

Room C (103)

Session Title 28C1 / [T02] Nonlinear Optics
Date & Time Friday, 28 August, 09:00 ~ 10:30
Session Chair Dong-Il Yeom (Ajou University, Korea)

[28C1-1] 09:00~09:15

Second Harmonic Generation and Shaping of Contra-propagating Light Pulses in Negatively Dispersive Metamaterials

Alexander Popov¹, Sergey Myslivets², Alexander Kildishev¹, and Alexandr Korotkevich³
¹Purdue University, USA, ²Siberian Federal University, Russia, ³University of New Mexico, USA
The possibility of great enhancement of short pulse second harmonic generation by employing phase matching of ordinary and backward electromagnetic waves in the metamaterials with mixed negative/positive spatial dispersion is demonstrated with numerical simulations.

[28C1-2] 09:15~09:30

Second-harmonic Generation of Near Ultraviolet Wavelength by Surface Nonlinearity Polarization

Jinhui Yuan^{1,2}, Xinzhu Sang¹, Xianting Zhang¹, Zhe Kang¹, Feng Li², Chongxiu Yu¹, and P. K. Alexander Waf²
¹Beijing University of Posts and Telecommunications, China, ²The Hong Kong Polytechnic University, Hong Kong
Second-harmonic generation of near ultraviolet wavelength by the surface nonlinearity polarization is experimentally demonstrated in a silica photonic crystal fiber. The maximum conversion efficiency of secondharmonic centered at 410 nm can be up to 1.6×10^{-6} .

[28C1-3] 09:30~09:45

Analysis on Morphological Domain Changes at the Hexagonal Corner of MgO:SLN Crystals

Ju Won Choi¹, Do-Kyeong Ko¹, Nan Ei Yu¹, and Jung Hoon Ro²
¹GIST, Korea, ²Pusan National University, Korea
A mesoscopic approach based on a simple microscopic 2D Ising model is developed to explain the macroscopic observation of 'asymmetric in-out domain wall motion' in (0001) plane of MgO:SLN single crystals.

[28C1-4] 09:45~10:00

Heat-Removal Wavelength-Conversion Module by Air-bubble Reduction

Masanobu Nonaka^{1,2}, Wataru Nagashima^{1,2}, Hwan Hong Lim¹, Sunao Kurimura¹, and Ichiro Shoji¹
¹National Institute for Materials Science, Japan, ²Chuo University, Japan
We report improved thermal performance in the heat removal module for stable wavelength conversion, fabricated by a new method, air-bubble reduction. The quantitative relation between focusing position, normalized conversion efficiency and effective heat capacity is investigated.

[28C1-5] 10:00~10:15

Multi-component Chalcogenide Glasses for Mid-infrared Nonlinear Optics

T. Wang^{1,5}, K. Chamma², C. Smitt², W. Chen³, G. F. R. Chen¹, A. M. Agarwal⁴, K. A. Richardson⁴, and D. T. H. Tan¹
¹Singapore University of Technology and Design, Singapore, ²University of Central Florida, USA, ³National University of Singapore, Singapore, ⁴Massachusetts Institute of Technology, USA, ⁵Chinese Academy of Sciences, China
We report here a series of z-scan experiments of the third-order nonlinearity of three typical chalcogenide glasses (As_2S_3 , As_2Se_3 and $\text{Ge}_{23}\text{Sb}_7\text{S}_{70}$) from the near-IR to mid-IR wavelengths for the first time. This work measured the n_2 values of As_2S_3 to be $1.3 \times 10^{-14} \text{ cm}^2/\text{W}$, of As_2Se_3 to be $5 \times 10^{-15} \text{ cm}^2/\text{W}$ and of $\text{Ge}_{23}\text{Sb}_7\text{S}_{70}$ to be $6.75 \times 10^{-15} \text{ cm}^2/\text{W}$ at the wavelengths of 2600 nm.

[28C1-6] 10:15~10:30

Improved Sellmeier Equations of Undoped and Mg-doped Stoichiometric LiNbO_3 and LiTaO_3 from Visible to Mid-IR Region

Daiki Kato¹, Syota Nuki¹, Daisuke Gunji¹, Tatsuro Fukui², Yasunori Furukawa², and Ichiro Shoji¹
¹Chuo University, Japan, ²OXIDE Corporation, Japan
We have succeeded in deriving accurate and simple Sellmeier equations for stoichiometric LiNbO_3 and LiTaO_3 available from visible to mid-IR region, based on the direct measurements of refractive indices and previously reported OPO experiments.

Room D (106)

Session Title 28D1 / [T04] High Power, High Energy Lasers II
Date & Time Friday, 28 August, 09:00 ~ 10:00
Session Chair Yong-Ho Cha (KAERI, Korea)

[28D1-1] 09:00~09:30 Invited Talk

Strong Electromagnetic Wave Generation and Electron Guidance on a Metal Wire Interacted with Intense Femtosecond Laser Pulses

Shuji Sakabe, Masaki Hashida, Shigeki Tokita, and Shunsuke Inoue
Kyoto University, Japan
Ultrafast field propagating along a metal wire driven by an intense femtosecond laser pulse has been measured by femtosecond electron deflectometry, and it is confirmed that electromagnetic surface waves guide laser-accelerated electrons along the wire.

[28D1-2] 09:30~09:45

Particle Acceleration with Laser and Applications

Kaniz Fatema Kakolee¹, Domenico Doria², and Marco Borghesi²
¹GIST, Korea, ²Queen's University, UK
The biological effectiveness of laser driven protons on cells at high dose rate in a single exposure has been studied. V79 cell lines were irradiated with laser driven protons.

[28D1-3] 09:45~10:00

Capture and Loss of Electron by MeV Ions Penetrating through Liquid Spray: Formation of Negative Ion and Neutral Atom Beams

Sargis Ter-Avetisyan^{1,2}, M. Borghesi³, M. Schnürer⁴, J. Bränzel⁴, S. Jequier⁵, and V. Tikhonchuk⁶
¹IBS, Korea, ²GIST, Korea, ³The Queen's University of Belfast, UK, ⁴Max Born Institute, Germany, ⁵University Bordeaux, France
Charge changing processes of MeV ions penetrating through liquid spray is confirmed to be abundant source of various energetic negative ion and neutral atom beams its generic nature is demonstrated.