黄永刚教授聘任仪式暨学术报告会（344学术报告厅）

黄永刚教授"客座教授"聘任仪式暨学术报告会

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时间：2004年7月20日(周二)上午9:30

1. 洪友士所长向黄永刚教授颁发力学研究所"客座教授"聘书；

洪友士所长和黄永刚教授分别致辞。

2. 黄永刚教授学术报告会

报告题目：MECHANICS OF CARBON NANOTUBES:

A CONTINUUM THEORY BASED ON THE INTERATOMIC POTENTIAL

注：黄永刚，1990年在美国哈佛大学获得博士学位，现为美国

UIUC的 Grayce Wicall Gauthier讲座教授.

报告摘要和报告人详细简历请见附件。

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时间：2004年7月20日(周二)上午9:30-11:30

地点：力学所大楼LNM 344学术报告厅

All are welcome.

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MECHANICS OF CARBON NANOTUBES:

A CONTINUUM THEORY BASED ON THE INTERATOMIC POTENTIAL

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Abstract. It is commonly believed that continuum mechanics theories may not be applicable on the nanometer scale due to the discrete nature of atoms. Here we develop a nano-continuum theory based on the interatomic potential for nanostructured materials. The interatomic potential is directly incorporated into the continuum theory through the constitutive models. The nano-continuum theory is then applied to study the mechanical deformation of carbon nanotubes, including (1) the pre-deformation energy; (2) linear elastic modulus; (3) fracture nucleation; (4) defect nucleation; (5) electrical property change due to mechanical deformation; (6) binding energy between carbon nanotubes; and (7) coefficient of thermal expansion. The nano-continuum theory agrees very well with the atomistic models without any parameter fitting, and therefore has the potential to be applied to complex nanoscale material systems (e.g., nanocomposites) and devices (e.g., nanoelectronics).

黄永刚教授简介：

Yonggang Young Huang received Ph.D. from Harvard University in 1990 under the supervision of Prof. John W. Hutchinson. After working with Profs. Bernard Budiansky and James R. Rice as a postdoc for one year, he joined the University of Arizona as an assistant professor in 1991. He moved to Michigan Technological University as an associate professor in 1995, and University of Illinois at Urbana-Champaign (UIUC) in 1998. He was promoted to full professor in 2001, and is the Grayce Wicall Gauthier Professor of Mechanical Engineering at UIUC since 2003.

His current research interest is the multiscale computational modeling of the deformation and fracture of materials, including nanoscale continuum theories, microscale constitutive models of solids, macroscale study of composite materials, dynamic fracture, and electronic packaging. He has published 1 book, 13 book chapters, and more than 150 journal papers. He has given many plenary/keynote lectures at international conferences, and invited seminars at many universities in US (e.g., Brown, CalTech, Carnegie Mellon, Cornell, GeorgiaTech, MIT, Northwestern, Princeton, Stanford, U. Michigan, UPenn, and Yale), China (Peking U., Tsinghua, and U. Hong Kong), Germany (Darmstadt U. Technology, and Max Planck Inst.), and Singapore (National U.); also at companies (Alcan, Alcoa, Ford, Intel, and Motorola) and government labs (Livermore, Los Alamos, Oak Ridge, and Sandia National Labs).

His honors and awards since 2000 include the Outstanding Young Investigator Award from NSFC (2000); Research Awards for US Scientists and Scholars from Alexander von Humboldt Foundation (2001); Associate of the Center for Advanced Study at UIUC (2002); Faculty Fellow of NCSA (2002); Gustus L. Larson Memorial Award (2003) and Melville Medal (2004) from the American Society of Mechanical Engineers (2003); and Grayce Wicall Gauthier Professor from UIUC (since 2003). He is on the editorial advisory board for International Journal of Plasticity, and is a regional editor for International Journal of Fracture.