

## Flexible and Printable Electronic Materials and Devices (FE)

### Oral Presentation

Nov. 10, 2011 (Thu.)

#### FE 1 (Flexible and Printable Electronic Materials and Devices 1)

Mara

Chairs: Dr. Mario Caironi (Italian Institute of Technology, Italy)  
Prof. Yoonseuk Choi (Hanbat National University, Korea)

09:10-10:20

#### **FE1** Tuning Transistor Performance by Semiconducting Materials Design and Interfacial Chemical Modifications

09:10-09:40

Invited Speech

Antonio Facchetti  
*Northwestern University and Polyera Corporation, USA*

#### **FE12** Controlling Interfacial Chemistry for Improving Charge Transport in Organic Thin Film Transistors

09:40-10:00

Invited Speech

Myung-Han Yoon  
*Gwangju Institute of Science and Technology, Korea*

#### **FE13** Characterization the Interfacial Electronic Structure of Graphene/organic Electronics

10:00-10:20

Invited Speech

Seong Jun Kang  
*Kyung Hee University, Korea*

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#### FE 2 (Flexible and Printable Electronic Materials and Devices 2)

Mara

Chairs: Prof. Myung-Han Yoon (Gwangju Institute of Science and Technology, Korea)  
Prof. Yoonseuk Choi (Hanbat National University, Korea)

10:40-12:00

#### **FE937** Effect of Sintering Conditions on Electrical Property in Printed Chip on Glass Module

10:40-11:00

Young-Chul Lee, Jee-Hyuk Ahn, Yongil Kim, Seung-Boo Jung  
*Sungkyunkwan University, Korea*

#### **FE14** Gigantic Stretchability of Conductive Elastomers with 3D Nanostructures

11:00-11:20

Invited Speech

Junyong Park, Seokwoo Jeon  
*KAIST, Korea*

#### **FE15** High-Resolution Electrohydrodynamic Inkjet Printing

11:20-11:40

Invited Speech

Vinod Thavarool Puthiyedath, Jang-Ung Park  
*UNIST, Korea*

**FE788 A Simple Patterning Method of Solution-processed ZnO Thin Film for Flexible Transparent Thin Film Transistors**

11:40-12:00

Kyongjun Kim<sup>1</sup>, Siyun Park<sup>1</sup>, Joohee Kim<sup>1</sup>, Jihyun Lee<sup>1</sup>, Sungyun Chung<sup>1</sup>, Hanju Jo<sup>1</sup>, Keon-Hee Lim<sup>1</sup>, Jieun Ko<sup>1</sup>, Kieun Seong<sup>1</sup>, Sunyoung Kim<sup>1</sup>, Youn Sang Kim<sup>1,2</sup>

<sup>1</sup>Seoul National University, Korea, <sup>2</sup>Advanced Institutes of Convergence Technology, Korea

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**FE 3 (Flexible and Printable Electronic Materials and Devices 3)**

Mara

Chairs: Prof. Antonio Facchetti (Polyera Corporation, USA)

15:00-16:10

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

**FE156 Electronics on Flexible Foils**

15:00-15:30 Paul Heremans

Invited Speech *IMEC, Belgium*

**FE565 Electrical Properties of Ferroelectric-gate Thin Film Transistor with 60-nm-thick P(VDF-TrFE) Gate Insulator**

15:30-15:50

Gwang-Geun Lee, Eisuke Tokumitsu

*Tokyo Institute of Technology, Japan*

**FE157 Advanced Materials and Device Architectures for High Performance Organic Memory Applications**

15:50-16:10

Invited Speech Tae-Wook Kim<sup>1</sup>, Alex K.-Y. Jen<sup>2</sup>, Takhee Lee<sup>3</sup>

<sup>1</sup>Korea Institute of Science and Technology, Korea, <sup>2</sup>University of Washington, USA,

<sup>3</sup>Gwangju Institute of Science and Technology, Korea

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**FE 4 (Flexible and Printable Electronic Materials and Devices 4)**

Mara

Chairs: Prof. Paul Heremans (IMEC, Belgium)

16:30-18:20

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

**FE158 Direct Writing and Device Physics of High Mobility Organic Field-effect Transistors**

16:30-17:00

Invited Speech Mario Caironi

*Italian Institute of Technology, Italy*

**FE432 Flexible Thin Film Transistors based on Oxide Semiconductor with Low-temperature Process and High Stability Characteristics**

17:00-17:20

Shinhyuk Yang<sup>1,2</sup>, Jun Yong Bak<sup>2</sup>, Sung-Min Yoon<sup>2</sup>, Min-Ki Ryu<sup>1</sup>, Gi Heon Kim<sup>1</sup>, Himchan Oh<sup>1</sup>, Chi-Sun Hwang<sup>1</sup>, Sang-Hee Ko Park<sup>1</sup>, Jin Jang<sup>2</sup>

<sup>1</sup>ETRI, Korea, <sup>2</sup>Kyung Hee University, Korea

## Flexible and Printable Electronic Materials and Devices

- FEIS9**      **New Circuit Applications using Inorganic and Organic Hybrid Structures**  
17:20-17:40      Min Suk Oh, Yong Hoon Kim, Byung Wook Yoo, Jung No Lee  
Invited Speech      *Korea Electronics Technology Institute, Korea*
- FE806**      **Ferroelectric and Resistive Switching Properties of Flexible Device by Laser Lift-off Process**  
17:40-18:00      Young Ho Do, Min Gyu Kang, Seung Min Oh, Won Hee Lee, Chong Yun Kang, Seok Jin Yoon  
*Korea Institute of Science and Technology, Korea*
- FE1517**      **Thermoelectric Properties of Bi-Te based Thin Films on Flexible Substrates Deposited by E-beam Evaporation**  
18:00-18:20      Kwang-Chon Kim<sup>1,2</sup>, Ju Hyuk Yim<sup>2</sup>, Young Jun Yoon<sup>3</sup>, Won Chel Choi<sup>1</sup>, Hyun Jae Kim<sup>2</sup>, Jin-Sang Kim<sup>1</sup>  
<sup>1</sup>*Korea Institute of Science and Technology (KIST), Korea*, <sup>2</sup>*Yonsei University, Korea*, <sup>3</sup>*Kwangwoon University, Korea*

## Poster Presentation

Nov. 10, 2011 (Thu.)

### FEP (Flexible and Printable Electronic Materials and Devices) Poster Presentation      Lobby 8F

Chairs: Prof. Sung-Min Yoon (Kyung Hee University, Korea)      13:30-15:00  
Prof. Yong-Young Noh (Hanbat National University, Korea)

- FE1675**      **Effects of Substrate Temperature on Electrical and Optical Properties of Al-doped ZnO Thin Films by Continuous Composition Spread**  
Keun Jung, Jin-Ju Lee, Won-Kook Choi, Seok-Jin Yoon, Ji-Won Choi  
*Korea Institute of Science and Technology, Korea*
- FE1674**      **The Electrical and Optical Properties of IZO Thin Films by Continuous Composition Spread**  
Jin-Ju Lee<sup>1,2</sup>, Seok-Jin Yoon<sup>1</sup>, Yong-Soo Cho<sup>2</sup>, Ji-Won Choi<sup>1</sup>  
<sup>1</sup>*Korea Institute of Science and Technology, Korea*, <sup>2</sup>*Yonsei University, Korea*
- FE1665**      **High Performance Printed OTFT and Ring Oscillators**  
Hyun Han<sup>1</sup>, Gwang-Tae Bae<sup>1</sup>, A-Ra Jo<sup>1</sup>, Sun-Woo Kwak<sup>1</sup>, Hyemi Lee<sup>1</sup>, Yong-Seok Yang<sup>2</sup>, Kang-Jun Baeg<sup>2</sup>, In-Kyu You<sup>2</sup>, Yong-Young Noh<sup>1</sup>  
<sup>1</sup>*Hanbat National University, Korea*, <sup>2</sup>*Electronics and Telecommunications Research Institute (ETRI), Korea*

- FE1623**    **Effect of Microwave Irradiation Power on Optical and Electrical Properties of ITO Nanoparticle Film**  
 Jong-Woong Kim, Jang-Woo Choi, Min-Gi Kwak, Sung-Jei Hong  
*Korea Electronics Technology Institute, Korea*
- FE1609**    **Controllable Preparation and Properties of Silver Particles for Electronics**  
 Chun-yan Liu, Xue-fu Cui  
*Technical Institute of Physics and Chemistry, CAS, China*
- FE1607**    **Study on Nano-silver Particles for Printed Electronics**  
 Zhi-ying Zhang, Shi-dong Nie  
*Technical Institute of Physics and Chemistry, CAS, China*
- FE1392**    **Synthesis of CoAl<sub>2</sub>O<sub>4</sub> Blue Nano-pigment by Ultrasonic Hydrothermal Method and Their Interaction with Glazes**  
 Jin-Ho Kim<sup>1</sup>, Ji-Ho Kim<sup>1</sup>, Sang-Min Ko<sup>1,2</sup>, Kwang-Taek Hwang<sup>1</sup>, Woo-Seok Jo<sup>1</sup>, Ung-Soo Kim<sup>1</sup>  
<sup>1</sup>*Korea Institute of Ceramic Engineering & Technology, Korea, <sup>2</sup>Hanyang University, Korea*
- FE1383**    **Chalcogenides Nanoparticle-based Complementary Inverters on Flexible Substrates**  
 Jaewon Jang, Junggwon Yun, Kyoungah Cho, Sangsig Kim  
*Korea University, Korea*
- FE1328**    **Fingerless Si Solar Cell Fabrication and Characterization for Embedded Ag Nanoarrays by Inkjet Printing Process**  
 Jung Tack Lee, Jaeho Choi, Hyung Yong Ji, Keunjoo Kim  
*Chonbuk National University, Korea*
- FE1306**    **The Influence of Surface-activated Bonding Treatment on the Peel Strength of Cu-Ni Clad Metal**  
 Kyung-Hoon Kim, Sung-Chul Lim, Hyouk-Chon Kwon  
*Korea Institute of Industrial Technology, Korea*
- FE1278**    **Effect of Two Different Classes of Polymeric Buffer Layers on Reducing the Interfacial Traps in a Pentacene Transistor with a Nanocomposite Insulator**  
 Jin-Hyuk Bae<sup>1</sup>, Yoonseuk Choi<sup>2</sup>  
<sup>1</sup>*Seoul National University, Korea, <sup>2</sup>Hanbat National University, Korea*
- FE1276**    **Effect of the Solvent Polarity on the Field-effect Mobility in an Organic Thin-film Transistor with a Solution-processed Polymeric Insulator**  
 Hyeok Kim<sup>1</sup>, Jin-Hyuk Bae<sup>2</sup>, Gilles Horowitz<sup>1</sup>, Yoonseuk Choi<sup>3</sup>  
<sup>1</sup>*Université Paris Diderot (Paris 7), France, <sup>2</sup>Ecole Nationale Supérieure des Mines de Saint-Etienne, France, <sup>3</sup>Hanbat National University, Korea*
- FE1114**    **Properties of AZO/Ag/AZO Multilayer Thin Film Deposited on Polyethersulfone Substrate**  
 Yu Sup Jung, Hyung-Wook Choi, Kyung Hwan Kim  
*Kyungwon University, Korea*

## Flexible and Printable Electronic Materials and Devices

### **FE933 Modified Electrochromic Coloration of P3HT Films by Incorporation of Metal Nanoparticles**

Yoon-Chae Nah<sup>1</sup>, Dong-Yu Kim<sup>2</sup>

<sup>1</sup>Korea University of Technology and Education, Korea, <sup>2</sup>Gwangju Institute of Science of Technology (GIST), Korea

### **FE898 Investigation and Improvement of Bending Reliability for ITO Film on Flexible Substrate**

Kyoungtae Eun<sup>1</sup>, Do-Geun Kim<sup>2</sup>, Jae-Wook Kang<sup>2</sup>, Kyounga Lim<sup>2</sup>, Sung-Hoon Choa<sup>1</sup>

<sup>1</sup>Seoul National Univ. of Science and Technology, Korea, <sup>2</sup>Korea Institute of Material Science, Korea

### **FE866 Effects of Al<sub>2</sub>O<sub>3</sub> Content and Surfactant on the Mechanical Properties of Electroformed Ni-Al<sub>2</sub>O<sub>3</sub> Composite Stencil Masks**

Ji Cheol Kim, Geun Chul Park, Seung Muk Lee, Jun Hyuk Choi, Soo Min Hwang, Jinho Joo

Sungkyunkwan University, Korea

### **FE858 Effects of Frequency and Duty Cycle on Mechanical Property of Ni Stencil Mask Fabricated by Pulse Electroforming**

Geun Chul Park, Ji Cheol Kim, Soo Min Hwang, Seung Muk Lee, Jun Hyuk Choi, Jinho Joo

Sungkyunkwan University, Korea

### **FE810 Preparation of Solution Processable Reduced Graphene using Sulfur Containing Reductant and Its Application to Optoelectronic Devices**

Jin-Mun Yun<sup>1,2</sup>, Dong-Yu Kim<sup>2</sup>, Hye Young Koo<sup>1</sup>, Myung Jong Kim<sup>1</sup>, Seok-In Na<sup>1</sup>

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

### **FE800 Fabrication of Organic Thin-Film Transistors based on Cross-linked Hybrid Dielectric Materials**

Yuedan Wang, Hongdoo Kim

Kyung Hee University, Korea

### **FE759 Intelligent System of Ambulance (ISA) to Bypass The Traffic Light**

Herlina A. Rahim, Muhammad Najmee Kamaruddin, Nur Saidah Mat Lani

Universiti Teknologi Malaysia, Malaysia

### **FE746 Improvement of Top-gate Staggered OTFT with Short Channel Length using Reverse Offset Printing Technology**

Minseok Kim<sup>1,2</sup>, Kang-Jun Baeg<sup>1</sup>, Tae-Youb Kim<sup>1</sup>, Soon-Won Jung<sup>1</sup>, Yong Suk Yang<sup>1</sup>, In-Kyu You<sup>1</sup>, Byeong-Kwon Ju<sup>2</sup>, Jae Bon Koo<sup>1</sup>

<sup>1</sup>Electronics and Telecommunications Research Institute, Korea, <sup>2</sup>Korea University, Korea

- FE692**     **An Experimental Study of the Effects of Source/Drain to Gate Overlap in Pentacene Thin-Film Transistors**  
Jaehoon Park<sup>1,2</sup>, Dong Wook Kim<sup>1</sup>, Christopher Pearson<sup>2</sup>, Michael C. Petty<sup>2</sup>, Jong Sun Choi<sup>1</sup>  
*<sup>1</sup>Hongik University, Korea, <sup>2</sup>Durham University, United Kingdom*
- FE669**     **Safety Car System using Heart Beat Monitor**  
Herlina A. R, Syahira I, Rashidah G  
*Universiti Teknologi Malaysia, Malaysia*
- FE574**     **Synthesis and Characterization of Siloxane/Metal Alkoxide Hybrid Materials as Gate Insulator for Organic Thin-film Transistors**  
Eunju Lee, Yeonok Kim, Hongdoo Kim  
*Kyung Hee University, Korea*
- FE561**     **Spin-on-Glass/TiO<sub>2</sub> Gate Dielectrics for Organic Thin Film Transistor**  
Yeonok Kim, Eunju Lee, Hongdoo Kim  
*Kyunghee University, Korea*
- FE549**     **Flexible Thin Film Transistors based on In-Ga-Zn-O Channel for Low Temperature Process**  
Jun-Yong Bak<sup>1</sup>, Shin-Hyuk Yang<sup>1,2</sup>, Eun-Sook Park<sup>2</sup>, Oh-Sang Kwon<sup>2</sup>, Sang-Hee Ko Park<sup>2</sup>, Chi-Sun Hwang<sup>2</sup>, Sung-Min Yoon<sup>1</sup>  
*<sup>1</sup>Kyung Hee University, Korea, <sup>2</sup>ETRI, Korea*
- FE536**     **Photocurable Polymeric Gate Insulator based on Polyimide for Pentacene Thin-film Transistor by Low Temperature Processing**  
Taek Ahn<sup>1</sup>, Jae-Won Ka<sup>2</sup>, Mi Hye Yi<sup>2</sup>  
*<sup>1</sup>Kyungsung University, Korea, <sup>2</sup>Korea Research Institute of Chemical Technology, Korea*
- FE535**     **Synthesis and Characterization of a Novel Polyimide/TiO<sub>2</sub> Nanocomposite for Solution Processable High K Dielectric**  
Taek Ahn<sup>1</sup>, Young Im Yu<sup>2</sup>, Mi Hye Yi<sup>2</sup>  
*<sup>1</sup>Kyungsung University, Korea, <sup>2</sup>Korea Research Institute of Chemical Technology, Korea*
- FE506**     **The Conductivity Enhancement of Thin Films of PEDOT:PSS by Solvent Treatment**  
JoongYeop Chae, Sungkoo Lee, Kyeong K. Lee, EunHee Lim  
*Korea Institute of Industrial Technology, Korea*
- FE474**     **Transparent Conductive Oxide (TCO) Films Prepared by Inkjet Printing Technology**  
Myung-sung Hwang<sup>1,2</sup>, Jihoon Kim<sup>1</sup>  
*<sup>1</sup>Korea Institute of Ceramic Engineering, Korea, <sup>2</sup>Yonsei University, Korea*
- FE258**     **Flexible Transparent Heaters with Heating Films Made of ITO Nanoparticles**  
Kiju Im<sup>1,2</sup>, Kyoungah Cho<sup>1</sup>, Jonhyun Kim<sup>2</sup>, Sangsig Kim<sup>1</sup>  
*<sup>1</sup>Korea University, Korea, <sup>2</sup>Research Institute of TNB Nanoelec Co., Ltd, Korea*

## Flexible and Printable Electronic Materials and Devices

**FE210**     **RFID Security Management System**

Herlina Abdul Rahim, Rashidah Ghazali  
*Universiti Teknologi Malaysia, Malaysia*

**FE73**     **Effect of Blue Dye on Electro-optical Characteristics of Polymer Dispersed Liquid Crystal Film for Flexible Display**

Kee-Jeong Yang, Byeong-Dae Choi  
*Daegu Gyeongbuk Institute of Science and Technology (DGIST), Korea*

**FE37**     **Radio Frequency Rectifiers based on Flexible InGaZnO TFT**

Tae-Youb Kim<sup>1,2</sup>, Soon-Won Jung<sup>1</sup>, Jae Bon Koo<sup>1</sup>, Yong Suk Yang<sup>1</sup>, Su Jae Lee<sup>1</sup>, Woo-Seok Cheong<sup>1</sup>, In-Kyu You<sup>1</sup>, Maki Suemitsu<sup>2</sup>  
*<sup>1</sup>Electronics and Telecommunications Research Institute, Korea, <sup>2</sup>Tohoku University, Japan*