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The Effect of Environmental Exposure on the Structure and Properties of Thin Films for MEMS Applications

by

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DATE/TIME: **Tuesday 9 October 2007 at 1:00 PM**

VENUE: **Billings Room 3.04** (3rd Floor)
School of Electrical, Electronic & Computer Engineering
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ABSTRACT:

This presentation introduces a PhD student research proposal on effect of environmental exposure on the structure and properties of thin films for MEMS applications. MEMS technology can be implemented using a number of materials. Common thin film materials for MEMS include SiN_x , SiO_x , SiC , Ge etc., owing to their excellent mechanical performances, stable chemical and structural properties, good fabricatability into various structures or special functional properties. However, determined intrinsically by the synthesis process, i.e. PECVD SiN_x thin films are structurally amorphous and chemical non-stoichiometric to Si_3N_4 . Such materials exhibit very different properties from the better known bulk crystalline, stoichiometric Si_3N_4 . Changes in chemical and physical structures will have direct impact on the properties, subsequent performances and long-term reliability of the MEMS devices that use these films. Therefore, it is of critical importance to study the environmental stability of these films and to understand the mechanisms of the effects of the environments.

ABOUT THE SPEAKER:

Yimeng Yang is a joint PhD candidate with the School of Mechanical Engineering and Microelectronic Research Group at EECE, UWA, under the supervision of Professor Yinong Liu and Professor John Dell. Her primary research interests are in materials engineering and MEMS technology with an emphasis on environmental effects on mechanical properties and structure of PECVD SiN_x thin films. Her recent research is in bulking mechanics and methods to design and test tensile stress structure by SiN_x thin films.