

Focused Session 3: Next Generation Technologies for Innovative Surface Coatings

Monday, January 23, 2012
**Technology for Innovative
Surface Engineering**

1:30 PM-6:20 PM

Room: Coquina Salon G

Session Chair(s): Taejin Hwang, Tsuyoshi
Honma

1:30 PM

**(ICACC-FS3-001-2012) Atomic Layer
Deposition of Ru-based Ternary Thin Films for
Seedless Copper Electroplating Applications
(Invited)**

Soo-Hyun Kim*, Yeungnam University,
Republic of Korea

1:50 PM

**(ICACC-FS3-002-2012) Multifunctional thin
film resistors prepared by ALD for high-
efficiency inkjet printheads**

Se-Hun Kwon*, Yu-Ri Shin, Won-Sub Kwack,
Pusan National University, Republic of Korea;
Seung yong Shin, Kyoung Il Moon, Korea
Institute of Industrial Technology, Republic of
Korea

2:10 PM

**(ICACC-FS3-003-2012) HfInZnO-based thin film
transistors: the effects of the Hf ratio on the
film properties and the bias stability**

Mi Ran Moon, Haseok Jeon, Sekwon Na,
Donggeun Jung, Hyoungsub Kim, Hoo-Jeong
Lee*, Sungkyunkwan University, Republic of

Korea

2:30 PM

**(ICACC-FS3-004-2012) Thermal anisotropy of
epoxy resin-based nano hybrid film with
oriented boron nitride nanosheets under
rotation magnetic field**

Hong-Baek Cho*, Masaya Mitsunashi,
Tadachika Nakayama, Tsuneo Suzuki, Satoshi
Tanaka, Weihua Jiang, Hisayuki Suematsu,
Koichi Niihara, Nagaoka University of
Technology, Japan

2:50 PM

**(ICACC-FS3-005-2012) Fabrication of
freestanding TiO₂ and TiO₂-based
Multicomponent nanotube arrays using ALD
and BCP templates**

Yu-Ri Shin*, Se-Hun Kwon, Pusan National
University, Republic of Korea; Se-Jin Ku,
Gyeong Cheon Jo, Jin-Baek Kim, KAIST,
Republic of Korea

3:10 PM

**(ICACC-FS3-006-2012) Synthesis and
electrochromic characterization of
polyaniline-silica nanoparticles using surface
modified colloidal silica with aminosilane**
HeungYeol Lee*, Jae Young Park, Gyuntak Kim,
Korea Institute of Industrial Technology
(KITECH), Republic of Korea; Myeongkyu Lee,
Yonsei University, Republic of Korea

3:30 PM

Break

3:50 PM

**(ICACC-FS3-007-2012) Fabrication of crystal
patterns on glass substrates by scanning laser
irradiation (Invited)**

Tsuyoshi Honma*, Nagaoka University of
Technology, Japan

4:20 PM

(ICACC-FS3-008-2012) Fabrication of nanocrystalline InGaZnO films: the microstructure and the device performance of their thin film transistors

Haseok Jeon*, Hwayoul Choi, Mi Ran Moon, Sekwon Na, Donggeun Jung, Hyounsub Kim, Hoo-Jeong Lee, Sungkyunkwan University, Republic of Korea

4:40 PM

(ICACC-FS3-009-2012) Corrosion protection for Mg by a sol-gel chemical method

Hohyeong Kim, Taejin Hwang*, Korea Institute of Industrial Technology, Republic of Korea

5:00 PM

(ICACC-FS3-010-2012) Gas sensing properties of noble metal decorated nano-grain TiO₂ thick films with controlled porosity

Jae Young Park*, Gyuntak Kim, HeungYeol Lee, Korea Institute of Industrial Technology (KITECH), Republic of Korea

5:20 PM

(ICACC-FS3-011-2012) High Velocity Suspension Flame Sprayed (HVSFS) coatings for automotive applications

Rainer Gadow*, Andreas Killinger, Andrei Manzat, University of Stuttgart, Germany

5:40 PM

(ICACC-FS3-012-2012) Synthesis and Characterization of Superhydrophobic Silica Layers via Electrospray (Invited)

Eun-Kyeong Kim, Chul-Sung Lee, Sang Sub Kim*, Inha University, Republic of Korea

Tuesday, January 24, 2012

Next Generation Production Methods for Surface Engineering

8:20 AM-12:00 PM

Room: Coquina Salon G

Session Chair(s): Sang Sub Kim, Toshiyuki Matsui

8:20 AM

(ICACC-FS3-013-2012) Synthesis and novel application of nano- or mezzo-scale porous 3C-SiC coatings by Si carbonization technique (Invited)

Toshiyuki Matsui*, Hiroshi Tsuda, Hiroshi Mabuchi, Osaka Prefecture University, Japan; Atsushi Kakitsuji, Technology Research Institute of Osaka Prefecture, Japan

8:50 AM

(ICACC-FS3-014-2012) Superconducting MgB₂ Thick Films Prepared by Aerosol Deposition
Shingo Hirose*, AIST, Japan

9:10 AM

(ICACC-FS3-015-2012) Next generation surface technologies for the exterior parts of mobile devices

Tai Hong Yim*, Korea Institute of Industrial Technology, Republic of Korea

9:30 AM

(ICACC-FS3-016-2012) Control of the oxygen content with oxygen gas introduction of Cr(N,O) thin films prepared by pulsed laser deposition

Kazuma Suzuki*, Toshiyuki Endo, Teruhisa Fukushima, Aoi Sato, Tsuneo Suzuki, Tadachika Nakayama, Hisayuki Suematsu, Koichi Niihara, Nagaoka University of Technology, Japan

9:50 AM

Break

10:10 AM

(ICACC-FS3-017-2012) Synthesis and thermal conductivity of thick AlN-YAG coating by plasma spraying

Kyeong-Ho Baik*, Woong-Sub Soh, Dae-gyun Noh, Chungnam National University, Republic of Korea

10:30 AM

(ICACC-FS3-018-2012) Carbon nanomaterials for energy storage and conversion (Invited)

Wonbong Choi*, Florida International University, USA

11:00 AM

(ICACC-FS3-019-2012) Enhancement of materials properties with the induced stress in aerosol deposition

DaeYong Jeong*, Inha University, Republic of Korea; Guifang Han, Jungho Ryu, Dong-Soo Park, Korea Institute of Materials Science (KIMS), Republic of Korea

11:20 AM

(ICACC-FS3-020-2012) Optical and Mechanical Properties of Infrared Transmitting Coatings Prepared by Aerosol Deposition

Hiroki Tsuda*, Jun Akedo, Shingo Hirose, AIST, Japan; Keishi Ohashi, NEC, Japan

11:40 AM

(ICACC-FS3-021-2012) The use of Aerosol Deposition Technique in all-solid-state Li-ion fabrication

Daniel Popovici*, AIST, Japan; Hideyuki Nagai, Seigo Fujishima, Toyota Motor Co., Japan; Jun Akedo, AIST, Japan

Longer Life Solution, Technological Problems and Solutions, and Mass Production

1:30 PM-4:40 PM

Room: Coquina Salon G

Session Chair(s): Jinsam Choi, Jun Akedo

1:30 PM

(ICACC-FS3-022-2012) Corrosion protection of non-ferrous metals by SiOxCy(-H)film deposited by atmospheric pressure dielectric barrier discharge (Invited)

Gi Taek Kim, Dong Bum Shin, YoonKee Kim*, Hanbat National University, Republic of Korea

2:00 PM

(ICACC-FS3-023-2012) Fabrication of the anisotropic structured BN/Polymer composites with Nanoimprint and Electric Field Process

Tadachika Nakayama*, Takeshi Fujihara, Hong-Baek Cho, Shin Endo, Hong-Dae Kim, Nagaoka University of Technology, Japan; Kazuhiro Tada, Toyama National College of Technology, Japan; Weihua Jiang, Hisayuki Suematsu, Koichi Niihara, Nagaoka University of Technology, Japan

2:20 PM

(ICACC-FS3-024-2012) Fabrication of De-NOx SCR catalyst over graphene supported vanadium oxides

Hong Dae Kim*, Min A Bae, Eok-Soo Kim, Man Sig Lee, Korea Institute of Industrial Technology, Republic of Korea

2:40 PM

(ICACC-FS3-025-2012) Production of hollow silica nanoparticles as a base material for the functional surface coatings

Taejin Hwang, Gyuntak Kim*, Korea Institute of Industrial Technology, Republic of Korea

3:00 PM

Break

3:20 PM

(ICACC-FS3-026-2012) Plasma resistant properties of sol-gel Y₂O₃ coating on quartz glass windows for semiconductor fabrication equipments

Doh-Hyung Riu*, Seoul National University of Science and Technology, Republic of Korea; Bum Sung Kim, Korea Institute of Industrial Technology, Republic of Korea; Cheol-Sang Oh, KumKang Quartz Co., Republic of Korea

3:40 PM

(ICACC-FS3-027-2012) Low-temperature curable TiO₂ paste for the flexible dye-sensitized solar cells

Hohyeong Kim*, Jae Young Park, Taejin Hwang, Korea Institute of Industrial Technology, Republic of Korea

4:00 PM

(ICACC-FS3-028-2012) Grain orientation control of bismuth layer-structured ferroelectric thick films prepared by aerosol deposition method

Muneyasu Suzuki*, Jun Akedo, AIST, Japan

4:20 PM

(ICACC-FS3-029-2012) An Approach to Sinter Yttria Monolith of a Full Density by Using Surface and Interfacial Engineering

Jinsam Choi*, Gyeongsang National University, Republic of Korea; Tadachika Nakayama, Hisayuki Suematsu, Nagaoka University of Technology, Japan; EunTae Kang, Gyeongsang National University, Republic of Korea

Focused Session 3: Poster Session

5:00 PM-8:00 PM

Room: Exhibition Hall, Ocean Center

(ICACC-FS3-P149-2012) Growth behaviors of iron nitride in a low pressure gas nitriding reactor

YoonKee Kim*, Hanbat National University, Republic of Korea; Kyoung Il Moon, Korea Institute of Industrial Technology, Republic of Korea

(ICACC-FS3-P150-2012) Fabrication, characterization and mechanical properties of the Y-Ti-O ceramics

Satoshi Amarume*, Nagaoka university of technology, Japan; He Lingfeng, University of Wisconsin-madison, USA; Nakayama Tadachika, Nagaoka university of technology, Japan; Rajagopalan Ramaseshan, Homi Bhabha National Institute, India; Yasunori Sato, Nagaoka university of technology, Japan; Hiroki Asami, Tomakomai national College of Technology, Japan; Tsuneo Suzuki, Hisayuki Suematsu, Koichi Niihara, Nagaoka university of technology, Japan

(ICACC-FS3-P151-2012) Fabrication of the rubber and ceramics electrets with nano second pulsed discharge

Masaya Mitsunashi*, Tadachika Nakayama, Shin Endo, Masahiro Terauchi, Weihua Jiang, Tsuneo Suzuki, Hong-Dae Kim, Hisayuki Suematsu, Koichi Niihara, Nagaoka University of technology, Japan

(ICACC-FS3-P152-2012) Plasma-Enhanced CVD of Metal Oxide Nanostructures: Growth and Device Applications

Andreas Mettenboerger*, Aadesh Pratap Singh, Peter Golus, Nurgul Tosun, Sanjay

Mathur, University of Cologne, Germany

(ICACC-FS3-P153-2012) Non-vacuum type Atomic Layer Deposition of TiO₂ Thin films

Won-Sub Kwack*, Se-Hun Kwon, Seong-Ho Jeong, Young-Keun Jeong, Pusan National University, Republic of Korea

(ICACC-FS3-P154-2012) Flexible piezoelectric thin film by hydrothermal process

SungWha Lee, Inha University, Republic of Korea; Won-Hee Lee, Hyun-Cheol Song, Chong-Yun Kang, Korea Institute of Science and Technology, Republic of Korea; DaeYong Jeong*, Inha University, Republic of Korea

(ICACC-FS3-P155-2012) Synthesis of Dense Nanocrystalline YSZ Coating by Room Temperature Vacuum Cold Spraying

Chang-Hyun Park*, Kyeong-Ho Baik, Chungnam National University, Republic of Korea

(ICACC-FS3-P156-2012) Microstructure Evolution and Electrical Properties of Plasma Sprayed Ba-Ti-O Coating

Kyeong-Ho Baik, Dong-Jin Lee*, Chungnam National University, Republic of Korea

(ICACC-FS3-P157-2012) A study on the ternary elements (X= Cr, Zr, Mo, Cu, Si, B) addition on the Ti-Al-N coating deposited by magnetron sputtering process with single alloying targets

Kyoung Il Moon*, Duck Hyeong Jung, Cheol Woong Byun, Seung Yong Shin, KITECH, Republic of Korea

(ICACC-FS3-P158-2012) A study on the improvement of the service life of shaft-bushing tribosystems by plasma sulfur nitriding process

Hyoung Jun Kim*, Kyung Suk Kim, Jin Uk Kim, Daekeum Geowell, Republic of Korea; Kyoung Il Moon, Cheol Woong Byun, KITECH, Republic

of Korea

(ICACC-FS3-P159-2012) Development of a dry and wet process for the applications in boundary lubrication area

Kyoung Il Moon*, Teajin Hwang, KITECH, Republic of Korea

(ICACC-FS3-P160-2012) A study on the lubrication properties of Diamond Like Carbon coating for industrial applications

Kyoung Il Moon*, Jun Hyung Kim, KITECH, Republic of Korea; Jong Wan Park, Hanyang University, Republic of Korea

(ICACC-FS3-P161-2012) Metal Nitride Coatings for Wear Resistant Aluminum Extrusion Mold

Su Young Lee, Sang Ho Kim*, Korea University Of Technology and Education, Republic of Korea

(ICACC-FS3-P162-2012) Temperature Dependent Thermoelectric Properties of Bismuth Antimony Telluride Prepared by Spark Plasma Sintering

Kyoung-Seok Lee*, Young-Keun Jeong, Pusan National University, Republic of Korea

Wednesday, January 25, 2012

Low Friction Coating

8:20 AM-12:10 PM

Room: Coquina Salon G

Session Chair(s): Oyelayo Ajayi, Tim Hosenfeldt

8:20 AM

(ICACC-FS3-030-2012) Advances in Multi-functional Nanocomposite Coatings for Demanding Automotive Applications (Invited)

Ali Erdemir*, Osman L Eryilmaz, Argonne National Laboratory, USA

8:50 AM

(ICACC-FS3-031-2012) Interactions Between

Amorphous Carbon Coatings and Engine Oil Additives: Prediction of the Friction Behavior Using Optimized Artificial Neural Networks (Invited)

Edgar Schulz*, Thilo Beitsprecher, Friedrich-Alexander-University Erlangen-Nuremberg, Germany; Yashar Musayev, Tim Hosenfeldt, Schaeffler Technologies GmbH&Co. KG, Germany; Stephan Tremmel, Sandro Wartzack, Harald Meerkamm, Friedrich-Alexander-University Erlangen-Nuremberg, Germany

9:20 AM

(ICACC-FS3-032-2012) The effect of Cu content on the microstructure and wear properties of MoN- Cu Nanocomposite coatings deposited by reactive magnetron sputtering with single alloying target

Kyoung Il Moon*, Han Chan Lee, Duck Hyeong Jung, Seung Yong Shin, KITECH, Republic of Korea

9:40 AM

Break

10:00 AM

(ICACC-FS3-033-2012) Performance Evaluation of Hard Ceramic Coatings for Tribological Applications (Invited)

Oyelayo Ajayi*, Cinta Lorenzo-Martin, Dileep Singh, Nikos Demas, George Fenske, Argonne National Laboratory, USA

10:30 AM

(ICACC-FS3-034-2012) Nanocrystalline Diamond Coatings on WC-Co with W or Ti Interlayer (Invited)

Bong-Kwon Na, Insub Kim, Jae-Woo Myung, Chan Hyoung Kang*, Korea Polytechnic University, Republic of Korea

10:50 AM

(ICACC-FS3-035-2012) Electronic and Grain Boundary Structure Control for Hardening in

Chromium Oxynitride Based Thin Films

Hisayuki Suematsu*, Tsuneo Suzuki, Nagaoka University of Technology, Japan; Jun Shirahata, UNION TOOL CO., Japan; Kazuma Suzuki, Tadachika Nakayama, Koichi Niihara, Nagaoka University of Technology, Japan

11:10 AM

(ICACC-FS3-036-2012) Low friction coatings for automotive and industry application in high volume production (Invited)

Tim Hosenfeldt*, Schaeffler Technologies GmbH & Co. KG, Germany

11:40 AM

(ICACC-FS3-037-2012) Industrial large scale production of PVD/PECVD coatings for automotive components

Roel Tietema*, Ruud Jacobs, Dave Doerwald, Thomas Krug, Hauzer Techno Coating BV, Netherlands