

Room 101 -- (1F)	Room 105 -- (1F)	Room 106 -- (1F)	Room 107 -- (1F)	Room 110 -- (1F)
<p>08:30-10:00 F1D · Lidar and Environmental Sensing (II) Takao Kobayashi, Fukui University, Japan, Presider</p>	<p>08:30-10:00 F1E · Laser-Cell, Laser Tissue Interactions and Optical Biopsy C. J. Chang, Chang Gung Memorial Hospital, Taiwan, Presider</p>	<p>08:30-10:00 F1H · Laser Materials K. Kitamura, Advanced Materials Laboratory, Japan, Presider</p>	<p>08:30-09:45 F1G · Quantum Optics and Spectroscopy S. H. Lin, Academia Sinica, Taiwan, Presider</p>	<p>08:30-10:00 F1I · Solid State Dye and Novel Solid State Lasers Masashi Yoshimura, University of Osaka, Japan, Presider</p>
<p>08:30-09:00 F1D-(10)-1 (Invited) Recent progress in cavity ringdown spectroscopy for ultrasensitive detection and quantitative measurement <i>Jae Yong Lee, Jae Wan Kim, Yong Shim Yoo, and Jae Won Hahn</i> <i>Korea Research Institute of Standards and Science; Yonsei University, Korea</i> Cavity ringdown spectroscopy (CRDS) enables absorption measurements to be made in a direct and quantitative fashion, permitting remarkable gain in sensitivity over conventional approaches. Developments, applications, and implementation issues of the CRDS technique are presented.</p>	<p>08:30-09:00 F1E-(12)-1 (Invited) Selective laser-tissue interaction and immunological stimulation in cancer treatment <i>Wei R. Chen and Mladen Korbelik</i> <i>University of Central Oklahoma; University of Oklahoma, USA; British Columbia Cancer Agency, Canada</i> An 805-nm diode laser and indocyanine green have been used to produce selective photothermal tissue interaction. In combination with an immunoadjuvant, this selective laser tissue interaction has shown to be an effective component in a novel.....</p>	<p>08:30-09:00 F1H-(7)-1 (Invited) Growth of ZnO single crystal by hydrothermal method using Pt container and its application to the growth of GaN by amonothermal method <i>T. Fukuda</i> <i>Tohoku University, Japan</i></p>	<p>08:30-08:45 F1G-(4)-1 Terahertz spectroscopic studies of mono- and di-substituted hydroxynaphthalenes <i>Alex Quema, Hiroshi Takahashi, Ryoichiro Yoshioka, Yuji Suzuki, Shingo Ono, and Nobuhiko Sarukura</i> <i>Institute for Molecular Science (IMS), Japan</i> Using magnetically enhanced terahertz (THz) radiation from InAs, the absorption of mono- and di- substituted hydroxynaphthalenes are determined. The absorption of 2-hydroxynaphthalene is found to be higher than that of 1-hydroxynaphthalene.....</p>	<p>08:30-08:45 F1I-(1)-1 Development of a prefabricated distributed feedback tunable dye laser through visible--NIR region and its application <i>Aki Abe, Keishi Tanaka, Masamitsu Tanak, Yuji Oki, and Mitsuo Maeda</i> <i>Kyushu University, Seiko Electric Corp., Japan</i> Very wide operation range from 560nm through 1100nm of a prefabricated distributed feedback dye laser which is tuned continuously was achieved. Also with the multi wavelength tunable laser, a polymerization monitoring application of Poly-methylmethacrylate by near infrared spectroscopy was demonstrated.</p>
			<p>08:45-09:00 F1G-(4)-2 First experimental observation of the doubly-excited 21deltag state of Na2 <i>Chin-Chun Tsai, Hue-Wen Wu, and Thou-Jen Whang</i> <i>National Cheng Kung University, Taiwan</i> The doubly-excited electronic state 21Deltag of Na2 dissociating into Na(3p)+Na(3p) limit was first experimentally observed. The Fitting the measured term values to the Dunham expansion yield Te, we and Be are 32540.669, 124.039 and 0.1186 cm-1, respectively.</p>	<p>08:45-09:00 F1I-(1)-2 End fired operation of plastic distributed feedback dye laser <i>Keishi Tanaka, Aki Abe, Masamitsu Tanaka, Yuji Oki, and Mitsuo Maeda</i> <i>Kyushu University, Seiko Electric Corp., Japan</i> A waveguide of laser-dye-doped PMMA (polymethylmethacrylate) with distributed feedback structure was fabricated, and its laser oscillation was confirmed by using end-fired scheme through a optical fiber coupling.</p>

December 19, Friday

Int'l Reception Hall -- (1F)

08:30-10:00
F1F · Femtosecond Laser
Processing
Yasuyuki Tsuboi, Hokkaido
Univ., Japan, Presider

**08:30-09:00 F1F-(11)-1
(Invited)**

**Femtosecond laser induced
microstructures with photonic
functions**

*Jianrong Qiu, Congshan Zhu, and
Kazuyuki Hirao*

*Shanghai Institute of Optics and
Fine Mechanics, China; Photon
Craft Project, JST; Kyoto
University, Japan*

Femtosecond laser is a perfect laser
source for materials processing when
high accuracy and small structure size
are required. Due to the ultra short
interaction time and the high peak
power.....

Ever Green Room -- (10F)

08:30-10:00
F1C · Metallic and Dielectric
Photonic Crystals
Yean-Woei Kiang, National
Taiwan University, Taiwan,
Presider

**08:30-09:00 F1C-(16)-1
(Invited)**

**Plasmonic photonic crystals:
theory and experiment**

D. S. Kim

Seoul National University, Korea

Spanish Room -- (10F)

08:30-10:00
F1A · Optical Components (III)
Henry Lee, University of
California at Irvine, USA ,
Presider

**08:30-09:00 F1A-(8)-1
(Invited)**

**Dynamic gain equalizers for
WDM systems**

B. Y. Kim

*Korean Advanced Institute of
Science and Technology, Korea*

Auditorium -- (10F)**Sky Lounge -- (12F)**

December 19, Friday

Room 101 -- (1F)

F1D · Lidar and Environmental Sensing (II) --- continued

**09:00-09:15 F1D-(10)-2
Differential optical absorption spectroscopy of atmospheric NO₂ with a pulsed, white flashlight**

*Yotsumi Yoshii, Hiroaki Kuze, and Nobuo Takeuchi
Chiba University, Japan*

We propose and demonstrate a novel method of differential optical absorption spectroscopy, in which an obstruction flashlight is exploited for monitoring concentration of atmospheric NO₂. This measurement also brings about information on the aerosol properties.

**09:15-09:30 F1D-(10)-3
Measurement of transient absorption change of NO₂ at 3.46 μm using difference frequency generation**

*Nobuyoshi Ohtani, Satoru Tanoue, Hiroaki Ashizawa, Kazufumi Yasumoto, Shigeru Yamaguchi, Masamori Endou, Katuhiko Sunako, Kenzo Nanri, and Tomoo Fujioka
Tokai University, Japan*

Rapid NO₂ detection by mid-infrared coherent light source based on difference frequency generation that used a fiber laser as pumping source was demonstrated. High resolution spectroscopic measurements of NO₂ are reported.

Room 105 -- (1F)

F1E · Laser-Cell, Laser Tissue Interactions and Optical Biopsy --- continued

**09:00-09:30 F1E-(12)-2 (Invited)
Current trend and recent progresses in optical trapping: from optical tweezers to single-particle spectroscopy and photonics force microscopy**

*Arthur Chiou
National Yang Ming University, Taiwan*

A brief overview of optical trapping is given followed by a few selected examples to highlight some recent progresses and the current trend. Some of the technical challenges will be discussed.

Room 106 -- (1F)

F1H · Laser Materials --- continued

**09:00-09:15 F1H-(7)-2
The F2-laser micro-scalpel for photonic applications**

*Jianzhao Li, Amir H. Nejadmalayeri, Andrew Yick, and Peter R. Herman
University of Toronto, Canada*

Surface-relief microstructures—microchannels, kinoforms, diffraction gratings—have been directly sculptured on optically transparent glasses with 157-nm radiation from a vacuum-ultraviolet F2-laser for biophotonic lab-on-a-chip and diffractive optical element applications.

**09:15-09:30 F1H-(7)-3
Optical-gradient type of antireflective coatings for sub-70 nm optical lithography applications**

*H. L. Chen, Wonder Fan, T. J. Wang, F. H. Ko, R. S. Zhai, C. K. Hsu, and T. J. Chuang
National Nano Device Lab.; National Taipei University of Technology; National Taiwan University, Taiwan*

We demonstrate an optical-gradient bottom antireflective coating film, which is prepared by a silicon nitride film treated with oxygen plasma. Results indicate that the optical-gradient type film is suitable for sub-70 nm optical lithography applications.

Room 107 -- (1F)

F1G · Quantum Optics and Spectroscopy --- continued

**09:00-09:15 F1G-(4)-3
Magnetic field effect on laser isotope separation of Gadolinium based on polarization selection rules**

*Shigeki Tokita, Yasukazu Izawa, and Hideaki Niki
Osaka University; Fukui University, Japan*

In the laser isotope separation based on the polarization selection rules, the dependence of magnetic field strength on the isotopic selectivity was experimentally measured by using atomic Gd vapor. The Lande factor for the high-lying excited level was newly determined.

**09:15-09:30 F1G-(4)-4
High-efficiency interaction-free measurements using a stabilised Fabry-Perot cavity**

*Naoto Namekata and Shuichiro Inoue
Nihon University, Japan*

Using a Fabry-Perot cavity, it is possible to realize high-efficiency interaction-free measurements. In the scheme, it is required to stabilize the cavity at a resonance point. Using a stabilized cavity, we have demonstrated interaction-free measurements.

Room 110 -- (1F)

F1I · Solid State Dye and Novel Solid State Lasers --- continued

**09:00-09:15 F1I-(1)-3
Solid state active media for tunable organic-compounds laser**

*T. N. Kopylova, L. G. Samsonova, V. A. Svetlichnyi, A. V. Reznichenko, M. S. Dolotov, and E. P. Ponomarenko
Siberian Physical-Technical Institute; Alpha-Aconis, LTD., Russia*

The laser properties and photostability of organic compounds emitting from blue to red region of spectrum in solutions and in a solid matrixes of polymethylmethacrylate (PMMA) pumped by XeCl-laser and second harmonic of Nd-YAG laser radiation are investigated.

**09:15-09:30 F1I-(1)-4
Manipulation of spatial beam patterns in a Nd:YVO₄ laser with degenerate hemispherical resonator**

*Hsiao-Hua Wu and Ying-Chung Lo
Tunghai University, Taiwan*

We show that the self-image property of degenerate hemispherical resonator in a Nd:YVO₄ laser gives rise to peculiar transverse modes and can be employed to manipulate the spatial beam patterns.

December 19, Friday

Int'l Reception Hall -- (1F)

F1F · Femtosecond Laser Processing --- continued

**09:00-09:15 F1F-(11)-2
Bulk modification of transparent materials by use of loosely focused femtosecond laser**

*Masanao Kamata, Kouke Ohta, and Minoru Obara
Keio University, Japan*

We demonstrate the control of refractive index change inside silica glass and PMMA induced by a loosely focused femtosecond laser. By decreasing numerical aperture, several mm long single mode optical waveguide is fabricated by non-scanning process.

**09:15-09:30 F1F-(11)-3
Recording by focusing femtosecond laser pulse and fluorescence readout of three-dimensional optical memory in human nail**

A. Takita, H. Yamamoto, Y. Hayasaki, H. Misawa, and N. Nishida,

The Univ. of Tokushima, Japan
Three-dimensional bit recording with a femtosecond laser pulse and bit observation with atomic force microscope and fluorescence observation in human nail are performed. The bit was formed by micro-explosion and the fluorescence intensity was increased.

Ever Green Room -- (10F)

F1C · Metallic and Dielectric Photonic Crystals --- continued

**09:00-09:15 F1C-(16)-2
Polarization dependence of light intensity distribution from nanometer metallic slits**

C. H. Wei, Wunshain Fann, P. K. Wei, Jonas O. Tegenfeldt, and Robert H. Austin

National Taiwan University; Academia Sinica, Taiwan; Princeton University, USA
The distribution of light intensity as a function of polarization in both the near and far-fields for single slits with widths below and above half a wavelength was studied both experimentally and by computer simulation.

**09:15-09:30 F1C-(16)-3
Dispersive QPM-SHG from $\chi^{(2)}$ nonlinear photonic crystal of LiNbO₃ with tetragonal symmetry**

C. -C. Hsu, Y. -C. Shih, and L. -H. Peng
National Taiwan University, Taiwan

We observe space dispersive, second harmonic green generations from a 2D QPM-periodically poled LiNbO₃ pumped by a Nd:YAG laser. The angular-tuning and phase-matching temperature analyses reveals a simultaneous quasi-phase-matching mechanism up to five reciprocal lattice vectors.....

Spanish Room -- (10F)

F1A · Optical Components (III) --- continued

**09:00-09:15 F1A-(8)-2
Dynamic strain measurement at 50Hz using a Brillouin optical correlation domain analysis based fiber optic sensor**

Sean S. L. Ong and Kazuo Hotate
The University of Tokyo, Japan

Pulsed-based Brillouin scattering sensors have large measurement times of 5-10 minutes, making them unsuitable for dynamic strain measurements. In this paper, we describe a Brillouin optical correlation domain analysis based fiber optic sensor for dynamic strain sensing at a rate of about 50Hz.

**09:15-09:30 F1A-(8)-3
Demonstration of a novel on-fiber photodetector for on-line power monitoring and all-fiber spectrometer applications**

Chien-hung Lin, Qun Li, Amy A. Au, and H. P. Lee
University of California, USA

An on-line power monitoring scheme is demonstrated in a single-mode fiber by using an all-fiber AOTF and a p-i-n photodetector bonded to the fiber. The on-fiber detector is successfully implemented in an all-fiber spectrometer.

Auditorium -- (10F)**Sky Lounge -- (12F)**

December 19, Friday

Room 101 -- (1F)

F1D · Lidar and Environmental Sensing (II) --- continued

09:30-10:00 F1D-(10)-4 (Invited)

Infrared active imaging for the remote detection of fugitive gas emissions

Thomas J. Kulp, Ray P. Bambha, Thomas A. Reichardt and Randy Schmitt, Masayuki Tamura, and Kiran Kothari

Sandia National Laboratories; Gas Research Institute USA; The Japan Gas Association, Japan

We summarize the development of a compact active imaging system for the detection and location of natural gas emissions. The device operates in a line-scanned fashion using a microlaser pumped OPG as its illuminator.

Room 105 -- (1F)

F1E · Laser-Cell, Laser Tissue Interactions and Optical Biopsy --- continued

09:30-09:45 F1E-(12)-3 Harmonic generation microscopy of dental sections

Chin-Jen Lin and Fu-Jen Kao National Sun Yat-sen University, Taiwan

In this study we are demonstrating the use of third harmonic generation (THG) and second harmonic generation (SHG) in dental sections to produce unique and high-resolution images. The porous structures and collagen within the dental sections greatly facilitate.....

09:45-10:00 F1E-(12)-4 Laser scanning microscopy of enamel and dentin sections with two-photon fluorescence and second harmonic generation

Jian-Cheng Chen, Te-Chen Yang, Fu-Jen Kao, and Chin-Ying Stephen Hsu

National Sun Yat-sen University, Taiwan; National University of Singapore, Singapore

In this study, we have demonstrated the use of two-photon fluorescence and second harmonic (SH) generation in imaging the enamel and dentin sections. In addition, microspectroscopy is employed to identify the origin of two-photon fluorescent and SH signals.....

Room 106 -- (1F)

F1H · Laser Materials --- continued

09:30-09:45 F1H-(7)-4 Nano-patterning by laser interference lithography

Q. Xie, M. H. Hong, L. H. Van, and T. C. Chong

Data Storage Institute, Singapore
The paper describes a simple approach to fabricate patterns which have 200nm in diameter and 400nm in period by Argon Ion Laser in Holographic film and plates (VRP-M and PFG-03C) using two beams interference lithography.

09:45-10:00 F1H-(7)-5 Optical properties of Cr: Al₂O₃ ceramics with low light scattering

Hiroshi Murotani, Moriaki Wakaki, and Shuichi Kawabata Tokai Univ.; Tokyo Inst. Polytechnics, Japan

We have succeeded to fabricate highly transparent ceramics ruby by using CIP and vacuum sintering techniques. The fluorescence spectrum corresponding to that of the single crystal ruby was observed.

Room 107 -- (1F)

F1G · Quantum Optics and Spectroscopy --- continued

09:30-09:45 F1G-(4)-5 Generation of pulsed correlated photon pairs in the 1550nm band using a PPLN waveguide

Shigehiko Mori, Naoto Namekata, and Shuichiro Inoue Nihon University, Japan

We report a generation of pulsed correlated photon pairs in the 1550nm band using a PPLN waveguide and two-photon interference experiments to demonstrate the quantum correlation of photon pairs.

Room 110 -- (1F)

F1I · Solid State Dye and Novel Solid State Lasers --- continued

09:30-09:45 F1I-(1)-5 Actively Q-switched Nd:YVO₄ laser using a low-voltage electro-optic PPLN crystal as the laser Q-switch

Y. H. Chen and Y. C. Huang National Tsing-Hua University, Taiwan

We present a <100V switching-voltage electro-optically Q-switched Nd:YVO₄ Laser by using a periodically poled lithium niobate (PPLN) polarization rotator as the laser Q-switch. 9-ns pulse-width and 0.85-kW 1064nm laser pulses were obtained with this system.

09:45-10:00 F1I-(1)-6 Measurement of gain and evaluation of photon avalanche efficiency in 10%Tm:KY(WO₄)₂ crystal pumped by free-running Nd:YAG laser

S. Vatnik, E. Balashov, A. Pavljuk, E. Golikova, and A. Lyutetskiy Institute of Laser Physics SB RAS; Institute of Inorganic Chemistry SB RAS; Joint stock company "Sigm plus"; A.F.Ioffe Physico-Technical Institute RAS, Russia

The gain at 1831nm and 3F₄ excited state relaxation were measured with 10%Tm:KYW crystals under free-running Nd:YAG laser pumping. The emission cross-section calculated from the gain data is in a reasonable agreement with that of from.....

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

December 19, Friday

Int'l Reception Hall -- (1F)

F1F · Femtosecond Laser Processing --- continued

**09:30-09:45 F1F-(11)-4
Fabrication of microfluidic structures three-dimensionally embedded in glass by femtosecond laser**

Masashi Masuda, Koji Sugioka, Ya Cheng, Masako Kawachi, Kazuhiko Shihoyama, Koichi Toyoda, and Katsumi Midorikawa
RIKEN, The Institute of Physical and Chemical Research; Tokyo University of Science; HOYA Photonics Corporation, Japan
Fabrication of hollow three-dimensional (3-D) microstructures embedded in a photosensitive glass by a femtosecond laser is demonstrated. This technique is applied for manufacturing microfluidic structures composed of microcells, microchannels, and microvalves.

**09:45-10:00 F1F-(11)-5
Formation of periodic structures by laser ablation using interfered femtosecond laser beams**

Yoshiki Nakata, Tatsuo Okada, and Mitsuo Maeda
Kyushu University, Japan
Periodic structures were processed on materials by laser ablation using interfered femtosecond laser beams. Surface morphology and diffractive properties of the processed structures were investigated.

Ever Green Room -- (10F)

F1C · Metallic and Dielectric Photonic Crystals --- continued

**09:30-09:45 F1C-(16)-4
PBG structure of two-dimensional magnetic photonic crystals**

Yun-Song Zhou, Ben-Yuan Gu, and Fu-He Wang
Normal University; Chinese Academy of Sciences, China
Band gap structures of magnetic photonic crystals (PC's) are studied with the use of plane-wave expansion method. They strongly depend on the parameters of structures. The introduction of magnetic materials into PC diversifies the species of PC's.

**09:45-10:00 F1C-(16)-5
Disorder effects on negative refractive lens made by photonic crystals**

Bikash Gupta and Zhen Ye
National Central University, Taiwan
By a multiple scattering theory, we confirm that properly arranged photonic crystals can indeed act as a negative refractive lens. The tolerance of the lens to positional disorders is also discussed.

Spanish Room -- (10F)

F1A · Optical Components (III) --- continued

**09:30-09:45 F1A-(8)-4
A lateral pressure sensor using a fiber Bragg grating**

Hao-Jan Sheng, Wen-Fung Liu, Tzu-Chiang Chen, Sheau-Shong Bor, and Ming-Yue Fu
National Defense University; Feng-Chia University, Taiwan
We have designed an all optical high-sensitivity pressure sensor based on a fiber Bragg grating (FBG) encapsulated in a polymer-half-filled metal cylinder with the sensitivity of $1.87 \times 10^{-2} \text{ Mpa}^{-1}$

**09:45-10:00 F1A-(8)-5
Novel monitoring technique for DWDM tunable lasers using an isolator and a polarizer**

Chun-Liang Yang, Ching-Yun Chien, San-Liang Lee, and Jingshown Wu
National Taiwan University of Science and Technology; National Taiwan University, Taiwan
Channel monitoring of DWDM tunable lasers can be easily performed by using the built-in isolator and an external polarizer. We applied it to monitor eight 100GHz-spaced channels and characterize fast tunable lasers.

Auditorium -- (10F)**Sky Lounge -- (12F)**

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

December 19, Friday

Room 101 -- (1F)	Room 105 -- (1F)	Room 106 -- (1F)	Room 107 -- (1F)	Room 110 -- (1F)
<p>10:30-12:30 F2D · Lidar and Environmental Sensing (III) Nobuo Takeuchi, Chiba University, Japan, Presider</p>	<p>10:30-12:45 F2E · Optical Sensing and Applications in Life Science F. J. Kao, National Sun-Yat-Sen University, Taiwan, Presider</p>	<p>10:30-12:30 F2H·Opto-electronics Materials and Fabrication L. Isaenko, Russian Academy of Sciences, Russia, Presider</p>	<p>10:30-12:30 F2G · Ultrafast and High Field Laser Induced Processes Robert Levis, Wayne State University, USA, Presider</p>	<p>10:30-12:45 F2I · High Power Solid State Lasers and Thermal Issues Sheng-Lung Huang, National Sun Yat-Sen University, Taiwan, Presider</p>
<p>10:30-11:00 F2D-(10)-1 (Invited) Lidar techniques for observations of atmospheric wind and temperature profiles <i>Chikao Nagasawa</i> <i>Tokyo Metropolitan University, Japan</i></p>	<p>10:30-10:45 F2E-(12)-1 Micro-surface plasmon resonance biosensing with cap-shaped gold nanoparticles <i>Xin Hong, Fu-Jen Kao, and Hiroyuki Takei</i> <i>Tianjin University, China; National Sun Yat-Sen University, Taiwan; Hitachi Ltd., Japan</i> In this study, high spatially resolved surface plasmon resonance (SPR) sensing is achieved by employing a cap-shaped gold nanoparticle based film. Unlike conventional SPR detecting gold films, this unique film is not sensitive to angular change.....</p>	<p>10:30-11:00 F2H-(7)-1 (Invited) Recent advances of deep and vacuum-UV harmonic generation with new borate crystals <i>C. T. Chen</i> <i>Chinese Academy of Sciences, China</i></p>	<p>10:30-11:00 F2G-(4)-1 (Invited) Sub-10 attosecond manipulation of quantum phases <i>Kenji Ohmori</i> <i>Tohoku University, Japan</i></p>	<p>10:30-11:00 F2I-(1)-1 (Invited) Withdrawn</p>
	<p>10:45-11:00 F2E-(12)-2 Sealed hollow infrared fibers for medical applications: experiment in laser lithotripsy <i>Katsumasa Iwai, Masashi Endo, Yuji Matsuura, Yi-Wei Shi, and Mitsunobu Miyagi</i> <i>Tohoku University, Japan</i> An infrared laser delivery system with a hollow optical fiber whose output end is sealed with a quartz cap is introduced. The potential of the fiber delivery system in medicine is shown by a laser lithotripsy experiment.</p>			

December 19, Friday

Int'l Reception Hall -- (1F)

10:30-12:30
F2F · Microfabrication and
Microsystems
Koji Sugioka, RIKEN, Japan,
Presider

10:30-11:00 F2F-(11)-1 (Invited)
**Fabrication of functional
polymeric prototypes for
micro-fluidic and micro-optical
applications**

*W. Pfleging, J. Böhm, S. Finke, E.
Gaganidze, Th. Hanemann, R.
Heidinger, and K. Litfin*
*Forschungszentrum Karlsruhe,
Institute for Materials Research,
Germany*

Laser-assisted technologies for the
fabrication of microfluidical and
microoptical components will be
presented. Prototypes are generated by
direct patterning of plastics. Small and
large series are realized by fabrication
of polymeric and metallic mould
inserts.

Ever Green Room -- (10F)

10:30-12:45
F2C · Organic Light Emitting
Diodes
H. S. Kwok, The Hong Kong
University of Science &
Technology, Hong Kong,
Presider

**10:30-11:00 F2C-(17)-1
(Invited)**
**Printing of nanothick organic
layers for photonic and
photovoltaic devices**

*G. E. Jabbour and N.
Peyghambarian*
University of Arizona, USA

Spanish Room -- (10F)

10:30-12:30
F2A · Novel Optical Devices
and Fabrication
B. Y. Kim, Korea Advanced
Institute of Science and
Technology, Korea, Presider

10:30-10:45 F2A-(8)-1
**Characterization of TiO₂/SiO₂
hybrid SOL-GEL glass and its
use for fabrication of
micro-optical elements**

*Weixing Yu, X. -C. Yuan, N. Q.
Ngo, W. C. Cheong, and V.
Koudriachov*
*Nanyang Technological University,
Singapore*

We demonstrated fabrication of
micro-optical elements in a TiO₂/SiO₂
hybrid sol-gel glass with different
facilities including HEBS gray scale
mask, laser direct writer and E-beam
lithography. With different facility, we
first calibrated this material and then
designed.....

10:45-11:00 F2A-(8)-2
**A novel quasi-ellipsoidal
microlens employing a
quadrangular- pyramid-shaped
finer endface**

*S. M. Yeh, Y. K. Lu, H. H. Lin, and
W. H. Cheng*
*National Sun Yat-sen University,
Taiwan*

We propose a novel quasi-ellipsoidal
microlens employing a quadrangular-
pyramid-shaped fiber endface
(QPSFE) for the coupling between
high-power 980nm laser diodes and
singlemode fibers. A coupling efficiency
of 60% has been demonstrated.

Auditorium -- (10F)**Sky Lounge -- (12F)****December 19, Friday**

Room 101 -- (1F)

F2D · Lidar and Environmental Sensing (III) --- continued

**11:00-11:15 F2D-(10)-2
Lidar measurements of dust, clouds and aerosols at Chung-Li (25N,121E)**

J. B. Nee, C. W. Jian, W. A. Liang, and W. N. Chen
National Central University, Taiwan
Dust, clouds, and aerosols in the 0-30 km have been measured by using a Mie scattering lidar at the National Central University in Chung-Li (25N,121E). Lidar system and results of recent measurement will be reported.

**11:15-11:30 F2D-(10)-3
A method for estimating mineral dust concentration in aerosol mixture using a polarization lidar**

Nobuo Sugimoto, Atsushi Shimizu, Ichiro Matsui, and Yan Chen
National Institute for Environmental Studies; Sino-Japan Friendship Center for Environmental Protection, Japan
A method using the lidar depolarization ratio for estimating mineral dust concentration in aerosol mixture is described. The method was applied to lidar data in Beijing to estimate contributions of Asian dust and air pollution.

Room 105 -- (1F)

F2E · Optical Sensing and Applications in Life Science --- continued

**11:00-11:15 F2E-(12)-3
A phase sensitive optical rotation measurement in a scattered chiral medium using a Zeeman laser**

Wen-Chuan Kuo, Tung-Sheng Hsieh, and Chien Chou
National Yang-Ming University, Taiwan
A novel circular polarized optical heterodyne interferometer using a Zeeman laser is proposed. Two orthogonal circular polarized light waves of different temporal frequencies from Zeeman laser propagate with different speeds in the optical active medium.....

**11:15-11:30 F2E-(12)-4
Enhancement of DNA hybridization efficiency using photovoltaic effect**

Chii-Chang Chen, Wei-Chi Ku, Sung-Kay Chiu, and Chi-Meng Tzeng
National Central University; U-Vision Biotech, Inc.; Academia Sinica, Taiwan
We present a novel method to enhance the DNA hybridization efficiency by photovoltaic effect that induces positive charges on the surface of microchip to attract negatively charged DNAs result in enhancing the hybridization rate up to two-order magnitude.

Room 106 -- (1F)

F2H·Opto-electronics Materials and Fabrication --- continued

**11:00-11:15 F2H-(7)-2
Fabrication of nonlinear photonic crystal fiber**

Y. C. Cho, L. M. Lee, J. C. Chen, S. L. Huang, and F. J. Kao
National Sun Yat-Sen University; Yung Ta Institute of Technology & Commerce, Taiwan
A novel electrically assisted thermal poling technique was developed to fabricate nonlinear photonic crystal fibers. Domain period of 18.9 μm was achieved with a length of more than 10 cm, which can be used as wavelength converter covering both C and L optical communication bands.

**11:15-11:30 F2H-(7)-3
Low-temperature growth of Si-nanostructures by laser assistance of conventional plasma enhanced chemical vapor deposition**

Chun-Hung Lin and Ching-Ting Lee
National Central University, Taiwan
We utilize a CO₂ laser in the deposition process because SiH₄ molecules have high photon absorption of laser light. This absorption increases the decomposition of SiH₄ molecules and helps form the Si-nanostructures in low-temperature growth.

Room 107 -- (1F)

F2G · Ultrafast and High Field Laser Induced Processes --- continued

**11:00-11:15 F2G-(4)-2
Coulomb explosion-dynamics of N₂O in intense laser fields probed by coincidence momentum imaging**

Masakuni Ueyama, Hirokazu Hasegawa, Akiyoshi Hishikawa and Kaoru Yamanouchi
The University of Tokyo, Japan
Coulomb explosion dynamics of N₂O in intense laser fields was studied by coincidence momentum imaging. It was revealed that the geometrical structure of N₂O is largely deformed in intense laser fields.

**11:15-11:30 F2G-(4)-3
Direct observation of molecular dynamics in intense laser fields probed by pulsed gas electron diffraction**

Tomoya Okino, Kennosuke Hoshina, and Kaoru Yamanouchi
The University of Tokyo, Japan
A pulsed gas electron diffraction apparatus was developed and applied to probing the alignment and structural deformation processes of CS₂ in nanosecond intense laser fields by the nanosecond and picosecond electron pulses, respectively.

Room 110 -- (1F)

F2I · High Power Solid State Lasers and Thermal Issues --- continued

**11:00-11:15 F2I-(1)-2
Mode-locked Yb:YAG lasers by using SHG nonlinear mirror**

Jiro Saikawa and Takunori Taira
Institute for Molecular Science, Japan
We have demonstrated a passively mode-locked Yb:YAG laser by using a second-harmonic nonlinear mirror(NLM) technique with a non-critical phase matched LBO crystal.

**11:15-11:30 F2I-(1)-3
High performance ceramic lasers**

J. Lu, T. Takaichi, K. Ueda, H. Yagi, T. Yanagitani, and A. Kaminskii
Konoshima Chemical Co., Japan; Institute of Crystallography, Russian Academy of Sciences, Russia
High quality ceramic lasers have been developed using modern ceramic technology. The spectroscopic, optical, thermal and mechanical properties were investigated intensively. O-O efficiency of 60% and more than 1 kW output were achieved by ceramic YAG lasers.

December 19, Friday

Int'l Reception Hall -- (1F)

F2F • Microfabrication and
Microsystems --- continued

11:00-11:15 F2F-(11)-2
**A novel implementation of laser
machining using diffractive
optical elements**

*Wei-Feng Hsu, Chao-Siang Yang,
and Chuan-Yu Luo*
*National Taipei University of
Technology, Taiwan*

We have achieved a 1mm-by-1mm
DOE with a long depth of focus about
90 μm that may be applied to laser
machining. The dimensions of the light
segment focusing along axis were 4 μm
and 1 mm.

11:15-11:45 F2F-(11)-3
(Invited)

F₂ laser processing of silicone

*Masayuki Okoshi, Hiromitsu Takao,
and Narumi Inoue*

National Defense Academy, Japan
We photochemically modified silicones
for fabrication of SiO₂ by an F₂ laser.
SiO₂ humps could be fabricated on
silicone rubber. Micro-patterning of
silicone films was also fabricated by
immersing the modified films in HF
solution.

Ever Green Room -- (10F)

F2C • Organic Light Emitting
Diodes --- continued

11:00-11:30 F2C-(17)-2
(Invited)

**White organic light-emitting
diodes operated by organic
field-effect transistors**

*Hye Yong Chu, Seong Hyun Kim,
Jeong-Ik Lee, Jung Hun Lee, Sang
Chul Lim, Lee-Mi Do, and
Taehyoung Zyung*
*Electronics and
Telecommunications Research
Institute, Korea*

Organic and/or polymer light-emitting
diode (OLED) is one of the most
promising candidates for the
application in the future flat and flexible
displays. In this presentation,
fabrication methods and performances
of the white...

Spanish Room -- (10F)

F2A • Novel Optical Devices
and Fabrication --- continued

11:00-11:15 F2A-(8)-3
**Fabrication of an optical
interconnection plate using a
polymeric waveguide and a
transparent substrate**

*Han Seo Cho, Ji-Young Eo,
Saekyoung Kang, Myung-Geun
Han, Kun Mo Chu, Byung Sup
Rho, and Hyo-Hoon Park*
*Information and Communications
University, Korea*

We fabricated the optical
interconnection plate to realize the
optical on-board interconnection
between chips using a polymeric
waveguide and a transparent
substrate, and emphasized the
importance of the mirror plane
roughness and angle control.

11:15-11:30 F2A-(8)-4
**Undercut etching the active
region of the waveguide for
traveling-wave**

electroabsorption modulator

W. C. Cheng and Yi-Jen Chiu
*National Sun Yat-Sen University,
Taiwan*

We proposed a novel waveguide
structure for electroabsorption
modulator. By selective undercut
etching the active region. The
calculation shows that it has the
properties of lower microwave loss,
higher microwave speed and higher
optical coupling efficiency compared
with conventional ridge type.

Auditorium -- (10F)**Sky Lounge -- (12F)**

December 19, Friday

Room 101 -- (1F)

F2D · Lidar and Environmental Sensing (III) --- continued

**11:30-11:45 F2D-(10)-4
Automatic correction of optical alignment deterioration of a continuously operated Mie lidar**

Nofel Lagrosas, Nobuo Takeuchi, Yotsumi Yoshii, Hiroaki Kuze, Suekazu Naito, Jun Okazaki, Akihiro Sone, and Hirohumi Kan Chiba University; Chiba Environmental Research Center; Hamamatsu Photonics Inc., Japan
Alignment of the laser beam and telescope axes is crucial to the acquisition of high quality lidar data. For a continuously operated Mie lidar, a routine alignment correction is needed to ensure that its data.....

**11:45-12:00 F2D-(10)-5
ACA lidar system for continuous monitoring of aerosols, dust and cloud in troposphere at Suwon, Korea**

Chan Bong Park, Choo Hie Lee, Ichiro Matsui, Atsushi Shimizu, and Nobuo Sugimoto Lidar Center of Kyung Hee University, Korea; National Institute for Environmental Studies, Japan
Using by Automatic Control Aerosol (ACA) Mie lidar system, continuous time-height indication plots of range corrected backscattered intensity, depolarization ratio, and IR/Visible ratio of Asian dust, aerosols, and cirrus clouds in the altitude range of 0.5-15 km have been measured and analyzed.

December 19, Friday

Room 105 -- (1F)

F2E · Optical Sensing and Applications in Life Science --- continued

**11:30-11:45 F2E-(12)-5
Detecting E.coli-O157 with fiber-optic biosensor**

Tsu-Shin Chan, Chien Chou, Chien-Yuan Han, Hsieh-Ting Wu, and Zhi-Ren You National Yang-Ming University, Taiwan
We develop a fiber-optic biosensor system for rapid identification of E.coli-O157 and calculate the kinetics of IgG.

**11:45-12:00 F2E-(12)-6
ARROW-B surface plasmon resonance sensors in aqueous environment**

Ching-Hung Cheng, Shih-Hsin Hsu, Ting-Hang Pei, and Yang-Tung Huang National Chiao Tung University, Taiwan
ARROW-B surface plasmon resonance sensors operating in aqueous environment for bio-molecular interaction analysis are investigated. The detectable changes of the refractive index down to the order of 10⁻⁵ can be achieved.

Room 106 -- (1F)

F2H·Opto-electronics Materials and Fabrication --- continued

**11:30-11:45 F2H-(7)-4
The use of fluorescence confocal microscopy in mapping Cr⁺³ profile within the YAG crystal fiber**

Jian-Cheng Chen, Chia-Yao Lo, Sheng-Long Huang, and Fu-Jen Kao National Sun Yat-Sen University, Taiwan
We have demonstrated the use of fluorescence confocal microscopy in mapping the Cr⁺³ profile within the YAG crystal fiber. A sensitivity of 2.3x10¹⁶ /cm³ was achieved, which is ten-fold of magnitude better than that of electron probe micro-analysis.

**11:45-12:00 F2H-(7)-5
The high electromagnetic shielding of wove carbon fiber composites applied to optoelectronic devices**

Wern Shiarng Jou National Kaohsiung University of Applied Sciences, Taiwan
The electromagnetic (EM) shielding effectiveness (SE) of plain weave, balanced twill weave, and uni-directional conductive carbon fiber were studied. The highest measured SE is 96 dB for balanced twill weave carbon fiber (CF) double plates composites (10wt% CF).....

Room 107 -- (1F)

F2G · Ultrafast and High Field Laser Induced Processes --- continued

**11:30-12:00 F2G-(4)-4 (Invited)
Temporal and spatial characteristics of high energy electrons generated by high laser field**

Jie Zhang Chinese Academy of Science, China

Room 110 -- (1F)

F2I · High Power Solid State Lasers and Thermal Issues --- continued

**11:30-11:45 F2I-(1)-4
Thermal analysis in Faraday rotator for use of the high-average power solid-state laser driver**

Ryo Yasuhara, Hiroyuki Furukawa, Yuji Fukumoto, Osamu Matsumoto, Toshiyuki Kawashima, Tadashi Kanabe, Hitoshi Nakano, Masanobu Yamanaka, Yasukazu Izawa, and Chiyoe yamanaka Osaka University; Institute for Laser Technology; Kinki University; Hamamatsu Photonics K. K, Japan
We calculated temperature distribution and measured thermally induced birefringence in Faraday glass under laser-light loading. Detailed computation results and experimental results are presented, which will be useful when designing the thermally compensated Faraday rotator.

**11:45-12:00 F2I-(1)-5
Diode-pumping high-power Q-switched fiber laser at 2.8 μm**

T. Segi, Y. Okada, T. Sakai, and A. Wada Optics and Electronics Laboratory, Fujikura Ltd., Japan
A Q-switched high-power fiber laser at 2.8 μm has been developed with a high power pumping laser diode array and an Er-doped double-clad fiber. Peak power over 50W and pulse energy of 31 μJ is achieved.

Int'l Reception Hall -- (1F)

F2F · Microfabrication and
Microsystems --- continued

11:45-12:00 F2F-(11)-4
Surface micro-fabrication of UV
transparent materials by
laser-induced backside wet
etching

H. Niino, X. Ding, R. Kurosaki, A. Narazaki, T. Sato, and Y. Kawaguchi

National Institute of Advanced Industrial Science and Technology, Japan

Laser-induced backside wet etching of silica glass and sapphire plates was performed by the excitation of a liquid with a ns-pulsed UV excimer laser.

Well-defined micropatterns were fabricated without debris and microcrack around the etched area.

Ever Green Room -- (10F)

F2C · Organic Light Emitting
Diodes --- continued

11:30-11:45 F2C-(17)-3
Emission characteristics of
white light phosphor

K. M. Lee, Bao-li An, Meng-lian Gong, Ying-liang Liu, and K. W. Cheah

Hong Kong Baptist University; Sun Yat-Sen University; Hong Kong; Jinan University, China

White light LED was successfully fabricated by converting near-UV LED emission (390-420nm) with a new white light phosphor. This new white phosphor was consisted of three fluorescence materials; two strontium aluminates based with lanthanide oxides, SrAl₂O₄.....

11:45-12:00 F2C-(17)-4
The study of blue organic light
emitting diodes with a CUPC
electron transporting layer

Chih-Chih Lin, Mou-Zhong Lin, Shui-Hsiang Su, and Meiso Yokoyama

I-Shou University, Taiwan

Organic light emitting diodes using copper phthalocyanine (CuPc), instead of tris-(8-hydroxyquinoline) aluminum (Alq), as an electron transporting layer are fabricated. The outcome significantly results in the reduction of operating voltages.....

Spanish Room -- (10F)

F2A · Novel Optical Devices
and Fabrication --- continued

11:30-11:45 F2A-(8)-5
A multi-wavelength light source
using an optical single-side
band modulator and an arrayed
waveguide grating

Akihiro Yamanaka, Mitsufumi Yamamoto, Yosuke Tanaka, Takashi Kurokawa, Tetsuya Kawanishi, and Masayuki Izutsu
Tokyo University of Agriculture and Technology; Communications Research Laboratory, Japan

We propose a multi-wavelength light source composed of an arrayed waveguide grating and a fiber loop with an optical single-side band modulator. In spite of no feedback control techniques for stabilization, we successfully generated 20 channels.....

11:45-12:00 F2A-(8)-6
GaN diffractive microlenses for
UV micro-optics system

C. C. Hou, M. H. Li, C. C. Chen, J. K. Sheu, J. Y. Chang, G. C. Chi, Chuck Wu, W. T. Cheng, and J. H. Yeh

National Central University, Taiwan; Canyon Materials Inc., U.S.A.; Nano-Architect Research Corporation, Taiwan

In this work, diffractive microlenses were fabricated in GaN-based material by using gravity-level mask and inductively coupled plasma etching technique. We also propose to insert the GaN/AlN anti-reflection thin films in the microlenses to enhance the ultraviolet/visible rejection ratio.

Auditorium -- (10F)**Sky Lounge -- (12F)**

December 19, Friday

Room 101 -- (1F)

F2E · Optical Sensing and Applications in Life Science --- continued

12:00-12:15 F2E-(12)-7
The kinetics of beta-amyloid protein polymerization using surface plasmon resonance biosensor

Hsieh-Ting Wu, Chien Chou, Wen-Chuan Kuo, Chien-Yuan Han, and Su-Yun Chiu
National Yang-Ming University; National Taiwan University; National Chiao Tung University, Taiwan

The A β 1-42 aggregation was analyzed, the results show that the association rate constant (k_a) is strongly dependent upon the A β concentration, but the dissociation rate constant (k_d) has no significant change.....

12:15-12:30 F2E-(12)-8
A novel method for Ca²⁺ sensing by waveguide structure

Shih-Jung Chang, Ding-wei Huang, Ying-Tso Lin, and Tsung-hsuan Chiu
Industrial Technology Research Institute, Taiwan

A novel and simple waveguide structure is proposed to detect Ca²⁺. The method can also be applied to detect other important ions of the human body.

Room 105 -- (1F)**Room 106 -- (1F)**

F2H·Opto-electronics Materials and Fabrication --- continued

12:00-12:15 F2H-(7)-6
Application of the tunable refractive indices of magnetic fluids in fiber optical switches

H. C. Yang, S. Y. Yang, H. E. Horng, and Chin-Yih Hong
National Taiwan University; Institute of Physics, Academia Sinica; National Taiwan Normal University; Da-Yeh University, Taiwan

Due to the phase separation in the magnetic fluid film under external magnetic fields, the refractive index of magnetic fluids was found to be tunable with the varying field strength. This result implies that the transmission.....

12:15-12:30 F2H-(7)-7
Fabry-Perot type antireflective coatings for binary mask applications in ArF and F2 Excimer laser lithographies

H. L. Chen, C. C. Lee, Y. F. Chuang, M. C. Liu, C. I. Hsieh, and F. H. Ko
National Nano Device Lab.; National Central University, Taiwan

We demonstrated an antireflective coating structure based on a Fabry-Perot structure for binary masks of ArF and F2 excimer laser lithographies. Reflectance of less than 1% at both 193 and 157 nm can be achieved.

Room 107 -- (1F)

F2G · Ultrafast and High Field Laser Induced Processes --- continued

12:00-12:15 F2G-(4)-5
Dissociative ionization dynamics of ethanol as studied by chirped intense laser pulses

R. Itakura, K. Yamanouchi, T. Tanabe, T. Okamoto, and F. Kannari
The University of Tokyo; Keio University, Japan

On the basis of the dependences of the fragmentation branching ratios on the linear chirp of an intense laser field, the dissociative ionization processes of ethanol in an intense laser field are investigated.

12:15-12:30 F2G-(4)-6
Trace detection of C₂H₄ by photoacoustic spectroscopy with a compact pulsed optical parametric oscillator

Tse-Luen Wee, Jimmy Ng, and A. H. Kung
Academia Sinica, Taiwan

A pulsed optical parametric oscillator operated in an optical cavity with a grazing-incidence grating configuration (GIOPO) was used for sensitive photoacoustic detection of trace quantities of ethylene (C₂H₄). A concentration sensitivity of 10 parts in 10⁹.....

Room 110 -- (1F)

F2I · High Power Solid State Lasers and Thermal Issues --- continued

12:00-12:15 F2I-(1)-6
High power diode-pumped Nd:GVO₄ lasers passively Q-switched by Cr⁴⁺:YAG crystals

S. P. Ng, D. Y. Tang, L. J. Qin, and X. L. Meng
Nanyang Technological University, Singapore; Shandong University, China

We report on high power diode pumped Nd:GdVO₄ lasers passively Q-switched by Cr⁴⁺:YAG crystals of different initial transmission. Q-switched pulses of duration of 6ns and peak power of 26.4kW have been obtained.

12:15-12:30 F2I-(1)-7
Design criteria in high power diode-pumped mode-locked laser with nonlinear mirror

Y. J. Su, S. W. Tsai, and Y. F. Chen
National Chiao-Tung University, Taiwan

From the threshold of nonlinear mirror CW mode locking (CML), design criteria for optimum nonlinear crystal length and optimum output coupler are experimentally and theoretically developed.

Int'l Reception Hall -- (1F)

F2F · Microfabrication and Microsystems --- continued

**12:00-12:15 F2F-(11)-5
Micro-crack formation of iron based alloys in laser spot welding for photonic packages**
P. L. Tu, Deming Liu, Ken Cheung, C. H. Yiu, and Angie Lau
ASM, Assembly automation Ltd, Hong Kong
This study focuses on the formation mechanism of micro-cracks in iron-based alloys joint formed by laser spot welding for the photonic packaging application. Methods to avoid the micro-cracks of the welding joint comprising of stainless carbon-steel and low carbon steel are proposed.

**12:15-12:30 F2F-(11)-6
Microstructure fabrication using heat shrinkable polymer films**
Andrew J. Lee, Michael J. Withford, David R. Baer, and Judith M. Dawes
Macquarie University, Australia
A novel method for fabricating 2D microstructures in a polymer film is presented. Laser ablation is combined with heat treatment as a direct write method in the formation of micron scale hole arrays.

Ever Green Room -- (10F)

F2C · Organic Light Emitting Diodes --- continued

**12:00-12:15 F2C-(17)-5
Highly efficient blue OLEDs using Ter(9,9-diarylfuorene)s with ambipolar carrier transport properties**
Y. -T. Lin, T. -L. Liu, W. -Y. Hung, P. -Y. Hsieh, C. -C. Wu, and K. -T. Wong
National Taiwan University, Taiwan
We report a highly efficient blue heterostructure organic light-emitting devices based on fluorene-based conjugated oligomers as the hole emitting layer. The amorphous thin films of ter(9,9-diarylfuorene)s exhibit non-dispersive bipolar transport and high carriers.....

**12:15-12:30 F2C-(17)-6
Light emission in phase separated conjugated and non-conjugated polymer blends**
Shen-Yi Hsu, Hsieh-Li Chou, and Pei-Kuen Wei
Academia Sinica, Taiwan
Phase separations in conjugated polymer (MEH-PPV) and non-conjugated polymer (PMMA) are studied by a near-field scanning microscopy and spectroscopy. Micron scale binary decomposition without photoluminescence spectrum shift occurs when the blending ratio (MEH-PPV/PMMA) is larger than one.....

Spanish Room -- (10F)

F2A · Novel Optical Devices and Fabrication --- continued

**12:00-12:15 F2A-(8)-7
Arrayed-waveguide grating multiplexer with graded-index free propagation region**
Tsung-Hsin Lee, Kun-Hung Tu, and Ching-Ting Lee
National Central University, Taiwan
Arrayed-waveguide multiplexer which is used a novel graded-index free propagation region is obtained Flat and broaden spectral response. The 1dB and 3dB wavelength pass band will increase while increasing the graded-index FPR length.

**12:15-12:30 F2A-(8)-8
A nonblocking 4×4 MMI-MZI electro-optic switch matrix using SOI waveguide**
Shyh-Lin Tsao, Hsin-Chun Huang, and Peng-Chun Peng
National Taiwan Normal University, Taiwan
The nonblocking 4×4 switching matrix using SOI waveguide operating at 1.55μm is designed and simulated in this paper. The nonblocking 4×4 switching matrix consists of eight 2×2 MMI-MZI electro-optic switches.

Auditorium -- (10F)**Sky Lounge -- (12F)**

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

F2E · Optical Sensing and Applications in Life Science
--- continued

**12:30-12:45 F2E-(12)-9
Coherent anti-Stokes Raman spectrometer for THz-frequency modes in biomolecules**

*J. Shikata, M. Nakazawa, T. Matsumoto, and H. Ito
Tohoku University, Japan*

A coherent anti-Stokes Raman spectrometer using near-infrared optical parametric oscillators is reported. It scans over a wide frequency range of 0-7000 cm⁻¹ (0-210 THz). Sensitive detection of THz- frequency vibrational modes of protein in aqueous solution is successfully achieved.

F2I · High Power Solid State Lasers and Thermal Issues
--- continued

**12:30-12:45 F2I-(1)-8
Measurement of gain and evaluation of thermal stress in end-pumped 1.1 % Nd:YAG rods with submillimeter diameters**

*Sergei M. Vatrnik
Institute of Laser Physics SB RAS, Russia*

From gain measurements of end-pumped 1.1.%Nd:YAG crystal fiber (0.18mm in diameter by 4.0mm long) both emission cross-section and up-conversion rate have been determined. These values are in a reasonable agreement with that of reported previously.....

December 19, Friday

Int'l Reception Hall -- (1F)**Ever Green Room -- (10F)****Spanish Room -- (10F)****Auditorium -- (10F)****Sky Lounge -- (12F)**

F2C · Organic Light Emitting Diodes --- continued

12:30-12:45 F2C-(17)-7

A novel optical touch switch structure

Sarun Sumriddetchkajorn and Ratthasart Amarit

National Electronics and Computer Technology Center; National Science and Technology

Development Agency; Ministry of Science and Technology, Thailand

This paper proposes for the first time a novel optical touch switch structure based on the use of light total internal reflection (TIR) concept. Key features include ease of implementation, prevention of the light beam incident.....

December 19, Friday