

# 2015 China-Korea Workshop of Diamond-like Carbon Films and Technology

26<sup>th</sup> — 28<sup>th</sup> November 2015, Ningbo, China



**Organized by:**

*Ningbo Institute of Materials Technology and Engineering, CAS, China*

*Korea Institute of Science and Technology, Korea*

**Supported by:**

*National Science Foundation of China*

*National Research Foundation of Korea*



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## Introduction of Workshop

We warmly welcome you to join the “*2015 China-Korea Workshop of Diamond-like Carbon Films and Technology*” held at Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences in Ningbo, China, November 26-28, 2015.

*2015 China-Korea Workshop of Diamond-like Carbon Films and Technology* is co-organized by Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences (*NIMTE, CAS*), China and Korea Institute of Science and Technology (*KIST*), Korea. The joint workshop is supported by National Science Foundation of China (*NSFC*) and National Research Foundation of Korea (*NRF*).

Since 1970s, diamond-like carbon (DLC) films, as a family of carbon based materials, have drawn much attention from scientific disciplines and economic industries due to their combined important physical and chemical properties. Variety of deposition technologies have been attempted to fabricate the demanded tunable DLC films. In order to take full advantage of properties of DLC films and activate the applications for increasing market, further diversification and contribution are needed from the international collaborations, in particular, with between China-Korea.

This workshop will focus on the following issues:

1. Overview of the present R&D of DLC films in Korea and china from both fundamental researches and industrial applications
2. Challenging subjects of Synthesis, Characterization, Applications and Standardization for the DLC films in future.
3. Survey of the possible collaboration of DLC films between international participants.

## Ningbo Institute of Materials Technology and Engineering (NIMTE), CAS

*Ningbo Institute of Materials Technology and Engineering* (NIMTE) of the *Chinese Academy of Sciences* (CAS), was officially co-founded in 2004 by the Chinese Academy of Sciences, Zhejiang provincial government and Ningbo municipal government. As the first state-owned national research and development institute in Zhejiang province, NIMTE has dedicated itself to strengthening cooperation with industries and research organizations in new materials, advanced manufacturing and new energy, and to integrating research and technology with high-tech industrialization.

NIMTE commenced the first stage of academic construction in 2007 with five materials research fields. The second stage of construction was finished by the end of 2014, whereupon NIMTE would be upgraded to a comprehensive research and development institution, which consisted of three subsidiary institutes respectively named as: the *Institute of Materials Technology*, which will mainly be engaged in R&D on magnetic, polymer, composite and functional materials, nano-devices and surface engineering; the *Institute of Advanced Manufacturing*, which will involve R&D on composite manufacturing and equipment, computer vision and virtual manufacturing, intelligent measurement and control, laser and energy field manufacturing, photoelectric ceramic materials and devices; and the *Institute of New Energy Technology*, which includes the R&D of solar energy and photovoltaic technology, fuel cells and technology, energy storage technology, hydrogen technology and basic research of comprehensive technology.

NIMTE has been working on collaboration with both external and local industries, benefitting from significant and innovated technology transfer. To date, NIMTE has collaborated with over 300 enterprises and transferred technologies worth a total of 410 million RMB. International partnership is strongly valued by NIMTE as well. NIMTE encourages all types of international exchange and cooperation, including joint research, staff and postgraduate exchange, facilities sharing, etc. Various international research staff and short-time visiting scholars from all over the world are promoted by NIMTE. Currently, NIMTE has built up long-term exchange and cooperative relationships with over 100 universities and research institutes from 18 countries.

## Committee

### Chair

Prof. Aiyang Wang, *Ningbo Institute of Materials Technology & Engineering, CAS, China*

Prof. Kwang-Ryeol Lee, *Korea Institute of Science and Technology, Korea*

### Honor-Chair

Prof. Qunji Xue, *Academician, Ningbo Institute of Materials Technology & Engineering, CAS, China*

### Consultative committees (Sorted by the initials)

Prof. Ping Cui, *Ningbo Institute of Materials Technology & Engineering, CAS, China*

Prof. Jianmin Chen, *Ningbo Institute of Materials Technology & Engineering, CAS, China*

Prof. Jiangping Tu, *Zhejiang University, China*

Prof. Junyan Zhang, *Lanzhou Institute of Chemical Physics, CAS, China*

Prof. Liping Wang, *Ningbo Institute of Materials Technology & Engineering, CAS, China*

Prof. Myoung-Woon Moon, *Korea Institute of Science and Technology, Korea*

Prof. Nan Jiang, *Ningbo Institute of Materials Technology & Engineering, CAS, China*

Dr. Young-ha Jun, *JNL Tech. Co. Ltd., Korea*

### Local Organizing Committee

Prof. Aiyang Wang, *Ningbo Institute of Materials Technology & Engineering, CAS, China*

Prof. Peiling Ke, *Ningbo Institute of Materials Technology & Engineering, CAS, China*

Dr. Xiaowei Li, *Ningbo Institute of Materials Technology & Engineering, CAS, China*

### Conference Secretary

Prof. Peiling Ke, E-mail: [kepl@nimte.ac.cn](mailto:kepl@nimte.ac.cn) Tel: 0574-86694790 (China)

Dr. Xiaowei Li, E-mail: [lixw@nimte.ac.cn](mailto:lixw@nimte.ac.cn) Tel: 0574-86685036 (China)

Prof. Myoung-woon Moon, Email: [mymoon@kist.re.kr](mailto:mymoon@kist.re.kr) (Korea)

## Accommodation

**Hotel:** Howard Johnson IFC Plaza Ningbo (宁波逸东豪生大酒店)

**Address:** No. 288 Dingtai Road, Jiangdong District, Ningbo, Zhejiang Province, China,

**Postcode:** 315040

**Tel:** (86 574 ) 8187 8888    **Fax:** (86 574) 8187 8887

**Website:** <http://plazaifcningbo.hojochina.com/ifc-nb-home-en.html>

**Distance from hotel to NIMTE:** about 9 km, 20min by car





## Workshop Schedule

**Workshop Date:** 26<sup>th</sup> Nov~28<sup>th</sup> Nov 2015

**Workshop Place:** Ningbo Institute of Materials Technology and Engineering (NIMTE)

### 1. Day One (26 November, 2015)

Time	Event
10:00~22:00	Registration at Howard Johnson IFC Plaza Ningbo Hotel
18:00~20:30	Buffet at Howard Johnson IFC Plaza Ningbo Hotel

### 2. Day Two (27 November, 2015)

Time	Event	Session Chair
8:00	Shuttle bus at the lobby of Howard Johnson Hotel to NIMTE	
08:30~08:45	<b>Opening Remarks</b> Aiyong Wang, <i>Ningbo Institute of Materials Technology and Engineering, CAS, China</i> Kwang-Ryeol Lee, <i>Korea Institute of Science and Technology, Korea</i>	<b>Aiyong Wang</b> <i>Ningbo Institute of Materials Technology and Engineering, CAS, China</i>
08:45~09:00	<b>Welcome Remark</b> Guest from NSFC, China Ping Cui, <i>President of Ningbo Institute of Materials Technology and Engineering, CAS, China</i>	
09:00~09:25	<b>Web based nano materials design platform</b> Kwang-Ryeol Lee, <i>Korea Institute of Science and Technology, Korea</i>	<b>Junyan Zhang</b> <i>Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, CAS, China</i>
09:25~09:50	<b>Hard yet tough carbon-based coatings towards high-tech applications</b> Liping Wang, <i>Ningbo Institute of Materials Technology and Engineering, CAS, China</i>	
09:50~10:20	<b>Coffee Break &amp; Photos</b>	
10:20~10:40	<b>The structure adjusting of fullerene carbon films and application</b> Junyan Zhang, <i>Lanzhou Institute of Chemical Physics, CAS, China</i>	

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10:40~11:00	<b>DLC coated, nano-structured surfaces with extreme wettability</b> Myoung-Woon Moon, <i>Korea Institute of Science and Technology, Korea</i>	<b>Kwang-Ryeol Lee</b> <i>Korea Institute of Science and Technology, Korea</i>
11:00~11:20	<b>High power impulse magnetron sputtering and applications for carbon-based coatings</b> Xiubo Tian, <i>Harbin Institute of Technology, China</i>	
11:20~11:40	<b>DLC, its application and new trends in Korea</b> Youngha Jun, <i>JNL Tech. Co. Ltd. Korea</i>	<b>Hao Wei</b> <i>Nanofilm Technologies International Pte. Ltd., Singapore</i>
11:40~12:00	<b>High speed and large area deposition of ta-C thick coating with filtered multi cathode vacuum arc plasma</b> Jong-Kuk Kim, <i>Korea Institute of Materials Science, Korea</i>	
12:00~12:20	<b>Atomistic simulations of diamond-like carbon films: structure and tribological properties</b> Tianbao Ma, <i>Tsinghua University, China</i>	
12:20~13:30	<b>Lunch Break</b>	
13:30~13:50	<b>Applications of the density functional theory calculations on large-scale carbon systems</b> Seungchul Kim, <i>Korea Institute of Science and Technology, Korea</i>	<b>Myoung-Woon Moon</b> <i>Korea Institute of Science and Technology, Korea</i>
13:50~14:10	<b>Tetrahedral amorphous carbon films doped with B or P and their experimental applications</b> Jiaqi Zhu, <i>Harbin Institute of Technology, China</i>	
14:10~14:30	<b>The Application of Plasma coating for Food packaging</b> Kyung Sik Cho, <i>CJ cheiljedang corporation, Korea</i>	
14:30~14:50	<b>The Performance of Diamond Like Carbon DLC in Physiological Solutions</b> Yongxiang Leng, <i>Southwest Jiaotong University, China</i>	<b>Magus Odén</b> <i>Linköping University, Sweden</i>
14:50~15:10	<b>Effect of ion beam conditions and interlayer on the formation of diamond-like carbon coatings</b> Jae-In Jeong, <i>Research Institute of Industrial Science &amp; Technology, Korea</i>	
15:10~15:30	<b>Application of ta-C coating on WC cutting tools by using filtered multi-cathode vacuum arc plasma (FMCVA)</b> Young-Jun Jang, <i>Korea Institute of Materials Science, Korea</i>	



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15:30~15:50	<b>Coffee Break</b>	
15:50~16:10	<b>Effect of Nitrogen Vacancies on the High Temperature behavior of (Ti<sub>1-x</sub>Al<sub>x</sub>)N<sub>y</sub> alloys</b> Magus Odén, <i>Linköping University, Sweden</i>	<b>Jong-Kuk Kim</b> <i>Korea Institute of Materials Science, Korea</i>
16:10~16:30	<b>TiO<sub>2</sub> functionalized hydrocarbon nano-sponge for oil absorption and desorption</b> Do Hyun Kim, <i>Korea Institute of Science and Technology, Korea</i>	
16:30~16:50	<b>DLC Coating Solutions for the Automotive and Precision Engineering Industry</b> Spyros Katsikis, <i>Oerlikon Balzers Coating (Suzhou) Co.,Ltd., China</i>	
16:50~17:10	<b>Development of conductive anti-corrosion DLC coating on metal bipolar plates</b> Ju Yong Kim, <i>JNL Tech. Co. Ltd. Korea</i>	<b>Xiubo Tian</b> <i>Harbin Institute of Technology, China</i>
17:10~17:30	<b>FCVA ta-C (DLC) Coating Technology</b> Hao Wei, <i>Nanofilm Technologies International Pte. Ltd., Singapore</i>	
17:30~17:50	<b>Diamond-like carbon films with high performance and its applications</b> Aiyong Wang, <i>Ningbo Institute of Materials Technology and Engineering, CAS, China</i>	
17:50~18:30	<b>Workshop Closing Remark &amp; Exhibition Tour of NIMTE</b>	
18:40~21:00	<b>Dinner (Banquet, NIMTE)</b>	

**3. Day Three (28 November 2015)**

Time	Event
8:30~12:00	Alternative city tour around Ningbo