



# PROGRAM BOOK



**IEEE Nanotechnology Materials  
and Devices Conference**

October 22-25, 2006, Gyeongju, Korea

[www.ieee-nmdc.org](http://www.ieee-nmdc.org)

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## CHAIRMAN'S MESSAGE

You are cordially invited to participate in IEEE Nanotechnology Materials and Devices Conference 2006 (IEEE NMDC 2006) which will be held at Hyundai Hotel, Gyeongju, Korea on October 22-25, 2006.

NMDC aims to develop critical assessment of existing work and future directions in nanotechnology research including nanomaterials and fabrications, nanoelectronics, nanophotonics, devices, and integration. This conference will bring together key researchers from all over the world and from every sector of academy and industry in the nanotechnology research field, with a special focus on materials and devices. The conference will consist of plenary talks, invited talks, and contributed presentations with a separate poster session. Short Course is provided to refresh the researchers/engineers in the field, and to introduce new developments to students.

We will appreciate your participation and be most obliged to you if you may send this message to other colleagues.

We are looking forward to seeing you at IEEE NMDC 2006 in Gyeongju, Korea.



Yoon-Ha Jeong, Ph. D.  
IEEE NMDC 2006 Conference Chair

## GENERAL INFORMATION

### Badges

Your badge contains your name, affiliation and location. The badge also indicates your registration type and allows access to the areas of the convention for which you are registered. The badge may contain more than one registration type.

Registration Types Include :

**Regular** ... allows access to any Exhibit or Conference for Oral and Poster session all day.

**Student** ... allows access to any Exhibit or Conference for Oral and Poster session all day.

**Short Course** ... access to Conference for Short Course on Sunday only..

### Conference Proceedings

The conference attendees will receive a conference proceedings book and CD. Additional copies of the conference proceedings can be purchased for a special show price of \$50 per copy for members and \$75 per copy for non-members at the registration desk. Proceedings purchased after IEEE NMDC 2006 will be much higher.

### Conference Luncheons

Lunch for conference attendees and anyone who pre-purchased a lunch ticket will be held on the Conference Floor (see the Floor Plan insert for exact location). Admittance is by ticket only. Lunch tickets may be purchased at the On-Site Registration Desk.

### Registration Hours

- Sunday, Oct. 22 : 8 am – 9 pm

- Monday, Oct. 23 : 8 am – 9 pm
- Tuesday, Oct. 24 : 8 am – 9 pm
- Wednesday, Oct. 25 : 8 am – 2 pm

### **Exhibit Hours**

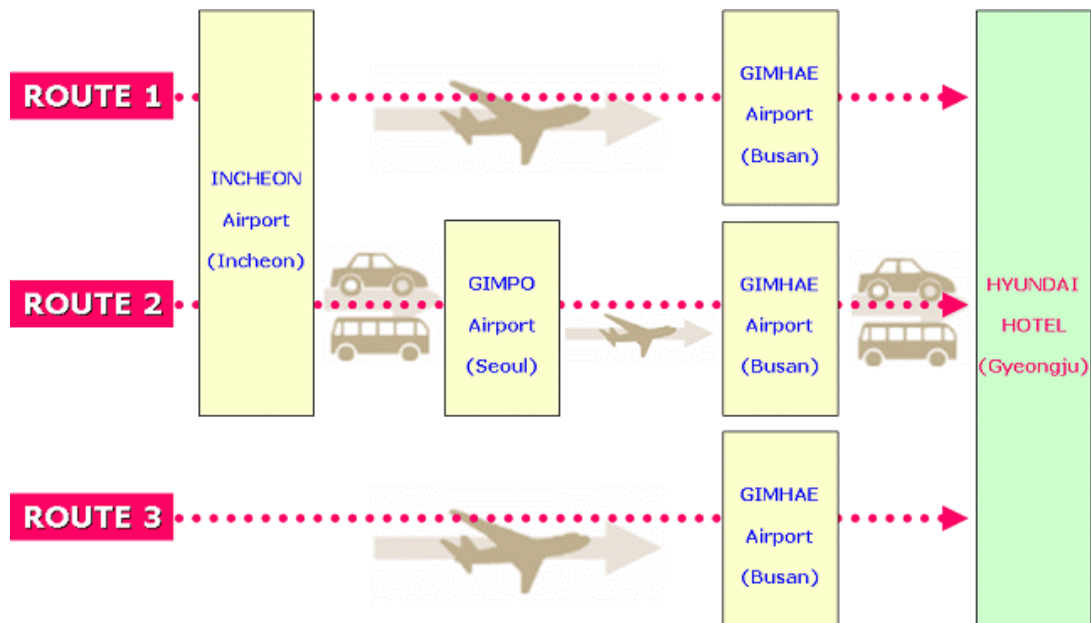
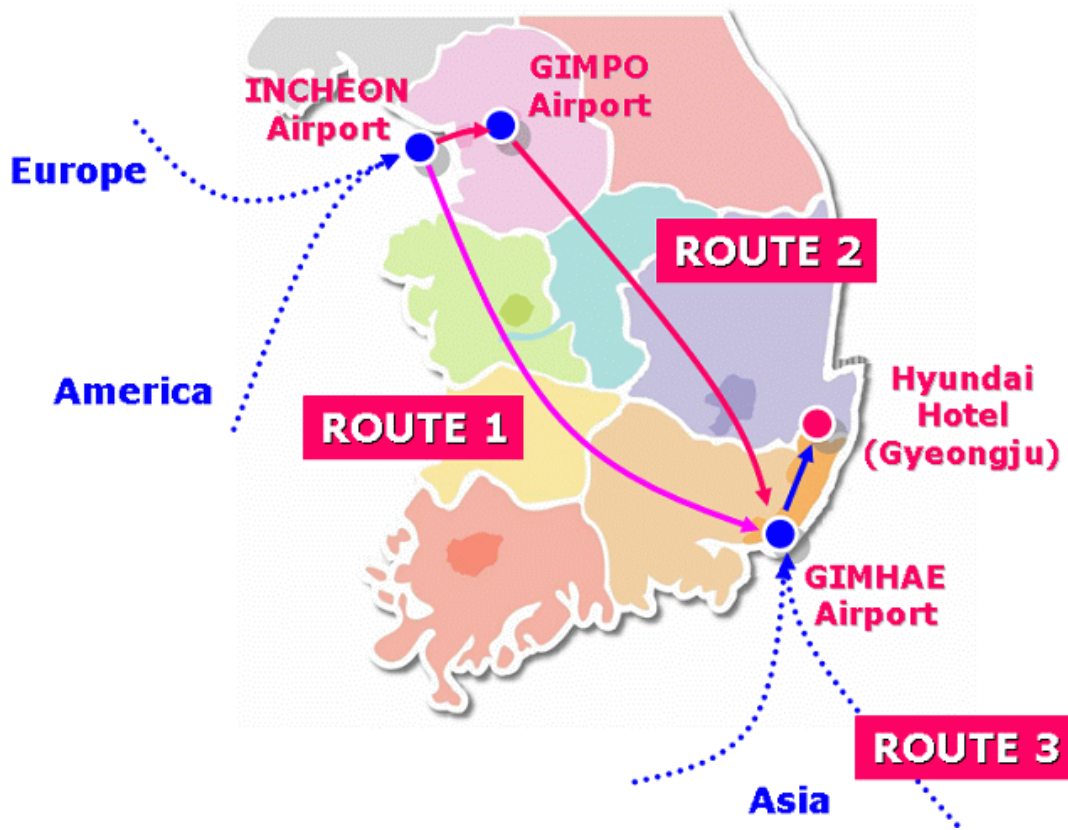
The IEEE NMDC 2006 Exhibit Show Floor will be open during the following hours:

- Monday, Oct. 23 : 8 am – 9 pm
- Tuesday, Oct. 24 : 8 am – 7 pm

### **Bookstore**

Be sure to visit Bookstore located in the conference floor. A wide variety of books dealing with Nanotechnology Materials and Devices are available. The Bookstore will be open during conference hours.

# TRANSPORTATION



## **ROUTE 1**

**Incheon International Airport (Seoul, Korea) ⇒ Gimhae(Busan, Korea)**

1. Information desk and desk clerk will be disposed on 1st floor. (Next to Gate 7)
2. Arrival Check at IEEE NMDC 2006 Information Desk(Arrival Lobby 1F)
3. Incheon Airport(Seoul, Korea) ⇒ Kimhae Airport(Busan, Korea)  
- Departure time: 08:00(AISANA), 09:00(KAL), 20:05(KAL), 20:50(ASIANA)
4. Gimpo(Seoul, Korea) ⇒ Gimhae(Busan, Korea)
5. Hyundai Hotel by shuttle bus(Gimhae airport, Busan, Korea)

## **ROUTE 2**

**Incheon International Airport (Seoul, Korea) ⇒ Gimpo Airport ⇒ Gimhae(Busan, Korea)**

1. Information desk and desk clerk will be disposed on 1st floor.
2. Arrival Check at IEEE NMDC 2006 Information Desk(Arrival Lobby 1F)
3. Gimpo Airport by Airport Limousine
4. Gimpo(seoul, Korea) ⇒ Gimhae(Busan, Korea)
5. Hyundai Hotel by Airport Limousine(Gimhae airport, Busan), Korea)

## **ROUTE 3**

**Gimhae International Airport (Busan, Korea)**

1. Information desk and desk clerk will be disposed on 1st floor.
2. Arrival Check at IEEE NMDC 2006 Information Desk(Arrival Lobby 1F)
3. Hyundai Hotel by Airport Limousine.



*The Scope and Topics of the Conference*

Topics in the general area of nanoelectronic materials and devices will be discussed at the Conference. Theme of the Conference is *“Emerging Nanotechnology and Impact on Technology Innovation in Industry”*

Discussions will emphasize a multidisciplinary approach (materials, devices, systems, and fabrications). Topics include, but are not restricted to:

**Nano CMOS**

**Nano Photonics**

**Molecular Electronics and Bio Devices**

**New Devices beyond CMOS**

**Spintronics**

**Nano Electronic Materials and Fabrication**

## COMMITTEE

### • **Advisory Committee**

Leo Esaki, Shibaura Inst. of Technology, Japan

Toshio Fukuda, Nagoya Univ., Japan

Hee-Gook Lee, LG Electronics, Korea

Oh-Hyun Kwon, Samsung Electronics, Korea

Harold Kroto, Univ. of Sussex, UK

Robert Leheny, DARPA, USA

Meyya Meyyappan, NASA, USA

Chan-Mo Park, POSTECH, Korea

Jung-Uck Seo, Past-Director, IEEE Region 10, Korea

Takuo Sugano, Toyo Univ., Japan

Tzyh-Jong Tarn, Washington Univ., USA

### • **International Steering Committee**

#### North America

Phaedon Avouris, IBM, USA

Jeffrey Bokor, UCB, USA

Hong-Koo Kim, Univ. of Pittsburgh, USA

Clifford Lau, IDA, USA

Byung-Lip Lee, AFOSR, USA

Gil Sik Lee, UT at Dallas, USA

Charles Lieber, Harvard Univ., USA

Serge Luryi, SUNY at Stony Brook, USA

Yoshio Nishi, Stanford Univ., USA

Sandip Tiwari, Cornell Univ., USA

#### Europe

Roberto Cingolani, Univ. of Lecce, Italy

Kishan Dholakia, Univ. of St. Andrews

Eli Kapon, Swiss Federal Inst. of Technology, Switzerland

Thomas P. Pearsall, European Photonics Industry Consortium, France

Klaus Ploog, PDI, Germany

## Asia/Pacific

Hideki Hasegawa, Hokkaido Univ., Japan

Hiroshi Iwai, Tokyo Institute of Tech., Japan

Ching-Fuh Lin, National Taiwan Univ., Taiwan

Hiroyuki Sakaki, Univ. of Tokyo, Japan

Seiichi Takeuchi, IEEE Region 10 Director, Tokyo Denki Univ., Japan

Huazhong Yang, Tsinghua Univ., China

### • **Conference Committee**

Conference Honorary Chair: Yoon Soo Park, RPI, USA

Conference Chair: Yoon-Ha Jeong, POSTECH, Korea

Co-chair: Yasuhiko Arakawa, Univ. of Tokyo, Japan

Co-chair: Chennupati Jagadish, Australian National Univ., Australia

Publications Chair: Hyungjun Kim, POSTECH, Korea

Co-chair: Ning Xi, Michigan State Univ., USA

Conference Secretary: Jinyong Chung, POSTECH, Korea

Hae-Wook Han, POSTECH, Korea

Press: Young-Kwon Jun, NCNT, Korea

Treasurer: Hoon-Kyu Shin, NCNT, Korea

Financial Advisor: Xiaoping Yun, Naval Postgraduate School, USA

### • **Local Steering Committee**

Jung-Chan Bae, KITECH, Korea

Min Koo Han, Seoul National Univ. , Korea

Sang-Rock Han, NTRA, Korea

Kyung-Ho Kim, KISTI, Korea

Bun Lee, KOSEF, Korea

Cheon Il Eom, KOSEF, Korea

Hee-Chul Lee, KAIST, Korea

Jo-Won Lee, TND, Korea

Joong-Won Lee, KANC, Korea

Kun-Hong Lee, POSTECH, Korea

Sang-Rok Lee, CNMM, Korea

Han-Jo Lim, Ajou Univ., Korea

Chan-Gyung Park, POSTECH, Korea

Sang-Hee Suh, CNMT, Korea

Hyung-Jae Lee, Chunbuk National Univ., Korea  
Duk-Dong Lee, Kyungpook National Univ., Korea  
Jong-Duk Lee, Seoul National Univ., Korea  
Suk-Ki Min, Kyunghee Univ., Korea  
Hyung Moo Park, Dongkuk Univ., Korea

• **Technical Program Committee**

Technical Program Chair: Dae Mann Kim, KIAS, Korea  
Co-chair: Jimmy Xu, Brown Univ., USA  
Co-chair: Yoshiro Hirayama, Tohoku Univ., Japan  
Vice-chair: Ki Bum Kim, Seoul National Univ., Korea  
Vice-chair: Jong Ku Park, KIST, Korea

**Nano CMOS**

Chair: Byung-Gook Park, Seoul National Univ., Korea  
Dong-Gun Park, Samsung Electronics, Korea  
Hi-Deok Lee, Chungnam National Univ., Korea  
Jong-Ho Lee, Kyungpook National Univ., Korea  
Jung-Soo Lee, Chonbuk National Univ., Korea  
Dae-Gwan Kang, Hynix, Korea  
Toshiro Hiramoto, Univ. of Tokyo, Japan  
Shinichi Tagaki, Univ. of Tokyo, Japan

**Nano Photonics**

Chair: O'Dae Kwon, POSTECH, Korea  
Co-Chair: Yoshiaki Nakano, Univ. of Tokyo, Japan  
Ki-Dong Lee, LG-Elite, Korea  
Yoon-Chang Kim, Samsung SDI, Korea  
Yong-Tak Lee, GIST, Korea  
Yong-Hee Lee, KAIST, Korea  
Hae-Wook Han, POSTECH, Korea  
Tae-Geun Kim, Korea Univ., Korea  
Claude Weisbuch, Ecole Polytechnique, France/ UCSB, USA  
James L. Merz, Univ. of Notre Dame, USA  
S.T. Ho, Northwestern Univ., USA

### *Molecular Electronics & Bio Devices*

Chair: Young-Soo Kwon, Dong-A Univ., Korea

Co-Chair: Axel Scherer, Caltech, USA

Jeong-O Lee, Korea Research Institute of Chemical Technology, Korea

Changjin Lee, Korea Research Institute of Chemical Technology, Korea

Kyung-Hwa Yoo, Yonsei Univ., Korea

Moon-Ho Jo, POSTECH, Korea

Mitsumasa Iwamoto, TIT, Japan

Chad Mirkin, Northwestern Univ., USA

Hyoyoung Lee, Electronics and Telecoms. Research Institute, Korea

Takhee Lee, Gwangju Institute of Science of Technology, Korea

Il-Hyung Lee, KISTI, Korea

### *New Devices beyond CMOS*

Chair: Han-Jo Lim, Ajou Univ., Korea

Co-Chair: Albert Yee, UCI, USA

Wan-Jun Park, SAIT, Korea

Doyeol Ahn, Univ. of Seoul, Korea

Kyung-Ho Shin, KIST, Korea

Song-Chel Hong, KIST, Korea

Sung-Woo Hwang, Korea Univ., Korea

Herb Goronkin, Technology Accel Assoc., USA

James A. Hutchby, SRC, USA

Seigo Tarucha, Univ. of Tokyo, Japan

Toshimasa Fujisawa, NTT, Japan

### *Spintronics*

Chair: Hu-Jong Lee, POSTECH, Korea

Co-Chair: Jacek K. Furdyna, Univ. Notre Dame, USA

Co-Chair: Sang-Ho Lim, Korea Univ., Korea

Taewan Kim, SAIT, Korea

Eun-Soon Oh, Chungnam National Univ., Korea

Hyung-Joon Kim, KIST, Korea

Taek-Dong Lee, KAIST, Korea

Kungwon Rhie, Korea Univ., Korea

Kyung-Ho Shin, KIST, Korea

Hyun-Woo Lee, POSTECH, Korea  
Byung-Chan Lee, Inha Univ., Korea  
Chun-Yeol Youe, Inha Univ., Korea  
Seung-Hyun Chun, Sejong Univ., Korea  
Jonghwa Eom, Sejong Univ., Korea  
Kyoung Jin Lee, Korea Univ., Korea  
Nam Kim, KRISS, Korea  
Jung-Il Lee, KIST, Korea  
Young Keun Kim, Korea Univ., Korea  
Tae Hee Kim, Ewha Women's Univ., Korea  
Do-Guwn Hwang, Sangji Univ., Korea  
Yong-Su Kim, Samsung., Korea  
Jisang Hong, Pukyong National Univ., Korea  
Sang-Koog Kim, Seoul National Univ., Korea  
Joon-Yeon Chang, KIST, Korea  
Myung-Hwa Jung, KBSI, Korea  
Shinichi Tagaki, Univ. of Tokyo, Japan  
Jinhee Kim, KRISS, Korea  
Sug-Bong Choe, Seoul National Univ., Korea  
Eun-Sik Kim, SAIT, Korea

### *Nano Electronic Materials & Fabrication*

Chair: Hyeong Joon Kim, Seoul National Univ., Korea

Co-Chair: Evelyn Hu, UCSB, USA

Jung-Hee Lee, Kyungpook National Univ., Korea

Gun-Nyun Kim, KETI, Korea

Eui-Jun Yoon, Seoul National Univ., Korea

Geun-Young Yeom, Sungkyunkwan Univ., Korea

Young-Jin Jeon, Korea Advanced Nano Fab Center, Korea

Ray Baughman, UT Dallas, USA

Eli Yablonovitch, UCLA, USA

Steve Chou, Princeton Univ., USA

## SPONSORS

- NCNT
- IEEE NTC
- KITECH
- NNIC
- POSTECH
- MOCIE
- GYEONGSANGBUK-DO
- POHANG CITY
- GYEONGJU CITY
- GUMI CITY
- BUSAN METROPLITAN CITY
- POSCO
- KOSEF
- AOARD/AFOSR
- JEOL
- CAMECA
- ELIONIX
- DMS
- LG Electronics
- LG Philips LCD
- Samsung Electronics
- Samsung SDI
- HYNIX
- DONGBU ELECTRONICS
- MAGNACHIP
- SAIT
- KETI
- KIST
- CNMT
- NTRA
- EDIRAK
- COSAR
- KSIA
- KODEMIA
- KTP
- PohangTP
- TTP
- UTP
- BTP
- ETNEWS

## **PLANNING GUIDE**

This is an overview spreadsheet of all event taking place during IEEE NMDC 2006. Use this handy guide to plan which conference sessions you will attend and when you will visit the Conference Floor. Place check marks next to the sessions you want to attend to keep track of your week.

### **SUNDAY, October 22, 2006**

AM	10:00-11:50	<b>SC I : New Devices beyond CMOS</b>	
PM	11:50-13:10	<b>Lunch</b>	
	13:10-15:00	<b>SC II-A : Nanodevices &amp; Circuit</b>	<b>SC III-A : Nanomaterials &amp; Structure</b>
	15:00-15:10	<b>Coffee Break</b>	
	15:10-17:00	<b>SC II-B : Bio-nanoelectronics</b>	<b>SC III-B : Spintronics</b>
	17:00-18:15	<b>SC IV : Nano Hub</b>	

## OCTOBER 23(MON), 2006

<b>AM</b>	8:30 – 9:00	<b>Opening remarks &amp; guest speech (20 min.)</b> Conference Speech : “Emerging Nanotechnology and Impact on Technology Innovation in Industry” Takuo Sugano, Toyo Univ., Japan		
	9:00 – 11:00	<b>Plenary Session (PL) I</b> : 30min lecture/10min Q&A <b>PL1</b> : The Trends and Future Prospects of Nano Technology Development and Deployment in Korea Hee-Gook Lee, LG Electronics, Korea <b>PL2</b> : IEEE NMDC 2006 Kwang Byuk Suh, Samsung Electronics, Korea <b>PL3</b> : Nanoelectronics Materials and Devices as New Opportunity Yoshio Nishi, Stanford Univ., USA		
	11:00 – 11:20	<b>Coffee Break</b>		
	11:20 – 12:10	NCI 1,2	NPI 1, 2	NMI 1,2
<b>PM</b>	12:10 – 13:30	<b>Lunch</b>		
	13:30 – 15:05	NCI 3~5/NCO 1	NPI 3,4/NPO 1~3	NMI 3,4/NMO 1~3
	15:05 – 15:25	<b>Coffee Break</b>		
	15:25 – 16:55	NDI 1~3 /NDO 1	MEI 1~3 /MEO 1	SPI 1~3 / SPO 1
	16:55 – 17:15	<b>Coffee Break</b>		
	17:15 – 18:15	NDO 2~5	MEO 2~5	NMO 4~7
<b>Evening</b>	18:30 – 20:00	<b>Poster Session I &amp; General Reception</b>		

## OCTOBER 24 (TUE), 2006

<b>AM</b>	9:00 – 11:00	<b>Plenary Session (PL) II</b> : 30min lecture/10min Q&A <b>PL4</b> : Self-organisation and self-assembly in nano/micro systems Toru Maekawa, Toyo Univ., Japan <b>PL5</b> : MONA : The MONA Project : The Nanophotonics Roadmap Tomas P. Pearsall, European Photonics Industry Consortium, France <b>PL6</b> : Computing at the Nanoscale Stanley Williams, HP, USA		
	11:00 – 11:20	<b>Coffee Break</b>		
	11:20 – 12:15	NCI 6 / NCO 2,3	NPI 5,6	NMI 5,6
<b>PM</b>	12:15 – 13:30	<b>Lunch</b>		
	13:30 – 14:00	NCO 4,5	NPI 7,8	MEI 4~6
	14:00 – 15:15	NDI 4~6	NPO 4~6	MEO 6
	15:15 – 15:35	<b>Coffee Break</b>		
	15:35 – 17:35	SPI 4,5 / SPO 2~4	Special Panel Session	NMO 8 ~ 13
	17:35 – 18:30	<b>Poster Session II (Coffee Break)</b>		
<b>Evening</b>	18:30 – 20:00	<b>Banquet</b>		

## OCTOBER 25 (WED), 2006

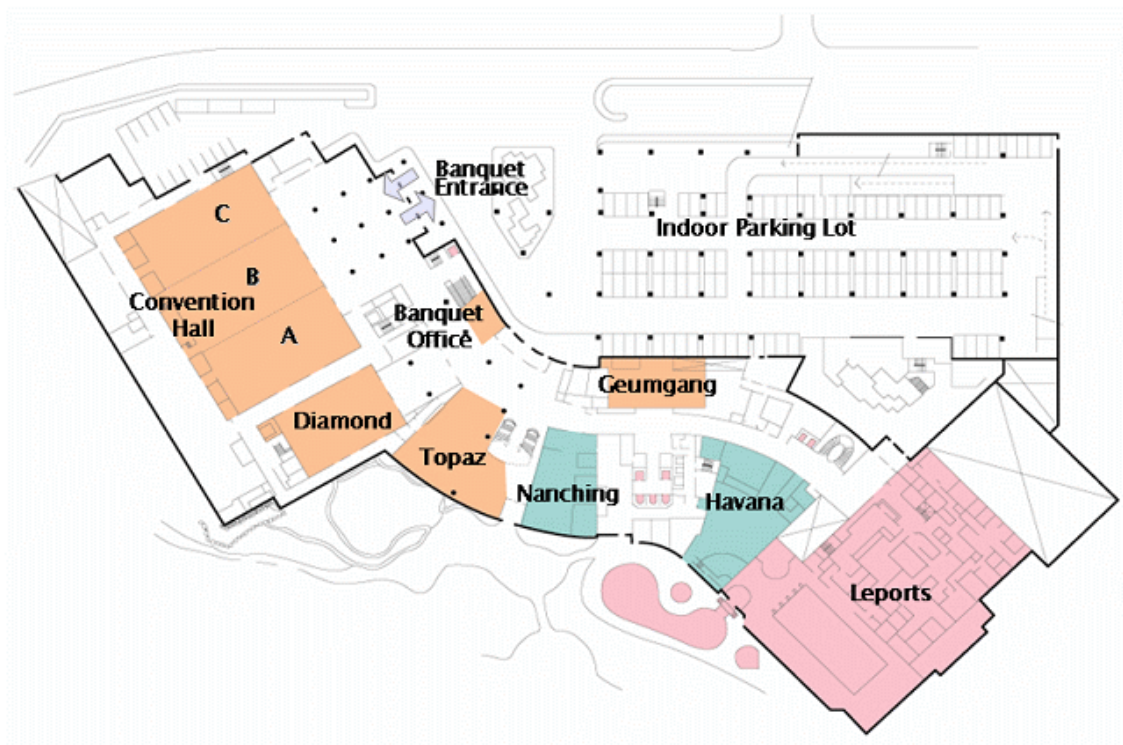
AM	09:30~12:00	<b>1. National Center for Nanomaterials Technology</b> <b>2. Pohang Accelerator Laboratory</b>
	12:00~13:30	<b>Lunch</b>
PM	13:30 -17:30	<b>1. Bulguksa (Buddhist temple)</b> <b>2. Gyeongju National Museum</b>

## FLOOR PLAN

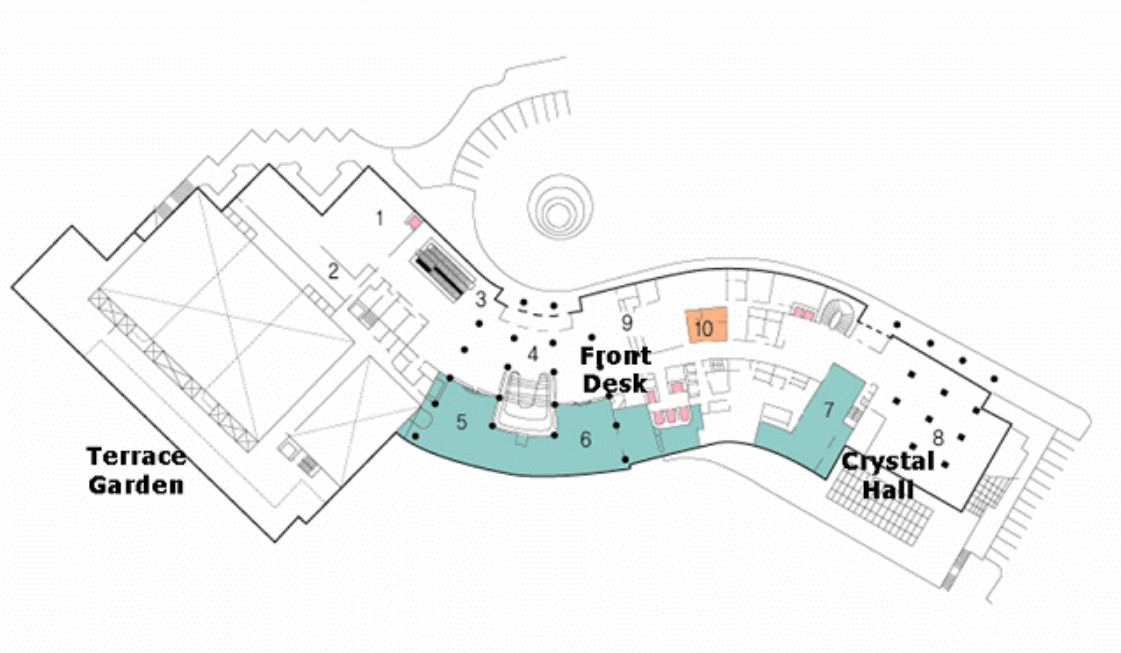
An overall layout Gyeong Hyundai Hotel, along with a complete floor plan of the Conference Hall.



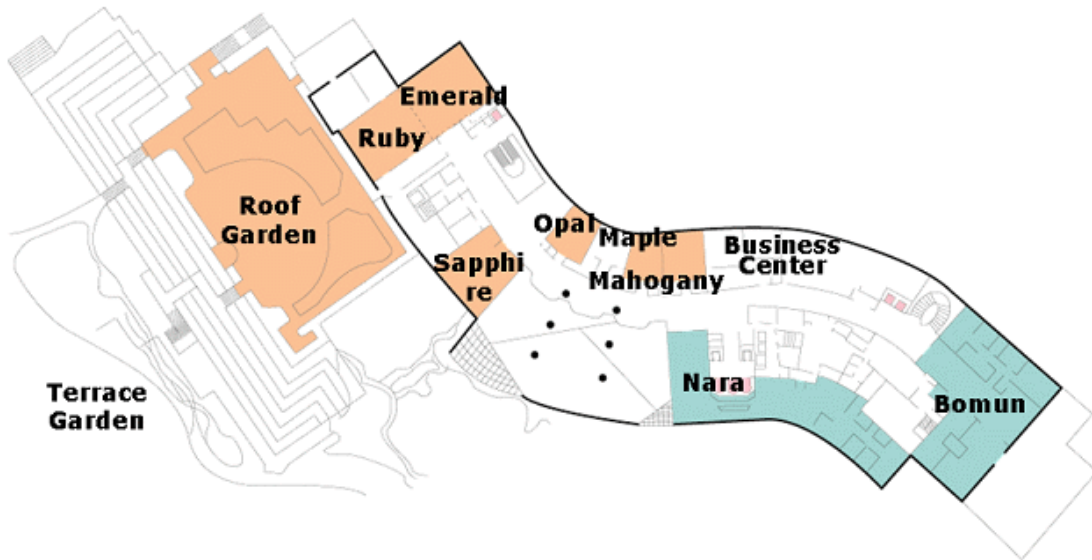
### LEVEL B1F



**LEVEL 1F**



**LEVEL 2F**



# CONFERENCE PROGRAM

## I. OCTOBER 22(SUN), 2006

AM	10:00-11:50	SC I : New Devices beyond CMOS	
PM	11:50-13:10	Lunch	
	13:10-15:00	SC II-A : Nanodevices & Circuit	SC III-A : Nanomaterials & Structure
	15:00-15:10	Coffee Break	
	15:10-17:00	SC II-B : Bio-nanoelectronics	SC III-B : Spintronics
	17:00-18:15	SC IV : Nano Hub	

## I. SHORT COURSE

### 1. CONVENTION HALL A+B

10:00 ~ 11:50 **I. New Devices beyond CMOS**

**From Superlattices to Quantum Dots : Progress of Semiconductor Nanostructures and Their Device Applications**

Prof. Hiroyuki Sakaki, Univ. of Tokyo, Japan

11:50 ~ 13:10 Lunch

### 2. CONVENTION HALL A

13:10 ~ 15:00 **II-A. Nanodevices & Circuit**

**Devices and Circuits of the Nanoscale**

Prof. Sandip Tiwari, Cornell Univ., USA

15:00 ~ 15:10 Coffee Break

15:10 ~ 17:00 **II-B. Bio-nanoelectronics**

**Enabling a new paradigm of IT – acquiring information and executing on information**

Prof. Jimmy Xu, Brown Univ., USA

### 3. CONVENTION HALL B

13:10 ~ 15:00 **III-A. Nanomaterials & Structure**

**Nanostructured Electrodes for Efficient Energy Storage**

Prof. Guozhong Cao, Univ. of Washington, USA

15:00 ~ 15:10 Coffee Break

15:10 ~ 17:00 **III-B. Spintronics**

**Spintronic Materials & Devices**

Prof. Sang-Ho Lim, Korea Univ., Korea

### 4. CONVENTION HALL A+B

17:00 ~ 18:15 **IV. Nano Hub**

**Nano Hub**

Prof. Gerhard Klimeck, Purdue University, USA

## II. OCTOBER 23(MON), 2006

AM	8:30 – 9:00	<b>Opening remarks &amp; guest speech (20 min.)</b> Conference Speech : "Emerging Nanotechnology and Impact on Technology Innovation in Industry" Takuo Sugano, Toyo Univ., Japan		
	9:00 – 11:00	<b>Plenary Session (PL) I</b> : 30min lecture/10min Q&A <b>PL1</b> : The Trends and Future Prospects of Nano Technology Development and Deployment in Korea Hee-Gook Lee, LG Electronics, Korea <b>PL2</b> : IEEE NMDC 2006 Kwang Byuk Suh, Samsung Electronics, Korea <b>PL3</b> : Nanoelectronics Materials and Devices as New Opportunity Yoshio Nishi, Stanford Univ., USA		
	11:00 – 11:20	<b>Coffee Break</b>		
	11:20 – 12:10	NCI 1,2	NPI 1, 2	NMI 1,2
PM	12:10 – 13:30	<b>Lunch</b>		
	13:30 – 15:05	NCI 3~5/NCO 1	NPI 3,4/NPO 1~3	NMI 3,4/NMO 1~3
	15:05 – 15:25	<b>Coffee Break</b>		
	15:25 – 16:55	NDI 1~3 /NDO 1	MEI 1~3 /MEO 1	SPI 1~3 / SPO 1
	16:55 – 17:15	<b>Coffee Break</b>		
	17:15 – 18:15	NDO 2~5	MEO 2~5	NMO 4~7
Evening	18:30 – 20:00	<b>Poster Session I &amp; General Reception</b>		

### I. PLENARY

09:00 – 09:40, **PL1**, **The Trends and Future Prospects of Nano Technology Development and Deployment in Korea**

Hee-Gook Lee  
LG Electronics, Korea

09:40 – 10:20, **PL2**, **[IEEE NMDC 2006]**

Kwang Byuk Suh  
Samsung Electronics, Korea

10:20 – 11:00, **PL3**, **Nanoelectronics Materials and Devices as New Opportunity**

Yoshio Nishi  
Stanford Univ., USA

## II. ORAL SESSION

### (CONVENTION HALL - A)

#### Nano CMOS Session (11:20 – 12:10)

11:20 – 11:45, **NCI1**, **3-D Silicon Technology for Nano-electronics**

Ki-Nam Kim  
Samsung Electronics, Korea

11:45 – 12:10, **NCI2**, **High Performance CMOS Device Technologies in Nano CMOS Era**

Shinichi Takagi  
Univ. of Tokyo, Japan

#### Lunch (12:10 – 13:30)

#### Nano CMOS Session (13:30 – 15:05)

13:30 – 13:55, **NCI3**, **Nano-CMOS Scaling : Novel Devices and Materials**

Meikei Jeong  
IBM TJ Watson Research Center, USA

13:55 – 14:20, **NCI4**, **Nanoelectronics Devices for the End of the Roadmap and Beyond**

Simon Deleonibus, Laboratoire Nanodispositifs Electroniques, France

14:20 – 14:45, **NCI5**, **Energy Constrained Limits to Operation and Assembly of Information Processing Systems; Lessons for Directions of Nanoscale Systems**

Sandip Tiwari  
Cornell Univ., USA

14:45 – 15:00, **NCO1**, **High Pressure Deuterium Annealing Effect on Nano-Scale CMOS Devices with Different Channel Width**

Sung-Man Cho\*, Jeong-Hyn Lee\*, M- Chang†, M.-S Jot†, H.-S Hwang†, J.-K. Lee††, S.-B Hwang†† and Jong-Ho Lee\*

\*KyungPook National University, Deagu, Korea , †Gwangju Inst. of Sci. & Tech., Korea, †† MagnaChip Semiconductor Inc., Korea.

#### Coffee Break (15:05 – 15:25)

#### New Devices beyond CMOS Session (15:25 – 16:55)

15:25 – 15:50, **NDI1**, **Orbital Quantum Bits in Si Quantum Dots**

Doyeol Ahn  
Univ. of Seoul, Korea

15:50 – 16:15, **NDI2**, **Rapid Fabrication of Functional CNT Sensors Arrays using Micro- spotting and DEP Technologies**

Wen J. LI  
The Chinese University of Hong Kong, China

16:15 – 16:40, **NDI3**, **Counting Statistics of Single Electron Transport Through a Double Quantum Dot**

Toshimasa Fujisawa  
NTT, Japan

16:40 – 16:55, **NDO1**, **Fabrication of 35-nm Zigzag T-gate Al<sub>0.25</sub>Ga<sub>0.75</sub>As/In<sub>0.2</sub>Ga<sub>0.8</sub>As/GaAs pHEMTs**

Kang-Sung Lee, Young-Su Kim, Yun-Ki Hong, and Yoon-Ha Jeong  
Pohang University of Science and Technology(POSTECH), Korea.

### Coffee Break (16:55 – 17:15)

### New Devices beyond CMOS Session (17:15 – 18:15)

- 17:15 – 17:30, **NDO2, A New Resistive Probe with Higher Resolution**  
Jaehong Lee, Junsoo Kim, Juhwan Jung\*, Seungbum Hong\*, Byung-Gook Park, Jong Duk Lee, and Hyungcheol Shin  
Seoul National University (SNU), Korea, \*Samsung Advanced Institute of Technology, Korea.
- 17:30 – 17:45, **NDO3, Ag/a-Si:H/c-Si Resistive Switching Nonvolatile Memory Devices**  
Sung Hyun Jo and Wei Lu  
University of Michigan, USA
- 17:45 – 18:00, **NDO4, Fabrication and Characterization of GaAs/AlGaAs Planar Resonant Tunneling Transistor**  
SeungHun Son<sup>1</sup>, JungIl Lee<sup>2</sup>, YongJu Park<sup>2</sup>, YunSeop Yu<sup>3</sup>, SungWoo Hwang<sup>1</sup> and Doyal Ahn<sup>4</sup> <sup>1</sup>Korea Univ., Seoul, Korea, <sup>2</sup>Korea Institute of Science and Technology, Korea, <sup>3</sup>Hankyong National University, Korea, Kyeonggi, Korea, <sup>4</sup>Univ. of Seoul, Korea.
- 18:00 – 18:15, **NDO5, Faraday's Induction in Nano-Transformer**  
H. K. Kim<sup>1</sup>, J. S. Hwang<sup>2</sup>, S. H. Hong<sup>1</sup>, S. W. Hwang<sup>1,\*</sup>, and D. Ahn<sup>2,\*</sup>  
<sup>1</sup>Korea University, <sup>2</sup>University of Seoul, Korea.

### **(CONVENTION HALL - B)**

### Nano Photonics Session (11:20 – 12:10)

- 11:20 – 11:45, **NPI1 Epitaxy and Devices for InP Digital Photonic Integrated Circuits**  
Yoshiaki Nakano  
Univ. of Tokyo, Japan
- 11:45 – 12:10, **NPI2 The Use of Near-field Magneto-luminescence to Study Phase Separation and Localization in Compound Semiconductors**  
James L. Merz  
Univ. of Notre Dame, USA

### Lunch (12:10 – 13:30)

### Nano Photonics Session (13:30 – 15:05)

- 13:30 – 13:55, **NPI3, Effects of Electronic Quantum Interference, Photonic-Crystal Cavity, Longitudinal Field and Surface-Plasmon-Polariton for Optical Amplification**  
DanHong Huang  
Air Force Research Lab, USA
- 13:55 – 14:20, **NPI4, Rare Earth Doped III-V Nitrides for Optoelectronics and Spintronics**  
John M. Zavada  
U.S Army Research Office, USA
- 14:20 – 14:35, **NPO1, PQR laser Can Outdo LED**  
Y.C.Kim\*, T.S.Jung, Y.J.Lee, J.H.Yoon, D.K.Kim, S.E.Lee, H.S.Kwon, S.S.Kim and O'Dae Kwon\*  
Pohang University of Science & Technology(POSTECH), Korea.
- 14:35 – 14:50, **NPO2 A Quantum Mechanical Approach to An Analytical Expression of the Single-molecule-single-nanoparticle Surface Enhanced Raman Scattering**  
Wenhua Gu\* and Kyekyoon (Kevin) Kim\*  
\*University of Illinois at Urbana-Champaign, USA.

14:50 – 15:05, **NPO3**, **Growth and Band-gap Modulation in Single-crystalline Si<sub>1-x</sub>Ge<sub>x</sub> Nanowires for Nanophotonics Applications**  
Jee-Eun Yang, Chang-Beom Jin, Cheol-Joo Kim, Donghwan Yoon<sup>†</sup>, Sungjee Kim<sup>†</sup>, Yosep Yang, Chan-Gyung Park and Moon-Ho Jo  
\*<sup>†</sup>Pohang University of Science and Technology(POSTECH), Korea.

### **Coffee Break (15:05 – 15:25)**

#### **Molecular Electronics & Bio Devices Session (15:25 – 16:55)**

15:25 – 15:50, **MEI1**, **Plasmonic Phenomena in Metal Nanoapertures and Chip-scale Instrumentation for Biochemical Sensing**  
Hong-Koo Kim  
Univ. of Pittsburgh, USA

15:50 – 16:15, **MEI2**, **Carbon Nanotube Interconnects in Electrical and Biological Systems**  
Cary Yang  
Santa Clara Univ., USA

16:15 – 16:40, **MEI3**, **Switching Characteristics in the Ferroelectric Organic Molecular Memories**  
Kazumi Matsushige  
Kyoto Univ., Japan

16:40 – 16:55, **MEO1**, **Development of Molecular Logic Array and Memory Device**  
Hyoyoung Lee\*, Gyeong Sook Bang, Nak-Jin Choi, Junghyun Lee, and Kang-Ho Park  
\*ETRI, Korea.

### **Coffee Break (16:55 – 17:15)**

#### **Molecular Electronics & Bio Devices Session (17:15 – 18:15)**

17:15 – 17:30, **MEO2**, **Organic Memory Device Using Tailored Nanostructure of Conducting Polymer**  
Gyoujin Cho, \* Eunjung Choi, and Jae Hee Song<sup>†</sup>  
\*Suncheon National University, Korea

17:30 – 17:45, **MEO3**, **Charge Transport Through Alkanethiols : Effect of Molecular Tilt-Configuration and Contacts**  
Takhee Lee, Tae-Wook Kim, Hyunwook Song, Gunuk Wang  
Gwangju Institute of Science and Technology(GIST), Korea.

17:45 – 18:00, **MEO4**, **Electrode-Molecule Interface Effects on Molecular Conductance**  
P. Tarakeshwar\*, Juan Jose Palacios<sup>†</sup>, and Dae M. Kim\*  
\*Korea Institute of Advanced Study(KIAS), Korea,  
<sup>†</sup>Universidad de Alicante, Spain

18:00 – 18:15, **MEO5**, **First-principles Study of Charge Transport Across Alkene Thiolate Self-assembled Monolayers**  
Yong-Hoon Kim\* and William A. Goddard III<sup>†</sup>  
\*University of Seoul, Korea, <sup>†</sup>California Institute of Technology, USA.

## **(CONVENTION HALL - C)**

#### **Nano Electronic Materials & Fabrication Session (11:20 – 12:10)**

11:20 – 11:45, **NMI1**, **ZnO Nanorods and Nanodevices**  
Gyu-Chul Yi,  
Pohang University of Science and Technology(POSTECH), Korea

11:45 – 12:10, **NMI2**, **NMR in a Point Contact Device**  
Yoshiro Hirayama, Tohoku Univ., Japan

### **Lunch (12:10 – 13:30)**

### **Nano Electronic Materials & Fabrication Session (13:30 – 15:05)**

13:30 – 13:55, **NMI3**, **Fabrication of Polymeric Nano- Structures: Techniques and Stability Issues**

Albert Yee  
UC Irvine, USA

13:55 – 14:20, **NMI4**, **Bimetallic Catalyzed Continuous Growth of CNT Forests**

Gil-Sik Lee  
UT Dallas, USA

14:20 – 14:35, **NMO1**, **Thickness Dependent Properties of Nanocrystalline Sb<sub>2</sub>S<sub>3</sub> Electrode**

Vaishali Patil, Arun Patil, Ji-Won Choi and Yoon Seok Jin

<sup>a</sup>Korea Institute of Science and Technology(KIST), Korea

14:35 – 14:50, **NMO2**, **Latest Advances in Nanomaterial Characterisation: from the Micron Scale to the Atom Scale**

F. Horréard, F. Hillion, L. Renaud, M. Schuhmacher, CAMECA, Gennevilliers, France

14:50 – 15:05, **NMO3**, **Monte Carlo Simulation on Ring Deposition of Nanoparticle-suspended Drying Liquid Droplet**

Hee-Soo Kim  
Samsung Electro-Mechanics, Korea

### **Coffee Break (15:05 – 15:25)**

### **Spintronics Session (15:25 – 16:55)**

15:25 – 15:50, **SPI1**, **Technological Issues for High-Density MRAM**

Taewan Kim  
Samsung Advanced Institute of Technology(SAIT), Korea

15:50 – 16:15, **SPI2**, **Current Induced Magnetization Switching in Spin Valves**

Kyung-Ho Shin  
Korea Institute of Science and Technology(KIST), Korea

16:15 – 16:40, **SPI3**, **Giant Tunneling Magnetoresistance in MgO-based Magnetic Tunnel Junctions and Its Industrial Applications**

Shinji Yuasa  
National Institute of Advanced Industrial Science and Technology(AIST), Japan

16:40 – 16:55, **SPO1**, **Magnetization Correlations in Lateral NiFe/Sb/NiFe Spin Valve Devices**

Seong-Hoon Kim\*, Jonghwa Eom\*<sup>†</sup>, Joonyeon Chang<sup>†</sup> and Suk-Hee Han<sup>†</sup>  
\*Sejong University, <sup>†</sup>Korea Institute of Science & Technology(KIST), Korea.

### **Coffee Break (16:55 – 17:15)**

### **Nano Electronic Materials & Fabrication Session (17:15 – 18:15)**

17:15 – 17:30, **NMO4**, **Field Emission Characteristics of Vertically Aligned Free-standing Copper Nanowires Grown by Chemical Vapor Deposition with No**

### Template

Wenhua Gu\*, Sangho Lim\*, Ju Gao†, Hyungsoo Choi\*, and Kyekyoon (Kevin) Kim\*

\*University of Illinois at Urbana-Champaign, USA,

†APL Engineered Materials, Inc., USA

17:30 – 17:45, **NMO5, Review of Issue and Challenges Facing Rechargeable Nanostructured Lithium Batteries**

Arun Patil, Ji-Won Choi and Seok-Jin Yoon

Korea Institute of Science and Technology(KIST), Korea

17:45 – 18:00, **NMO6, Misfitstrain and Growth Characteristics of InAs/GaAs Quantum Dots Grown by Molecular Beam Epitaxy**

Hyung Seok Kim\*, Ju Hyung Suh\*, Chan Gyung Park\*, Sang June Lee†, and Sam Kyu Noh† \*Pohang University of Science and Technology(POSTECH), Korea, Korea Research Institute of Standards and Science(KRISS), Korea.

18:00 – 18:15, **NMO7, Growth of Nickel Silicide Nanowires by Chemical Vapor Deposition**

Chang-Beom Jin, Cheol-Joo Kim, and Moon-Ho Jo\*

Pohang University of Science and Technology(POSTECH), Korea.

## III. POSTER SESSION(97) (TOPAZ HALL)

### Poster Session I (18:30 – 20:00)

**NCP1 RF Characteristics in a Multi-Finger Structure for 70-nm CMOS Devices at Low Temperature**

Seung-Ho Hong\*, Min-Sang Park\*, Hee-Sung Kang†, and Yoon-Ha Jeong\*

Pohang University of Science and Technology(POSTECH), Korea.

Samsung Electronics Co., Ltd., Korea.

**NCP2 A New Non-Quasi-Static Small Signal Model of SOI FinFETs**

In Man Kang, Jong Duk Lee, and Hyungcheol Shin

Seoul National University(SNU), Korea.

**NCP3 I-V Modeling for Nanoscale n-MOSFET from Liquid-Nitrogen Temperature to Room Temperature**

Rock-Hyun Baek\*, Hee-Sung Kang†, Jeong-soo Lee‡, and Yoon-Ha Jeong\*

Pohang University of Science and Technology(POSTECH), Korea

Samsung Electronics Co., Ltd., Korea, Chonbuk National University, Korea.

**NCP4 Analysis and Modeling of Resistive Probes**

Sang Wan Kim, Woo Young Choi, Jae Young Song, Jong Pil Kim, Junsoo Kim, \*Hyoungsoo Ko,

\*Hongsik Park, \*Chulmin Park, \*Seungbum Hong, \*Sung-Hoon Choa, Jong Duk Lee,

Hyungcheol Shin and Byung-Gook Park.

Inter-University Semiconductor Research Center(ISRC), Korea.

Seoul National University(SNU), Korea, Samsung Advanced Institute of Technology, Korea.

**NCP5 Hot Carrier Stress in 70-nm nMOSFET with Various Bias Conditions**

Hyun-Sik Choi\*, Seung-Ho Hong\*, Hee-Sung Kang†, and Yoon-Ha Jeong\*

Pohang University of Science and Technology(POSTECH), Korea.

Samsung Electronics Co., Ltd., Korea.

**NPP1 LaGuerre-Gaussian Emission Properties of Photonic Quantum Ring Hole-type Lasers**

Kai Ide\*, Seung Eun Lee†, Young Chun Kim†, and O'Dae Kwon

Universität Berlin, Germany, Pohang University of Science and Technology(POSTECH), Korea.

**NPP2 Exciton Binding Energies in Wurtzite ZnO/MgZnO Quantum Wells**

J.S.Hong , S. W. Ryu, W. P. Hong, J. J. Kim, H. M. Kim, and S. H. Park\*  
Catholic University of Daegu, Korea

**NPP3 Nano-scale Phase Separation in As<sub>2</sub>S<sub>3</sub> Film and Its Effect on Scattering Loss in Plasma Etched Waveguides**

Duk Yong Choi, Steve Madden, Andrei Rode, Rongping Wang, Adrian Ankiewicz<sup>†</sup>, Barry Luther-Davies  
Australian National University, Australia.

**NPP4 The Nanophotonic Crystals of Anodic Alumina Deposited on InGaN/GaN Quantum Well Structures**

Jae Ho Choi\*, Keunjoo Kim\*, Mi Jung<sup>†</sup>, and Deok Ha Woo<sup>†</sup>  
\*Chonbuk National University, Korea,  
<sup>†</sup>Korea Institute of Science and Technology(KIST), Korea.

**NPP5 Optical Logic Gates Based On Integrated Vertical Cavity Laser with Depleted Optical Thyristor Structure**

Woonkyung Choi\*, Doo-Gun Kim\*, Yon-Tae Moon\*, Young-Wan Choi\*, Seok Lee<sup>†</sup>, Deok-Ha Woo<sup>†</sup>, Young-Min Jhon<sup>†</sup>, Young-Tae Byun<sup>†</sup>  
\*Chung-Ang University, Korea, <sup>†</sup>Korea Institute of Science and Technology(KIST), Korea.

**NPP6 1.55 μm InAs Quantum Dot DFB Lasers**

Jin Soo Kim\*, Ho-Sang Kwack\*, Byung Seok Choi\*, Eundeuk Sim\*, Chul Wook Lee\*, Dae Kon Oh\*, and Cheul-Ro Lee<sup>†</sup>  
Electronics and Telecommunications Research Institute, Korea,  
Chonbuk National University, Korea.

**NPP7 Hole Whispering Gallery Laser of Photonic Quantum Ring**

O'Dae Kwon\*, D.K. Kim, S.E. Lee, J.H. Yoon, and Y.C. Kim  
Pohang University of Science & Technology(POSTECH), Korea.

**NPP8 Differential Gain and Linewidth Enhancement Factor in GaAs based Quantum Dot Laser Diodes**

Kyoung Chan Kim\*<sup>†</sup>, Il Ki Han\*, Young Chae Yoo\*, Jung Il Lee\*, and Tae Geun Kim<sup>†</sup>  
Korea Institute of Science and Technology(KIST), Korea, Korea University, Korea.

**NPP9 Photonic Quantum Ring Laser for Optical Encoder Application**

D. K. Kim, E. G. Lee and O'Dae Kwon  
Pohang University of Science and Technology(POSTECH), Korea.

**NPP10 Investigation of Nano-Porous Silicon Antireflection Coatings for Crystalline Silicon Solar Cells**

Hyunwoo Lee, Eunjoo Lee, Soohong Lee  
Sejong University, Korea.

**MEP1 Electrochemical DNA Detecton Using Indicator-free Target DNA on a DNA Chip**

Yong-Sung Choi\*, Young-Soo Kwon<sup>†</sup>, and Kyung-Sup Lee\*  
\*Dongshin University, Korea, <sup>†</sup>Dong-A University, Korea.

**MEP2 Hydrophilic and Hydrophobic Patterned Template for DNA Chip Microarray**

Yong-Sung Choi\*, Jong-Dae Moon\*, Young-Soo Kwon<sup>†</sup>, and Kyung-Sup Lee\*  
\*Dongshin University, Korea, <sup>†</sup>Dong-A University, Korea.

**MEP3 Three-Dimensional Bochip Microarray Using Magnetic Force Interaction and Self-Assembly**

Yong-Sung Choi\*, Jong-Dae Moon\*, Young-Soo Kwon<sup>†</sup>, and Kyung-Sup Lee\*  
\* Dongshin University, Korea, <sup>†</sup> Dong-A University, Korea.

**MEP4 Rectified Photocurrent of Biophodiode Composed of Cytochrome c/chlorophyll a Hetero-structure**

Jeong-Woo Choi\*<sup>†</sup>, Doo-Bong Lee\*, and Bumhwan Lee<sup>†</sup>  
\*<sup>†</sup>Sogang University, Korea,

**MEP5 Bio Electroluminescent Device Composed of Cytochrome c/chlorophyll a Hetero-structure**

Hun-Soo Kim\*, Chang-Ho Lee\*, Doo-Bong Lee\*, Se-Young Oh\*<sup>†</sup> and Jeong-Woo Choi\*<sup>†</sup>  
\*<sup>†</sup>Sogang University, Korea.

**MEP6 Temperature Dependence of Coulomb Oscillations on DNA-mediated Au Nanoparticle Assembly**

Sung In Kim, Young Wook Chang, and Kyung Hwa Yoo  
Yonsei University, Korea

**MEP7 Comparisons of Charge Transport through Alkane-Monothiols and Dithiols**

Tae-Wook Kim, Gunuk Wang, Takhee Lee  
Gwangju Institute of Science and Technology(GIST), Korea.

**MEP8 Molecular Chain-to-Chain Tunneling and Nanowell Devices for Electronic Transport Studies in Metal-Alkanethiol-Metal Junctions**

Hyunwook Song,<sup>1</sup> Nak-Jin Choi,<sup>2</sup> Hyoyoung Lee,<sup>2</sup> and Takhee Lee<sup>1,\*</sup>

<sup>1</sup>Gwangju Institute of Science and Technology(GIST), Korea

<sup>2</sup>Electronics and Telecommunication Research Institute, Korea.

**MEP9 Single-walled Carbon Nanotube Biosensor for Detection of *E. coli***

Hye-Mi So\*, Dong-Won Park\*<sup>†</sup>, Yo-Han Kim<sup>†</sup>, Sun Young Choi<sup>‡</sup>, Young Mi Kim<sup>‡</sup>, Sung Chun Kim<sup>‡</sup>, Beom Soo Kim<sup>†</sup> and Jeong-O Lee\*

\*Korea Research Institute of Chemical Technology, Korea

<sup>†</sup>Chungbuk National University, Korea, <sup>‡</sup>GenoProt Inc., Korea.

**MEP10 Enhanced Diffraction Efficiency in a Photorefractive Liquid Crystal Cell with Poly(9-vinylcarbazole)-Infiltrated Mesoporous TiO<sub>2</sub> Layers**

Kwang-Suk Jang, and Jong-Duk Kim\*

\* Korea Advanced Institute of Science and Technology(KAIST), Korea.

**MEP11 Electrochemical Biosensor Array for Liver Diagnosis Using a Silanization Technique on Nano-porous Silicon Electrode**

Min-Jung Song, Dong-Hwa Yun, Nam-Ki Min and Suk-In Hong  
Korea University, Korea.

**MEP12 Dynamic Formation of Diffraction Grating in a Photorefractive Liquid Crystal Cell with Mesoporous TiO<sub>2</sub> Layers**

Kwang-Suk Jang, Sung-Ho Cho, and Jong-Duk Kim\*

\*Korea Advanced Institute of Science and Technology(KAIST), Korea.

**MEP13 Temperature Dependent Electrical Properties of OLEDs Using Zn Complex**

Oh-Kwan Kwon, Dong-Eun Kim, Won-Sam Kim<sup>1</sup>, Burm-Jong Lee<sup>1</sup>, and Young-Soo Kwon\*  
Dong-A University, Korea, <sup>1</sup>Inje University Gimhae, Korea.

**MEP14 Brewster Angle Microscopic Study of Mixed Lipid- protein Monolayer at Air-water Interface and Its Electrochemical Properties**

A.K.M. Kafi, Dong-Yun Lee, Sang-Hyun Park, Young-Sung Choi<sup>1</sup>, and Young-Soo Kwon\*  
Dong-A University, Korea, <sup>1</sup>DongShin University, Korea.

**MEP15 Electrical Properties of Carbon Films By Electrolysis Method**

Sang Heon Lee\*

\* Sun Moon University, Korea.

**MEP16 Electrical and Structural Properties of PZT/ST Films**

Sang Heon Lee\*, Yong Choi<sup>†</sup>

<sup>†</sup>Sun Moon University, Korea.

**MEP17 Measurement of Mechanical Properties of Nanometer Scale Polymer Structures Using Atomic Force Microscope**

Sung-Kyoung Kim<sup>†</sup>, Min Kyoon Shin<sup>††</sup>, Seon Jeong Kim<sup>††</sup> and Haiwon Lee\*

<sup>†</sup>Hanyang University, Korea

**NDP1 High Performance GOI MISFET with Nickel Germanide Source/ Drain Using New Graded Ge Condensation Method**

Mungi Park<sup>1\*</sup>, Won Seok Choi<sup>2</sup> and Byungyou Hong<sup>2,3</sup>

<sup>1</sup>LG. Philips LCD, Korea, <sup>2,3</sup>Sungkyunkwan University, Korea.

**NDP2 Controlling the Characteristics of Single Walled Carbon Nanotube Network Transistors by Using Metal Electrodes with Different Work Functions**

Un Jeong Kim, Eun Ju Bae, Yo-Sep Min and Wanjun Park\*

Samsung Advanced Institute of Technology(SAIT), Korea.

### **NDP3 Breakdown Voltage Reduction in I-MOS Devices**

Woo Young Choi, Jae Young Song, Jong Pil Kim, Sang Wan Kim, Jong Duk Lee, and Byung-Gook Park

Inter-university Semiconductor Research Center(ISRC), Korea  
Seoul National University, Korea

### **NDP4 Multilevel Dual-channel NAND Flash Memories with High-speed Read and Verifying Program**

Jae-Ho Kim, Joung-Woo Lee, Kyung-Sik Mun, and Tae Whan Kim<sup>†</sup>

Advanced Semiconductor Research Center, Korea, Hanyang University, Korea.

### **SPP1 Spin Hall Effect in an Inverted Heterostructure**

Hyun Cheol Koo\*, Seon-Gu Huh\*,<sup>†</sup> Jonghwa Eom\*,<sup>†</sup> Hyunjung Yi\*, Joonyeon Chang\*, and Suk-Hee Han\*

\* Korea Institute of Science and Technology(KIST), Korea <sup>†</sup> Sejong University, Seoul, Korea.

### **SPP2 Thermal Stability of Perpendicular Exchange Bias In [Pd/Ferromagnet]<sub>N</sub>/FeMn Films**

H. W. Joo<sup>a</sup>, J. Heo<sup>b</sup>, H. C. Choi<sup>a</sup>, M. S. Kim<sup>c</sup>, S. D. Choi<sup>c</sup>, C.-Y. You<sup>a</sup>, K. A. Lee<sup>b</sup>, S. S. Lee<sup>c</sup>, and D. G. Hwang<sup>c</sup>

<sup>a</sup>University of Inha, Korea, <sup>b</sup>University of Dankook, Korea, <sup>c</sup>University of Sangji, Korea.

### **SPP3 Structural and Magnetic Properties of Amorphous and Nanocrystalline CoFeSiB Thin Films**

Jungbum Yoon\*<sup>†</sup>, Seung-young Park<sup>†</sup>, Myung-Hwa Jung<sup>†</sup>, Chun-Yeol You\*, Byong Sun Chun<sup>‡</sup>, You Song Kim<sup>‡</sup>, Young Keun Kim<sup>‡</sup>, Soon Seop Kim<sup>§</sup>, Jae Youn Hwang<sup>§</sup>, Jang Roh Rhee<sup>§</sup>, and Taewan Kim<sup>\*\*</sup>

<sup>†</sup> Korea Basic Science Institute, Korea \*Inha University, Korea <sup>‡</sup>Korea University, Korea

<sup>§</sup>Sookmyung Women's University, Korea,

<sup>\*\*</sup>Samsung Advanced Institute of Technology(SAIT), Korea

### **SPP4 Spin Transfer Enhancement and Switching Behavior in Exchange Bias Spin Valves**

Hoang Yen Thi Nguyen, Hyunjung Yi, Sung-Jung Joo, Hi-Jung Kim, and Kyung-Ho Shin  
Korea Institute of Science and Technology(KIST), Korea

### **SPP5 Ferrimagnetic Ordering in (Fe<sub>x</sub>Mn<sub>1-x</sub>)<sub>2</sub>As Thin Films**

Younghnu Hwang<sup>a</sup>, Jeongyong Choi<sup>a</sup>, Sunglae Cho<sup>a,b</sup>, and Sungyoul Choi<sup>c</sup>

<sup>a</sup>University of Ulsan, Korea, <sup>b</sup>Korea Institute of Science and Technology(KIST), Korea,

<sup>c</sup>Electronics and Telecommunications Research Institute, Korea

### **SPP6 Effect of Intervening Ferromagnet on Spin Accumulation in Py/Au/Py Spin Valve Device**

Janghae Ku<sup>1,3</sup>, Joonyeon Chang<sup>1\*</sup>, Jonghwa Eom<sup>1,2</sup>, Suk-Hee Han<sup>1</sup> and Gyutae Kim<sup>3</sup>

<sup>1</sup>Korea Institute of Science and Technology(KIST), Korea, <sup>2</sup> Sejong University, Korea,

<sup>3</sup> Korea University, Korea.

### **SPP7 Local Magnetization Reversal of Perpendicular Exchange-biased Multilayers by Laser Annealing**

S. D. Choi<sup>a</sup>, H. W. Joo<sup>b</sup>, K. A. Lee<sup>c</sup>, S. S. Lee<sup>a</sup> and D. G. Hwang<sup>a</sup>

<sup>a</sup>Sangji University, Korea, <sup>b</sup>Inha University, Korea, <sup>c</sup>Dankook University, Korea.

### **SPP8 Micromagnetic Study on the Threshold Current Density for Continuous Domain Wall Motion**

Woo Jin Kim\*, Soo Man Seo<sup>†</sup>, Taek Dong Lee\*, and Kyung Jin Lee<sup>†</sup>

\*Korea Advanced Institute of Science and Technology(KAIST), Korea,

<sup>†</sup> Korea University, Korea

### **SPP9 Microstructure and Physical Properties of ZnCoO Films Prepared by Pulsed DC Magnetron Sputtering**

Ki-Chul Kim\* and Young-Sung Kim<sup>†</sup>

\*<sup>†</sup>Sungkyunkwan University, Korea

### **SPP10 Magnetic and Electronic Properties of Mn Delta-doped (Ga<sub>0.995</sub>Mn<sub>0.005</sub>)N Thin Films**

H. C. Jeon<sup>1</sup>, T. W. Kang<sup>1</sup>, T. W. Kim<sup>2</sup>, Joongoo Kang<sup>3</sup>, and K. J. Chang<sup>3</sup>

<sup>1</sup>Dongguk University, Korea, <sup>2</sup>Hanyang University, Korea,

<sup>3</sup>Korea Advanced Institute of Science and Technology(KAIST), Korea

**SPP11 Oscillatory Magnetoresistance in a Carbon Nanotube with Ferromagnetic Electrodes'**

Tae-Suk Kim\*, C. K. Lee\*, and B. C. Lee<sup>†</sup>

\*Seoul National University (SNU), Korea, <sup>†</sup> Inha University, Korea

**NMP1 Nano Accuracy Elevation of Ultra-Precision Machining Using Optical Fiber Laser Encoder System**

Jae-Yeol Kim\*, Lee-Ku Kwac<sup>†</sup>, Nam-Su Kwak<sup>††</sup>

\*<sup>††</sup>Chosun University, Gwangju, Korea, <sup>†</sup> Jeonju University, Korea,

**NMP2 Fabrication of Gold Nanowires Using Self-organized Porous Alumina Template**

Hyunsook Kwon\*, Seungeun Lee, and O'Dae Kwon

\* Pohang University of Science and Technology(POSTECH), Korea.

**NMP3 Simple Selective Electron Beam Patterning on a Single Nanowire**

Kanghyun Kim\*, Haeyong Kang, Jung Hwan Huh, and Gyu Tae Kim

\*Korea University, Korea

**NMP4 Near-field Measurement of Quantum Dot Broad Area Laser Diodes By Utilizing Near-field Scanning Optical Microscope: Effects of the Linewidth Enhancement Factor on Filamentation**

S. I. Jung<sup>1</sup>, H. Y. Yeo<sup>1</sup>, I. Yun<sup>1</sup>, I. K. Han<sup>2</sup>, and J. I. Lee<sup>3</sup>

<sup>1</sup>Yonsei University, Korea, <sup>2</sup>Korea Institute of Science and Technology(KIST), Korea,

<sup>3</sup>Korea Research Institute of Standards and Science(KRISS), Korea

**NMP5 Fabrications and Electrochemical Properties of Two-phase Activated Carbon Nanofibers From Electrospinning**

Chan Kim<sup>1</sup>, Bui Thi Nhu Ngoc<sup>2</sup>, Woo Yeon Yun<sup>1</sup>, Jae Wook Lee<sup>3</sup>, Kap Seung Yang<sup>1,2,\*</sup>

<sup>1,2</sup>Chonnam National University, Korea, <sup>3</sup>Seonam University, Korea.

**NMP6 Parametric Study on InAs Quantum Dots Grown by Migration Enhance Molecular Beam Epitaxy**

Jindong Song, Wonjun Choi, Jungil Lee

Korea Institute of Science and Technology(KIST), Korea

**NMP7 The Improvement of Selective-area Growth Using Plasma Assisted Molecular Beam Epitaxy for Low Ohmic Contact Resistance**

Hui-chan Seo\*, Seung Jae Hong<sup>†</sup>, and Kyekyoon(Kevin) Kim<sup>†</sup>

\*<sup>†</sup>University of Illinois at Urbana-Champaign, USA,

**NMP8 Transmission Electron Microscopy Analysis of Free-standing Copper Nanowires Grown by Chemical Vapor Deposition with No Template Or Seed**

Changwook Kim\*, Sangho Lim<sup>†</sup>, Martha Briceno\*, Ian M. Robertson\*,

Hyungsoo Choi<sup>†</sup> and Kyekyoon (Kevin) Kim<sup>†</sup>

\*<sup>†</sup>University of Illinois at Urbana-Champaign, USA,

**NMP9 Selective Oxidation Fin Channel MOSFET for Source/Drain Series Resistance Reduction**

Young-Kyun Cho, Tae Moon Roh, and Jongdae Kim

Electronics and Telecommunications Research Institute(ETRI), Korea

**NMP10 Memory Characteristics of MIS Capacitors with Parylene Gate Material**

Byoungjun Park, Ki-Ju Im, Kyoungah Cho, and Sangsig Kim

Korea University, Korea.

**NMP11 Comparison of Electrical Characteristics of Back- and Top-gate Si Nanowire Field-effect Transistors**

Changjoon Yoon\*, Kihyun Keem\*, Jeongmin Kang\*, Dong-Young Jeong\*, Moon-Sook Lee<sup>†</sup>,

In-Seok Yeo<sup>†</sup>, U-In Chung<sup>†</sup>, Joo-Tae Moon<sup>†</sup> and Sangsig Kim\*

\*Korea University, Korea, <sup>†</sup>Samsung Electronics Co., Ltd., Korea.

**NMP12 Fabrication of Carbon Nanotubes by Anodic Aluminum Oxide Nano-template**

Jaehyeong Lee\*, Sunghun Choi

Kunsan National University, Korea

**NMP13 Atmosphere Pressure Dependent Electrical Properties of the ZnO Nanowire Transistors**

E.-K. Kim\*, H.-Y. Lee\*, J. Park\*, S. E. Moon\*, S. Maeng\*, K.-H. Park\*, H. J. Ji†, S. J. Park† and G. T. Kim†

\*Electronics and Telecommunications Research Institute, Korea,

†Korea University, Korea

**NMP14 Characterization and Properties of a Textured Silicon Surface with Nano-porous Layer**

Eunjoo Lee\* and Soohong Lee\*

\*Sejong University, Korea

**NMP15 Capacitance-voltage Characteristics of MOS Capacitors with Ge Nanocrystals Embedded in HfO<sub>2</sub> Gate Material**

Hye-Ryoung Lee\*, Samjong Choi†\*, Kyoungah Cho\*, and Sangsig Kim\*

\*Korea University, Korea, †Samsung Electronics Co.,, Korea

**NMP16 Raman Studies of Ti<sub>1-x</sub>Fe<sub>x</sub>O<sub>2</sub> Nano-particles**

Nguyen Van Minh<sup>1,2\*</sup>, Dao Hai Long<sup>2</sup>, Nguyen The Khoi<sup>2</sup>, Sung-Jin Kim<sup>1</sup> and In-Sang Yang<sup>1\*</sup>

<sup>1</sup>Ewha Womans University, Korea, <sup>2</sup>Hanoi University of Education, Vietnam.

**NMP17 Enhancement of PL Intensity by Photonic Crystal fabricated on GaAs Substrate Using Nanoporous Alumina Mask**

Mi Jung, Seok Lee, Min Chul Park, Young Tae Byun, Young Min Jhon, Sun Ho Kim, Sun-il Mho\*,

Keunjoo Kim,† and Deok Ha Woo

KIST, Korea, \*Ajou University, Korea, †Chonbuk National University, Korea.

**NMP18 Study of Influenced Pressure Condition at Deposited Carbon Nanotubes in Low Temperature**

Jaehyeong Lee\*, Sunghun Choi

Kunsan National University, Korea.

**NMP19 Large Surface Area Titanium Oxide Nanotube Arrays Anodized in KH<sub>2</sub>PO<sub>4</sub>/NH<sub>4</sub>F/Citric Acid Electrolytes by Multi Step Voltage Method**

Seong-Je Cho<sup>1</sup>, Dae-Jin Yang<sup>2</sup>, Jong-Oh Kim<sup>1</sup>, and Won-Youl Choi<sup>1,\*</sup>

<sup>1</sup>Kangnung National University, Korea, <sup>2</sup>KAIST, Korea.

**NMP20 Vertically Oriented TiO<sub>2</sub> Nanotube Arrays Prepared by Anodic Oxidation**

Dae-Jin Yang<sup>1</sup>, Ho-Gi Kim<sup>1</sup>, Seong-Je Cho<sup>2</sup>, and Won-Youl Choi<sup>2,\*</sup>

<sup>1</sup>Korea Advanced Institute of Science and Technology(KAIST), Korea,

<sup>2</sup>Kangnung National University, Korea.

**NMP21 Syntehsis and Optical Properties of Higly Fluorescent Anthracene Oligomers**

Taechang Kwon, Yuna Kim, K. Rameshbabu and Eunkyoung Kim\*

Yonsei University, Korea

**NMP22 Enhancement of Photoluminescncce Properties of Y<sub>2</sub>O<sub>3</sub>:Eu<sup>3+</sup> Nanophosphor by Low Temperature Synthetic Method**

Sung-Jei Hong and Jeong-In Han\*

Korea Electronics Technology Institute, Korea

**NMP23 Preparation and Characterization of Supported Pt Nanoparticles for N<sub>2</sub>O-H<sub>2</sub> Reaction**

Moon Hyeon Kim\*, and Won-Ho Yang†

\* Daegu University, Korea, † Catholic University of Daegu, Korea.

**NMP24 Effect of Charge Storage in Silicon Nanocrystals on Needle-like Nano-Structure for Non-volatile Memory**

Sungwook Jung\*, Sunghyun Hwang\*, Jeoungin Lee\*, Dae-Ho Park†, Byeong-Hyeok Sohn†,

S.K.Dhungel\*, Kyunghae Kim\*, and J. Yi\*

\*Sungkyunkwan University, Korea,

†Pohang University of Science and Technology(POSTECH), Korea,

‡ Seoul National University, Korea.

**NMP25 Electrical Characteristics of AC Dielectrophoretically Aligned ZnO Nanowires**

Seung-Yong Lee\*, Ahmad Umart, Duk-II Suh\*, Ji-Eun Park\*, Yoon-Bong Han†, and Sang-Kwon Lee\*

\*†Chonbuk National University, Korea.

**NMP26 Preparation of Water-Dispersible and Biocompatible Iron Oxide Nanoparticles for MRI Agent**

Yun Tack Lee and Kyoungja Woo\*

Korea Institute of Science and Technology(KIST), Korea

**NMP27 Bandgap Modulation of Single Crystalline CdS<sub>x</sub>Se<sub>1-x</sub> Ternary Alloy Nanowires**

Young-Jin Choi, In-Sung Hwang, Jae-Hwan Park†, and Jae-Gwan Park

Korea Institute of Science and Technology(KIST), Korea

**NMP28 High Sensitivity Gas Sensors Based on SnO<sub>2</sub> Nanowires**

Kyung-Soo Park, Young-Jin Choi, In-Sung Hwang, Jae-Hwan Park, and Jae-Gwan Park† Korea Institute of Science and Technology(KIST), Korea

**NMP29 Nanocrystalline CdS Thin Films Prepared by Chemical Bath Deposition**

Wug-Dong Park\*

\* Dongyang University, Korea

**NMP30 Generation of Si-O-C Bond without Si-CH<sub>3</sub> Bond in Hybrid Type SiOC Film**

Jung Sang Shin, \* Teresa Oh†

\*Chungcheongbuk-do I & C Foundation Semiconductor Test Center, Korea,

†Cheongju University, Korea

**NMP31 Development of Ultrafine Indium Tin Oxide (ITO) Nanoparticle for Ink Jet Printing by Low Temperature Synthetic Method**

Sung-Jei Hong, Yong-Hoon Kim and Jeong-In Han\*

Korea Electronics Technology Institute(KETI), Korea

**NMP32 Assembly Technique and Characterization for the Nanodevice Using Dielectrophoresis**

Hee Won Seo, Jong-Hong Lee, Jin-Won Song, Chang-Soo Han\*

Korea Institute of Machinery & Materials, Korea.

**NMP33 Characterization of ZnO Nanowire Field-Effect Transistors Exposed to High Energy Proton Radiation**

Woong-Ki Hong, Ahnsook Yoon, Sunghoon Song, Kwanwoo Shin, and Takhee Lee

Gwangju Institute of Science and Technology(GIST), Korea

**NMP34 Boron Ion Implantation on Al-doped ZnO Films for OLEDs Transparent Conducting Electrodes**

Sang-Jin Hong<sup>1</sup>, Gi-Seok Heo<sup>2</sup>, Bum-Ho Choi<sup>2</sup>, and Dong-Chan Shin<sup>1</sup>

<sup>1</sup>Chosun University, Korea, <sup>2</sup>Korea Institute of Industrial Technology, Korea.

**NMP35 A Nanometer Gaped Gas Sensor with the Colloid Pani**

SooYeon Park\*, InDeok Jeon\*, SeungWoo Lee\*, HyunTaek Cho\* and JaeJong Lee\*

\*Korea Institute of Machinery and Materials, Korea.

**NMP36 Charging and Discharging Mechanisms of Vertically Stacked Ni<sub>1-x</sub>Fe<sub>x</sub> Self Assembled Nanoparticle Arrays Embedded in Polyimide Layers**

Jea Hun Jung\*, Joo Hyung You, Jae-Ho Kim, Tae Whan Kim\*, Chong Seung Yoon†, and Young-Ho Kim†

\*†Hanyang University, Korea,

**NMP37 Electrical Transport Properties of VO<sub>2</sub> Nanowire Field Effect Transistors**

Jongsun Maeng, Gunho Jo, Tak-Wook Kim and Takhee Lee\*

Gwangju Institute of Science and Technology(GIST), Korea

**NMP38 The Reliability of MLCC by the Additives Associated with the Grain Size and Sintering Condition**

Hyun Duk Kim†, Eung Kwon Kim†, Tae Yong Lee†, Bong Suk Kim†, Byong Chul Woo\*, and Joon Tae Song†

Sungkyunkwan University, Korea, \*Samwha capacitor R & D center, Korea

**NMP39 Photoluminescence and Electroluminescence Properties of Organotin Complexes**

Won Sam Kim<sup>a</sup>, Jeong-Keun Park<sup>a</sup>, Dong-Eun Kim<sup>b</sup>, Young-Soo Kwon<sup>b</sup>, Burm-Jong Lee<sup>a\*</sup>  
<sup>a</sup>Inje university, Korea, <sup>b</sup>Dong-A University, Korea.

**NMP40 Random Network Transistors of Carbon Nanotubes Directly Grown on Glass Substrate**

Eun Ju Bae, Yo-Sep Min, Un Jeong Kim, and Wanjun Park  
Samsung Advanced Institute of Technology(SAIT), Korea

**NMP41 Generation and Characterization of Copper Nanowires, Nanoparticles, and Thin Films by Flow-Limited Field-Injection Electrostatic Spraying**

Philip Heil, Wenhua Gu, Sangho Lim, Hyungsoo Choi\*, and Kyekyoon (Kevin) Kim\*  
University of Illinois and Urbana-Champaign, USA

**NMP42 Simultaneous Generation and Deposition of Cobalt Nanoparticles by Flow-Limited Field-Injection Electrostatic Spraying for Catalytic Growth of Single-Walled Carbon Nanotubes**

Timothy E. Day, Nicholas McDonnell, Philip Heil, James J. Pasquesi, Sangho Lim, Hyungsoo Choi\*, and Kyekyoon (Kevin) Kim\*  
University of Illinois and Urbana-Champaign, USA

**NMP43 Metal Nanodot Array Fabrication Using Self-assembled Diblock Copolymer**

<sup>1</sup>S.J. Kim, <sup>1</sup>W.J. Maeng, <sup>2</sup>D.H. Park, <sup>2</sup>B.H. Sohn and <sup>1</sup>H. Kim\*  
<sup>1</sup>Pohang University of Science and Technology(POSTECH), Korea Pohang  
Seoul National University(SNU), Korea

**NMP44 Surface Heterogeneity Analysis of MWCNT from Methane Adsorption Isotherms for Adsorbed Natural Gas Storage**

Jae-Wook Lee\*, Hyun-Chul Kang<sup>†</sup>, Wang-Geun Shim<sup>†</sup>, Chan Kim<sup>†</sup>, Soong-Hyuck Suh<sup>††</sup>, Hee Moon<sup>†</sup>

\*Seonam University, Korea, <sup>†</sup>Chonnam National University, Korea,

<sup>††</sup>Keimyung University, Korea

**NMP45 Fabrication and Characterization of Resonator Using Multi-wall Carbon Nanotubes**

Jin-Won Song, Jong-Hong Lee, Hee Won Seo, Chang-Soo Han\*  
Korea Institute of Machinery & Materials, Korea

**NMP46 Electronic Transport in Indium Oxide Nanowire Field Effect Transistors**

Gunho Jo, Jongsun Maeng, Woong-ki Hong, Tae-Wook Kim, and Takhee Lee  
Gwangju Institute of Science and Technology(GIST), Korea.

**NMP47 The Preparation of Carbon Nanotubes by DC Arc Discharge Process Using Xylene-Ferrocene as a Floating Catalyst Precursor**

Hyeon Hwan Kim, Hyeong Joon Kim  
Seoul National University, Korea.

**NMP48 Dependence of the Charging Effects on the Tunnel Oxide Thickness in Si Nanoparticles Embedded in a SiO<sub>2</sub> Layer**

Do-Hyun Oh<sup>\*†</sup>, Soojin Lee\*, Woon-Jo Cho\*, Jae-Ho Kim<sup>†</sup>, Jae Hun Jung<sup>†</sup>, and Tae Whan Kim<sup>†</sup>  
\*Korea Institute of Science & Technology(KIST), Korea,  
Hanyang University, Korea.

**NMP49 Characterization of PZT Composite Thick Films Fabricated Using a Modified Sol-Gel Based Process**

Sung-Gap Lee<sup>\*.a</sup>, Sang-Man Park<sup>\*.b</sup>, Cheol-Jin Kim<sup>\*.c</sup>, Young-Hie Lee<sup>†</sup>  
\*Gyeongsang National University, Korea, <sup>†</sup>Kwangwoon University, Korea.

**NMP50 Fabrication of Si<sub>1-x</sub>Ge<sub>x</sub> Alloy Nanowire FETs**

Eun-Kyoung Jeon<sup>\*†</sup>, Han-Kyu Sung<sup>§</sup>, Jeong-O Lee\*, Heon-Jin Choi<sup>§</sup>, Ju-Jin Kim<sup>†</sup>  
\*Korea Research Institute of Chemical Technology, Korea,

<sup>†</sup>Chonbuk National University, Korea, <sup>§</sup>Yonsei University, Korea.

## III. OCTOBER 24(TUE), 2006

AM	9:00 – 11:00	<b>Plenary Session (PL) II</b> : 30min lecture/10min Q&A <b>PL4</b> : Self-organisation and self-assembly in nano/micro systems Toru Maekawa, Toyo Univ., Japan <b>PL5</b> : MONA : The MONA Project : The Nanophotonics Roadmap Tomas P. Pearsall, European Photonics Industry Consortium, France <b>PL6</b> : Computing at the Nanoscale Stanley Williams, HP, USA		
	11:00 –11:20	<b>Coffee Break</b>		
	11:20 –12:15	NCI 6 / NCO 2,3	NPI 5,6	NMI 5,6
PM	12:15 –13:30	<b>Lunch</b>		
	13:30–14:00	NCO 4,5	NPI 7,8	MEI 4~6 MEO 6
	14:00 –15:15	NDI 4~6	NPO 4~6	
	15:15 –15:35	<b>Coffee Break</b>		
	15:35 –17:35	SPI 4,5 / SPO 2~4	Special Panel Session	NMO 8 ~ 13
	17:35 –18:30	<b>Poster Session II (Coffee Break)</b>		
Evening	18:30 –20:00	<b>Banquet</b>		

### I. PLENARY

09:00 – 09:40, **PL4**, **Self-organisation and Self-assembly in Nano/Micro systems**

Toru Maekawa  
Toyo Univ., Japan

09:00 – 09:40, **PL5**, **The MONA Project : The Nanophotonics Roadmap**

Thomas P. Pearsall  
European Photonics Industry Consortium, France

09:00 – 09:40, **PL6**, **Computing at the Nanoscale**

Stanley Williams  
HP, USA

## II. ORAL SESSION

### (CONVENTION HALL - A)

#### Nano CMOS Session (11:20 – 12:15)

11:20 – 11:45, **NCI6**, **Gate Stack Technology for Nano Scale Devices**

Byoung Hun Lee  
SEMATECH, USA

11:45 – 12:00, **NCO2**, **Body Effects in Tri-Gate Bulk FinFETs for DTMOS**

Jin-Woo Han\*, Choong-Ho Lee†, Donggun Park†, and Yang-Kyu Choi\*  
\*Korea Advanced Institute of Science and Technology(KAIST), Korea,  
†Samsung Electronics, Youngin, Korea

12:00 – 12:15, **NCO3**, **Improved Performance of Multi-Giga bit NAND Flash Using <100> Channel Orientation**

Hye Jin Cho, Byung Young Choi, Hee Soo Kang, Suk-Kang Sung, Tae Hun Kim, Byung Kyu Cho, Donguk Choi, Albert Fayrushin, Jong Ho Lim, Ji-Hwon Lee, Andrew T. Kim, Hong-Shik Kim, In Sun Jung#, Yonghan Roh+, Choong-Ho Lee, Kyucham Park, and Donggun Park  
Samsung Electronics Co., Ltd., Korea, +Sungkyunkwan University, Korea,

#Samsung Advanced Institute of Technology(SAIT), Korea.

#### Lunch (12:15 – 13:30)

#### Nano CMOS Session (13:30 – 14:00)

13:30 – 13:45, **NCO4**, **High Performance Twin Silicon Nanowire MOSFET(TSNWFET) on Bulk Si Wafer**

Sung Dae Suk, Kyoung Hwan Yeo, Keun Hwi Cho, Ming Li, Yun Young Yeoh, Sung-Young Lee, Sung Min Kim, Eun Jung Yoon, Min Sang Kim, Chang Woo Oh, Sung Hwan Kim, Dong-Won Kim, Donggun Park  
Samsung Electronics Co., Korea.

13:45 – 14:00, **NCO5**, **Investigation of 4-bit SONOS Nonvolatile Memory Using 3-Dimensional Numerical Simulation**

J. G. Yun, Y. Kim, I. H. Park, S. J. Cho, J. H. Lee, D. H. Kim, G. S. Lee, J. Y. Song, J. D. Lee, and B. G. Park  
Seoul National University(SNU), Korea.

#### New Devices beyond CMOS Session (14:00 – 15:15)

14:00 – 14:25, **NDI4**, **Probing Quantum Dots and Molecules by Nanogap Electrodes**

Kazuhiko Hirakawa  
Univ. of Tokyo, Japan

14:25 – 14:50, **NDI5**, **Alternative MRAMS Embedded on Silicon**

Francois Arnaud d'AVITAYA  
CRMC N-CNRS, France

14:50 – 15:15, **NDI6**, **New Scheme of Spin Qubits Driven by ac Electric Field**

Seigo Tarucha  
Univ. of Tokyo, Japan

#### Coffee Break (15:15 – 15:35)

#### Spintronics Session (15:35 – 17:35)

15:35 – 15:50, **SPI4**, **Ferromagnetic III-Mn-V Semiconductors: Basic Issues and**

### Prospects for Spintronic Applications

Jacek K. Furdyna  
Univ. of Notre Dame, USA

15:50 – 16:15, **SPI5**, **Spintronic Nanostructures**

Laurens Molenkamp, Wuerzburg Univ., Germany

16:15 – 16:30, **SPO2**, **Four States Memory Function in GaMnAs Ferromagnetic Semiconductor Epilayer**

Sanghoon Lee\*, D. Y. Shin\*, X. Liu†, and J. K. Furdyna

\*Korea University, †University of Notre Dame, USA

16:30 – 16:45, **SPO3**, **Mechanical and Electrical Properties of Ni Nanocontacts**

D. Jacob, M. J. Caturla, R. Calvo, C. Untiedt, and J. J. Palacios

Universidad de Alicante, Spain.

16:45 – 17:00, **SPO4**, **Origin of Surface Polarization Phenomena at the Interface between Pentacene/Permalloy Bilayers**

Tae Hee Kim<sup>1\*</sup>, Nyun Jong Lee<sup>1</sup>, J. H. Lee<sup>2</sup>, Arsen Babajayan<sup>3</sup>, Kiejun Lee<sup>3</sup>,

Eunju Lim<sup>4</sup>, Mitsumasa Iwamoto<sup>4</sup>

<sup>1</sup>Ewha Womans University, Seoul, Korea, <sup>2</sup>Microgate, Inc. Korea,

<sup>3</sup>Sogang University, Korea, <sup>4</sup>Tokyo Institute of Technology, Japan.

## (CONVENTION HALL - B)

### Nano Photonics Session (11:20 – 12:15)

11:20 – 11:45, **NPI5**, **High Efficiency Microcavity and Photonic Crystal LEDs**

Claude Weisbuch

Cole Polytechnique, France

11:45 – 12:10, **NPI6**, **Generation of Optical Vortices in Optical Fiber via Acousto-optic Interaction**

Henry Lee

UCI, USA

### Lunch (12:15 – 13:30)

### Nano Photonics Session (13:30 – 15:15)

13:30 – 13:55, **NPI7**, **Advances in Quantum Dots for Single Photon Sources**

Yasuhiko Arakawa

Univ. of Tokyo, Japan

13:55 – 14:20, **NPI8**, **Quantum Dots and Nanowires for Photonics Application**

Chennupati Jagadish

Australian National University, Australia

14:20 – 14:35, **NPO4**, **Plasmon Dynamics in a Metal Nanoslit**

Jeff Wuenschell and Hong Koo Kim

University of Pittsburgh, USA

14:35 – 14:50, **NPO5**, **Simulation of Current-Injection and All-Optical Nanophotonic Semiconductor Devices with Multi-Level Multi-Electron FDTD Model**

Yingyan Huang and Seng-Tiong Ho

Northwestern University, USA

14:50 – 15:05, **NPO6**, **Cubic Nonlinearity and Hyperpolarizability of Gold Nanometals**

J. T. Seo\*, S. M. Ma\*, Q. Yang\*, R. Battle\*, L. Creekmore\*, B. Tabibi\*, W. J.

Kim†, J. H. Heo†, W. S. Yunt†, D. H. Ha†, S. S. Jung†, E. Bryant°, C. Payne°,

W. Yu°, and V. Colvin°

\*Hampton University, USA, °Rice University, USA,

† Korea Research Institute of Standards and Science (KRISS), Korea.

### Coffee Break (15:15 – 15:35)

### Special (Panel) Session (15:35 – 17:35)

Session Title: "CMOS and Beyond : Emerging Trends"

Organizer : Yoon Soo Park, RPI, USA

Co-Organizer : Jinyong Chung, POSTECH, Korea

Moderator : Michael Shur, RPI, USA

Panel Members are :

15:35 – 16:05, **SS1, Flexible and Giant Electronics**

Michael Shur, RPI, USA

16:05 – 16:35, **SS2, III-V Nanoelectronics for Post Si Era**

Hideki Hasegawa, Hokkaido Univ., Japan

16:35 – 17:05, **SS3, Carbon Nanotubes in the Post CMOS-scaling World**

Jimmy Xu, Brown Univ., USA

17:05 – 17:35, **SS4, CMOS-State-of -the -Art and Future Potential**

Yoshio Nishi, Stanford University, USA

### **(CONVENTION HALL - C)**

### Nano Electronic Materials & Fabrication Session (11:20 – 12:15)

11:20 – 11:45, **NMI5, Filling of Carbon Nanotube Forests Grown by Atmospheric Pressure**

Lawrence Overzet

UT Dallas, USA

11:45 – 12:10, **NMI6, Probing Mechanics of Nanostructures**

Laszlo Forro

EPF Lausanne, Swiss

### Lunch (12:15 – 13:30)

### Molecular Electronics & Bio Devices Session (13:30 – 15:15)

13:30 – 13:55, **MEI4, Analysis and Probing of Surface Polarization Phenomena in Organic Films and Organic Devices**

Mitsumasa Iwamoto

Tokyo Inst. of Tech, Japan

13:55 – 14:20, **MEI5, Solid State Protein Devices**

Roberto Cingolani,

Univ. of Lecce, Italy

14:20 – 14:45, **MEI6, Nanomaterials Based Optical and Electrochemical Biosensors**

Eiichi Tamiya

JAIST, Japan

14:45 – 15:00, **MEO6, Investigation of Device Parameters for Field-Effect DNA-Sensors by Three-Dimensional Simulation**

Eddie Howell\*, Clemens Heitzinger<sup>†</sup>, and Gerhard Klimeck<sup>†</sup>

\*Norfolk State University, USA, <sup>†</sup>Purdue University, USA.

### Coffee Break (15:15 – 15:35)

### **Nano Electronic Materials & Fabrication Session (15:35 – 17:35)**

- 15:35 – 15:50, **NMO8, A Flexible Thin-Film Transistor with High Field-Effect Mobility by Using Carbon Nanotubes**  
Xuliang Han\*, Daniel C. Janzen\*, Jarrod Vaillancourt†, and Xuejun Lu†  
\*Brewer Science, Inc. USA, †University of Massachusetts Lowell, USA
- 15:50 – 16:05, **NMO9, Transparent Electrooptical Nanocomposite Thick Films by Aerosol Deposition Method for Application to Ultrahigh-Speed Optical Switches**  
Jae-Hyuk Park, Jun Akedo  
National Institute of Advanced Industrial Science and Technology (AIST), Japan
- 16:05 – 16:20, **NMO10, Indium Phosphide Nanostructures on Hydrogenated Silicon Formed on Metallic and Dielectric Substrates**  
Nobuhiko P. Kobayashi\*†, Shih-Yuan Wang\*, Xuema Li\*, R. Stanley Williams\*, Suqin Wang†, and Holger Schmidt†  
†University of California, USA, \*Quantum Science Research, Hewlett-Packard Laboratories, USA
- 16:20 – 16:35, **NMO11, Synthesis of Carbon Nanotubes by Direct Irradiation of Microwave Signal**  
Gyu-Young Son†, Kun-Hong Lee†,\* and Yongshik Lee‡  
†Pohang University of Science and Technology(POSTECH), Korea,  
‡Yonsei University, Korea.
- 16:35 – 16:50, **NMO12, A New Approach to Accurate Resistivity Measurement for a Single Nanowire – Theory and Application**  
Wenhua Gu and Kyekyoon(Kevin) Kim \*  
\*University of Illinois at Urbana-Champaign, USA
- 16:50 – 17:05, **NMO13, Metal Nanotube Membranes and Their Lithographic Applications**  
Woo Lee\*, Hong Jin Fan, Marin Alexe, Roland Scholz, Margit Zacharias, Kornelius Nielsch, Ulrich Gösele  
Max Planck Institute of Microstructure Physics, Germany

### **III. POSTER SESSION (88) (TOPAZ HALL)**

#### **Poster Session II (17:35 – 18:30)**

- NCP6 A New Substrate Network Model and Parameter Extraction for RF Nano-CMOS**  
Gil-Bok Choi\*, Seung-Ho Hong\*, Hee-Sung Kang†, and Yoon-Ha Jeong\*  
\* Pohang University of Science and Technology(POSTECH), Korea,  
†Samsung Electronics Co. Ltd., Korea.
- NCP7 Characterization of Near-Interface Oxide Trap Density in Remote Plasma Nitrided Oxides for Nano-Scale MOSFETs**  
Younghwan Son\*, Chang-Ki Baek†, Bomsu Kim†, In-Shik Han\*, Tae-Gyu Goo\*, Ooksang You\*, Wonho Choi\*, Hee-Hwan Ji††, Hi-Deok Lee\* and Dae M. Kim†  
\*Chungnam National University, Korea, †Korea Institute for Advanced Study, Korea,  
††Magnachip Semiconductor Inc., Korea.
- NCP8 Simulation of Vertical Channel Nanoscale MOSFETs for Low Leakage DRAM Cell**  
Seung-Hyun Song\*, Jeong-Soo Lee†, Yoon-Ha Jeong\*  
\*Pohang University of Science and Technology(POSTECH), Korea,  
† Chonbuk National University, Korea.

**NCP9 Impact of Initial-Oxidation on 1/f Noise and Subthreshold Swing of n-Channel MOSFETs**

Han-Soo Joo\*, In-Shik Han\*, Tae-Kyu Goo\*, Ook-Sang Yoo\*, Won-Ho Choi\*, Ga-Won Lee\* and Hi-Deok Lee\*

\*Chungnam National University, Korea.

**NCP10 Interfacial Layer Thickness Dependence of the Low-Frequency Noise in High-k Dielectric MOSFETs**

Hyungdo Nam\*,†, Jungil Lee\*, Ilki Han\*, and Haesuk Yang†

\* Korea Institute of Science and Technology(KIST), Korea,

†Chung-Ang University, Korea

**NCP11 Nonvolatile Memory Characteristics of NMOSFET with Silver Nanocrystals Synthesized by Thermal Decomposition Process**

Seong-Wan Ryu\*, Chan Bin Mo†, Soon Hyung Hong† and Yang-Kyu Choi\*

\*†Korea Advanced Institute of Science and Technology(KAIST), Korea.

**NPP11 Lateral Conduction Mid-Infrared Photodetectors Using Self-Assembled Ge/Si Quantum Dots**

S.-W. Lee,<sup>1</sup> T.G. Kim,<sup>2</sup> K. Hirakawa,<sup>3</sup> J.S. Kim,<sup>4</sup> and H.Y. Cho<sup>5</sup>

<sup>1</sup>Dongguk University, Korea, Korea University, Korea, University of Tokyo, Tokyo, KIST, Korea, Dongguk University, Korea.

**NPP12 Kaluza-Klein Theory Extended to a Photonic Domain**

O'Dae Kwon\*, Y.C. Kim, D.K. Kim

\*Pohang University of Science & Technology(POSTECH), Korea.

**NPP13 Effects of Paraffin Addition on Characteristics of Self-Assembled SiO<sub>2</sub> Photonic Crystals**

Yong-Taeg O\*, and Dong-Chan Shin\*†

\* Chosun University, Korea.

**NPP14 Cost Effective Process for High-efficiency Solar Cells**

S. H. LEE

Sejong University, Korea.

**NPP15 Investigation of a-Si<sub>x</sub>Ge<sub>1-x</sub>:H Nano Films Deposited by RF Magnetron Sputtering for Heterojunction Silicon Solar Cells**

Dowan Kim\*, Eunjoo Lee\* and Soohong Lee\*

\*Sejong University, Korea.

**NPP16 Sensitization of Er by Si-nanoclusters in Erbium Doped Si-rich Si Nitride Films**

Moon-Seung Yang\*, Jung H. Shin\*, and Kyung Joong Kim†

\*Korea Advanced Institute of Science and Technology(KAIST), Korea,

†Korea Research Institute of Standards and Science(KRISS), Korea.

**NPP17 Polarization-resolved Cubic Nonlinearity and Optical Power Limiting of Highly Porous Silica Nanoaerogels**

J. T. Seo\*, S. M. Ma\*, Q. Yang\*, R. Battle\*, L. Creekmore\*, B. Tabibi\*, K. P. Yoo†, S. Y. Kim†, S. S. Jung°, and M. Namkung♦

\*Hampton University, USA, †Sogang University, Korea,

°Korea Research Institute of Standards and Science(KRISS), Korea,

♦ NASA Goddard Space Flight Center, USA .

**NPP18 Application of UV Nanoimprint Lithography in Polymer Photonic Nano-Systems**

Choon-Gi Choi\*, Young-Tak Han, and Jin Tae Kim

IT Convergence & Components Laboratory(ICCL), Korea,

Electronics and Telecommunications Research Institute(ETRI), KOREA

**NPP19 Fabrication of High Mobility P-type ZnO Thin Film by Ampoule-tube Method**

In-Sung Yoo\*, Soon-Jin So†, and Choon-Bae Park\*

\*Wonkwang University, Korea, †Knowledge\*On Inc., Korea.

**NPP20 Increase in the Luminescence Efficiency of R-G-B LED via the Controlling Texture of AZO Thin films**

Kyeong-Min Kim\*, Eun-Mi Jin\*, and Yong-Kab Kim\*

\*Wonkwang University, Korea.

**NPP21 Defect Analysis of N-doped p-type ZnO Film Fabricated by Magnetron Sputtering Via Photoluminescence Spectra**

Hu-Jie Jin\*, Deok-Kyu Kim\*, Choon-Bae Park\*

\*Wonkwang University, Korea.

**NPP22 Spatiotemporal Dynamics in Rayleigh Band of Photonic Quantum Ring Laser**

D. K. Kim, and O'Dae Kwon

Pohang University of Science and Technology(POSTECH), Korea.

**NDP5 DC and RF Characteristics of HfO<sub>2</sub> in Metal-Insulator-Metal Capacitor**

S.-W. Jeong\*, Jung Sung Ha†, K.-S. Kim\*, J. Y. Soon\*, and Y. Roh\*

\*Sungkyunkwan University, Korea,

†Electronics Telecommunications Research Institute, Korea.

**NDP6 Scaling Studies of Coaxially Gated Carbon Nanotube MOSFETs**

Chiyui Ahn and Mincheol Shin

Information and Communications University, Korea

**NDP7 Optical and Electrical Properties of High and Low Resistive CuInSe<sub>2</sub> Films: A Potential Photoactive Channel for Chalcogen Photo Thin Film Transistor**

Ki-Bong Song\*, Kyoung-Am Kim, and Jun-Ho Kim†

\* Electronics and Telecommunications Research Institute, Korea,

University of Incheon, Korea.

**NDP8 Simulations of Schottky-Barrier Nanowire Field Effect Transistors**

Jaehyun Lee, Chiyui Ahn, and Mincheol Shin

Korea Information and Communication University, Korea

**NDP9 Simulation Method of Transmission-Type Radio-Frequency Single-Electron Transistor (RF-SET) by SPICE**

YunSeop Yu\*, Jung Hyun Oh†, Seung Hun Son<sup>1,2</sup>, Bum Ho Choi<sup>3</sup>, SungWoo Hwang<sup>1,2</sup>, and Doyeol (David) Ahn<sup>1</sup>

\* Hankyong National University, Korea, <sup>1</sup>University of Seoul, Korea,

<sup>2</sup>Korea University, Korea, <sup>3</sup>Korea Institute of Industrial Technology Gwangju, Korea.

**NDP10 Triple-Walled Carbon Nanotube Oscillator as High Frequency Device**

Jun Ha Lee\* and Jeong Won Kang†

\*Sangmyung University, Korea, †University of California, USA.

**MEP15 Electrochemical Single Nucleotide Polymorphism Detection Using Hoechst 33258 Groove Binder**

Yong-Sung Choi\*, Young-Soo Kwon†, and Kyung-Sup Lee\*

\*Dongshin University, Korea, †Dong-A University, Korea.

**MEP16 Displacement Properties of NanoDendrimer**

Yong-Sung Choi\*, Young-Soo Kwon†, and Kyung-Sup Lee\*

\*Dongshin University, Korea, † Dong-A University, Korea.

**MEP17 Electrical Property of Organic Thin Films**

Yong-Sung Choi\*, Young-Soo Kwon†, and Kyung-Sup Lee\*

\*Dongshin University, Korea, †Dong-A University, Korea.

**MEP18 Interface Study of Metal Electrode and Semiconducting Carbon Nanotubes: Effects of Electrode Atomic Species**

P. Tarakeshwar\*, Juan Jose Palacios†, and Dae M. Kim\*

\* Korea Institute of Advanced Study, Korea(KIAS), †Universidad de Alicante, Spain.

**MEP19 Length-Dependent Electronic Transport through Alkane-Dithiol Self-Assembled Monolayer Junctions**

Gunuk Wang, Tae-Wook Kim, and Takhee Lee\*

Gwangju Institute of Science and Technology(GIST), Korea.

**MEP20 Study on Tunneling Current through Barrier Height Using Scanning Tunneling Microscopy**

Nam-Suk Lee, Dong-Jin Qian<sup>1</sup>, Hoon-Kyu Shin<sup>2</sup>, and Young-Soo Kwon\*  
Dong-A University, Korea, <sup>1</sup>Fudan University, China,

<sup>2</sup>National Center for Nanomaterials Technology(POSTECH), Korea

**MEP21 DNA Detection and Characterization of Nano Magnetite Powders Synthesized by Sonomechanical Method**

Eung Kwon Kim<sup>a</sup>, Joon Tae Song<sup>a</sup>, Ki Chul Kim<sup>b</sup>, Yong Jun Jo<sup>c</sup>, Areum Han<sup>c</sup>, Se Chan Kang<sup>d</sup>,  
Jae Won Lee<sup>e</sup> and Young Sung Kim<sup>e†</sup>

<sup>abd e†</sup>Sungkyunkwan University, Korea, <sup>c</sup>IGS Bio Co. Ltd, Korea,

**MEP22 Sensitivity Improvement of Polypyrrole-based Urea Sensor Using Copper Ion Doping Effect**

Dong-Hwa Yun\*, Min-Jung Song\*, Huijun Sim\*, and Suk-In Hong\*

\*Korea University, Korea.

**MEP23 The Fabrication of Molecular Memory Device Composed of Iron Storage Protein, Ferritin**

Jeong-Woo Choi\*<sup>†</sup>, Young Jun Kim<sup>†</sup>, Jin Seok Kim\*, and Byung-Keun Oh\*

\*<sup>†</sup>Sogang University,

**MEP24 Random Network Single-walled Carbon Nanotube Biosensor by Metal Work Function Modulation**

Sung-Wook Choi, Won-Seok Kang, Hyo-Sop Kim, Byung-Sam Choi and Jae-Ho Kim\*

\* Ajou University, Korea.

**MEP25 Novel Red Phosphorescent Iridium-Phenylisoquinoline Complex for Organic Electroluminescent Device**

Dong Uk Kim<sup>1\*</sup>, Seoung-Hey Paik<sup>2</sup>, Sung-Hoon Kim<sup>3</sup>, Yoon-Hoon Tak<sup>4</sup>, Yoon Soo Han<sup>5</sup>, Tae-Jeong Kim<sup>6</sup>

<sup>1</sup>Daegu National University of Education, Korea, <sup>2</sup>Korea National University of Education,

<sup>3</sup>University, Korea, <sup>4</sup>LG Electronics Inc., Korea,

<sup>5</sup>Daegu Gyeongbuk Institute Science & Technology, Korea,

<sup>6</sup>Kyungpook National University, Korea.

**MEP26 Characteristics of Polydimethylsiloxane Microfluidic System with Embedded Electrochemical Detector for a Lab-On-a-Chip**

In-Je Yi\*, Jong-Chul Yoo\*, Jaewan Kim\*<sup>†</sup>, Y. J. Choi\*<sup>†</sup>, C. J. Kang\*<sup>†</sup>, and Yong-Sang Kim\*<sup>††</sup>

\*<sup>†††</sup>Myongji University, Korea.

**MEP27 Formulation of High Conducting Ink Using Composites of Ag Nanoparticles, Ag Nanowires, and Polyaniline**

Jae Hee Song\*, Bock Im Lee<sup>†</sup>, Chae Min Lim<sup>†</sup>, and Gyoujin Cho<sup>†</sup>

\*<sup>†</sup>Sunchon National University, Korea.

**MEP28 A Novel Immobilization Technique for Surface Plasmon Resonance Sensing**

Jae Hyun Jeong\*, and Jong-Duk Kim<sup>†</sup>

\*Korea Advanced Institute of Science and Technology(KAIST), Korea.

**MEP29 Effect of Metal Oxide Doping on the Superconductivity of YBaCuO Ceramics**

Sang Heon Lee\*

\*Sun Moon University, Korea.

**MEP30 Magnetic Properties of Ag Doped BiSrCaCuO Oxides Using Thermal Pyrolysis Method**

Sang Heon Lee\* , Yong Choi<sup>†</sup>

\*<sup>†</sup>Sun Moon University, Korea.

**SPP12 Spin Torque Induced Noise Effect in TMR Head**

Eunsik Kim\*, S.C. Lee and Kuk-Hyun. Sunwoo

\*Samsung Advanced Institute of Technology(SAIT), Korea.

**SPP13 Characterization of Magnetic Nanoparticles Synthesized by Sonomechanical Method**

Ki-Chul Kim\*, Eung-Kwon Kim<sup>†</sup>, Jae-One Lee<sup>†</sup> and Young-Sung Kim

\*<sup>†</sup>Sungkyunkwan University, Korea.

**SPP14 Effect of Intervening Ferromagnet on Spin Accumulation in Py/Au/Py Spin Valve**

## Device

Janghae Ku<sup>1,3</sup>, Joonyeon Chang<sup>1\*</sup>, Jonghwa Eom<sup>1,2</sup>, Suk-Hee Han<sup>1</sup> and Gyutae Kim<sup>3</sup>

<sup>1</sup>Nano Device Research Center, Korea Institute of Science and Technology, Korea,

<sup>2</sup>Sejong University, Korea, <sup>3</sup>Korea University, Korea.

### **SPP15 Spin Transfer Torque in NanoPillar Spin-valve with [CoFe/Pd]<sub>2</sub> Double Free-Layers**

Jae-Chul Lee<sup>1,4</sup>, Chun-Yeol You<sup>1</sup>, Sug-Bong Choe<sup>2</sup>, Kyung-Jin Lee<sup>3</sup> and Kyung-Ho Shin<sup>4</sup>

<sup>1</sup>Inha University, Korea, <sup>2</sup>Seoul National University (SNU), Korea <sup>3</sup>Korea University, Korea,

<sup>4</sup>Korea Institute of Science and Technology(KIST), Korea

### **SPP16 Continuous Vortex Wall Motion Induced by Adiabatic Spin Torque**

Soo Man Seo\*, Woo Jin Kim<sup>††</sup>, Taek Dong Lee<sup>††</sup>, Kyung Jin Lee<sup>†</sup>

\*Korea University, Korea, <sup>††</sup> Korea Advanced Institute of Science and Technology, Korea.

### **SPP17 Micromagnetic Simulations on Current-driven Domain Depinning**

Sung-Chul Lee, Eun-Sig Kim, Kuk-Hyun Sunwoo, and Yong-Su Kim

Samsung Advanced Institute of Technology(SAIT), Mt., Korea.

### **SPP18 Magnetoresistance in Double-Wall Carbon Nanotubes Contacted by Ferromagnetic Electrodes**

Woon Song\*, Sunkyung Moon\*, Nam Kim\*, Byung-Chill Woo\*, Soon-Gul Lee<sup>†</sup>, and Jinhee Kim\*

\*Korea Research Institute of Standards and Science(KRISS), Korea,

<sup>†</sup>Korea University, Korea.

### **SPP19 Interlayer Magnetostatic Fields in Submicron Cells for High Density Magnetic Random Access Memory**

D. H. Lee and S. H. Lim

Korea University, Korea

### **SPP20 Reduction of Critical Current Density for Spin Transfer Magnetization Switching in a Spin-valve Nano-pillar**

C. H. Kang<sup>1,2</sup>, J. C. Lee<sup>2</sup>, K. H. Shin<sup>2\*</sup> and S. H. Lim<sup>1</sup>

<sup>1</sup>Korea University, Korea <sup>2</sup>Korea Institute of Science and Technology(KIST), Korea.

### **SPP21 Negative Resistance in a Magnetic Barrier Device**

Sungjung Joo\*, Jinki Hong<sup>†</sup>, Kungwon Rhie<sup>†</sup>, Kyung-Ho Shin\*, Jungseung Kim\*, B. C. Lee

\*Korea Institute of Science and Technology(KIST), Korea, <sup>†</sup>Korea University, Korea,

Inha University, Korea.

### **SPP22 Characterization of Domain Switching Behavior of MTJ Cells Using Magnetic Force Microscopy(MFM) and H-R loop Analysis**

Jinhee Heo<sup>1</sup>, Kyohyeok Kim<sup>1</sup>, Taewan Kim<sup>2</sup> and Isub Chung<sup>1</sup>

<sup>1</sup>SungKyunKwan University, Korea, <sup>2</sup>Samsung Advanced Institute of Technology, Korea.

### **SPP23 Room-Temperature Ferromagnetism in Diluted Magnetic Zinc Oxide Semiconducting Nanomaterials**

Xiao Li Zhang, Ru Qiao, Yan Li, Ri Qiu and Young Soo Kang\*

\*Pukyong National University, Korea

### **NMP51 Synthesis and Dielectric Properties of Poly(epoxy-imide)-Nano Silica Hybrid Film by CS Sol Process**

Se Won HAN, Dong Hee HAN, Dong Pil KANG, Young Taec KANG, and Suck Jun KIM

KERI(Korea Electrotechnology Research Institute), Korea.

### **NMP52 Organic Perylene Single Crystal Based Field-effect Transistor**

J. W. Lee, H. S. Kang, M. K. Kim, M. Y. Cho and J. Joo\*

\*Korea University, Korea.

### **NMP53 Electrical Characteristics of Nano-Crystal Si Particles for Nano Floating Gate Memory**

Jin Seok Yang\*, Seong-II Kim<sup>†, #</sup>, Yong Tae Kim<sup>†</sup>, Woon Jo Cho<sup>†</sup> and Jung Ho Park\*

\*Korea University, Korea, <sup>†</sup>Korea Institute of Science and Technology(KIST), Korea.

### **NMP54 Copper-phthalocyanine Based Organic Thin Film Transistor**

T. H. Kwak, H. S. Kang, K. Kim, M. Y. Cho, J. W. Lee and J. Joo\*

\*Korea University, Korea

**NMP55 The Structural and Dielectric Properties of Sandwiched PZT Thin Films**

Sung-Pill Nam\*, Sung-Gap Lee<sup>†</sup>, Seong-Gi Bae<sup>††</sup>, Young-Hie Lee\*

\* Kwangwoon Univeristy, Korea, <sup>†</sup>Gyeongsang National University, Korea,

<sup>††</sup> University of Incheon, Korea.

**NMP56 The Application of Atomic Layer Deposition for Transparent Thin Film Transistor**

S.J. Lim, Soonju Kwon, H. Kim

Pohang University of Science and Technology(POSTECH), Korea

**NMP57 Nanomaterial Fabrication by Ru Atomic Layer Deposition on Anodic Aluminum Oxide Nanotemplate**

Woo-Hee Kim, Sang-Joon Park, and H. Kim\*

\* Pohang University of Science and Technology(POSTECH), Korea

**NMP58 Low-pressure, Low-temperature Hydrogen Annealing for Nanoscale Silicon Fin Rounding**

Jung-Hoon Lee, Hyun-Woo Kim, Il Han Park, Seongjae Cho, Gil Seong Lee, Doo Hyun Kim,

Jang Gn Yun, Yoon Kim, Jong Duk Lee, Byung-Gook Park and Euijoon Yoon

Seoul National University(SNU), Korea.

**NMP59 Pulsed Laser Deposited LiNi<sub>0.5</sub>Mn<sub>0.5</sub>O<sub>2</sub> Thin Films on the Pt(200)/TiO<sub>2</sub>/SiO<sub>2</sub>/Si Substrates for Lithium-ion Battery Application**

Junki Chung\*, Wonjung Kim\*, Jinsung Tak<sup>†</sup>, Sunggap Lee<sup>†</sup>, and Cheoljin Kim<sup>†</sup>

\*Changwon National University, KOREA, <sup>†</sup>Gyeongsang National University, KOREA.

**NMP60 Retention Characteristics of Ge-nanocrystal Nonvolatile MOS Memories**

J.S. Oh<sup>a</sup>, H.T. Oh<sup>a</sup>, Y.H. Lee<sup>a</sup>, W.-C. Yang<sup>a</sup>, and H.Y. Choa<sup>a</sup>, S.-H. Choi<sup>b</sup>, and C.J. Park<sup>c</sup>, C.-W. Kim<sup>c</sup>

<sup>a</sup> Dongguk University, Korea, <sup>b</sup>Kyung Hee University, Korea <sup>c</sup> Electronics Co. Ltd., Korea.

**NMP61 Characterization And Fabrication of Alkyl Urethane Acrylate Oligomers for UV Curable Coating Agents**

Mi Na Park\*, Sun Wha Oh<sup>†</sup>, Hyo Sim Kang\*, Byung Hyun Ahn\*, Yong Cheol Kang\*, Young Hwan Kim\*, Young Soo Kang\*

<sup>††</sup>Pukyong National University, Korea.

**NMP62 Preparation and Characterization of Ag Nanoparticle Using Hydrothermal Process**

Young Hwan Kim\*, Chang Woo Kim\*, Hyun Gil Cha\*, Yong Chul Kang\*, and Young Soo Kang\*

Pukyong National University, Korea.

**NMP63 A Magnetic Behavior of  $\alpha$ -Fe Nanoparticle**

Young Chul Han\*, Young Hwan Kim\*, Jin Kook Heo\*, Yong Cheol Kang\* and Young Soo Kang\*

\*Pukyong National University, Korea.

**NMP64 Synthesis and Investigation of SmCo<sub>5</sub> Magnetic Nanoparticles**

Yan Li, Xiao Li Zhang, Ri Qiu, Ru Qiao and Young Soo Kang\*

\*Pukyong National University, Korea.

**NMP65 Synthesis and Charateristics of NdFeB Magnetic Nanoparticle**

Hyun Gil Cha\*, Young Hwan Kim\*, Chang Woo Kim\*, and Young Soo Kang\*

\*Pukyong National University, Korea.

**NMP66 Reduction Diffusion Process for Preparation of Nd-Fe-B Based Alloy**

Chang Woo Kim\*, Young Hwan Kim\*, Hyun Gil Cha\*, and Young Soo Kang\*

\*Pukyong National University, Korea

**NMP67 FePt Magnetic Material Synthesis by Electrochemical Methods**

Ri Qiu, Xiao Li Zhang, Ru Qiao, Yan Li, Myung Soon Lee, Yeong Il Kim and Young Soo Kang\*

\*Pukyong National University, Korea.

**NMP68 Synthesis and Characterization of Well Dispersed Electronic Ink Particles for Electronic Paper**

Hyo Sim Kang\*, Sun Wha Oh<sup>†</sup>, Mi Na Park\*, Ju Chang Kim\*, Young Soo Kang\*

\*†Pukyong National University, Korea.

**NMP69 Fabrication of Functional Microcapsules Containing Two-Phase Suspensions for Microparticle-Based Displays**

Ru Qiao, Xiao Li Zhang, Yan Li, Ri Qiu, Young Soo Kang\*  
Pukyong National University, Korea.

**NMP70 Solar Cell Surface Texturing Using a Micro-Blaster Etching Technique**

Duk-Soo Eun\*<sup>1</sup>, Dae-Young Kong\*, Hee-Sung Kim\*, In-Sik Yu<sup>†</sup> and Jong-Hyun Lee\*  
\*Kyungpook National University, Korea, <sup>†</sup>Kyungdong college of Techno-Information, Korea.

**NMP71 Preparation and Characterization of Ag/SiO<sub>2</sub> Core/Shell Type Nanoparticles**

Hwa Jin Cha, Young Hwan Kim, Yong Chul Kang, Young Soo Kang\*  
Pukyong National University, Korea.

**NMP72 A Study on Magnetic Property Loss of Nd-Fe-B Permanent Magnet By  $\gamma$ -ray Irradiation**

Song Lee\*, and Young Soo Kang<sup>†</sup>  
\*<sup>†</sup>Pukyong National University, Korea.

**NMP73 Dielectric Properties of Epoxy/Al<sub>2</sub>O<sub>3</sub> Nanocomposites Depending on Frequency and Temperature**

Joon Ho Ahn\*, and Jae-Jun Park<sup>†</sup>  
\*Hongik University, Korea, <sup>†</sup>Joongbu University, Korea.

**NMP74 Electrical Characteristics of Hybrid Nanoparticle-nanowire Devices**

Dong-Young Jeong, Kihyun Keem, Byoungjun Park, Kyoungah Cho, and Sangsig Kim  
Korea University, Korea.

**NMP75 Fabrication of Titania Structures for Photonic Applications**

Hyung Kyun Yu\*, Gi-Ra Yi<sup>†</sup>, Ji-Hwan Kang\*, Tai-Hee Eun\*, Se-Heon Kim\*, David J. Pine<sup>‡</sup> and Seung-Man Yang\*

\*Korea Advanced Institute of Science and Technology(KAIST), Korea,

<sup>†</sup>Korea Basic Science Institute, Korea, <sup>‡</sup>New York University, USA.

**NMP76 ZnO Nanostructures Synthesized with/without Catalyst by Metalorganic Chemical Vapor Deposition**

Seong Hun Jeong, Dong.-Geun. Yoo, Bit Na Park, and Jin-Hyo Boo  
Sungkyunkwan University, Korea.

**NMP77 High-Density Optical Disk Pattern Mastering Using Nanoimprint Lithography**

Choon-Gi Choi,  
IT Convergence & Components Laboratory(ICCL),  
Electronics and Telecommunications Research Institute(ETRI), Korea.

**NMP78 Efficient Transformation of Water-Soluble Quantum Dot to Highly Luminescent Nanocomposite**

Dong Hyun Koo, Kyoungja Woo  
Korea Institute of Science and Technology(KIST), Korea.

**NMP79 Direct Observation of Suppressed Recombination of Electron-hole Pairs in the TiO<sub>2</sub> Nanopowders with Anatase-rutile Interface: *in-situ* NEXAFS Study Under UV**

**Irradiation**

Hoon Park\*<sup>,†</sup>, Hyunseock Jie\*, Ho-bum Lee\*<sup>,†</sup>, Keun-Hwa Chae\*, Jong-Ku Park\*<sup>,††</sup>, and Dok-Yol Lee<sup>†,††</sup>

\*Korea Institute of Science and Technology(KIST), Korea, <sup>†</sup>Korea University, Korea.

**NMP80 Magnetic Properties of Ag Doped BiSrCaCuO Oxides Using Thermal Pyrolysis Method**

Sang Heon Lee\*, Yong Choi<sup>†</sup>  
\*<sup>†</sup>Sun Moon University, Korea.

**NMP81 Electrical and Structural Properties of PZT/ST Films**

Sang Heon Lee\*, Yong Choi<sup>†</sup>  
\*<sup>†</sup>Sun Moon University, Korea.

**NMP82 Effect of the Thermal Distribution for ZnO Nano-powder Bi-based Varistors**

Min-Sung Wang\*, Sang-Hyun Oh\* and Choon-Bae Park\*,

\*Wonkwang University, Korea.

**NMP83 Study on Charge Trap Layer in Nanocrystal Charge Trap MOSFET**

Seung Su Cho\* Kyong Hee Joo<sup>†</sup>, In-Seok Yeo<sup>†</sup> and IISub Chung\*

<sup>†</sup>Samsung Electronics Co., LTD., Korea, \*Sungkyunkwan University, Korea.

**NMP84 Fabricated Poly-Si Thin Film Transistor with Anodizing Al film Using Nanoindentation**

Jin-Woo Han\*, Jong-Yeon Kim\*, Hee-Jin Kan\* ,Hyun-Chan Moon<sup>†</sup>, Seong-Ho Choi<sup>†</sup>, Kwang-Bum Park<sup>†</sup>, Tae-Ha Kim<sup>†</sup> and Dae-Shik Seo\*,

\*Yonsei University, Korea, <sup>†</sup> Korea Electronics Technology Institute(KETI), Korea.

**NMP85 Fabricated Si Nanowire Using Nanoimprint Method**

Jin-Woo Han\*, Jong-Yeon Kim\*, Hee-Jin Kan\* ,Hyun-Chan Moon<sup>†</sup>, Seong-Ho Choi<sup>†</sup>, Kwang-Bum Park<sup>†</sup>, Tae-Ha Kim<sup>†</sup> and Dae Shik Seo\*,

\*Yonsei University, Korea, <sup>†</sup>Korea Electronics Technology Institute(KETI), Korea.

**NMP86 Interfacial Structure and Crystallinity of YSZ Thin Films Grown by Ion Beam Sputtering for MFIS-FRAM'**

Ju Hyung Suh, Hyung Seok Kim, Chan Gyung Park

Pohang University of Science and Technology(POSTECH), Korea.

**NMP87 Characterization of Pd-nanocrystal-based Nonvolatile Memory Devices**

Kwang Soo Seol\*, Seong Jae Choi\*, Jae-Young Choi\*, Eun-Joo Jang\*, Byung-Ki Kim\*, Sang-Jin Park\*, Dea-Gil Cha\*, Shinae Jun\*, Jong-Bong Park\*, Yoondong Park\*, and Suk-Ho Choi<sup>†</sup>

\*Samsung Advanced Institute of Technology, Korea, <sup>†</sup>Kyung Hee University, Korea

**NMP88 Structural and Compositional Characteristics of Nanocrystalline Nichrome Thin Film as Anode for Lithium Battery**

Arun Patil, Dong Wook Shin, Ji-Won Choi and Seok-Jin Yoon

Thin Film Materials Reserach Center, Korea Institute of Science and Tehcnology, Seoul, Korea

**NMP89 Preparation, Growth Mechanism and Chemical Compositional Analysis of Nano crystalline [Sb<sub>2</sub>(S<sub>1-X</sub>, Sex)<sub>3</sub>] Thin Films Using Arrested Precipitation Technique (APT)**

Vaishali Patil, Arun Patil, Ji-Won Choi and Seok-Jin Yoon

Thin Film Materials Reserach Center, Korea Institute of Science and Tehcnology, Seoul, Korea

## IV. OCTOBER 25(WED), 2006

### I. Conference Tour

AM	09:30~12:00	<b>1. National Center for Nanomaterials Technology</b> <b>2. Pohang Accelerator Laboratory</b>
	12:00~13:30	<b>Lunch</b>
PM	13:30 -17:30	<b>1. Bulguksa (Buddhist temple)</b> <b>2. Gyeongju National Museum</b>