

Room 101 -- (1F)	Room 105 -- (1F)	Room 106 -- (1F)	Room 107 -- (1F)	Room 110 -- (1F)
<p>08:30-10:15 TH1I · Fibre Lasers John Harvey, University of Auckland, New Zealand, Presider</p>	<p>08:30-10:00 TH1E · In vivo Optical Imaging and Tomography Z. Chen, UC Irvine, Presider</p>	<p>08:30-10:00 TH1H · Optical Computer Roger Lessard, Laval University, Canada, Presider</p>	<p>08:30-10:00 TH1G · Coherent Control of Reactions Kaoru Yamanouchi, University of Tokyo, Japan, Presider</p>	<p>08:30-10:00 TH1J · Novel Devices and Materials F. Koyama, Tokyo Institute of Technology, Japan, Presider</p>
<p>08:30-09:30 TH1I-(1)-1 (Tutorial) Developments in High-Power Fibre Lasers <i>Stuart D. Jackson</i> <i>The University of Sydney, Australia</i> In this tutorial, I will provide a brief history of the high power fibre laser and highlight the major developments that have led to the exponential improvement in the maximum output power over recent years.</p>	<p>08:30-09:00 TH1E-(12)-1 (Invited) Functional biophotonic imaging with ultrasonic mediation <i>L. Wang</i> <i>Texas A&M University, USA</i></p>	<p>08:30-09:00 TH1H-(9)-1 (Invited) Optoelectronic hybridization for compact imaging system <i>Jun Tanida</i> <i>Osaka University, Japan</i> Combination of compound imaging and post digital processing enables us to embody a compact optoelectronic imaging system called TOMBO (thin observation module by bound optics). Not only compactness but also versatile functionality are obtained on this specific architecture.</p>	<p>08:30-09:00 TH1G-(4)-1 (Invited) Quantum control of molecular chirality <i>Yuichi Fujimura</i> <i>Tohoku University, Japan</i> Electric fields of laser pulses to obtain pure enantiomers from racemic mixtures are designed using a quantum control theory. Several types of effective control scenarios are presented for simple molecules with axial or helical chirality.</p>	<p>08:30-08:45 TH1J-(2)-1 InGaAs/InP heterojunction bipolar transistors with low offset voltage and current blocking <i>Shu-Han Chen, Meng-Lin Lee, Po-Han Chen, Sheng-Yu Wang, Ming-Yuan Tseng, and Jen-Inn Chyi</i> <i>National Central University, Taiwan</i> InGaAs/InP double heterojunction bipolar transistors with low offset voltage and low collector current blocking effect have been obtained using a combination of InGaAs spacers at the BE and BC junctions. Suitable n⁺InP doping concentration is shown to be effective as well.</p>
				<p>08:45-09:00 TH1J-(2)-2 A low power consumption VCSEL driver IC for 10Gb/s direct modulation using InGaP/GaAs HBT <i>Ji Young Eo, Saekyoung Kang, Hyo-Hoon Park, D. Y. Jung, C. S. Park, and K. S. Yoon</i> <i>Information and Communications University; Korea University, Korea</i> We designed a 10Gb/s driver IC for direct modulation of VCSEL (vertical-cavity surface-emitting laser) diodes, using InGaP/GaAs heterojunction bipolar transistor technology with a cut-off frequency of 45GHz and an emitter area of 6 μm²</p>

December 18, Thursday

Int'l Reception Hall -- (1F)

08:30-10:00
TH1F · Characterization of Nonlinear Optical Properties
TBD, Presider

08:30-08:45 TH1F-(5)-1
Characterization of nonlinear refractive indices of KDP, KTP, LiNbO₃ and BBO crystals at 1064 nm and 532 nm

R. A. Ganeev, I. A. Kulagin, R. I. Tugushev, A. I. Ryasnyansky, and T. Usmanov
NPO Akadempribor of Academy of Sciences, Uzbekistan; Samarkand State University, Tokyo University, Japan

We present our studies of nonlinear refractive indices of various nonlinear crystals (KDP, LiNbO₃, BBO, and KTP) in IR and visible ranges. The experimental results were analysed in a framework of Gaussian decomposition, paraxial approximation and numerical methods.....

08:45-09:00 TH1F-(5)-2
Optical controlled nonlinear absorption and third harmonic generation in azo-PMMA thin films

Sean Liu, Jin Horn Lin, Vicotr M. Churikov, and Chia Chen Hsu
National Chung Cheng University, Taiwan

Near-resonant optical pumping is applied for encoding of anisotropy of third order susceptibility, which can be probed by third harmonic generation (THG) and open aperture Z-scan techniques, respectively. We observed optical controlled THG...

Ever Green Room -- (10F)

08:30-10:00
TH1B · Advanced Metrology
Der-Chin Su, National Chiao Tung University, Taiwan,
Presider

08:30-09:00 TH1B-(10)-1 (Invited)
Femtosecond-comb distance meter: ultrahigh-resolution distance measurement using a mode-locked laser

Kaoru Minoshima, Tatsuo Tomita, and Hirokazu Matsumoto
AIST, Japan
World-record uncertainty of 2 micrometers is achieved at 240-m distance using the phase measurement of intermode beats of a femtosecond frequency comb. Self-correction of the air refractive index is realized with an accuracy of 0.6 ppm.

Spanish Room -- (10F)

08:30-10:00
TH1D · THz Detector, Emitter and Applications
M. Tani, Osaka Univ., Japan,
Presider

08:30-09:00 TH1D-(6)-1 (Invited)
THz MSM traveling-wave photodetectors for communications and imaging
Chi-Kuang Sun
National Taiwan University, Taiwan
In this talk, we will review the design, fabrication, and performance of sub-terahertz bandwidth metal-semiconductor-metal traveling-wave photodetectors. Its application in THz bandwidth communication and T-ray imaging will be discussed.

Auditorium -- (10F)

08:30-10:00
TH1C · Analysis of Photonic Crystal Fibers and Waveguides
M. Notomi, NTT, Japan,
Presider

08:30-08:45 TH1C-(16)-1
Effect of defect structure on light extraction from a photonic crystal slab nanocavity
Jyh-Yang Wang, Yean-Woei Kiang, and C. C. Yang
National Taiwan University, Taiwan
Radiation characteristics of photonic crystal slab nanocavities are numerically studied. The radiation rate and extraction efficiency are calculated for different defect structures.

08:45-09:00 TH1C-(16)-2
Photonic crystal fiber analysis through vector boundary-element method
Chia-Hsin Chao and Tzong-Lin Wu
National Sun Yat-Sen University, Taiwan
Based on the full wave model, vector boundary element method (VBEM) is used to study the ring number effect on the propagation and dispersion properties of the PCF. Besides showing the accuracy of the VBEM.....

Sky Lounge -- (12F)

08:30-10:00
TH1A · Network Design and Operation
Thomas C. J. Chae, University of Melbourne, Australia,
Presider

08:30-09:00 TH1A-(13)-1 (Invited)
Optical code correlation-based processing : a potential technology for photonic networking
Ken-ichi Kitayama
Osaka University, Japan
This paper presents a novel paradigm of photonic networkings using optical code (OC) labels, which range from OC path switching, burst switching to packet switching. The ultrafast label processing is based upon OC correlation.

December 18, Thursday

Room 101 -- (1F)

TH1I • Fibre Lasers --- continued

Room 105 -- (1F)

TH1E • In vivo Optical Imaging and Tomography --- continued

09:00-09:30 TH1E-(12)-2 (Invited)
Multi-photon tissue microscopy & microanalysis
Peter So
 MIT, USA

Room 106 -- (1F)

TH1H • Optical Computer --- continued

09:00-09:15 TH1H-(9)-2
Optical encryption system based on circular polarization and interferometer
Kyu-Bo Cho, Chang-Mok Shin, Dong-Hoan Seo, Sang-Gug Park, Yang-Hoi Doh, and Soo-Joong Kim
Kyungpook Nat'l Univ.; Uiduk Univ.; Cheju Nat'l Univ., Korea
 Encryption system, using circular polarization based on interferometer architecture, is proposed. The phase-modulated input image is encrypted into circularly polarized states whose direction of the rotation is random. We use the inverse matrix of polarization- modulation key and can recover the original polarization.

09:15-09:30 TH1H-(9)-3
Multilevel image encryption by binary phase XOR operation
Chang-Mok Shin, Dong-Hoan Seo, Kyu-Bo Cho, Ha-Woon Lee, and Soo-Joong Kim
Kyungpook Nat'l University; Dongyang University, Korea
 We propose a multilevel image encryption by using binary phase exclusive-OR(XOR) operations and image dividing technique. We encrypt gray image by combining each binary encrypted images and implement the decryption process with joint transform correlator (JTC).

Room 107 -- (1F)

TH1G • Coherent Control of Reactions --- continued

09:00-09:15 TH1G-(4)-2
Laser coherent control of molecular chiral states via entanglement of the rotational and torsional degrees of freedom
Stanislav S. Bychkov, Boris A. Grishanin, Victor N. Zadkov, and Hiroaki Takahashi
M. V. Lomonosov Moscow State University, Russia; Waseda University, Japan
 A new scheme of laser coherent control of molecular chirality in a racemic mixture of chiral molecules employing quantum entanglement between rotational and chiral molecular degrees of freedom is proposed. Feasibility of an experimental realization of such a scheme is discussed in detail.

09:15-09:30 TH1G-(4)-3
Entangling two distant atoms by interference of polarized photons
Xun-Li Feng, Shang-Qing Gong, and Zhi-Zhan Xu
Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China
 Two deexciting possibilities of an excited Lambda-type three-level atom result in a superposition state of two atoms. The subsequent detection of different polarized photons reveals both atoms are in an entangled state.

Room 110 -- (1F)

TH1J • Novel Devices and Materials --- continued

09:00-09:15 TH1J-(2)-3
Surface plasmon resonance on micro-aperture VCSEL with metal grating
S. Shinada, J. Hashizume, and F. Koyama
Tokyo Institute of Technology, Japan
 We proposed and demonstrated a micro-aperture VCSEL with metal grating for enhancement of optical near-field using surface plasmon resonance. The near-field intensity is eight times larger than that of a single aperture device without grating.

09:15-09:30 TH1J-(2)-4
Continuous-wave and time-resolved photoluminescence analysis of defect density evolution in silicon implanted borosilicate glass
Chun-Jung Lin and Gong-Ru Lin
National Chiao Tung University, Taiwan
 The study in lengthened photoluminescent lifetime of the silicon-implanted Borosilicate glass from 1.7 ns to 2.8 ns after low-temperature annealing reveals that the decrease in NBOHC defect density with activation energy of 2.63 eV is up to one order of magnitude.

December 18, Thursday

Int'l Reception Hall -- (1F)

TH1F · Characterization of Nonlinear Optical Properties --- continued

**09:00-09:15 TH1F-(5)-3
Temperature effect on photoinduced third harmonic generation variation in azo polymer thin films**

Chia-Chen Hsu, Jian-Hung Lin, Tzer-Hsiang Huang, and Kenji Harada
National Chung Cheng University; Wu Feng Institute of Technology, Taiwan; Kitami Institute of Technology, Japan
The temperature effect on the variation of photoinduced third-harmonic generation (THG) of an azo-polyurethane homopolymer and an azo guest-host polymer is studied at several different temperatures. Both angular hole burning and molecule angular redistribution motions weaken at higher temperature.

**09:15-09:30 TH1F-(5)-4
Resonant nonlinearities and figures of merit of strongly-confined 5.5 nm PbS nanocrystals in the 1150 nm to 1550 nm wavelength range**

Lukasz Brzozowski, Edward H. Sargent, and Margaret A. Hines
University of Toronto, Canada
By directly measuring the saturation of absorption and resonant nonlinear refraction in strongly-confined 5.5 nm diameter PbS nanocrystals in the wavelength range 1150 nm to 1550 nm, we analyze their applicability to nonlinear optical switching.

Ever Green Room -- (10F)

TH1B · Advanced Metrology --- continued

**09:00-09:15 TH1B-(10)-2
A method for measuring the thickness of a glass plate**

Zhi-Cheng Jian, Cheng-Chih Hsu, and Der-Chin Su
National Chiao Tung University, Taiwan
A method for measuring the thickness of a glass plate is presented by using the heterodyne interferometry and the two-wavelength interferometry. The phase difference variations due to the wavelength shift and the extraction of the glass plate are measured.....

**09:15-09:30 TH1B-(10)-3
Accuracy improvement of two-photon absorption based measurement by temperature controlled Si-photodetector**

Soichiro Imoto, Naoya Sako, Yosuke Tanaka, and Takashi Kurokawa
Tokyo University of Agriculture and Technology, Japan
Temperature characteristics of two-photon absorption (TPA) in Si-APD was investigated. Based on this result, we improved the measurement accuracy more than 10 times by the temperature control of Si-APD comparing to the measurement without control.

Spanish Room -- (10F)

TH1D · THz Detector, Emitter and Applications --- continued

**09:00-09:15 TH1D-(6)-2
Nonlinear behaviors of low-temperature-grown GaAs based photodetectors at long telecommunication wavelength (~1.3μm)**

Jin-Wei Shi, Kian-Giap Gan, John E. Bowers, and Yi-Jen Chiu
Industrial Technology Research Institute, Taiwan; University of California, USA; National Taiwan University; National Sun Yat-Sen University, Taiwan
We observed distinct nonlinear behaviors of bandwidth degradation in low-temperature-grown-GaAs based traveling-wave-photodetectors under long wavelength (~1300nm) operation. The disclosed unique material properties of LTG-GaAs at different excitation wavelengths are important for its applications in ultrafast optoelectronic.....

**09:15-09:30 TH1D-(6)-3
THz-radiation from InSb (100) surface by use of a communication wavelength laser and an external magnetic field**

Hiroshi Takahashi, Yuji Suzuki, Masahiro Sakai, Shingo Ono, Nobuhiko Sarukura, Toshiharu Sugiura, Tomoya Hirosumi, and Makoto Yoshida
The Graduate University for Advanced Studies; Institute for Molecular Science; AISIN SEIKI CO., Japan
Magnetic-field dependence of THz-radiation power from InSb (100) surface is investigated. Significant enhancement of THz-radiation power is successfully achieved by using a 1560-nm excitation and an external magnetic field.

Auditorium -- (10F)

TH1C · Analysis of Photonic Crystal Fibers and Waveguides --- continued

**09:00-09:15 TH1C-(16)-3
Variational theory for photonic molecules**

Bin-Shei Lin
National Center for High-Performance Computing, Taiwan
A new type of artificial molecule is proposed, named as photonic molecule. In addition, a new type of photonic waveguide is proposed that manipulates the mechanism of photon hopping between photonic molecules and offers a new optical feature of twin waveguiding bandwidths.

**09:15-09:30 TH1C-(16)-4
Theoretical investigation of a vertically asymmetric photonic crystal slab**

Y. Tanaka, T. Asano, Y. Akahane, B. S. Song, and S. Noda
Kyoto University; Japan Science and Technology Corporation; Sumitomo Electric Industries, Ltd., Japan
The effects of vertical structural asymmetries in two-dimensional photonic crystal slab waveguides are investigated. It is shown that coupling between TE-like and TM-like modes occurs, which results in large propagation losses.

Sky Lounge -- (12F)

TH1A · Network Design and Operation --- continued

**09:00-09:15 TH1A-(13)-2
A novel dynamic fault restoration mechanism using multiple rings approach in WDM mesh network**

I-Shyan Hwang, I-Feng Huang, and Chia-Chin Chien
Yuan-Ze University; Kang-Ning Junior College of Nursing, Taiwan
This work proposes a distributed algorithm for fault restoration, called the Dynamic Multiple Rings Algorithm (DMRA) to explore restoration paths selection and fault-tolerant bandwidth distribution when link, node and channel faults occur in the DWDM mesh networks.

**09:15-09:30 TH1A-(13)-3
Stochastic generative model of cost-effective OADM using a three-dimensional neural network in a WDM access network**

San-Nan Lee and I-Shyan Hwang
Yuan-Ze University, Taiwan
This work uses a three-dimensional neural network algorithm to develop new stochastic generative model that aggregates data on cost-effective OADM. Three parameters are considered to evaluate the performance of the network: translation time, switching times and conversion times.....

December 18, Thursday

Room 101 -- (1F)

TH1I • Fibre Lasers --- continued

**09:30-09:45 TH1I-(1)-2
High-efficiency 2- μ m
Tm-Ho-codoped silica fiber laser
pumped at 1212 nm***T. Kuwayama, A. Taniguchi, A. Hoehl, J. -F. Bisson, A. Shirakawa, and K. Ueda
University of**Electro-Communications, Japan*

We report the efficient high power Tm-Ho-codoped silica fiber laser pumped by a 1212-nm RFL by using a 2030-nm FBG. More than 1 W output power is obtained. By using a 1823-nm FBG, efficient high-power laser operation at 1823 nm.....

**09:45-10:00 TH1I-(1)-3
Optimization of DFB fiber laser
performance based on a
superimposed cavities structure***Yicheng Lai, W. Zhang, J.A.R. Williams, and I. Bennion
Aston University, UK*

A simple technique based on superimposed cavities structure for direct real-time assessment of a DFB fiber laser mode condition during operation is demonstrated and used to provide a cavity mode conditioning feedback mechanism to optimize output performance.....

Room 105 -- (1F)

TH1E • In vivo Optical Imaging and Tomography --- continued

**09:30-10:00 TH1E-(12)-3
(Invited)
Calibrated fluorescence imaging
of tissue pathology in vivo***Jianan Qu
Hong Kong University of Science and Technology, Hong Kong***Room 106 -- (1F)**

TH1H • Optical Computer --- continued

**09:30-09:45 TH1H-(9)-4
Multiple viewing zone
three-dimensional integral
imaging using a dynamic barrier
array***Heejin Choi, Sung-Wook Min, Sungyong Jung, Jae-Hyeung Park, and Byoungho Lee
Seoul National University, Korea*

A multiple-viewing-zone integral imaging system using a dynamic barrier array is proposed. The number of viewing zones can be increased by distributing the elemental images with the dynamically tilted barrier array. The idea is proved by experiment and compared with the conventional method.

**09:45-10:00 TH1H-(9)-5
Light-induced infrared
absorption in Ru-doped
Bi₁₂TiO₂₀ single crystals***Vera Marinova, Shiuan Huei Lin, Suzanne Piquette, Marin Gospodinov, and Ken Yuh Hsu
National Chiao Tung University, Taiwan; Institute of Solid State Physics, Bulgaria*

Bi₁₂TiO₂₀ crystals doped with high Ru concentration are grown by the Top Seeded Solution Method. Light induced near infrared absorption, dark decay of light-induced absorption and intensity dependence are investigated to study photorefractive centers.

Room 107 -- (1F)

TH1G • Coherent Control of Reactions --- continued

**09:30-09:45 TH1G-(4)-4
Transient photon switching by
quantum interference in a
four-state system***Yong-Fan Chen, Guan-Chi Pan, and Ite A. Yu
National Tsing Hua University, Taiwan*

We present the predictions of transient photon switching by quantum interference in a four-state system. This experiment will be carried out in laser-cooled atoms. Our study can demonstrate feasibility of the three-fold entangled state.

**09:45-10:00 TH1G-(4)-5
Coherent superposition of Fock
states via adiabatic passage
using a four-level atom***Shangqing Gong, Shiqi Jin, Shuguang Zhang, Ruxin Li, and Zhizhan Xu
Laboratory for High Intensity Optics, Shanghai Institute of Optics and Fine Mechanics; Shandong Provincial Institute of Metrology, China*

The behavior of a four-level atom-cavity system is investigated. It is shown, because of a control field, that a superposition of Fock states can be prepared, even the cavity initially is not in vacuum state.

Room 110 -- (1F)

TH1J • Novel Devices and Materials --- continued

**09:30-09:45 TH1J-(2)-5
High-efficiency and wideband
SOA-based wavelength
converters by using
four-wave-mixing with
orthogonal pumps and an
assisted beam***Dar-Zu Hsu, Pei-Miin Gong, Yu-Min Lin, Steven S. W. Lee, San-Liang Lee, and Maria C. Yuang
Industrial Technology Research Institute; National Taiwan Univ.; National Chiao Tung University, Taiwan*

Using a 1480-nm assisted beam significantly improves conversion efficiency and SBR for wideband SOA wavelength converters with orthogonal pumps. With a moderate-gain SOA, greater than -10 dB efficiency over 70-nm wavelength range is achieved.

**09:45-10:00 TH1J-(2)-6
Atomic structure evolution of
the mechanism for nickel
induced lateral crystallization of
amorphous silicon***Chi-Pin Lu and Li-Jen Chou
National Tsing-Hua University, Taiwan*

Growing of a [211] orientation crystallite is found at the initial stage of nickel-induced lateral crystallization by using HRTEM and with further growth, the [110]-oriented crystallites take place along with residual [211]-oriented crystallites.

December 18, Thursday

Int'l Reception Hall -- (1F)

TH1F · Characterization of Nonlinear Optical Properties --- continued

09:30-09:45 TH1F-(5)-5 Mapping 3D electric fields using electric field induced second harmonic generation in LiNbO₃ crystals

Ming-Che Chan, Tzu-Ming Liu, Chien-Hung Tseng, Ming-Chun Tien, Hsu-Hao Chang, and Chi-Kuang Sun
National Taiwan University, Taiwan

Strong electric-field-induced-second-harmonic-generation effect was observed in bulk Lithium Niobate. We utilize this effect to map three-dimensional electric field distribution with high spatial and temporal resolutions.

09:45-10:00 TH1F-(5)-6 3D four- three- two-photon and multi-harmonic microscopy of lateral-over- grown GaN

Chien-Hung Tseng, Shi-Wei Chu, Chi-Kuang Sun, Paul Fini, and Steven P. DenBaars
National Taiwan University, Taiwan; University of California, Santa Barbara, USA

Complete information regarding the distribution of growth quality, defect state, and piezoelectric field in lateral-over-grown GaN can be obtained simultaneously through multi-photon (4 and 3) and multi-harmonic (3 and 2) microscopy.

Ever Green Room -- (10F)

TH1B · Advanced Metrology --- continued

09:30-09:45 TH1B-(10)-4 Non-contact electrical test of the BGA substrate by electro-optic probing technique

W. K. Kuo, D. Z. Tong, C. J. Wu, and Thomson Lai
National Huwei Institute of Technology; Horng Chih Precision Co., LTD., Taiwan

A new technique to test BGA substrate using the electro-optic probing technique is investigated. This technique can detect open circuits in the BGA substrate with high spatial resolution. Measurement results of a real BGA substrate are reported.

09:45-10:00 TH1B-(10)-5 The analysis of an optical differential phase decoder

Chien Chou and Hui-Kang Teng
National Yang-Ming University; Nan-Kai College, Taiwan

An optical heterodyne differential phase decoder is proposed. The performance of the decoder is demonstrated theoretically and experimentally.

Spanish Room -- (10F)

TH1D · THz Detector, Emitter and Applications --- continued

09:30-09:45 TH1D-(6)-4 Excitation fluence dependence of THz-radiation from femtosecond-laser - irradiated InAs under magnetic field

Hiroshi Takahashi, Alex Quema, Ryoichiro Yoshioka, Shingo Ono, and Nobuhiko Sarukura

The Graduate University for Advanced Studies; Institute for Molecular Science, Japan

The excitation fluence and magnetic field dependence of THz-radiation power from InAs is investigated. It is found that there are two THz-radiation mechanisms for the femtosecond-laser-irradiated InAs depending on the excitation fluence.

09:45-10:00 TH1D-(6)-5 Study of ZnCdTe crystals as terahertz wave emitters and detectors

Kai Liu, Hyun-Shik Kang, Tae-Kyu Kim, Scott Woltman, and X.-C. Zhang
Rensselaer Polytechnic Institute, USA; Chonbuk National University; Chonju National University of Education, Korea

We report our systematic study of ternary ZnCdTe crystals as terahertz wave emitters and sensors, we obtained the optimal composition and resistivity of these crystals for THz device applications.

Auditorium -- (10F)

TH1C · Analysis of Photonic Crystal Fibers and Waveguides --- continued

09:30-09:45 TH1C-(16)-5 Coupling behaviors of vertically coupled photonic crystal nano-cavities

Chih-Haw Wang, Jyh-Yang Wang, Yen-Chen Lu, Yean-Woei Kiang, and C. C. Yang

National Taiwan University, Taiwan

The coupling behaviors of closely placed, parallel slab photonic crystal nano-cavities are numerically studied. The separations between split resonance frequencies as functions of slab separation, slab thickness, and photonic crystal parameters are demonstrated.

09:45-10:00 TH1C-(16)-6 Spectral response of splice loss in photonic crystal fibers

Shailendra K Varshney, R. K. Sinha, and T. Iwai
Hokkaido University, Japan; Delhi University, India

The effective index method has been used to obtain a spectral response of splice loss in Photonic Crystal Fibers. The dependence of loss on geometrical parameters of PCFs is shown. The splicing of two butt coupled PCFs is also reported.

Sky Lounge -- (12F)

TH1A · Network Design and Operation --- continued

09:30-09:45 TH1A-(13)-4 Transient behavior of C-band EDFA under various wavelength allocations of add/drop channels

Wonkyoung Lee, Heuk Park, Hee Sang Chung, and Moo-Jung Chu
Electronics and Telecommunications Research Institute, Korea

We report the wavelength-dependent gain variation of a C-band EDFA under dynamic channel add/drop. The optical power transient varies with the assignment of the wavelength of the add/drop channels while the total number of the channel is kept constant.

09:45-10:00 TH1A-(13)-5 Higher-order dispersion management methods for suppressing FWM in WDM transmission systems

Yan Liu, Kang Li, and Fanmin Kong
Shandong University, China

In order to reduce the FWM crosstalk and avoid the signal waveform distortion in long-haul WDM systems, helpful methods on how to choose suitable local parameters in higher-order dispersion managed line are presented.

December 18, Thursday

Room 101 -- (1F)**Room 105 -- (1F)****Room 106 -- (1F)****Room 107 -- (1F)****Room 110 -- (1F)**

TH11 · Fibre Lasers ---
continued

10:00-10:15 TH11-(1)-4
Advanced configuration of
diode-pumped erbium fiber laser
with Co²⁺:ZnSe crystal as
saturable absorber

V.N.Filippov and A.V.Kir'yanov
Centro de Investigaciones en
Optica, Mexico ; Institute for
Physical High Technology,
Germany

An advanced design of a diode-pumped passively Q-switched erbium fibre laser with a Co²⁺:ZnSe crystal as a saturable absorber is reported. The laser giant-pulse operation is obtained with threshold of 8.3 mW.....

10:00-10:30
Coffee/Tea Break

December 18, Thursday

Int'l Reception Hall -- (1F)

Ever Green Room -- (10F)

Spanish Room -- (10F)

Auditorium -- (10F)

Sky Lounge -- (12F)

**10:00-10:30
Coffee/Tea Break**

December 18, Thursday

Room 101 -- (1F)

10:30-12:15
TH2I · UV-VIS Solid-state Lasers
Ken-ichi Ueda, University of
Electro-Communications,
Japan, Presider

**10:30-11:00 TH2I-(1)-1
(Invited)**
**Recent advancement on UV light
generation by nonlinear optical
borate crystals in Osaka
University**
*T. Sasaki, Y. Mori, M. Yoshimura,
and Z. G. Hu*
Osaka University, Japan
We review optical properties of borate
crystals $\text{CsLiB}_6\text{O}_{10}$, $\text{Gd}_x\text{Y}_{1-x}\text{Ca}_4\text{O}(\text{BO}_3)_3$,
 CsB_3O_5 , $\text{K}_2\text{Al}_2\text{B}_2\text{O}_7$, and $\text{BaAlBO}_3\text{F}_2$,
which possess superior properties for
UV light generation. The latest crystal
growth and recent progress in UV light
generation are also presented.

Room 105 -- (1F)

10:30-12:15
TH2E · Photon Migration and
Diffuse Optical Imaging
E. Okada, Keio University,
Japan, Presider

**10:30-11:00 TH2E-(12)-1
(Invited)**
**Photon migration in biological
tissue and application to diffuse
optical tomography**
*Yukio Yamada, Feng Gao, Huijuan
Zhao, Yukari Tanikawa, and
Kazuhiro Homma*
*University of
Electro-Communications; AIST;
NEDO, Japan*
Near-infrared photon migration in
biological tissue is dominated by strong
scattering and modeled as a diffusion
phenomenon. The modeling of photon
migration in tissue is introduced and its
application to diffuse optical imaging is
explained.

Room 106 -- (1F)

10:30-12:30
TH2H · Nonlinear Optical
Materials-I
C. T. Chen, Chinese Academy
of Sciences, China, Presider

**10:30-11:00 TH2H-(7)-1
(Invited)**
**Single crystals with low phonon
energy for mid-IR lasers**
L. Isaenko and A. Yeliseyev
*Russian Academy of Sciences,
Russia*
The present state of growth and
characterization of new crystals related
to ternary halogenides MPb_2Cl_5 (Br_5):
RE with M=K, Rb, Tl, (active media)
and ternary Li-containing
chalcogenides LiMeX_2 , with Me = In,
Ga, Al; X=S, Se, Te (nonlinear
crystals)

Room 107 -- (1F)

10:30-12:30
TH2G · Coherent and Ultrafast
Processes on Surfaces
Hai-Lung Dai, University of
Pennsylvania, USA, Presider

**10:30-11:00 TH2G-(4)-1
(Invited)**
**Making movies of molecules
with femtosecond electron
wavepackets**
*Bradley J. Siwick, Jason R. Dwyer,
Robert E. Jordan, and R. J.
Dwayne Miller*
University of Toronto, Canada
The propagation dynamics of
femtosecond electron wavepackets and
their use in time-resolved diffraction
studies of transition state processes is
discussed.

Room 110 -- (1F)

10:30-12:30
TH2J · 1.3 μm Laser
N. Nishiyama, Corning Inc.,
USA, Presider

**10:30-11:00 TH2J-(2)-1
(invited)**
**1.3 μm -range GaInNAsSb
VCSELs with high temperature
operation**
*Y. Ikenaga, H. Shimizu, C.
Setiagung, M. Ariga, T. Sato, T.
Hama, K. Kumada, Y. Haga, N.
Iwai, and A. Kasukawa*
*The Furukawa Electric Co., Ltd.,
Japan*
1.3 μm GaInNAsSb based VCSELs
with improved active region structure
are reported. By changing the active
region, maximum lasing temperature of
over 105°C and single mode output
power at 85°C of 0.35 mW were
obtained.

December 18, Thursday

Int'l Reception Hall -- (1F)

10:30-12:30
TH2F · Nonlinear Frequency Conversion and Propagation
TBD, Presider

10:30-11:00 TH2F-(5)-1 (Invited)

Design and operation of all-solid-state Raman lasers

J. A. Piper, Macquarie University, Australia

H. M. Pask and J. A. Piper

Macquarie University, Australia

We discuss resonator design issues for intracavity Raman lasers containing two independent, dynamic thermal lenses. Understanding thermal effects has

enabled us to demonstrate record powers of 1.4W at 578nm and 1.7W at 579nm using LiIO_3 and $\text{KGd}(\text{WO}_4)_2$ Raman crystals respectively.

Ever Green Room -- (10F)

10:30-12:30
TH2B · Quantum Dot Physics and Application (I)
G. Solomon, Stanford University, USA, Presider

10:30-11:00 TH2B-(SS2)-1 (Invited)

Progress in MOCVD grown quantum dot lasers

D. Huffaker

University of New Mexico, USA

Spanish Room -- (10F)

10:30-12:30
TH2D · Heterodyne Metrology
Hirokazu Matsumoto, National Metrology Institute of Japan, Japan, Presider

10:30-10:45 TH2D-(10)-1 Non-axial-scanning confocal microscope by membrane mirror shape switching

Yoshiaki Yasuno, Tobias F. Wiesendanger, Aiko K. Ruprecht, Shuichi Makita, Toyohiko Yatagai, and Hans J. Tiziani
University of Tsukuba, Japan; Universit" at Stuttgart, Germany

A non-axial-scanning confocal microscope by membrane mirror shape switching has been developed. The system controls the defocus of an objective by membrane mirror, and determines the height of an object from the confocal output value of each defocus.

10:45-11:00 TH2D-(10)-2 Twisted nematic liquid crystal as an elliptical retarder

P. L. Lin, C. Y. Han, and Y. F. Chao
Institute of Electro-Optical Engineering, NCTU, Taiwan

A three-intensity technique is applied in polarimetry for measuring the twisted angle and phase retardation of a twisted nematic liquid crystal. The TN-LC is considered as an elliptical retarder, its ellipse angle is studied and measured.

Auditorium -- (10F)

10:30-12:30
TH2C · Fabrication of Photonic Crystal Devices and Related Microstructures
T. F. Krauss, University of St. Adreus, UK, Presider

10:30-11:00 TH2C-(16)-1 (Invited)

Functional optical components consisting of heterostructured photonic crystals

Y. Ohtera, H. Ohkubo, K. Miura, T. Sato, T. Kawashima, W. Ishikawa, T. Aoyama, and S. Kawakami
Tohoku University; Photonic Lattice, Inc., Japan

We present ultra-low loss waveguides and several guided-wave components for optical communication consisting of heterostructured photonic crystals. The current status of surface-normal type components is also reviewed.

Sky Lounge -- (12F)

10:30-12:30
TH2A · Optical Components (I)
J. J. He, Lightip Technologies Inc., Canada, Presider

10:30-11:00 TH2A-(8)-1 (Invited)

Recent advances in AWG technologies

Y. Hibino

NTT Photonics Laboratories, Japan

December 18, Thursday

Room 101 -- (1F)

TH2I • UV-VIS Solid-state Lasers
--- continued

**11:00-11:15 TH2I-(1)-2
Intra-cavity frequency doubled
and passively mode-locked
diode-pumped Nd:GdVO₄/KTP
laser with a Saturable Bragg
Reflector**

Chao-Kuei Lee, J. L. He, J. Y.
Huang, S. C. Wang, K. F. Huang,
and Ci-Ling Pan
*National Chiao Tung University,
Taiwan*

We report a continuous-wave passively
mode-locked intracavity SHG
Nd:GdVO₄/KTP laser with pulse width
of 8.28 ps at a repetition rate of 60 MHz
and 532nm output through nonlinear
crystal KTP with average power of
250mW.

**11:15-11:30 TH2I-(1)-3
Tuning of a spectrally narrowed
Ti³⁺:sapphire laser by
electro-optic modulation**

Nilesh J. Vasa, Makoto Fujiwara,
Shigeru Yokoyama, Michihiro
Uchiumi, and Mitsuo Maeda
*Kyushu University; Engineering,
Ariake National College of
Technology, Japan*

A wavelength modulation method for
tuning a self-injection-seeded Ti³⁺:
sapphire laser is reported that uses an
electro-optic beam deflection technique.
This approach can allow a fast and
stable electronic wavelength switching
without involving any mechanical
movement.

Room 105 -- (1F)

TH2E • Photon Migration and
Diffuse Optical Imaging ---
continued

**11:00-11:15 TH2E-(12)-2
Determination of target depth in
a turbid medium with polarized
transmitted signals**

Chia-Wei Sun, Kuei-Chao Liu,
Yih-Ming Wang, Hsiang-Hsu
Wang, C. C. Yang, Hua-Kuang Liu,
and Yean-Woei Kiang
*National Taiwan University,
Taiwan*

A novel method for target depth
determination in a turbid medium is
proposed. The method is based on the
strong dependence of the co- polarized
intensity of the transmitted signal on
the target depth.

**11:15-11:30 TH2E-(12)-3
Modelling of light propagation in
adult head for topographic
imaging**

Eiji Okada, Yuichi Fukui, Tsuyoshi
Yamamoto, Toshinori Kato, Minoru
Obara, and Toshiaki Makabe
*Keio University; Hitachi Ltd.,
Hamano Life Science Research
Foundation, Japan*

The light propagation in a realistic head
model is calculated to evaluate the
efficiency of source-detector
arrangement of topographic imaging of
brain activity. The double density
arrangement improves the quality of
the topographic image.

Room 106 -- (1F)

TH2H • Nonlinear Optical
Materials-I --- continued

**11:00-11:15 TH2H-(7)-2
Development of the new
nonlinear optical crystal
BaAlBO₃F₂ (BABF)**

Zhang-Gui Hu, Masashi
Yoshimura, Yusuke Mori, and
Takatomo Sasaki
Osaka University, Japan

A new nonlinear optical (NLO)
alumino-borate BaAlBO₃F₂ (BABF) has
been discovered. The BABF crystal
growth and crystal structure have been
discussed. The preliminary optical
characterizations have been measured.
It exhibits that BABF is an excellent
candidate for frequency mixing into the
ultraviolet (UV).

**11:15-11:30 TH2H-(7)-3
Rapid prototyping of
periodically poled lithium
niobate**

Benjamin F. Johnston and Michael
J. Withford

Macquarie University, Australia
Laser micro-machining techniques are
used to scribe topographic electrode
structures onto the surface of lithium
niobate wafers. These structures define
the regions of domain inversion when
fabricating periodically poled lithium
niobate using conventional electric field
poling methods.

Room 107 -- (1F)

TH2G • Coherent and Ultrafast
Processes on Surfaces ---
continued

**11:00-11:15 TH2G-(4)-2
Single molecule fluorescence
spectroscopy of luminescent
conjugated polymers with
different chain length**

W. Y. Sun, J. D. White, J. H. Hsu,
and W. S. Fann
*Academia Sinica; National Taiwan
University, Taiwan; Multimedia
University, Malaysia*

Fluorescence intensity traces of
different length luminescent conjugated
polymers are studied by single
molecule spectroscopy. The
fundamental difference between one
and three-dimensional system is used
to explain the discrepancy in the
photophysics of different chain length.

**11:15-11:30 TH2G-(4)-3
Trace element analysis of
nanometer-scaled solid state
surface by laser ablation atomic
fluorescence spectroscopy**

Daisuke Nakamura, Takayuki
Takao, Yuji Oki, and Mitsuo Maeda
Kyushu University, Japan

Nanometer-scaled layer removal of
poly-methylmethacrylate surface was
attained by pulsed excimer laser
ablation. The combination of the
removal and laser fluorescence
spectroscopy demonstrated a
nanometer-scaled element analysis on
a solid surface.

Room 110 -- (1F)

TH2J • 1.3µm Laser ---
continued

**11:00-11:30 TH2J-(2)-2
(invited)**

**1.3-µm InGaAlAs
WTR-MQW-DFB lasers for
10-Gbit/s SR applications**
K. Nakahara and T. Yuasa
*Hitachi, Ltd.; OpNext, Japan, Inc.,
Japan*

Directly modulated WTR-DFB lasers
operating at 10 Gb/s are reviewed, and
superior laser properties including
reliability of 1.3-µm InGaAlAs
WTR-MQW-DFB lasers are
demonstrated.

Int'l Reception Hall -- (1F)

TH2F · Nonlinear Frequency Conversion and Propagation
--- continued

11:00-11:15 TH2F-(5)-2
Generation of femtosecond tunable radiation from 380 nm to 450 nm via cascaded wave-mixing in a seeded 405-nm pumped type-I BBO noncollinear optical parametric amplifier
Chao-Kuei Lee, J. Y. Zhang, J. Y. Huang, and C. L. Pan
National Chiao Tung University, Taiwan; Georgia Southern University, USA

We report the generation of femtosecond tunable radiation from 380-nm to 450-nm in a 405-nm pumped BBO noncollinear optical parametric amplifier (NOPA) via cascaded sum-frequency-generation between the OPA and the fundamental near its degenerate point.

11:15-11:30 TH2F-(5)-3
Temperature tuning from 5 – 12 μm by difference frequency mixing of OPO outputs in a AgGaS_2 crystal

S. Haidar, E. Niwa, K. Masumoto, and H. Ito
Tohoku University, Research Institute for Electric and Magnetic Materials, Japan

We report a temperature tuned mid-IR generating system ranging from 5 - 12 μm by difference frequency mixing of output waves from two OPO in a AgGaS_2 crystal. The AgGaS_2 crystal is temperature tuned to allow phase matching.

Ever Green Room -- (10F)

TH2B · Quantum Dot Physics and Application (I) --- continued

11:00-11:30 TH2B-(SS2)-2 (Invited)
Spontaneous emission properties of position-controlled quantum dots in microdisk cavities
G. S. Solomon
Stanford University, USA

Spanish Room -- (10F)

TH2D · Heterodyne Metrology --- continued

11:00-11:30 TH2D-(10)-3 (Invited)
Optical heterodyne interferometer on optical activity measurement
Chien Chou
National Yang-Ming University, Taiwan
A novel optical heterodyne interferometer is setup to measure the optical activity of a quartz crystal successfully. In addition, an optical rotation of a scattered chiral medium is also measured and demonstrated experimentally.

Auditorium -- (10F)

TH2C · Fabrication of Photonic Crystal Devices and Related Microstructures --- continued

11:00-11:30 TH2C-(16)-2 (Invited)
Photonic lattices fabrication using Si lithographic processes
J. G. Fleming and Shawn-Yu Lin
Sandia National Laboratories, USA
This paper describes the used of silicon based photolithographic techniques to fabricate a variety of one, two and three-dimensional photonic lattice structures.

Sky Lounge -- (12F)

TH2A · Optical Components (I) --- continued

11:00-11:15 TH2A-(8)-2
Integrated dynamic gain equalizer using a double-pass arrayed-waveguide grating
Ding-wei Huang, Ying-Tso Lin, and Tsung-hsuan Chiu
Industrial Technology Research Institute, Taiwan
A novel integrated dynamic gain equalizer based on a double-pass AWG, VOAs and monitor-photodiodes is proposed for flattening the gain spectra of EDFAs without the need of extra spectrometers.

11:15-11:30 TH2A-(8)-3
A compact wavelength selective 2x2 fiber-optic switch
Sarun Sumriddetchkajorn and Khunat Chaitavon
National Electronics and Computer Technology Center; National Science and Technology Development Agency; Ministry of Science and Technology, Thailand
A programmable wavelength selective 2x2 fiber-optic switch structure is proposed by incorporating the independent control and alignment of the off-the-shelf thin film filter with the reflective optical element.....

December 18, Thursday

Room 101 -- (1F)

TH2I • UV-VIS Solid-state Lasers
--- continued

**11:30-11:45 TH2I-(1)-4
Diode-pumped Q-switched
yellow laser with single-pass
sum-frequency mixing:
comparison between PPLN and
PPKTP**

*Y. S. Chen, S. W. Tsai, S. C. Wang, and Y. F. Chen
National Chiao-Tung University,
Taiwan*

PPKTP and PPLN were used to generate yellow laser under optimal phase-matching condition. The performance was found to be nearly the same. However, the temperature-bandwidth of PPKTP was about twice wider than that of PPLN.

**11:45-12:00 TH2I-(1)-5
Random wavelength solid state
laser**

J. Kong and D. Y. Tang, J. Lu, and K. Ueda

Nanyang Technological University, Singapore; University of Electro-Communication, Japan

We report on the experimental observation of random wavelength emission and intensity dependant central wavelength shift in a diode pumped Yb:Y₂O₃ ceramic laser, which could be explained based on reabsorption in the gain medium.

Room 105 -- (1F)

TH2E • Photon Migration and Diffuse Optical Imaging --- continued

**11:30-11:45 TH2E-(12)-4
Cross-sectional imaging of
absorption distribution using
backscattered light**

Koji Akiyama, Yuji Kato, and Koichi Shimizu

Hokkaido University, Japan

For cross-sectional imaging of absorption distribution in a scattering medium using backscattered light, the temporal path-length distribution (TPD) of light in the medium is required. A technique was developed to obtain this TPD in measurement.

**11:45-12:00 TH2E-(12)-5
Multiple-scattering-free optical
glucose monitoring based on
femtosecond pulse
interferometry**

Yasuaki Hori, Takeshi Yasui, and Tsutomu Araki

Osaka University, Japan

We propose femtosecond pulse interferometry for optical glucose monitoring method free from unwanted multiple-scattering. We demonstrated the relationship between glucose concentration and temporal shift which is caused by the change of group refractive index of glucose solution with or without scattering medium.

Room 106 -- (1F)

TH2H • Nonlinear Optical Materials-I --- continued

**11:30-11:45 TH2H-(7)-4
Vacuum-ultraviolet, real time
imaging utilizing LiCaAlF₆ optics**

Masahiro Sakai, Toshimasa Kozeki, Masato Hosomizu, Yuji Suzuki, Shingo Ono and Nobuhiko Sarukura, Hiroki Sato, and Tsuguo Fukuda

Institute for Molecular Science(IMS); Tohoku University, Japan

LiCaAlF₆ is shown to be used as optical material down to 112nm. Moreover, the compact video-rate, imaging system in vacuum-ultraviolet region utilizing LiCaAlF₆ lens is demonstrated.

**11:45-12:00 TH2H-(7)-5
355-nm ultraviolet light
generation in high-quality
CsB₃O₅**

T. Matsui, T. Saji, K. Sato, H.

Kitano, F. Kawamura, M.

*Yoshimura, Y. Mori, and T. Sasaki
Osaka University, Japan*

We obtained high-quality CsB₃O₅ crystals grown by the TSSG method using high-quality sintered powder. A 2.9-W 355-nm power at a 31-kHz repetition rate was generated in the crystal, which corresponds to a conversion efficiency of 28%.

Room 107 -- (1F)

TH2G • Coherent and Ultrafast Processes on Surfaces --- continued

**11:30-12:00 TH2G-(4)-4
(Invited)
The fundamental response of Si
to 50 THz bandwidth optical
excitation**

*Hrvoje Petek
University of Pittsburgh, USA*

Room 110 -- (1F)

TH2J • 1.3μm Laser --- continued

**11:30-11:45 TH2J-(2)-3
Lasing characteristics of
GaNAs/GaAsP
strain-compensated lasers for
various phosphorous content**

*M. Kawaguchi, T. Miyamoto, S. Kawakami, S. Minobe, A. Saitoh, and F. Koyama
Tokyo Institute of Technology,
Japan*

We found that lasing wavelength, threshold and efficiency of GaInNAs/GaAsP strain-compensated lasers depends on the P content in GaAsP barrier layer. For a P content of 11%, we obtained improved threshold and efficiency compared with GaAs barrier.

**11:45-12:00 TH2J-(2)-4
Long-wavelength
ridge-waveguide InGaAsN/GaAs
single quantum well lasers
grown by molecular beam
epitaxy**

J. S. Wang, A. R. Kovsh, R. S. Hsiao, G. Lin, D. A. Livshits, I. F. Chen, Y. T. Wu, L. P. Chen, J. F. Chen, and J. Y. Chi

Industrial Technology Research Institute; National Chiao Tung University, Taiwan, A. F. Ioffe Physico Technical Institute, Russia
We demonstrate ridge-waveguide InGaAsN/GaAs single quantum well lasers at wavelength 1.3 and 1.4 μm grown by molecular beam epitaxy using radio frequency plasma nitrogen source. Threshold current density of 0.57 and 3.87 KA/cm² at Ef = 1.3.....

December 18, Thursday

Int'l Reception Hall -- (1F)

TH2F · Nonlinear Frequency Conversion and Propagation --- continued

11:30-11:45 TH2F-(5)-4 Self-phase modulation induced spectral broadening of ultrashort laser pulses in tantalum pentoxide (Ta₂O₅) rib waveguide
Chao-Yi Tai, James S. Wilkinson, Nicolas M. B. Perney, M. Caterina Netti, and Jeremy J. Baumberg
University of Southampton; Mesophotonics Limited, UK
Self-phase modulation induced spectral broadening has been observed for ultrashort pulses propagating through Ta₂O₅ rib waveguide. The associated nonlinear refractive index was estimated to be $7.23 \times 10^{-19} \text{ m}^2/\text{W}$, which is higher by one order of magnitude than silica glass.

11:45-12:00 TH2F-(5)-5 Optimising broadband tunable wavelength conversion in fibre optical parametric amplifiers
Ross W. McKerracher, Justin L. Blows, and C. Martijn de Sterke
The University of Sydney, Australia
We present device parameters for low ripple and maximum gain bandwidth in tunable optical parametric wavelength converters. Expressions for conversion bandwidth are given for typical fibre dispersion parameters.

Ever Green Room -- (10F)

TH2B · Quantum Dot Physics and Application (I)--- continued

11:30-12:00 TH2B-(SS2)-3 (Invited) Optical characterization of strong carrier-phonon interactions in single quantum dots
Y. Toda, T. Inoue, T. Nakaoka, S. Ishida, and Y. Arakawa
Hokkaido University; PRESTO JST; University of Tokyo, Japan
Phonon-assisted transitions in single self-assembled InGaAs quantum dots are investigated by photoluminescence (PL) and PL excitation (PLE) spectroscopy. Under nearly resonant conditions of the excitonic ground state, a broad sideband is observed in both PL and PLE.....

Spanish Room -- (10F)

TH2D · Heterodyne Metrology --- continued

11:30-11:45 TH2D-(10)-4 An electro-optic mapping system of near electric-field using heterodyne method
W. K. Kuo, C. H. Pai, S. L. Huang, H. Y. Chou, and H. S. Huang
National Huwei Institute of Technology; National Sun Yat-Sen University; National Science Council, Taiwan
A novel heterodyne method is proposed to perform the electro-optic mapping measurement of the near electric-field. An experiment system using a vertical-cavity surface-emitted laser diode (VCSEL) of wavelength 850 nm and the measurement results of a micro-strip transmission line are reported.

11:45-12:00 TH2D-(10)-5 Tunable-contrast fiber-optic polarization interferometers
Sarun Sumriddetchkajorn
National Electronics and Computer Technology Center (NECTEC); (NSTDA), Thailand
This paper introduces tunable-contrast fiber-optic polarization interferometer (PI) structures arranged in a Michelson configuration. Our key idea for achieving the polarization insensitivity during the calibration process is to fix the analyzer at the PI output port.....

Auditorium -- (10F)

TH2C · Fabrication of Photonic Crystal Devices and Related Microstructures --- continued

11:30-11:45 TH2C-(16)-3 Photonic crystal modulators controlled by micro electromechanical systems -- proposal and experiments
S. Iwamoto, H. Yamada, A. Gomyo, M. Shirane, and Y. Arakawa
University of Tokyo; NEC Corporation, Japan
Photonic-crystal (PhC) modulators using micro electro-mechanical system (MEMS) are proposed. MEMS controls the distance of a semiconductor plate from the PhC and modulates propagating light through the evanescent interaction. Feasibility is demonstrated numerically and experimentally.

11:45-12:00 TH2C-(16)-4 Femtosecond fabrication of three-dimensional photonic crystals in polymers
Min Gu, M. Ventura, and M. Straub
Swinburne University of Technology, Australia
We report on the successful femtosecond fabrication of polymer-based micro-void channel photonic crystals with a high degree of perfection. In woodpile-type structures large main bandgaps in the mid infrared wavelength region and numerous higher-order gaps are observed.

Sky Lounge -- (12F)

TH2A · Optical Components (I) --- continued

11:30-11:45 TH2A-(8)-4 All-optical regenerative mode-locking at adjustable repetition rates from a SOA fiber ring laser
W. W. Tang and C. Shu
The Chinese University of Hong Kong, Hong Kong
We describe a simple method for generating wavelength-tunable pulses at adjustable repetition rates by regenerative mode-locking with an all-optical approach. The optical modulation signal of a SOA is generated by optical injection to a Fabry-Perot laser diode.....

11:45-12:00 TH2A-(8)-5 KW fiber lasers for industrial applications
K. Ueda, H. Sekiguchi, and H. Kan
Institute for Laser Science, UEC; HOYA R&D Lab.; Hamamatsu Photonics, Japan
The disk-shaped solid state laser was fabricated in a manner of fiber-embedded disk formation. More than 1 kW output was produced from a single multi-mode Nd³⁺-doped fiber with M₂=15 quality.

December 18, Thursday

Room 101 -- (1F)

TH2I·UV-VIS Solid-state Lasers
--- continued

12:00-12:15 TH2I-(1)-6

New crystalline Raman lasers

T. T. Basiev

Laser Materials and Technology

Research Center of GPI RAS,

Russia

Review on search, development, and investigation of new SRS crystals and solid state Raman lasers is presented. Nanosecond (steady state) and pico-femtosecond (transient) regimes of highly efficient operation are discussed.

Room 105 -- (1F)

TH2E · Photon Migration and Diffuse Optical Imaging --- continued

12:00-12:15 TH2E-(12)-6

Absorption effects on object depth determination in turbid media

Yih-Ming Wang, Chia-Wei Sun,

Cheng-Kuan Lee, Yean-Woei

Kiang and C. C. Yang

National Taiwan University, Taiwan

We demonstrate the effects of absorption on the operation of a novel approach for determining the object depth in turbid media. This approach is based on two-way measurements of polarized signals passing through random media.

Room 106 -- (1F)

TH2H · Nonlinear Optical Materials-I --- continued

12:00-12:30 TH2H-(7)-6

(Invited)

Polariton in a piezoelectric superlattice

Y. Y. Zhu

Nanjing University, China

Room 107 -- (1F)

TH2G · Coherent and Ultrafast Processes on Surfaces --- continued

12:00-12:15 TH2G-(4)-5

Simultaneous measurement of thickness and drying process of paint film by terahertz electromagnetic pulse

Takeshi Yasui, Takashi Yasuda, Tetsuro Iwata, and Tsutomu Araki
Osaka Univ.; Univ. of Tokushima, Japan

We propose a new method for non-contact, simultaneous measurement of thickness and drying process of the paint film based on time-resolved spectroscopy of a terahertz electromagnetic pulse.

12:15-12:30 TH2G-(4)-6

Observation of coherent interfacial optical phonons in III-V semiconductor nanostructures

Y.-M. Chang, N.-A. Chang, H. H.

Lin, C. -T. Chia, and Y. F. Chen

National Taiwan University; National Taiwan Normal University, Taiwan

We report the coherent phonon spectroscopy of InGaP-GaAs-InGaP SQWs, in which a localized interfacial optical phonon is identified. The GaAs-InGaP heterointerface quality can be characterized by measuring the dephasing time of this interfacial phonon mode.

Room 110 -- (1F)

TH2J · 1.3 μ m Laser --- continued

12:00-12:15 TH2J-(2)-5

Characteristics of 1.3 μ m InGaAs light-emitting diodes

Hung-Pin D. Yang, Chen-Ming Lu, Daniil Livchits, Gray Lin, I-Fan Chen, Tsing-Dong Lee, and Jim Y. Chi

Industrial Technology Research Institute, Taiwan; A. F. Ioffe Physico Technical Institute, Russia
We have made InGaAs light-emitting diodes for fiber-optic applications at 1.3 μ m. The epitaxial layers were grown on the n-GaAs substrates in a MOCVD system P-type metal grid lines were formed on the light-emitting aperture for current spreading.....

12:15-12:30 TH2J-(2)-6

Narrow ridge-waveguide multi-layer InAs/InGaAs/GaAs quantum dot lasers of 1.3 μ m range

G. Lin, I. F. Chen, F. J. Lay and J. Y. Chi, D. A. Livshits, A. R. Kovsh, and V. M. Ustinov

Industrial Technology Research Institute, Taiwan; A. F. Ioffe Physico Technical Institute, Russia
We have demonstrated high-performance multi-layer (2, 5 and 10) InAs/InGaAs/GaAs quantum dot lasers of 1.3 μ m range with narrow ridge-waveguide structure. Simultaneous ground-state and excited-state lasing emissions well above threshold was observed and their spectral evolution was also investigated.

Lunch Break

December 18, Thursday

Int'l Reception Hall -- (1F)

TH2F · Nonlinear Frequency Conversion and Propagation --- continued

12:00-12:15 TH2F-(5)-6 Simultaneous amplification by Er-ions and nonlinear Raman phenomena in a Er-doped germano-silica fiber
H. S. Seo, Y. G. Choi, B. J. Park, D. H. Cho, and K. H. Kim
Telecommunication Basic Research Laboratory, ETRI, Korea
 It is possible to obtain a flat gain band in C and L band by Er-ions and stimulated Raman scattering in a Er-doped germano-silica fiber if the concentration of Er and background loss in a fiber core.....

12:15-12:30 TH2F-(5)-7 Stimulated Raman scattering in counterpropagating pump beams: threshold decrease and pulse compression
O. V. Kulagin, A. K. Kotov, and G. A. Pismanik
Institute of Applied Physics, Russia; Passat Ltd., Canada
 We investigated both theoretically and experimentally stimulated Raman scattering (SRS) in two counterpropagating focussed laser pump beams. The pulse compression from 3.3 ns to 25 ps was obtained by SRS in Ba(NO₃)₂. Also the SRS threshold decrease up to 3-4 times was achieved.

Ever Green Room -- (10F)

TH2B · Quantum Dot Physics and Application (I) --- continued

12:00-12:30 TH2B-(SS2)-4 (Invited) Growth and optical properties of GaN-based quantum dots
Hyun Jin Kim, Hyunseok Na, Soon-Yong Kwon, Young-Woon Kim and Euijoon Yoon
Seoul National University
 GaN-based quantum dots were grown by low-pressure metalorganic chemical vapor depositions. High-density In-rich InGaN/GaN quantum dots were successfully grown by low temperature growth. In-rich InGaN/GaN quantum dots showed enhanced emission properties whose wavelength.....

Spanish Room -- (10F)

TH2D · Heterodyne Metrology --- continued

12:00-12:15 TH2D-(10)-6 Phase shifting low-coherence interferometry by grating based axial-phase-shifter
Yoshiaki Yasuno, Yoshiyuki Tashiro, Takashi Endo, Masahide Itoh, and Toyohiko Yatagai
University of Tsukuba, Japan
 A chromatic axial-phase-shifter for low-coherence phase-shifting interferometry is proposed. By employing this system, the envelope of low-coherence interferograms is successfully extracted.

12:15-12:30 TH2D-(10)-7 Interferometric differential phase ellipsometer
Chien Chou and Hui-Kang Teng
National Yang-Ming University; Nan-Kai College, Taiwan
 We present in this report a differential phase detection scheme associates with a common-path optical heterodyne interferometer to measure the ellipsometric parameters in near real time.

Auditorium -- (10F)

TH2C · Fabrication of Photonic Crystal Devices and Related Microstructures --- continued

12:00-12:15 TH2C-(16)-5 Ultrasmall filters and low loss intersection by Si photonic wire waveguides
Tatsuhiko Fukazawa, Tomohisa Hirano, and Toshihiko Baba
Yokohama National University, Japan
 We demonstrate 10- μ m-order-size Mach-Zehnder interferometer and AWG composed of Si photonic wire waveguides. We also demonstrate a small intersection with an elliptical slab region in this waveguide, which exhibited the almost lossless transmission.

12:15-12:30 TH2C-(16)-6 Photonic band gaps of two-dimensional trigonal photonic crystals fabricated by four umbrellalike beam interference technique
X. L. Yang, L. Z. Cai, and Q. Liu
Shandong University, China
 The photonic band gap (PBG) properties of a class of two-dimensional (2-D) trigonal structures fabricated by holographic lithography are investigated. The effect of intensity threshold on the filling ratio, the shape of "atoms", and then the photonic gap is comprehensively studied.

Sky Lounge -- (12F)

TH2A · Optical Components (I) --- continued

12:00-12:15 TH2A-(8)-6 Multiple wavelength and wavelength switchable actively mode-locked laser based on semiconductor optical amplifier
J. He, K. T. Chan, Shi Wei, and Yuanzhong Xu
The Chinese University of Hong Kong, Hong Kong; Accelink Technologies Co., Ltd, China
 A novel multi-wavelength and wavelength switchable actively mode-locked ring laser based on a semiconductor optical amplifier and cascaded fiber Bragg gratings has been proposed. Stable wavelength switchable mode-locked pulses have been obtained. Simultaneous multi-wavelength operation.....

12:15-12:30 TH2A-(8)-7 Fiber Fabry-Perot interferometer with expanded core
Chiemi Fujikawa and Toshihiro Shintaku
Tokyo Institute of Polytechnics, Japan
 A new type of fiber Fabry-Perot interferometer with expanded core fiber was proposed. It has a simple structure and a wide wavelength range. The free spectral range of the device was suitably controllable.

Lunch Break

December 18, Thursday