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# Editorial

The VIIIth International Workshop on Plasma-Based Ion Implantation and Deposition (PBII and D-05) was held from September 18 to 22, 2005 at Southwest Jiaotong University in Chengdu, Sichuan, China. One hundred and nine delegates from 14 countries and regions attended this event and 180 papers were presented in the workshop. This special volume of Surface and Coatings Technology publishes 103 of the papers after rigorous peer reviewing. The objectives of the workshop were to update practitioners on the recent progress and new activities in the field, introduce new scientists, engineers, and business leaders to the science, technology, as well as applications of PIII and D, and facilitate a stronger interaction between the cross-disciplinary fields that can contribute to or benefit from this plasma technology. During the workshop, many novel processes and results were presented with respect to PIII and D technologies such as power supplies, plasma generation hardware and control, as well as applications pertaining to mechanical, chemical, and electronic properties of various types of materials including biomaterials, nano-materials, functional thin films, and so on.

Plasma-based ion implantation and deposition has many potential advantages over conventional beam-line ion implantation as well as traditional thin film processes such as evaporation, sputtering, and chemical vapor deposition. It offers a flexible means to modify the surface of many types of materials and to synthesize high-quality thin films. In order for the technique to be more widely accepted by the industry, the various processes must meet the requirements by different sectors while offering economical advantages such as reduced costs and increased throughput. One of the differences between the VIIIth workshop and previous ones is that "deposition" has been added to the title of the workshop in order to expand the scope. Related processes and techniques such as filtered metal arc plasma deposition and hybrid techniques like plasma implantation/deposition complement traditional plasma immersion ion implantation and lead to many novel applications. During the workshop, a panel discussion chaired by Prof. Paul Chu was held to address the future development of the technology and emerging applications in semiconductors, biomedical engineering, and aerospace technology.

General sponsorship of the conference was provided by Southwest Jiaotong University, one of the oldest universities in China with a history of 110 years. Many people contributed to the success of the workshop including members of the international committee, and local organization committee. We acknowledge members of the Key Laboratory of Advanced Technologies of Materials in Southwest Jiaotong University for the preparation of the conference. Professor Paul K Chu, elected chairman of the Plasma-Based Ion Implantation and Deposition (PBII and D) International Committee, Professor Wolfhard Moeller, Professor Nan Huang, new member of the PBII and D international committee, and Professor Yongxiang Leng contributed to the organization of the workshop as well as oversaw the review of the papers.

Leibniz Institute for Surface Modification and Research Center Rossendorf will organize and hold the next PBII and D Workshop in Leipzig, Germany in the fall of 2007. Dr. Stephan Maendl and Professor Wolfhard Moeller will be the workshop chairmen. We hope that this biennial event will attract more people, and again, we express our gratitude to everybody who contributed to the VIIIth Workshop as well as this special issue.

*Guest editors*
Nan Huang*
Paul K. Chu
Yongxiang Leng
Southwest Jiaotong University,
Chengdu 610031, China
*E-mail address:* nhuang@263.net (N. Huang).
*Corresponding author. Tel./fax: +86 28 87600625.


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