2013第二届国际新材料大会
BIT’s 2nd Annual World Congress of Advanced Materials-2013

2013第四届国际纳米医药大会
BIT’s 4th Annual World Congress of NanoMedicine-2013

时间：2013年6月5-7日
Time: June 5-7, 2013

地点：中国苏州国信雅都大酒店
Venue: Grand Trustel Astor Suzhou, China

主办单位
Hosting Organizations

国家外国专家局国外人才信息研究中心
Information Research Center of International Talents

国家外国专家局国外人才信息研究中心
State Administration of Foreign Experts Affairs (SAFEA)

苏州市人才工作领导小组办公室
Suzhou Personnel Work Leading Group Office

苏州市人力资源和社会保障局
Suzhou Municipal Human Resources and Social Security Bureau

苏州工业园区管理委员会
Suzhou Industrial Park Administrative Committee

承办单位
Operating Organizations

苏州市外国专家局
Suzhou Bureau of Foreign Experts Affairs

苏州工业园区管理委员会
Organization and Personnel Bureau of Suzhou Industrial Park

苏州工业园区管理委员会
Foreign Experts Expert Bank of SAFEA-Dalian Branch
BIT's 2nd Annual World Congress of Advanced Materials-2013 (WCAM-2013), held in Grand Trustel Aster Suzhou on June 5-7, achieved a consummation. The theme of this conference is "High-end, Smartness and Pro-Environment". Over 200 honored guests presented at the ceremony and gave brilliant speeches on invitation, among them are Dr. Baixin Liu, Academician and Professor, Chinese Academy of Sciences, China; Dr. Chang-Hyun Kim, Vice President, Samsung Electro-Mechanics Co., Korea; Dr. William C. Tang, Associate Dean and Professor, University of California, USA; Dr. Michel Meunier, Canada Research Chair in Laser Micro/Nano-Engineering of Materials, Laser Processing and Plasmonics Laboratory, Department of Engineering Physics, Ecole Polytechnique de Montreal, Canada; Dr. Mengsu Yang, Chair Professor, Department of Biology & Chemistry, City University of Hong Kong, Hong Kong, China. More than 300 world-renowned experts, professors, laboratory principals, project leaders and representatives of well-known enterprises attended the conference.

This annual congress comprised 7 Tracks and 23 sessions following the ceremony, including "Basic Topics of Material Science"; "Optical, Electronic and Magnetic Materials"; "Novel and Advanced Materials"; "Biomaterials and Pharmaceutical/Medical Materials"; "Materials for Energy and Environment"; "Advanced Technology of Materials for Industrial Applications"; "Material Property Characterization, Simulation and Control"... etc.

This annual conference, brought together nearly 350 specialists from 37 countries and areas, was devoted to the leading issues and popular topics and provide up-to-date information to all over the world. On the other hand, the meeting provided a brilliant information platform for domestic researchers to communicate with international experts and pushed forward the advanced materials development. According to the investigation after the conference, most of our participants expressed that they would like to attend WCAM in the next year. Depending on the warmly support and good suggestions from all of the participants, we are quite confident in organizing WCAM-2014 which would be better and more successful than WCAM-2013. All of us are looking forward to meeting you again in 2014.
BIT’s 2013 World Congress of Advanced Materials—2013

- 50+ Exhibitors Showcasing the Emerging New Products and Technologies to an Audience of over 1000 People
- 100+ Posters Demonstrating Cutting-edge Keynote Addresses by Prominent Leaders from China and Abroad
- Creating a Harmonious Environment for Project Matchmaking and Promotion
- Opportunities to Visit Chinese Natural and Humanistic Landscapes

Renowned Speakers

Dr. Michel Meunier, Professor, Ecole Polytechnique de Montreal, Canada
Read More

Dr. Baixin Liu, Academician and professor, Chinese Academy of Sciences, China
Read More

Dr. Chang-Hyun Kim, Vice President, Samsung Electro-Mechanics Co., Korea
Read More

Dr. William C. Tang, Associate Dean/Professor, University of California, USA
Read More

Dr. Qiming Zhang, Vice President & CTO, Strategic Polymer Sciences, Inc., USA
Read More

Dr. Victor Li, Professor, University of Michigan, USA
Read More

Dr. Chuan-Jian Zhong, Professor, State Univ. of New York at Binghamton, USA
Read More

Dr. Simon X. Yang, Professor, University of Guelph, Canada
Read More

Dr. Lu Li, Professor, National University of Singapore, Singapore
Read More

Exhibition and Poster

WCAM-2013 provides an ideal platform to showcase your new technologies and products in China. It is developed to maximize your exposure, generate new leads, build brand awareness, and solidify business relations.

Why Reserve a Booth at WCAM-2013
- Meet with International Leaders and Senior Officers in the Field of Advanced Materials
- Maximize Your Opportunities for Collaboration
- Explore Business Opportunities in China and beyond
- Spotlight Your Technologies and Its Commercial Application
- Superior Networking Opportunities with Senior Professionals and Industry Elites

Past Event—WCAM 2012

BIT’s 1st World Congress of Advanced Materials (WCAM-2012), successfully held in Beijing International Convention Center on June 6-8, 2012 were nearly 400 participants from more than 33 countries and areas have attended the WCAM-2012.

Sponsorship

WCAM-2013 is one of the most effective international marketing platforms in the field of advance materials, which offers a wide range of sponsoring categories for branding and highlighting your company in order to achieve the best publicity.

Expand Your Business - A Cost Effective Sponsorship
- Get Cost and Time Effective Marketing Exposure and Boost Your Brand Recognition
- Set Up Stronger Alliances, New Partnerships
- Showcase Products and Services to a Targeted Prospects of Decision-makers
- Opportunity to Speak and Announce Recent Company Development
- Network from 800+ Professionals Offering Opportunities, before, during and after the Conference

Scene of Suzhou

Suzhou is located in the center of the Yangtze Delta, in the south of Jiangsu Province, with Shanghai to the east, Zhejiang Province to the south, Wuxi City to the west and the Yangtze River to the north. Since 42% area of the city is covered by water, including a vast number of ponds and streams, Suzhou is praised as the ‘Oriental Venice’. Taihu Lake, four fifths of which is in the territory of Suzhou, is one of the four largest fresh lakes in China, with East Hill, West Hill and other scenic spots in its vicinity. The city is cut by the Beijing-Hangzhou Grand Canal from north to south. Together with its mild climate, making it an available destination all year round, fertile landscape and abundance of produce, it is no wonder that Suzhou is called ‘paradise on earth’.

BIT’s Upcoming Events

- Nano-S&T 2015 (September 24-26, 2015, Xi'an, China)
- LCES2015 (September 24-26, 2015, Xi'an, China)
- GCC2015 (September 24-26, 2015, Xi'an, China)
- WCORT2015 (September 24-26, 2015, Xi'an, China)
- WCBE2015 (September 24-26, 2015, Xi'an, China)

http://www.bitcongress.com/wcam2013/
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| 09:15-09:35 | **Title:** Ferromagnetic Superconductors and Spin Fluctuation Mediated Cooper Pairing  
**Dr. Antheunis de Visser,** Associate Professor, University of Amsterdam, The Netherlands | | |
| 09:35-09:55 | **Title:** From Superconductivity towards Thermoelectricity: Germanium based Skutterudites  
**Dr. Ernst Bauer,** Professor, Vienna University of Technology, Austria | | |
| 09:55-10:15 | **Title:** Development of Processing of YBa$_2$Cu$_3$O$_{7-\delta}$ and MgB$_2$ Superconductors  
**Dr. Jacques Noudem,** Professor, University of Caen Basse Normandie, France | | |
| 10:15-10:25 | **Coffee Break** | | |
| 10:25-10:45 | **Title:** The Role of the Josephson Effect on the Properties of the 2G Coated Conductors  
**Dr. Pierre Bernstein,** Professor, CRISMAT-CNRS, France | | |
| 10:45-11:05 | **Title:** Ultrafast Dynamics in Topological Insulators and Fe-based Pnictides  
**Dr. Chih Wei Luo,** Associate Professor, National Chiao Tung University, Taiwan | | |
| 11:05-11:25 | **Title:** Graphene, Graphite and Superconductivity  
**Dr. Rafael Baquero,** Professor, Department of Physics, Cinvestav, Mexico | | |
| 11:25-11:45 | **Title:** Pairing in High Tc Cuprates from Attraction of Quantum Spin Vortices  
**Dr. Pieralberto Marchetti,** Associate Professor, University of Padua, Italy | | |
| 11:45-12:05 | **Title:** Combining Materials for a Superconducting Spintronics  
**Dr. Matthias Eschrig,** Professor, University of London, UK | | |

**Session 2-5: Thin Films**  
*Time: 08:30-12:10, June 6, 2013 (Thursday); Place: Sunshine Hall, 4th Floor, GTAS*

**Chair**  
**Dr. Frank Klose,** Professor, Australian Nuclear Science & Technology Organization, Australia

**Co-Chair**  
**Dr. Rachel Desfeux,** Professor, University of Artois, France

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<td>08:30-08:35</td>
<td><strong>Chair’s Introduction</strong></td>
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| 08:35-09:00 | **Keynote Speech**  
**Title:** Nanoregion Anion-Substituted Homocomposite-type New Thin Film Dielectric Materials and Their Applications for Tunable Microwave Devices and Frequency Agile Reconfigurable RF Front-End  
**Dr. Ivoyl P. Koutsaroff,** Chief Research Engineer, Murata Manufacturing Co. Ltd., Japan | | |
| 09:00-09:25 | **Title:** Neutron Scattering Investigations on Multiferroic Thin Film Structures  
**Dr. Frank Klose,** Professor Group Leader, Australian Nuclear Science & Technology Organization, Australia | | |
| 09:25-09:50 | **Title:** Magnetic Oxide Thin Films on-on-chip Nonreciprocal Photonic Devices  
**Dr. Lei Bi,** Professor, University of Electronic Science and Engineering of China, China | | |
| 09:50-10:15 | **Title:** Work Function Engineering on ZnO TCO for OLED Application  
**Dr. Dong Chan Shin,** Professor, Chosun University, South Korea | | |
Title: Nanoregion Anion-Substituted Homocomposite-type New Thin Film Dielectric Materials and Their Applications for Tunable Microwave Devices and Frequency Agile Reconfigurable RF Front-End

Ivo(y)l P. Koutsaroff
Chief Research Engineer
MURATA Manufacturing Co., Ltd.
Japan

Abstract

We have prepared perovskite oxynitride (Ba,Sr)TiO3-xNx (BSTON) thin-films with various thicknesses from 30 nm to 800 nm using reactive RF sputtering technique at moderate deposition temperatures on Pt coated sapphire and Si substrates. The structural and composition characteristics of the A-/B-site co-doped BSTON thin films were studied by STEM-EELS, XPS, powder XRD and synchrotron powder diffraction. The dielectric properties of the obtained thin films were analyzed under various electric fields (up to 5 MV/cm) and temperatures (150K-400K) by precision LCR-meter from 0.1 kHz to 5 MHz. It was found that our BSTON thin-films have pseudo-tetragonal structure with large lattice parameter c/a ratio and with increased lattice volume, which was confirmed both experimentally (from film samples and by using “micro-powder” samples made from thicker films) and theoretically by using Density Functional Theory (DFT) simulations. We provide experimental evidence that the anionic substitution lead to formation of BSTO-BSTON homocomposites with N-substitution concentrated within nm size clusters dispersed across the grain boundaries and within the grains, while such anion-substituted perovskite system remains in superparaelectric state (nonpolar) at room temperature, with the higher dielectric constant in comparison to the pure BSTO system, much higher voltage agility (up to 7:1 tuning ratio at 7.5V) [1-2], and significantly improved symmetrical stable dielectric loss (tan δ – E ) characteristics under up to ±1 MV/cm external electric fields is achieved in this system without any annealing treatment after the RF sputter deposition. These results show that new BSTON-based variable capacitors (varactors), which are with ultraminiature size, could be able to outperform in the future the modern GaAs-based varactors [3].

References


Biography

Dr. Ivo(y)l P. Koutsaroff is a Chief Research Engineer working on Advanced Functional Thin Film Materials & Devices at Murata Manufacturing Co., Ltd., Business & Technology R&D Development Unit, Kyoto, Japan. He received his M.Sc. degree in Applied Physics from Sofia University in 1986, and his Ph.D. degree in Semiconductor Material Physics from Sun-Yat Sen University, Guangzhou and Institute of Semiconductors, Chinese Academy of Sciences, Beijing in 1993. Prior to joining Murata in 2005, since 1994, he had held several research and engineering positions at the University of Toronto, Canada; Electrotechnical Laboratory (AIST), Tsukuba, Japan; and E&G Optoelectronics (Perkin-Elmer), Montreal, Quebec. From 1999 to 2005 he has been engaged in manufacturing and development activities at Gennum Corporation in Toronto, Canada, related primarily to the low dielectric loss high density ferroelectric thin film decoupling and tunable capacitor devices used in RF-front-end communication modules. Being a manufacturing engineer from 1998 to 2001, he was actively involved in Statistical Process Control (SPC) and Design of Experiments (DOE) activities for Plasma Enhanced Chemical Vapor Deposition (PECVD), Reactive Ion etching (RIE), RF sputtering, and Rapid Thermal Annealing (RTA) steps in different semiconductor class production lines. He was a licensed Professional Engineer (P.Eng) in Ontario, Canada. He has authored more than 60 publications, co-edited proceedings in the ferroelectric thin films field, and chaired sessions in various international conferences, as well as holds a dozen of patents. He is a member of the IEEE, the Materials Research Society (MRS), the American Chemical Society (ACS), and the American Ceramic Society (ACerS). He is the principle organizer of the 1st International Symposium on "Advances and Enhanced Functionalities of Anion-controlled New Inorganic Materials (ANIM)" , as part of E-MRS 2013 Spring Meeting, Strasbourg, France, May 27 – 31, 2013.
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The Introduction of Overseas High Tech Talent and Project

Dr. Ivo (yi) P. Koutsaroff is a Chief Research Engineer working on Advanced Functional Thin Film Materials & Devices at Murata Manufacturing Co. Ltd., Business & Technology R&D Development Unit, Kyoto, Japan. He received his M.Sc. degree in Applied Physics from Sofia University in 1986, and his Ph.D. degree in Semiconductor Material Physics from Sun-Yat Sen University, Guangzhou and Institute of Semiconductors, Chinese Academy of Sciences, Beijing in 1993. Prior to joining Murata in 2005, since 1994, he had held several research and engineering positions at the University of Toronto, Canada; Electrotechnical Laboratory (AIST), Tsukuba, Japan; and E&G Optoelectronics (Perkin-Elmer), Montreal, Quebec. From 1999 to 2005 he has been engaged in manufacturing and development activities at Gennum Corporation in Toronto, Canada, related primarily to the low dielectric loss high density ferroelectric thin film decoupling and tunable capacitor devices used in RF-front end communication modules. Being a manufacturing engineer from 1998 to 2001, he was actively involved in Statistical Process Control (SPC) and Design of Experiments (DOE) activities for Plasma Enhanced Chemical Vapor Deposition (PECVD), Reactive Ion etching (RIE), RF sputtering, and Rapid Thermal Annealing (RTA) steps in different semiconductor class production lines. He was a licensed Professional Engineer (P.Eng) in Ontario, Canada. He has authored more than 60 publications, co-edited proceedings in the ferroelectric thin films field, and chaired sessions in various international conferences, as well as holds a dozen of patents. He is a member of the IEEE, the Materials Research Society (MRS), the American Chemical Society (ACS), and the American Ceramic Society (ACerS). He is the principle organizer of the 1st International Symposium on "Advances and Enhanced Functionalities of Anion-controlled New Inorganic Materials (ANIM)", as part of E-MRS 2013 Spring Meeting, Strasbourg, France, May 27 – 31, 2013.