

# B-1 Nitride Process

## Representative Organizer

Hideto MIYAKE (Mie University)

## Co-organizers

Hiroshi AMANO (Nagoya University)

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Motoaki IWAYA (Meijo University)

Makoto MIYOSHI (Nagoya Institute of Technology)

Akihiro WAKAHARA (Toyohashi University of Technology)

Kou MATSUMOTO (TAIYO NIPPON SANSO Corporation)

Oral Session                      March 28 (Sat.)                      Room 2

## Nitride Processing

Chair : Akihiro Wakahara (Toyohashi University of Technology)

- 8:50    B1-I-01    **High-Density Nitrogen Radical Source for High-Speed Growth of High in Content InGaN by Plasma-Assisted MBE** [Invited Lecture]  
*<sup>1</sup>Hiroki Kondo, <sup>1</sup>Masaru Hori, <sup>2</sup>Hiroshi Amano*  
*<sup>1</sup> PLASMA NANOTECHNOLOGY RESEARCH CENTER, GRADUATE SCHOOL OF ENGINEERING, NAGOYA UNIVERSITY*  
*<sup>2</sup> AKASAKI RESEARCH CENTER, NAGOYA UNIVERSITY*
- 9:20    B1-O-01    **Comparison Between Homo-Epitaxial and Hetero-Epitaxial GaN Growth Using Radical-Enhanced Metal-Organic Chemical Vapor Deposition (REMOCVD)**  
*Yi Lu, Osamu Oda, Kenji Ishikawa, Hiroki Kondo, Makoto Sekine, Masaru Hori*  
*DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE, NAGOYA UNIVERSITY*
- 9:35    B1-O-02    **Study on Surface Thermal Stability of Free-Standing GaN Substrates**  
*<sup>1</sup>Shunsuke Okada, <sup>1</sup>Hideto Miyake, <sup>1</sup>Kazumasa Hiramatsu, <sup>2</sup>Reina Miyagawa, <sup>2</sup>Osamu Eryu, <sup>3</sup>Tamotsu Hashizume*  
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*<sup>3</sup> RESEARCH CENTER FOR INTEGRATED QUANTUM ELECTRONICS, HOKKAIDO UNIVERSITY*
- 9:50    B1-O-03    **Formation of Electrode for GaN-Based Blue Light Emitting Diodes by Screen Printing Using Ag Nanoparticle Inks**  
*<sup>1</sup>Tasuku Shigemune, <sup>1</sup>Atsushi Koizumi, <sup>2</sup>Yukiyasu Kashiwagi, <sup>3</sup>Hiroshi Kakiuchi, <sup>4</sup>Yasutaka Takemura, <sup>2</sup>Mari Yamamoto, <sup>2</sup>Masashi Saitoh, <sup>2</sup>Masanari Takahashi, <sup>2</sup>Toshinobu Ohno, <sup>2</sup>Masami Nakamoto, <sup>3</sup>Nobuyoshi Aoyagi, <sup>3</sup>Yukio Yoshida, <sup>4</sup>Koichiro Murahashi, <sup>4</sup>Kuniaki Ohtsuka, <sup>1</sup>Yasufumi Fujiwara*  
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*<sup>2</sup> OSAKA MUNICIPAL TECHNICAL RESEARCH INSTITUTE*  
*<sup>3</sup> DAIKEN CHEMICAL CO., LTD.*  
*<sup>4</sup> OKUNO CHEMICAL INDUSTRIES CO., LTD.*

## Devcie Processing and Characterziation

Chair : Andreas Waag (Braunschweig University of Technology)

13:00 B1-I-02 **MOCVD Growth of III-Nitride Core-Shell-Structured Nanorod with Flexible Geometry** [Invited Lecture]  
Chang-Gan Tu, Che-Hao Liao, Yu-Feng Yao, Chia-Ying Su, Horng-Shyang Chen, Wei-Han Chen,  
Chieh Hsieh, Hao-Tsung Chen, Yean-Woei Kiang, C.C.Yang  
*INSTITUTE OF PHOTONICS AND OPTOELECTRONICS, NATIONAL TAIWAN UNIVERSITY*

13:30 B1-O-04 **Excitation Area Dependence of Lasing Modes in Thin Hexagonal GaN Microdisks**  
<sup>1</sup>Tetsuya Kouno, <sup>2</sup>Masaru Sakai, <sup>3</sup>Katsumi Kishino, <sup>1</sup>Kazuhiko Hara  
*1 DEPARTMENT OF ELECTRONICS AND MATERIAL SCIENCE, SHIZUOKA UNIVERSITY*  
*2 INTERDISCIPLINARY GRADUATE SCHOOL OF MEDICINE AND ENGINEERING, UNIVERSITY OF YAMANASHI*  
*3 DEPARTMENT OF ENGINEERING AND APPLIED SCIENCES, SOPHIA UNIVERSITY*

13:45 B1-O-05 **Arrayed Whispering-Gallery-Mode Optical Microcavities via Top-Down Process on a GaN Layer**  
<sup>1</sup>Sho Suzuki, <sup>1</sup>Tetsuya Kouno, <sup>2</sup>Masaru Sakai, <sup>3</sup>Katsumi Kishino, <sup>1</sup>Kazuhiko Hara  
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14:00 B1-O-06 **Investigation of Energy Transfer Process in Eu-Doped GaN by Two-Wavelength Excited Photoluminescence**  
Kohei Okada, Ryuta Wakamatsu, Dolf Timmerman, Takanori Kojima, Atsushi Koizumi, Yasufumi Fujiwara  
*DIVISION OF MATERIALS AND MANUFACTURING SCIENCE, OSAKA UNIVERSITY*

14:15 B1-O-07 **Formation of a New Eu Luminescent Center by Zn,O-Codoping in Eu-Doped GaN**  
Masaaki Matsuda, Atsushi Koizumi, Takanori Kojima, Dolf Timmerman, Yasufumi Fujiwara  
*DIVISION OF MATERIALS AND MANUFACTURING SCIENCE, GRADUATE SCHOOL OF ENG., OSAKA UNIVERSITY*

14:30 B1-O-08 **Carbon-Related Deep-Level Defects and Carrier-Trapping Characteristics in AlGaIn/GaN Hetero-Structures**  
<sup>1</sup>Yoshitaka Nakano, <sup>2</sup>Yoshihiro Irokawa, <sup>2</sup>Masatomo Sumiya, <sup>3</sup>Shuichi Yagi, <sup>3</sup>Hiroji Kawai  
*1 CHUBU UNIVERSITY*  
*2 NATIONAL INSTITUTE FOR MATERIALS SCIENCE*  
*3 POWDEC*

14:45 **Break**

Chair : C. C. Yang (National Taiwan University)

15:00 B1-I-03 **Multifunctional 3D GaN: Strategies for Solid State Lighting, High Power Electronics and Sensor Devices** [Invited Lecture]  
<sup>1,5,6</sup>A. Waag, <sup>1</sup>J. Hartmann, <sup>1</sup>H. Zhou, <sup>1,6</sup>J. Ledig, <sup>1,6</sup>F. Steib, <sup>1,6</sup>M. Mohajerani, <sup>1,3</sup>X. Wang, <sup>1,6</sup>H.-F. Yu, <sup>1,5</sup>H. Wehmann,  
<sup>6,4,1</sup>M. W. G. Hoffmann, <sup>1,6</sup>A. E. Gad, <sup>1,6</sup>H. Shen, <sup>4</sup>J. D. Prades, <sup>2</sup>D. Bichler, <sup>2</sup>B. Huckenbeck, <sup>3</sup>T. Schimpke, <sup>3</sup>M. Mandl,  
<sup>3</sup>I. Stoll, <sup>3</sup>M. Strassburg, <sup>3</sup>H.-J. Lugauer  
*1 INST. OF SEMICONDUCTOR TECHNOLOGY, BRAUNSCHWEIG UNIVERSITY OF TECHNOLOGY, GERMANY*  
*2 OSRAM GMBH, GERMANY*  
*3 OSRAM OPTO SEMICONDUCTORS GMBH*  
*4 DEPARTMENT OF ELECTRONICS, UNIVERSITY OF BARCELONA*  
*5 EPITAXY COMPETENCE CENTER*  
*6 LABORATORY OF EMERGING NANOMETROLOGY*

15:30 B1-O-09 **Vertical InGaIn/GaN Light-Emitting Diodes Fabricated on SiC/Si Substrates**  
<sup>1</sup>Tomoyuki Tanikawa, <sup>2</sup>Mitsuhisa Narukawa, <sup>1</sup>Takashi Aisaka, <sup>1</sup>Shigeyuki Kuboya, <sup>1</sup>Ryuji Katayama,  
<sup>1</sup>Takashi Matsuoka, <sup>2</sup>Keisuke Kawamura  
*1 INSTITUTE FOR MATERIALS RESEARCH, TOHOKU UNIVERSITY*  
*2 AIR WATER R&D CO., LTD.*

15:45 B1-O-10 **Improved Performance of AlGaIn-Based Deep Ultraviolet Light-Emitting Diodes via a 20-nm-Thick n-AlGaIn Interlayer**  
Lei Li, Tatsuya Tsutsumi, Yuta Miyachi, Yuta Akatsuka, Makoto Miyoshi, Takashi Egawa  
*RESEARCH CENTER FOR NANO-DEVICE AND SYSTEM, NAGOYA INSTITUTE OF TECHNOLOGY*

- 16:00 B1-O-11 **Improvement of Polarization Characteristics of UV-LED by Using Sub-Wavelength Grating with Low Index Underlayer**  
<sup>1</sup>Yuusuke Takashima, <sup>1</sup>Ryo Shimizu, <sup>1,2</sup>Masanobu Haraguchi, <sup>1,2</sup>Yoshiki Naoi  
*1 GRADUATE SCHOOL OF ADVANCED TECHNOLOGY AND SCIENCE, TOKUSHIMA UNIVERSITY*  
*2 INSTITUTE OF TECHNOLOGY AND SCIENCE, TOKUSHIMA UNIVERSITY*
- 16:15 B1-O-12 **Solar-Blind Ultraviolet Detector Based on Al<sub>0.49</sub>Ga<sub>0.51</sub>N/AlN Heterostructure Back-Illuminated Schottky Barrier Diode**  
<sup>1</sup>Ousmane Barry, <sup>1</sup>Hiroto Sekiguchi, <sup>1</sup>Keisuke Yamane, <sup>1,2</sup>Hiroshi Okada, <sup>1</sup>Akihiro Wakahara, <sup>3</sup>Hideto Miyake, <sup>3</sup>Masakazu Hiramatsu  
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*3 DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING, FACULTY OF ENGINEERING, MIE UNIVERSITY*
- 16:30 B1-O-13L **Structural Characteristics About Initial Growth Process of GaN Nanoneedles Grown by Hydride Vapor Phase Epitaxy**  
<sup>1</sup>In-Jun Jeon, <sup>2</sup>Min Jeong Shin, <sup>2</sup>Dong-Oh Gwon, <sup>2</sup>Chanmi Lee, <sup>2</sup>Hyung Soo Ahn, <sup>2</sup>Sam Nyung Yi  
*1 DEPARTMENT OF NANO SEMICONDUCTOR ENGINEERING, KOREA MARITIME AND OCEAN UNIVERSITY*  
*2 DEPARTMENT OF APPLIED SCIENCE, KOREA MARITIME AND OCEAN UNIVERSITY*