublin City Univ. (Ireland) . . . . . .[7137-76]

14.00: **Optical path dynamic routing algorithm based on traffic prediction**, Keita Obara, Hiroshi Hasegawa, Ken-ichi Sato, Nagoya Univ. (Japan) . . . . . .[7137-77]

14.15: **Self-organized call admission control for optical communication networks**, Bing Zuo, Lei Liu, Jian Wu, Jintong Lin, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7137-78]

14.30: **Implementation of bandwidth on-demand service on adaptive service provisioning platform of transport networks**, Yuan Feng, Jie Zhang, Haibin Zhang, Xiuzhong Chen, Lei Wang, Wanyi Gu, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7137-79]

14.45: **a fast path-based approach to infer link loss rates by explicit estimation**, Haibo Su, Wentao Chen, Yong Li, Shijun Lin, Depeng Jin, Lieguang Zeng, Tsinghua Univ. (China) . . . . . .[7137-80]

Coffee/Tea Break. . . . .15.00 to 15.30

Room: Shaoxing Auditorium

Wed. 13.30 to 15.00

SESSION 9b
GMPLS/ASON

Session Chair: **Zhengbin Li,** Peking Univ. (China)

13.30: **An experimental analysis on OSPF-TE convergence time**, Shaowei Huang, Ken-ichi Kitayama, Osaka Univ. (Japan); Filippo Cugini, Consorzio Nazionale Interuniv. per le Telecomunicazioni (Italy); Francesco Paolucci, Alessio Giorgetti, Luca Valcarenghi, Piero Castoldi, Scuola Superiore Sant'Anna (Italy) .[7137-81]

13.45: **Experimental demonstration of OSPF-TE extensions in muiti-domain OBS networks connected by GMPLS network**, Chunlei Tian, Yawei Yin, Jian Wu, Jintong Lin, Beijing Univ. of Posts and Telecommunications (China)[7137-82]

14.00: **Performance evaluation of differentiated-resilience provisioning scheme for the GMPLS/ASON networks**, Tan Zhi, Beijing Univ. of Civil Engineering and Architecture (China) . . . . . .[7137-83]

14.15: **A novel differentiated-resilience provisioning scheme of service level agreements for the GMPLS/ASON network**, Tan Zhi, Beijing Univ. of Civil Engineering and Architecture (China) . . . . . .[7137-84]

14.30: **GMPLS control plane failure recovery** *(Invited Paper)*,

Jing Wu, J. Michel Savoie, Communications Research Ctr. Canada (Canada) . . [7137-85]

Coffee/Tea Break. . . . .15.00 to 15.30

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Room: Taizhou Auditorium

Wed. 15.30 to 17.15

SESSION 10a
Microstructured Fibers

Session Chair: **David Z. Chen,** Verizon (USA)

15.30: **Wave propagation analysis in 2-D non-orthogonal coordinate photonic crystals based on finite difference frequency domain**, Ali Rostami, Univ. of Tabriz (Iran). . . . . .[7134-97]

15.45: **Finite alement analysis of propagation characteristics for an octagonal photonic crystal fiber**, Jianfei Guan, Nanjing Univ. of Posts and Telecommunications (China) . . . . . .[7134-98]

16.00: **Recent progress in photonic bandgap fiber technology** *(Invited Paper)*, Satoki Kawanishi, Nippon Telegraph and Telephone Corp. (Japan). . . . . .[7134-99]

16.30: **Nanosecond ultraviolet laser micromachining of microstructured polymer optical fibers for microfluidic and gas sensing**, Ye Wu, Shenzhen Univ. (China) and Shenzhen Key Lab of Laser Engineering (China) . . . . . .[7134-100]

16.45: **Single-mode TE01 fibers** *(Invited Paper)*,

Jacques J. Bures, Ecole Polytechnique de Montréal (Canada); Xavier Daxhelet, FG2 Tech (Canada) . [7134-102]

Room: Jinhua Auditorium

Wed. 15.30 to 17.30

SESSION 10b
Fiber Ring Lasers

Session Chair: **Tomoharu Kitabayashi,** Fujikura Ltd. (Japan)

15.30: **Optical injection mode-locking and DWDM channeling characteristics of weak-resonant-cavity FPLD-based fiber ring lasers** *(Invited Paper)*,

Gong-Ru Lin, National Taiwan Univ. (Taiwan China) . . . . [7134-103]

16.00: **Multiwavelength emission and passive mode-locking from a same fiber laser with nonlinear optical loop mirror**, Zuxing Zhang, Jiangxi Normal Univ. (China) . . . . . .[7134-104]

16.15: **Tunable single polarization Yb3+-doped fiber ring laser by using intracavity tilted fiber Bragg grating**, Xueping Cheng, Junqiang Zhou, Ping Shum, Nanyang Technological Univ. (Singapore); Ruifen Wu, DSO National Labs. (Singapore) . . . . . .[7134-105]

16.30: **Discretely tunable narrow linewidth fiber ring laser based on matching the transmission spectra of two Fabry-Perot filters made of FBGs**, Minxiu Chen, Xiaopeng Dong, Jinlong Zhou, Jie Qi, Xiamen Univ. (China) . . . . . .[7134-106]

16.45: **Repetition tunable active mode-locked fiber ring laser based on SOA with a forward injection pulse sequence**, Shuangyi Yan, Xi'an Institute of Optics and Precision Mechanics (China); Jian-Guo Zhang, London South Bank Univ. (United Kingdom) and Xi'an Institute of Optics and Precision Mechanics (China); Jun Zhou, Ministry of Army Aviation (China); Wei Zhao, Xi'an Institute of Optics and Precision Mechanics (China) . . . . . .[7134-107]

17.00: **Discretely tunable SOA-fiber laser based on few-mode polarization maintaining fiber in Sagnac interferometer**, Guoyong Sun, Gwangju Institute of Science and Technology (South Korea) . . . . . .[7134-108]

17.15: **Tunable laser based on silicon nanocrystal doped in erbium amplifier using ring resonators structure**, Ghassem Rostami, Univ. of Tehran (Iran). . . . . .[7134-109]

Room: Quzhou Auditorium

Wed. 15.15 to 17.00

SESSION 10a
Fiber and Waveguide I

Session Chair: **Jianyi Yang,** Zhejiang Univ. (China)

15.15: **Influence of weak optical feedback on the polarization**, Xiao-Fa Wang, Guang-Qiong Xia, Xue-Min Jiao, Yin-Chuan Zhao, Zong-Min Leng, Zheng-Mao Wu, Southwest Univ. (China) . . . . . .[7135-90]

15.30: **Temporal-spectral imaging of optical pulses using time lens**, Tan Z. Wei, Wenhua Ren, Beijing Jiaotong Univ. (China) . . . . .[7135-91]

15.45: **Optimization of resolution in confocal imaging system**, Huayong Ge, Shanghai Jiao Tong Univ. (China) . . . . . .[7135-92]

16.00: **The research on implementing very high-speed imaging technique using digital holography**, Xiaowei Lu, Shenzhen Univ. (China) . . . . . .[7135-93]

16.15: **A study of polymer clad resin with higher modulus for high NA fibers**, Ji-hye Lee, Seungjo Kwak, Jung-Woo Yoon, Kyoungbeom Min, Sanghwan Kim, Min-Jeong Kim, Sungkoog Oh, SSCP Co., Ltd. (Korea, Republic of). . . . . .[7135-95]

16.30: **Sensible measurement of localized surface plasmon based on lithographic gratings**, I-Min Jiang, National Sun Yat-Sen Univ. (Taiwan, China) . . . . . .[7135-96]

16.45: **Low-loss intersection of subwavelength plasmonic slot waveguides**, Sanshui Xiao, Niels A. Mortensen, Danmarks Tekniske Univ. (Denmark) . . . . . .[7135-97]

Room: Huzhou Auditorium

Wed. 15.30 to 17.00

SESSION 10b
Nanophotonics IV

Session Chair: **Yoshiaki Nakano,** The Univ. of Tokyo (Japan)

15.30: **Properties of nanostructured metamaterials at optical frequencies** *(Invited Paper)*, Alexandre M. Bratkovski, Hewlett-Packard Labs. (United States) . . . . . .[7135-98]

16.00: **Femtosecond pulse generation in a C-band quantum dot laser**, Zhenguo Lu, Jiaren Liu, Sylvain Raymond, Philip J. Poole, Pedro J. Barrios, Daniel Poitras, National Research Council Canada (Canada) . . . . . .[7135-99]

16.15: **Fabrication and Characterization of evanescent wave coupled PbS quantum dots fiber amplifier based on Sol-Gel method**, Jiwen Yan, Fufei Pang, Zhenyi Chen, Tingyun Wang, Shanghai Univ. (China) . . .[7135-100]

16.30: **Photonic crystal emitters incorporating ordered quantum wires and dots** *(Invited Paper)*, Eli E. Kapon, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . .[7135-164]

Conference 7136

Optical Transmission, Switching, and Subsystems VI

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Conference 7137

Network Architectures, Management, and Applications VI

Monday-Thursday 27-30 October 2008
Proceedings of SPIE Vol. 7137

Wednesday 29 October

Room: Hangzhou Auditorium

Wed. 15.15 to 16.30

SESSION 10a
Light Generators

Session Chair: **Lianshan Yan,** Southwest Jiaotong Univ. (China)

15.15: **Photonic monocycle pulse generation and modulation for ultra-wideband-over-fiber application**, Songnian Fu, Wen-De Zhong, Ping Shum, Nanyang Technological Univ. (Singapore); Jianqiang Li, Kun Xu, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7136-91]

15.30: **A novel optical pulse source based on optoelectronic oscillator**, Yang Jiang, Guizhou Univ. (China); Jinlong Yu, Bo Wu, Litai Zhang, Bingchen Han, Wenrui Wang, Enze Yang, Tianjin Univ. (China) . . . . . .[7136-92]

15.45: **Photonic generation of ultra-wideband monocycle and doublet pulses using simplex semiconductor optical amplifier**, Jianji Dong, Xinliang Zhang, Dexiu Huang, Enbo Zhou, Huazhong Univ. of Science and Technology (China) . . . . . .[7136-93]

16.00: **Supercontinuum generation in photonic crystal fibers with different dispersion profiles**, Wangyang Cai, Changsha Univ. of Science and Technology (China) . . . . . .[7136-94]

16.15: **Time- and wavelength-interleaved picosecond pulse source with tunable channels and repetition rate**, Aixu Zhang, Jinlong Yu, Litai Zhang, Wenrui Wang, Hao Hu, Bingchen Han, Yang Jiang, Enze Yang, Tianjin Univ. (China) . .[7136-95]

Room: Ningbo Auditorium

Wed. 15.30 to 17.00

SESSION 10b
WDM Transmission and Modulation Formats

Session Chair: **Christina Lim,** The Univ. of Melbourne (Australia)

15.30: **WDM transmission systems based on SOAs and alternative modulation formats** *(Invited Paper)*, Ernesto Ciaramella, Scuola Superiore Sant'Anna (Italy) . . . . . .[7136-97]

16.00: **High spectral-efficiency DWDM transmission with mixed data rates and signal formats** *(Invited Paper)*, Xiang Liu, Lucent Technologies/Bell Labs. (United States) . . . . . .[7136-98]

16.30: **Statistics of intrachannel four-wave mixing induced phase noise in coherent RZ-DQPSK transmission systems** *(Invited Paper)*,

Yan Gao, Fan Zhang, Zhangyuan Chen, Anshi Xu, Peking Univ. (China) . . . . [7136-99]

Room: Wenzhou Auditorium

Wed. 15.30 to 17.00

SESSION 10a
Optical Grid II

Session Chair: **Tomohiro Kudoh,** National Institute of Advanced Industrial Science and Technology

15.30: **Scheduling and routing algorithm for aggregating large data files from distributed databases to super-computers on lambda grid**, Shen Sun, Wei Guo, Weiqiang Sun, Yaohui Jin, Weisheng Hu, Shanghai Jiao Tong Univ. (China) . . . . . .[7137-86]

15.45: **Demonstration of an Improved P2P-based optical grid architecture on LOBS testbed**, Xiaoqiang Hu, Lei Liu, Jian Wu, Xiaobin Hong, Jintong Lin, Beijing Univ. of Posts and Telecommunications (China)[7137-87]

16.00: **Application-driven grid node architecture for intensive data services on Grid based ASON**, Runze Wu, Beijing Univ. of Posts and Telecommunications (China)[7137-88]

16.15: **Resource parallel provisioning scheme for collaborating service in optical grid network**, Runze Wu, North China Electric Power Univ. (China) and Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7137-89]

16.30: **Grid-oriented resource optimization and control of intelligent optical network** *(Invited Paper)*, Hui Li, Yuefeng Ji, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7137-90]

Room: Shaoxing Auditorium

Wed. 15.30 to 17.00

SESSION 10b
Network Survivability II

Session Chair: **Keping Long,** Univ. of Electronic Science and Technology of China (China)

15.30: **Novel performance monitoring techniques and their applications to 160-Gb/s ultra high-speed transmission system** *(Invited Paper)*, Masatoshi Kagawa, Hitoshi Murai, Oki Electric Industry Co., Ltd. (Japan). . . . . .[7137-91]

16.00: **Horizontal protection for multicast optical virtual private networks**, Yunfeng Peng, Keping Long, Univ. of Electronic Science and Technology of China (China)[7137-92]

16.15: **p-Cycle-based strategy for adaptive PWCE design**, Zhenrong Zhang, Anshi Xu, Yongqi He, Peking Univ. (China) . . . . . .[7137-93]

16.30: **The research of invulnerability in complex optical networks**, Yongli Zhao, Li Li, Jie Zhang, Dahai Han, Yu Yao, Wanyi Gu, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7137-94]

16.45: **CE Dual-homing protection with two active access links for Layer 1 VPN**, Shu Du, Yunfeng Peng, Keping Long, Univ. of Electronic Science and Technology of China (China) . . . . . .[7137-95]

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Thursday 30 October

Room: Taizhou Auditorium

Thurs. 08.30 to 10.00

SESSION 11a
Optical Filters

Session Chair: **Xingkun Wu,** Zhejiang Univ. (China)

08.30: **In-line fiber Etalon fabricated by laser micromachining** *(Invited Paper)*, Yunjiang Rao, Univ. of Electronic Science and Technology of China (China) . . . . . [7134-110]

09.00: **Widely tunable Gaussian-shaped spectral filters using dispersion-engineered fibers for bioimaging applications**, Kuei-Chu Hsu, National Chiao Tung Univ. (Taiwan); Nan-Kuang Chen, National United Univ. (Taiwan China); Shien-Kuei Liaw, National Taiwan Univ. of Science and Technology (Taiwan China); Yin-Chieh Lai, Sien Chi, National Chiao Tung Univ. (Taiwan China) . . . . . [7134-111]

09.15: **How to design an easily deposited multi-band-pass filter**, Sho Kamikawa, Koshin Kogaku Co., Ltd. (Japan) . . . . . [7134-112]

09.30: **Ultra-narrow flat-top filter based on multiple equivalent phase shifts**, Fei Wang, Nanjing Univ. (China); Xihua Zou, Southwest Jiaotong Univ. (China); Zuowei Yin, Xiangfei Chen, Haisong Shen, Nanjing Univ. (China) . . . . . [7134-113]

09.45: **All-fiber tunable band-pass filter based on dual acousto-optic mode coupling**, Ren Miao, Xue Feng, Wei Zhang, Jianhui Zhao, Xiaoming Liu, Tsinghua Univ. (China) . . . . . [7134-114]

Coffee/Tea Break . . . . . 10.00 to 10.30

Room: Jinhua Auditorium

Thurs. 08.30 to 10.00

SESSION 11b
Fiber Gratings

Session Chair: **Hongpu Li,** Shizuoka Univ. (Japan)

08.30: **Transfer matrix model of the fiber grating external cavity semiconductor laser**, Zhao-Yun Li, Zheng-Mao Wu, Jiao Liu, Li-Hua Du, Ze-Chao Gao, Guang-Qiong Xia, Southwest Univ. (China) . . [7134-115]

08.45: **Wavelength-spacing-tunable multiwavelength filter and laser using a fiber grating-based distributed F-P interferometer**, Xinyong Dong, China Jiliang Univ. (China); Hwa-Yaw Tam, Chao Lu, The Hong Kong Polytechnic Univ. (Hong Kong, China); Ping Shum, Nanyang Technological Univ. (Singapore) . . . . . [7134-116]

09.00: **Recent development on CO_2 laser written long-period fiber gratings** *(Invited Paper)*, Yunqi Liu, Shanghai Univ. (China); Kin-Seng Chiang, City Univ. of Hong Kong (Hong Kong, China) . . . . . [7134-117]

09.30: **Optical resonances analysis of reflected long period fiber grating with metal film coated**, Guiju Zhang, Soochou Univ. (China) . . . . . [7134-118]

09.45: **High sensitive pulse measurement using nonuniform quasi-phase matching (QPM) gratings**, Chun-Mei Ning, Beijing Institute of Technology (China) . . . . . [7134-119]

Coffee/Tea Break . . . . . 10.00 to 10.30

Room: Quzhou Auditorium

Thurs. 08.30 to 10.00

SESSION 11
Fiber and Waveguide II

Session Chair: **Yi Luo,** Tsinghua Univ. (China)

08.30: **Guided plasmon polaritons for triangular metallic waveguides**, Yuntian Chen, Sanshui Xiao, Danmarks Tekniske Univ. (Denmark) . . . . . [7135-101]

08.45: **Design and analysis of nonpolarizing beam splitter in a glass cube**, Jin Hui Shi, Harbin Engineering Univ. (China) . [7135-102]

09.00: **High directive antenna based on metamaterial slab with zero permittivity**, Wei Yan, Min Qiu, Kungliga Tekniska Högskolan (Sweden); Lin-Fang Shen, Zhejiang Univ. (China) . . . . . [7135-103]

09.15: **Light waveguide interconnect Mesh network based on EOPCB**, Fengguang Luo, Liangjia Zong, Mingcui Cao, Jun Xu, Zhixiang Luo, Jing Yuan, Xinjun Zhou, Zhujun Wan, Chao Chen, Conghuei Zhang, Guoqin Wang, Huazhong Univ. of Science and Technology (China) . . . . . [7135-104]

09.30: **Digital polarization encoding based on orthogonal polarization rotation in a semiconductor optical amplifier**, Zhengyong Li, Chongqing Wu, Beijing Jiaotong Univ. (China) . . . . . [7135-105]

09.45: **Spectroscopic properties of Er^{3+} doped boro-tellurite glasses for broadband short-length EDFA**, Fei Zheng, China Jiliang Univ. (China) . . . . . [7135-106]

Coffee/Tea Break . . . . . 10.00 to 10.30

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Room: Hangzhou Auditorium

Thurs. 08.30 to 10.00

SESSION 11a
RoF and Wireless Networks II

Session Chair: **Richard V. Penty,** Univ. of Cambridge (United Kingdom)

08.30: **Subcarrier demultiplexing using a tunable single resonance microwave photonic rilter in radio-over-fiber system**, Ying Hu, Haiyan Ou, Kun Zhu, Hoangyan Fu, Zhejiang Univ. (China) . . . . . .[7136-100]

08.45: **Optical impairments mitigation in millimeter-wave fiber-wireless systems** *(Invited Paper)*,

Christina Lim, Ampalavanapillai Nirmalathas, The Univ. of Melbourne (Australia); Dalma Novak, Rod Waterhouse, The Univ. of Melbourne (Australia) and Pharad, LLC (United States) . . . . . .[7136-101]

09.15: **The transmission performance of the MPPM modulaton in indoor optical wireless communication based on white LED**, Na Zhu, Jiang Zhu, Qiduan Zhong, Jiangsu Univ. (China) . . . . . .[7136-102]

09.30: **Optical systems and RoF** *(Invited Paper)*,

Ian H. White, Univ. of Cambridge (United Kingdom) . [7136-103]

Coffee/Tea Break. . . . .10.00 to 10.30

Room: Ningbo Auditorium

Thurs. 08.30 to 10.00

SESSION 11b
Optical Signal Processing II

Session Chair: **Tong Ye,** Shanghai Jiao Tong Univ. (China)

08.30: **High speed modulation format transformation from return-to-zero ASK To return-to-zero FSK based on nonlinear polarization rotation**, Xue Wang, Huazhong Univ. of Science and Technology (China); Bo Huang, Fudan Univ. (China); Yaoxiong Liang, Huazhong Univ. of Science and Technology (China) and Fudan Univ. (China); Hongxing Liu, Liang Wang, Dexiu Huang, Huazhong Univ. of Science and Technology (China); Nan Chi, Fudan Univ. (China) . . . . . .[7136-104]

08.45: **All-optical NRZ to RZ format conversion using bistable semiconductor ring laser**, Bei Li, Irfan Memon, Univ. of Bristol (United Kingdom); Gabor Mezosi, Univ. of Glasgow (United Kingdom); Zhuoran Wang, Univ. of Bristol (United Kingdom); Marc Sorel, Univ. of Glasgow (United Kingdom); Siyuan Yu, Univ. of Bristol (United Kingdom) . . . . . .[7136-105]

09.00: **NRZ-DPSK to RZ-BPSK all-optical format conversion using optical filter and SOA-MZI**, Yu Yu, Xinliang Zhang, Huazhong Univ. of Science and Technology (China); Jose B. Rosas-Fernandez, Univ. of Cambridge (United Kingdom); Dexiu Huang, Huazhong Univ. of Science and Technology (China); Richard V. Penty, Ian H. White, Univ. of Cambridge (United Kingdom) . . . . . .[7136-106]

09.15: **All-optical 40-Gb/s RZ-DPSK to ASK-Manchester format conversion**, Minghao Li, Wei Hong, Nan Chi, Wei Li, Dexiu Huang, Huazhong Univ. of Science and Technology (China) . . . . . .[7136-107]

09.30: **A photonic digital-to-analog conversion based on multiwavelength sampling**, Yuancheng Zhang, Tsinghua Univ. (China) . . . . . .[7136-108]

09.45: **Implementation of Fourier and inverse Fourier transformation in high-speed optical frequency-domain transmission system**, Zhang Huan, Huazhong Univ. of Science and Technology (China) . . . . . .[7136-109]

Coffee/Tea Break. . . . .10.00 to 10.30

Room: Wenzhou Auditorium

Thurs. 08.30 to 09.45

SESSION 11
Routing and Wavelength Assignment

Session Chairs: **Kwok-Shing Ho,** The Chinese Univ. of Hong Kong (Hong Kong, China); **Kwok-Wai Cheung,** The Chinese Univ. of Hong Kong (Hong Kong, China)

08.30: **An effective algorithm for routing with node inclusion constraint**, Jian Wu, Univ. of Electronic Science and Technology of China (China) . . . . . .[7137-96]

08.45: **Research on an light tree generating algorithm applying to optical layer dynamic multicast traffic grooming**, Jijun Zhao, Shuguang Zhang, Lirong Wang, Hebei Univ. of Engineering (China) . . . . . .[7137-97]

09.00: **BoD services in layer 1 VPN with dynamic virtual concatenation group**, Shu Du, Yunfeng Peng, Keping Long, Univ. of Electronic Science and Technology of China (China) . . . . . .[7137-98]

09.15: **Blocking analysis of dynamic lightpath establishment based on multistates reservation for wavelength-routed networks**, Yongli Zhao, Li Li, Jie Zhang, Dahai Han, Yu Yao, Ting Liang, Wanyi Gu, Beijing Univ. of Posts and Telecommunications (China)[7137-99]

09.30: **A distributed multicast label switched path setup scheme to solve the multi-destination reservation collision**, Shu Du, Yunfeng Peng, Keping Long, Univ. of Electronic Science and Technology of China (China) . . . . . .[7137-100]

Coffee/Tea Break. . . . .09.45 to 10.15

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Room: Taizhou Auditorium

Thurs. 10.30 to 11.45

SESSION 12
Nonlinear Effects

Session Chair: **Chester Shu,** The Chinese Univ. of Hong Kong (Hong Kong, China)

10.30: **The study of the gain characteristics of 1.66 μm fiber Raman amplifier with ordinary single-mode fiber**, Lanlan Liu, Chongqing Wu, Luyao Zhai, Guodong Lin, Beijing Jiaotong Univ. (China); Yongnan Li, Nankai Univ. (China) . . . . . .[7134-120]

10.45: **Demonstration of a multiwavelength laser source based on supercontinuum generation in dispersion-flattened holey fiber**, Qiuguo Wang, Hu Zhang, Beijing Univ. of Posts and Telecommunications (China); Xia Zhang, Liaocheng Univ. (China); Bojun Yang, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7134-122]

11.00: **Modulational instability in highly nonlinear media**, A. B. Moubissi, Th. B. Ekogo, S. B. Yamgoue, J. P. Ngantcha, Univ. des Sciences et Techniques de Masuku (France); K. Nakkeeeran, Univ. of Aberdeen (United Kingdom); K. Senthilnathan, The Hong Kong Polytechnic Univ. (Hong Kong China); Ailing Zhang, Tianjin Univ. of Technology (China) . . . . . .[7134-123]

11.15: **High-power supercontinuum generation in PCF using a continuous-wave Raman fiber laser**, Tingting Sun, Guiyun Kai, Qing Shi, Zhi Wang, Yange Liu, Shuzhong Yuan, Xiaoyi Dong, Nankai Univ. (China) . . . . . .[7134-124]

11.30: **All-optical low-pass filter based on cross-gain modulation in fiber optical parametric amplifier**, Ka Yi Cheung, Tsz Fung Chau, The Univ. of Hong Kong (Hong Kong China); Jia Li, The Univ. of Hong Kong (Hong Kong, China); Kenneth K. Y. Wong, The Univ. of Hong Kong (Hong Kong China) . . . . . .[7134-125]

Room: Quzhou Auditorium

Thurs. 10.30 to 11.15

SESSION 12
Wide Bandgap Semiconductor Devices III

Session Chair: **Yi Luo,** Tsinghua Univ. (China)

10.30: **Nanocolumn GaN LEDs covering full visible colors and related growth technology** *(Invited Paper)*,

Katsumi Kishino, Akihiko Kikuchi, Hiroto Sekiguchi, Shunsuke Ishizawa, Sophia Univ. (Japan) and CREST Japan Science and Technology Agency (Japan) . . . [7135-107]

11.00: **The lasing action of GaN-based two dimensional surface-emitting photonic crystal laser**, Tien-Chang Lu, Shih-Wei Chen, Tsung-Ting Kao, Chih-Chiang Kao, Li-Fan Lin, Tzu-Wei Liu, Hao-Chung Kuo, Shing-Chung Wang, National Chiao Tung Univ. (Taiwan China) . . . . . .[7135-108]

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Thurs. 10.30 to 11.30

SESSION 12a
High-speed Transmission Systems

10.30: **Modeling of ultra-high speed optical transmission systems**, Hadrien Louchet, Kuzmin Konstantin, Andre Richter, Cristina Arellano, VPIsystems (Germany) . . . . . .[7136-110]

10.45: **Advanced photoreceivers for 40 and 100 Gbit/s optical communication networks** *(Invited Paper)*,

Andreas Umbach, U2T Photonics AG (Germany) [7136-111]

11.15: **High-speed FSK signal generation and transmission labelled with ASK**, He Wen, Tsinghua Univ. (China); Nan Chi, Huazhong Univ. of Science and Technology (China); Huan Jiang, Xiaoping Zheng, Hanyi Zhang, Yili Guo, Tsinghua Univ. (China) . . . . . .[7136-112]

Room: Ningbo Auditorium

Thurs. 10.30 to 11.30

SESSION 12b
Optical Monitoring and Compensation II

Session Chair: **Yong Liu,** Univ. of Electronic Science and Technology of China (China)

10.30: **Research on the simulation system and PMD compensation performance of oDQPSK modulation format**, Huiyang Liu, Xiaoguang Zhang, Wei Xu, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7136-113]

10.45: **Deficiency monitoring of DPSK signal using coherent hybrid**, He Wen, Yihong Ge, Huan Jiang, Xiaoping Zheng, Xin Chen, Liuyan Han, Hanyi Zhang, Yili Guo, Tsinghua Univ. (China) . . . . . .[7136-114]

11.00: **All-optical performance monitoring of multibitrate and multiformat signals based on optical sampling for transparent optical networks**, Noboru Yoshikane, Takehiro Tsuritani, Jun-Haeng Lee, Tomohiro Otani, KDDI R&D Labs., Inc. (Japan). . . . . .[7136-115]

11.15: **The optical sampling based on semiconductor optical amplifier for optical performance monitoring**, Mao-Tong Liu, Xiang-Yu Wu, Aiying Yang, Yu-Nan Sun, Beijing Institute of Technology (China) . . . . . .[7136-116]

Room: Wenzhou Auditorium

Thurs. 10.15 to 11.30

SESSION 12
Optical Switching and Routing

Session Chair: **Hui Li,** Beijing Univ. of Posts and Telecommunications (China)

10.15: **Performance evaluation of TCP over OBS networks with multiple TCP input flows**, Yongjiao Yu, Xiaobin Hong, Lei Liu, Jintong Lin, Beijing Univ. of Posts and Telecommunications (China) . . . . . .[7137-101]

10.30: **Flow-oriented dynamic assembly algorithm in TCP over OBS networks**, Shuping Peng, Zhengbin Li, Anshi Xu, Peking Univ. (China) . . . . . .[7137-102]

10.45: **Transmission properties of a novel ASK/FSK orthogonal labelled signal based on two conjugated IM modulation**, Hongxing Liu, Huazhong Univ. of Science and Technology (China); Yaoxiong Liang, Bo Huang, Fudan Univ. (China); Xue Wang, Liang Wang, Zhixue He, Dexiu Huang, Huazhong Univ. of Science and Technology (China); Nan Chi, Fudan Univ. (China) . . . . . .[7137-103]

11.00: **A novel link architecture for optical burst switched networks**, Chi Yuan, Peking Univ. (China) . . . . . .[7137-104]

11.15: **An optimizing configuration scheme of asynchronous OPS node based on DLOB**, Kai-qiang Gao, Xin-zhi Sheng, Chong-qing Wu, Qian Ha, Beijing Jiaotong Univ. (China) . . . . . .[7137-105]

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POSTER SESSION

Wednesday · 12.30 to 14.00 · Room: Multi-function Room

The Poster Session, with authors present at their posters, will be held Wednesday from 12.30 to 14.00. Posters must be removed between 16.00-17.00. Posters not removed at this time will be considered unwanted and will be discarded. See pages 52-57 for a complete list of poster papers.

Hole-assisted lightguide fiber for dispersion tailoring, Juan J. Hu, Ping Shum, Nanyang Technological Univ. (Singapore); Chao Lu, The Hong Kong Polytechnic Univ. (Hong Kong China) . . . . . [7134-03]

All-optical clock recovery CSRZ-format data at 40Gbit/s using SOA-based ring laser, Zhixin Chen, Central Univ. of Finance and Economics (China) . . . . . [7134-126]

A novel ultrafast all-optical NRZ to RZ format converter based on Sagnac interferometric structure, Zhixin Chen, Central Univ. of Finance and Economics (China). . . . . [7134-127]

Photoluminescence of copper ion-exchange planar waveguides in commercial soda-lime glass, Feng Qiu, Yunqiang Ti, Jie Zheng, Jilin Univ. (China); Gerald Farrell, Dublin Institute of Technology (Ireland) . . . . . [7134-129]

Design of Tunable wavelength selector with Fiber Bragg Gratings with cladding made of Electro-optic materials, Shanglin Hou, Lanzhou Univ. of Technology (China) and Beijing Univ. of Posts and Telecommunications (China); Suo Ping Li, Dao Bin Wang, Jing Li Lei, Lanzhou Univ. of Technology (China) . . . . . [7134-130]

Output power stabilized dual-order Raman fiber laser by generated amplified spontaneous emission, Yingwu Zhou, Minjiang Univ. (China) . . . . . [7134-131]

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White light emission from InGaN CdSe/CdS/ZnS quantum dots LEDs, Changyu Shen, China Jiliang Univ. (China) . . . . . [7135-126]

Deposition of nanocrystalline SiC films using helicon wave plasma enhanced chemical vapor deposition, Wanbing Lu, Wei Yu, Ma Luo, Liping Wu, Guangsheng Fu, Hebei Univ. (China) . . . . . [7135-127]

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Research on integrated dynamic multilayer network survivability based on GMPLS, Sujian Wang, Hebei Univ. of Engineering (China). . . . . [7136-126]

Primary Experiments on 2-D and 1-D Fiber-type Optical Phased Array, Xiaozhou Yang, Yanyun Yang, Qin Cai, Ying Zhao, Ao Fang, Weiwei Hu, Anshi Xu, Peking Univ. (China) . . . . . [7136-127]

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Influence of in-band group delay ripple of chirp FBG on 40-Gb/s transmission using RZ and CSRZ formats, Taorong Gong, Fengping Yan, Bo Lv, Peng Liu, Beijing Jiaotong Univ. (China); Guanhong Wang, China Electric Power Research Institute (China); Shuisheng Jian, Beijing Jiaotong Univ. (China) . . . . . [7136-129]

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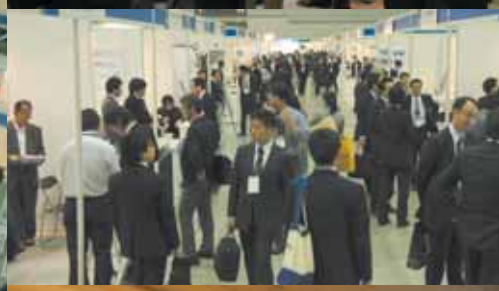

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