Room C (103)

Session Title 28C2 / [T09] Light Emitting Devices
Date & Time Friday, 28 August, 11:00 ~ 12:30
Session Chairs Sergey Ivanov (Ioffe Physics and Technique Institute, Russia)
Tien-chang Lu (National Chiao Tung University, Taiwan)

[28C2-1] 11:00~11:30 Invited Talk

Growth of Semipolar GaN Substrates by Hydride Vapor Phase Epitaxy on Patterned Sapphire Substrate

Kazuyuki Tadatomo[1], Takushi Inagaki[1], Narihito Okada[1], Keisuke Yamane[2], Hiroshi Furuya[3], and Yasuhiro Hashimoto[3]

[1]Yamaguchi University, Japan, [2]Toyohashi University of Technology, Japan, [3]Tokuyama Corpoation, Japan

The surface roughening and crack generation during the HVPE growth on the MOVPE-grown semipolar GaN template were successfully suppressed by using SiO_2 striped masks perpendicular to the a-axis on the semipolar GaN template. The growth toward the –c-direction during the MOVPE growth was also successfully suppressed by using the growth temperature control; this resulted in a large reduction in the formation of stacking faults in semipolar GaN.

[28C2-2] 11:30~12:00 Invited Talk

Extremely Low-resistivity and High-carrier-concentration Si-doped AlGaN with Low AlN Molar Fraction for Improvement of Wall Plug Efficiency of Nitride-based LED

Motoaki Iwaya[1], Daisuke Iida[1], Kunihiro Takeda[1], Toru Sugiyama[1], Tetsuya Takeuchi[1], Satoshi Kamiyama[1], and Isamu Akasaki[1,2]

[1]Meijo University, Japan, [2]Nagoya University, Japan

We discovered that Si-doped AlGaN with low AlN molar fraction has been used to realize an external low-resistivity n-layer at room temperature. This Si-doped n-Al0.05Ga0.95N underlying layer is extremely useful for the realization of high-performance nitride-based light emitting diodes. We also confirmed a reduction in the differential resistance of a violet light-emitting diode by using this n-AlGaN.

[28C2-3] 12:00~12:15

Enhanced Light Extraction Efficiency of AlGaN-based Deep-Ultraviolet Light-Emitting Diodes by Utilizing Strong Sidewall Emission

Jong Won Lee[1], Jun Hyuk Park[1], Dong Yeong Kim[1], Jungsub Kim[2], E. Fred Schubert[3], and Jong Kyu Kim[1]

[1]POSTECH, Korea, [2]Samsung Electronics, Korea, [3]Rensselaer Polytechnic Institute, USA

We demonstrate new design of Deep-UV LEDs extracting strong sidewall-emission redirect top direction. We observe considerably enhanced optical and improved electrical properties and expect this model can provide key idea in current DUV LEDs for enhancing light extraction efficiency.

[28C2-4] 12:15~12:30

Optimization of p-Electrode Pattern for AlGaN-based Deep-Ultraviolet Light-Emitting Diodes

Guo-Dong Hao, Manabu Taniguchi, Kousei Nakaya, and Shin-Ichiro Inoue

National Institute of Information and Communications Technology, Japan

We studied on various p-electrode patterns to solve current crowding problem in AlGaN-based deep-ultraviolet light-emitting diode. Simulation results of optimized pelectrode pattern showed a uniform current density distribution and improved performance of light output power.

Room D (106)

Session Title 28D2 / [T10] Micro/Nanophotonics
Date & Time Friday, 28 August, 11:00 ~ 12:00
Session Chair Ki-Hun Jeong (KAIST, Korea)

[28D2-1] 11:00~11:30 Invited Talk

Single-mode Parity-time-symmetric Micro-ring Lasers

Mercedeh Khajavikhan, H. Hodaei, M. A. Miri, and D. Christodoulides

University of Central Florida, USA

Parity-time (PT) symmetry has been recently emerged as a new paradigm for mode management in micro-cavity lasers. Single-mode lasing is demonstrated in longitudinally and transversely multi-moded PT-symmetric micro-ring arrangements.

[28D2-2] 11:30~11:45

Particle Propulsion Using Higher Order Microfiber Modes

Maimaiti Aili[1,2], Viet Giang Truong[1], Marios Sergides[1], Ivan Gusachenko[1], and Sile Nic Chormaic[1]

[1]Okinawa Institute of Science and Technology Graduate University, Japan, [2]University College Cork, Ireland

Propulsion of polystyrene particles in the evanescent field of the first group of higher order modes in an optical microfiber were studied. Higher speeds were observed for higher order mode propulsion than for fundamental mode.

[28D2-3] 11:45~12:00

FRET-mediated Wavelength Conversion for Enhanced Solar Cell Efficiency

Xi Ding and Yu-Chueh Hung

National Tsing Hua University, Taiwan

We report an efficient Förster resonance energy transfer (FRET) realized in biopolymer thin films. Via FRET, shorter wavelengths of solar light are down-shifted which may result in enhanced light absorption by Si solar cells.