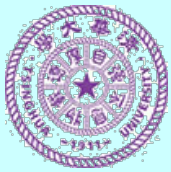




The 18th International Conference on Ion Beam Modifications of Materials

September 2-7, 2012 Qingdao, China

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The **18th International Conference on Ion Beam Modifications of Materials** (IBMM2012) had been held successfully in Qingdao, China, from September 2nd to 7th, 2012. We thank all the colleagues for their contributions for IBMM 2012.

The IBMM is a major international forum to present and discuss recent research results and future directions in the field of ion beam and plasma-induced modification, synthesis, patterning and characterization of materials. The conference brings together physicists, materials scientists, ion beam specialists and those who are interested in the practical application of ion beams from all over the world. The focus of the conference is on the materials science involving both basic ion-solid interaction processes and property changes occurring either during or subsequent to ion bombardment and ion beam processing in relation to materials, biomaterials and device applications.

The official emails of IBMM 2012 are ibmm2012@sdu.edu.cn and ibmm18@gmail.com. Please note that ibmm2012@gmail.com is **NOT** our email. Please ignore emails sending from this address (if there are some.)

The official language of IBMM 2012 is **English**.

Group photograph. [Download.](#)

Conference Program. [Download.](#)

General Information. [Download.](#)

Important Dates

First announcement	October 2011
Notification to authors	January 2012
Abstract deadline	15 April 2012 29 April 2012 (Closed!)
Opening of the early registration	16 May 2012
Early registration deadline	06 July 2012 16 July 2012 (Closed!)
Manuscript submission deadline	30 September 2012

IBMM2012 Best Poster Award

- 1. Thomas Bierschenk - The Australian National University**
- 2. Zhangcan Yang - Purdue University**
- 3. Sandeep Kumar Garg - Intitute of Physics, Bhubaneswar**

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4. *Chao Zhang - Beijing Normal University*
5. *Liang Chen - Lanzhou University*
6. *Jan Stefan Fiedler - Helmholtz-Zentrum Dresden-Rossendorf*
7. *Chenxu Wang - Peking University*

Students are the hope of future research. Many students will attend the IBMM 2012 and present their results as posters by themselves. There will be two poster sessions during the conference. Among these presentations, we believe that some of them are really very excellent and the presenters should be encouraged.

Hereby we are pleased to announce IBMM 2012 “**Best Poster Award**” for *student participants* who present their posters by themselves during the IBMM 2012. The “*student participants*” must be graduate students, i.e., master students or PhD students. Postdoctoral researchers are not included, which is a tradition of most conference series. The student participants who want to apply for such awards will be asked to make marks above their posters during the session. The IBMM staffs will prepare small paper marks for the candidates before the poster session. Up to **6** awardees will be selected by an Expert Committee consisting of well-known scientists.

The winners for **Best Poster Award** will receive a *Certificate* issued by the Chairman of IBMM 2012 and a *Grant* for attendance on the conference banquet and conference tour *free of charge* (the fee for conference banquet and conference tour will be refunded if the winners prepay it). The winners of this award will be announced during the Conference Banquet on Thursday evening.

We *encourage* and *welcome* all the student participants who will present their posters by themselves during IBMM 2012 to be candidates for the **Best Poster Award**!

Conference Topics

- *Fundamentals of ion-solid interaction*
- *Nanostructure synthesis and modification*
- *Ion-driven self-organization, nanopatterning*
- *Defect-induced modification of materials*
- *Ultra-low energy implantation*
- *Focused ion beams, ion lithography*
- *Cluster ions, single ion, swift heavy ions, highly charged ions*
- *Plasma immersion, plasma-induced modification*
- *Modification of semiconductors, metals and ceramics*
- *Application to electronic, magnetic and optical materials*
- *Irradiation effects in insulators and nuclear materials*
- *Modification of polymers and biomaterials*



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Effects of MeV Au Ions Irradiation in W/ZrO₂ Nano-multilayer Films

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Interfaces can act as obstacles to slip and sinks for radiation-induced defects. Hence, nanolayered composites that contain a large volume fraction of interfaces are designed to enhance radiation damage tolerance compared to bulk materials [1,2]. Previous research on multilayered metal/metal nano-composites such as Cu/Nb [2], Cu/V [3], and Cu/W [4] multilayered films indicates that the interface can effectively absorb radiation-induced point defects and suppress bubbles in He⁺ irradiation. The effects of SHI irradiation on multilayer such as W/Ni [5], Fe/W [6] have also been studied.

W/ZrO₂ multilayer films (MLF) with individual layer thicknesses between a few and dozens of nms were deposited on silicon by magnetron sputtering. These films were irradiated by 4 MeV Au²⁺ ions at different fluences ranging from 6×10^{14} to 1×10^{16} ions/cm². XRD, RBS, Nanoindentation, and X-TEM were used in the structural characterization of the pristine and irradiated MLF samples with different layer thicknesses. RBS and X-TEM reveal that the interface is stable and no mixing is observed in the multilayered films after irradiation as shown in Fig. 1. The nanoindentation results indicate that the mechanical properties are preserved after irradiation and XRD and X-TEM disclose significant resistance to grain coarsening and phase transition in W/ZrO₂ (7/14nm)_{50BL} MLF compared to the thicker W and ZrO₂ monolayer under the same irradiation conditions. The layered geometry with flat interfaces may provide benefits compared to the bulk materials with equiaxed grains that may rapidly coarsen under irradiation [2].

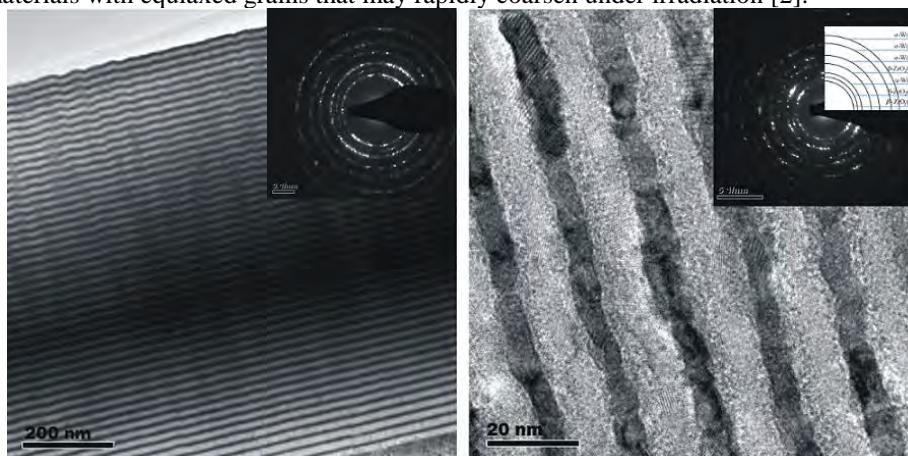


Fig. 1. X-TEM images and SAED patterns of W/ZrO₂ (7/14 nm) multilayer in: (a) pristine sample and (b) irradiated sample by 3×10^{15} Au ions/cm².

This work was financially supported by the Ministry of Science and Technology of China (2010CB832904, 2008CB717803), National Natural Science Foundation of China (11075005), and Hong Kong Research Grants Council (RGC) General Research Funds (GRF) No. CityU 112510.

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