

# Emerging Nano-based Device Technologies (ND)

## Oral Presentation

Nov. 7, 2011 (Mon.)

### ND 1 (Emerging Nano-based Device Technologies 1)

Mara

Chair: Prof. Sung-Jin Kim (Chungbuk National University, Korea)

15:00-16:10

#### NDIS1 Physics and Chemistry of Nanostructured Materials: Solid State Devices for Energy Harvesting

15:00-15:30

Invited Speech

Nobuhiko P. Kobayashi

*University of California Santa Cruz, USA*

#### ND1545 Synthesizing Functional Group of Graphene Nano-Platelets using Atmospheric Pressure Plasma with Capillary Electrode

15:30-15:50

Steven Kim<sup>1</sup>, Jung-Hyun Kim<sup>1</sup>, Jong-Yun Jeong<sup>1</sup>, Yun-Jung Kim<sup>1</sup>, In-Tae Kim<sup>1</sup>, Eun-Ha Choi<sup>1</sup>, Gwang-Seop Cho<sup>1</sup>, Jason Chung<sup>2</sup>, Yong-Hwa Cha<sup>3</sup>

<sup>1</sup>Kwangwoon University, Korea, <sup>2</sup>XG Sciences Corporation, USA, <sup>3</sup>HRNMC Co. Ltd., Korea

#### ND1363 Memristor-MOS Analog Comparator for Pattern Recognition System

15:50-16:10

Ca-Ram Han, Sang-Jin Lee, Kwang-Seok Oh, Kyoungrok Cho

*Chungbuk National University, Korea*

Nov. 7, 2011 (Mon.)

### ND 2 (Emerging Nano-based Device Technologies 2)

Mara

Chair: Prof. Massood Tabib-Azar (University of Utah, USA)

16:30-17:40

#### NDIS2 Memristive Devices: Modeling, Properties, and Applications

16:30-17:00

Invited Speech

Derek Abbott

*The University of Adelaide, Australia*

#### ND1361 Memristor-based Programmable Logic Array (PLA) on Crossbar Architecture

17:00-17:20

Kwan-Hee Lee, Sang-Jin Lee, Seok-Man Kim, Kyoungrok Cho

*Chungbuk National University, Korea*

#### ND1360 Analysis of Pulse-Frequency Modulation CMOS Image Sensors

17:120-17:40

Omid Kavehei<sup>1,2</sup>, Sang-Jin Lee<sup>2</sup>, Kyoungrok Cho<sup>2</sup>, Said Al-Sarawi<sup>1</sup>, Derek Abbott<sup>1</sup>

<sup>1</sup>University of Adelaide, Australia, <sup>2</sup>Chungbuk National University, Korea

## Emerging Nano-based Device Technologies

Nov. 8, 2011 (Tue.)

### ND 3 (Emerging Nano-based Device Technologies 3)

Mara

Chair: Prof. Nobuhiko P. Kobayashi (University of California Santa Cruz, USA)

09:10-10:20

#### NDIS3 Localized Deposition of Engineered Materials for Sensor Arrays

09:10-09:40 Massood Tabib-Azar

Invited Speech *University of Utah, USA*

#### ND517 Carbon Nanotube (CNT) Electron Beam Source to Mimic Radioisotope Micro-Power Generation

09:40-10:00

Jong Uk Kim, Yoon-Cheol Ha, Doohun Kim, Hae Young Choi, Chil-Hoon Doh  
*Korea Electrotechnology Research Institute (KERI), Korea*

#### ND776 CMOS Image Sensor with an In-Pixel Memristive Analog Memory

10:00-10:20

Omid Kavehei<sup>1,2</sup>, Kyoungrok Cho<sup>2</sup>, Sang-Jin Lee<sup>2</sup>, Said Al-Sarawi<sup>1</sup>, Kamran Eshraghian<sup>2</sup>, Derek Abbott<sup>1</sup>

<sup>1</sup>*University of Adelaide, Australia*, <sup>2</sup>*Chungbuk National University, Korea*,

Nov. 8, 2011 (Tue.)

### ND 4 (Emerging Nano-based Device Technologies 4)

Mara

Chair: Prof. Sung-Jin Kim (Chungbuk National University, Korea)

10:40-12:00

#### NDIS4 Millimeter-wave and Terahertz CMOS Design

10:40-11:10 Minoru Fujishima

Invited Speech *Hiroshima University, Japan*

#### NDIS5 Si and SiGe Nanowire Transistors

11:10-11:40 Hyunng-Sang Yuk<sup>1</sup>, Moon-Jae Kim<sup>1</sup>, Jin-Heon Oh<sup>2</sup>, Kee-Joe Lim<sup>2</sup>

Invited Speech <sup>1</sup>*University of Texas, USA*, <sup>2</sup>*Chungbuk National University, Korea*

#### ND262 Fabrication of n-TiO<sub>2</sub>/dye/p-CuI Incorporating New Chelating Agent for Dye Sensitized Solar Cells

11:40-12:00

Ayib Rosdi Zainun<sup>1,2,3</sup>, Tomoya Sakamoto<sup>1</sup>, Uzer Mohd Noor<sup>2</sup>, Mohamad Rusop<sup>2</sup>, Masaya Ichimura<sup>2</sup>

<sup>1</sup>*Nagoya Institute of Technology, Japan*, <sup>2</sup>*Universiti Teknologi MARA, Malaysia*, <sup>3</sup>*Universiti Malaysia Pahang (UMP), Malaysia*

Nov. 8, 2011 (Tue.)

**ND 5 (Emerging Nano-based Device Technologies 5)**

Mara

Chair: Prof. Minoru Fujishima (Hiroshima University, Japan)

15:30-16:10

**ND306 Thickness Dependent of Sol-gel Deposited Layer-by-layer Nanoparticles Zinc Oxide Thin Films**

15:30-15:50

Shafinaz Sobihana Shariffudin, Sukreen Hana Herman, Mohamad Rusop  
*Universiti Teknologi MARA, Malaysia***ND372 Surface Morphology and Crystallinity of PVDF/MgO Thin Films Composite with Different Loading Ratios**

15:50-16:10

Adillah Nurashikin Arshad, Mohamad Hafiz Mohd Wahid, Habibah Zulkefle, Mohamad Rusop Mahmood, Rozana Mohd Dahan  
*Universiti Teknologi MARA, Malaysia***Poster Presentation**

Nov. 7, 2011 (Mon.)

**NDP (Emerging Nano-based Device Technologies) Poster Presentation**

Lobby 8F

Chair: Prof. Sung-Jin Kim (Chungbuk National University, Korea)

13:30-15:00

**ND1472 Development of Nanopatterning Process by Nano-Electrohydrodynamic Inkjet Printer using Anodic Aluminum Oxide Mask**Jaeho Choi, Jung Tack Lee, Hyung Yong Ji, Keunjoo Kim  
*Chonbuk National University, Korea***ND1380 Vertically Integrated Logic Circuits Constructed using ZnO-nanowire-based Field-effect Transistors on Plastic Substrates**Jeongmin Kang, Taeho Moon, Youngin Jeon, Hoyoung Kim, Sangsig Kim  
*Korea University, Korea***ND1378 Si-Nanowire-Array-Based NOT-Logic Circuits Constructed on Plastic Substrates using Top-Down Methods**Youngin Jeon, Jeongmin Kang, Myeongwon Lee, Taeho Moon, Sangsig Kim  
*Korea University, Korea***ND1377 Photocurrent Characteristics of Hetero-dimensional Junctions Made with N-type Si Nanowires and P-type HgTe Nanoparticle-films**Sukhyung Park, Kyoungah Cho, Sangsig Kim  
*Korea University, Korea*

## Emerging Nano-based Device Technologies

**ND1284 A Novel SiGe-on-Insulator (SGOI) MOSFET for Leakage Current Reduction: Graded Single Halo Doping**

Morteza Rahimian, Ali A. Orouji  
*Semnan University, Iran*

**ND1168 AlGaN/GaN Schottky Barrier Diodes on Si Substrate Employing NiO<sub>x</sub>Ni/Au Contact**

Young-Shil Kim<sup>1</sup>, O-Gyun Seok<sup>1</sup>, Min-Woo Ha<sup>2</sup>, Min-Koo Han<sup>1</sup>  
<sup>1</sup>*Seoul National University, Korea*, <sup>2</sup>*Korea Electronics Technology Institute, Korea*

**ND1130 Low Reset Current and Diode Characteristic of Resistive Switching Memory with Si based Cr-doped SrTiO<sub>3</sub>**

Minyeong Song<sup>1</sup>, Yujeong Seo<sup>1</sup>, Yeon-Soo Kim<sup>2</sup>, Hee-Dong Kim<sup>1</sup>, Ho-Myoung An<sup>1</sup>, Tae Geun Kim<sup>1</sup>  
<sup>1</sup>*Korea University, Korea*, <sup>2</sup>*Kunkuk University, Korea*

**ND1086 AFM-scratching Induced Patterning Towards Top-down Processed SiC Nano-structured Devices**

Jung-ho Lee<sup>1</sup>, Min-Seok Kang<sup>1</sup>, Jung-Jun Ahn<sup>1</sup>, Carl-Mikael Zetterling<sup>2</sup>, Anders Hallen<sup>2</sup>, Wook Bahng<sup>3</sup>, Sang-Cheol Kim<sup>3</sup>, Nam-Kyun Kim<sup>3</sup>, Ji-Hoon Lee<sup>1</sup>, Sang-Mo Koo<sup>1</sup>  
<sup>1</sup>*Kwangwoon Univ., Korea*, <sup>2</sup>*KTH, Royal Inst. of Technology, Korea*, <sup>3</sup>*Korea Electrotechnology Research Institute, Korea*

**ND836 The Impact Characterization of N<sub>2</sub> Implantation in SOHOS Flash Memory using Low Frequency Noise Analysis**

Seung-Dong Yang<sup>1</sup>, Sang Youl Lee<sup>1</sup>, Ho Jin Yun<sup>1</sup>, Kwang Seok Jeong<sup>1</sup>, Yu Mi Kim<sup>1</sup>, Jae Sub Oh<sup>1,2</sup>, Hi-Deok Lee<sup>1</sup>, Ga-Won Lee<sup>1</sup>  
<sup>1</sup>*Chungnam National University, Korea*, <sup>2</sup>*National Nanofab Center, Korea*

**ND518 High Breakdown SOI MESFET with Horizontal T Shaped Gate**

Amirhossein Aminbeidokhti, Ali A. Orouji, Soude Rahmaninezhad, Morteza Rahimian, Masoomeh Ghasemian  
*Semnan University, Iran*

**ND427 Nanoscale SiGe-on-Insulator (SGOI) MOSFET with Step High Doping Concentration for Leakage Current Reduction**

Morteza Rahimian, Ali A. Orouji, Amirhossein Aminbeidokhti  
*Semnan University, Iran*

**ND314 Characterization of pn Heterojunction Diodes Constructed with a Cu<sub>2</sub>O Nanoparticle-film and a Single ZnO Nanowire**

Kiyool Kwak, Kyoungah Cho, Sangsig Kim  
*Korea University, Korea*

**ND292 Preparation of Barium Titanate-strontium Titanate Accumulation Ceramics by Solvothermal Synthesis and Their Dielectric Properties**

Shogo Iwatsuki, Masatoshi Kera, Nakashima Kouichi, Ichiro Fujii, Satoshi Wada  
*University of Yamanashi, Japan*

- ND290 Investigation of Transfer Characteristics of High Performance Graphene Flakes**  
Gunasekaran Venugopal<sup>1,2</sup>, Karthikeyan Krishnamoorthy<sup>1</sup>, Rajneesh Mohan<sup>1</sup>, Sang-Jae Kim<sup>1</sup>  
<sup>1</sup>Jeju National University, Korea, <sup>2</sup>Karunya University, India
- ND190 Kinetic Monte Carlo (kMC) Study on Carbon Trapping Effect in Pre-amorphized Silicon**  
Soonyeol Park, Taeyoung Won  
*Inha University, Korea*
- ND188 Design Issues for LDMOS with Higher Breakdown Voltage**  
Keun-Sik Sung, Tae-young Won  
*Inha University, Korea*
- ND178 Diode Current of Metal-oxide-semiconductor Field-effect Transistor Junction with Doping Dependence**  
Hyunho Park<sup>1,2</sup>, Byoungdeok Choi<sup>2</sup>  
<sup>1</sup>Samsung Electronics Co., Korea, <sup>2</sup>Sungkyunkwan University, Korea
- ND137 All-optical Switching using Localized Surface Plasmons in Nano-metal Strips**  
Hua Xu, Byoung S. Ham  
*Inha University, Korea*
- ND132 Properties of Optical Quantum Transition of ZnS and Ge of Electron-Piezoelectric Interaction System Under Two Circularly Oscillating Fields**  
Su-Ho Lee<sup>1</sup>, Jeong-Young Sug<sup>2</sup>, Min-Sek Seong<sup>1</sup>, John-Tark Lee<sup>1</sup>, Jun-Hee Lee<sup>1</sup>  
<sup>1</sup>Donga University, Korea, <sup>2</sup>Kyungpook National University, Korea
- ND82 Optical Property and Crystallinity of Self-Assembled TiO<sub>2</sub>-SiO<sub>2</sub> Photonic Crystals**  
Yong Taeg Oh, Dong Chan Shin  
*Chosun University, Korea*