

Qiang Hu

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EDUCATION

Ph.D. in Mechanical Engineering fall semester 2006- present (expected graduation summer 2010)
University of South Florida, Tampa, FL
Dissertation: Carbon based materials: synthesis, characterization & applications

TECHNICAL SKILLS

Film Deposition Systems

Skillful operation and troubleshooting of Astex CVD (Chemical Vapor Deposition) system for deposition of diamond films including nanocrystalline, polycrystalline and amorphous forms. Operation of

- Lesker sputtering system.
- Iplas CVD system.
- HF(Hot Filament)CVD system.
- PLD(Pulse Laser Deposition) system

Films Characterization Facilities

Skillful operation of

- Hitachi S800 SEM(Scanning Electron Microscope)
- X'Pert XRD(X-Ray Diffraction)
- Pacific AFM(Atomic Force Microscope)
- Renishaw Raman Spectroscopy
- Alpha Step 200 Profilometer
- Nanospec

Nanowires Growth by VLS (Vapor Liquid Solid) Method

Skillful operation of Lindberg-blue Thermal Furnace

Mostly for the growth of ZnO nanowires, Si nanowires and diamond nanowires under vacuum and atmospheric pressure.

MEMS Design and Fabrication

Familiar with the principles, mechanisms and structures of Surface Acoustic Wave (SAW) device, Quartz Crystal Microbalance (QCM) as well as MEMS photolithography process

Fabrication of Capacitive Micromachined Ultrasonic Transducers (CMUTs) device

Certain understanding of Surface Plasmon Resonance Sensors and ZnO nanowires Solar Cells

Software Simulation

- ANSYS

PUBLICATIONS AND CONFERENCES

1. Structural and electrical characteristics of nitrogen-doped nanocrystalline diamond films prepared by CVD, Journal of Physics. D: Applied physics. 42(2009)
2. Au decorated zinc oxide nanowires for CO sensing, J. Phys. Chem. C.,113(2009)
3. Carbon monoxide sensing at room temperature via electron donation in boron doped diamond films Sensors & Actuators: B. Chemical, 145(2010)
4. Electrons diffusion study on the nitrogen doped nanocrystalline diamond film grown by MPECVD method, Applied Surface Science, 256 (2010)
5. Surface and crystallite features of nitrogen doped nanocrystalline diamond films on multi-layer, Thin Solid Films (in review)

Presentations in conferences

1. Electrical Characteristics of Nitrogen-doped Nanocrystalline Diamond Films and Wires Symposium P: Diamond Electronics--Fundamentals to Applications II MRS 2007 Fall Meeting, Nov 26-30, Hynes convention center, Boston, MA
2. Electrons diffusion study of nitrogen doped nanocrystalline diamond film 2009 Annual Joint Symposium & Exhibition Florida Chapter of the AVS Science and Technology Society (FLAVS), Florida Society for Microscopy (FSM) March 8-12, 2009, University of Central Florida, Orlando, Florida
3. Growth and I-V characteristics of nanocrystalline diamond films/wires 2nd annual nanoscience technology symposium at UCF, Sep. 25-26,2009 University of Central Florida , Orlando , Florida
4. Electrical characteristics of nanocrystalline diamond films/wires for field emission and ultrasonic applications USF college of engineering day 2009, Oct. 7,2009, University of South Florida, Tampa, Florida

EDUCATION, RESEARCH AND EMPLOYMENT HISTORY IN CHINA

- Department of Fatigue and Fracture, Shenyang National Laboratory for Materials 1998-2002
 Institute of Metal Research, Chinese Academy of Sciences
 Ph. D. in materials physics
 Dissertation: Fatigue and Transformation behavior of TiNi Shape Memory Alloy Based on Cyclic Stress/Strain

- Fatigue and fracture of equi-atomic TiNi shape memory alloys: 2000-2002
 Stress-strain response of low cycle fatigue
 Fracture mechanism related to the deformation of martensitic variants of TiNi shape memory alloys
 Life prediction of TiNi shape memory alloys as structural materials
 Asymmetry of yield stress under cyclic tension and compression applied load

- Transformation behavior of TiNi shape memory alloys 1999-2000
 Mechanical training method for TiNi shape memory alloy
 The characteristic variation of relative resistance-temperature curve of TiNi shape memory alloys
 The relationship between transformation temperatures and microstructures evolution due to cyclic stress/strain

- Finite element computation on constitutive relationship of thermo-elastic martensitic transformation:98-99
 Stress configuration in the coupling of thermo-elastic martensitic TiNi memory alloy (ANSYS software)

PUBLICATIONS AND PATENT IN CHINA

1. Q. Hu, J. Wei, X. P. Liu, M. Z. Cao and S. X. Li, Effect of Symmetric tension-Compression Fatigue

controlled by Low Stress/Strain Amplitude on the Transformation Behavior of Ti-49.6Ni Alloy

Acta Metallurgica Sinica, 2001, 37 (3) : 263-266

2. Q. Hu, J. Wei, X. P. Liu, M. Z. Cao and S. X. Li, Resistance-Temperature Curve due to Cyclic Load under Symmetric Tension-Compression for Ti-49.6Ni Alloy

Chinese Journal of Materials Research , 2001, 15 (6) : 605-609

3. ***Patent (Sinica)*** : Q. Hu, J. Wei, M. Z. Cao and S. X. Li, A New Mechanical Training Method of TiNi Shape Memory Alloys, No. 01128129.4, 2001, 9, 5

4. Q. Hu, J. Wei, X. P. Liu, M. Z. Cao and S. X. Li, Influence of Fully Reversed Stress/Strain-Controlled Cycling On the Transformation Behavior of Ti-49.6Ni Shape Memory Alloy

Physica Status Solidi (a), 2002,191(2), 458-466

5. Q. Hu, J. Wei, X. P. Liu, M. Z. Cao and S. X. Li, The Transformation Behavior and the Shape Memory Effect due to Cyclic Stress/Strain for Ti-49.6Ni Alloy,

Materials Letters, 2002,54(2-3), 114-119

- Experienced with metallography, optical microscopy, SEM (scanning electron microscope), TEM (transmission electron microscopy)
- Operation of Shimadzu and MTS servo-hydraulic testing machines
- Special instrument used for the measurement of R-T curves of martensitic transformation
- Use of DSC (Differential Scanning Calorimetry) method, CorelDRAW

✚ Department of Mechanics, College of Sciences, Northeastern University (in China) 1995-1998

Master of Science in Solid Mechanics

- Thesis: The finite element computation for the welding onto in-service oil pipeline (Award of the First Class Thesis)
- The finite element computation for the welding onto in-serviced oil pipeline (In collaboration with USA Amoco company)
- Programming of finite element method by FORTRAN language
- Application of Gauss model onto linear welding
- Interdisciplinary research of welding, numerical analysis, finite element method, heat transfer, fluid, solid mechanics, and programming by FORTRAN language
- ANSYS finite element software