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Professional Experience

Computational Scientist/Assistant Professor, LONI/SU, May 2008 -- current

Assistant Professor, Physics Department, Southern University, August 2007 -- April 2008

Postdoc on NSF and NASA supported nano-material simulation, Physics Department, Southern University, August 2006 -- July 2007

- *Ab initio* MD simulation of Co/Fe/Ni nanoparticle and CNT growth
- *Ab initio* MD potential and code design
- *Ab initio* doped C₆₀ simulation

Research Assistant, University of Missouri, January, 2000 -- July, 2006

- *Ab initio* plane wave DFT high performance computer simulation of gold nanoparticles
- *Ab initio* simulation of CO/Cu(110), O/Diamond, CO/Au/TiO₃/Mo(112)
- Study on commensurate Ar/Ag(111), Kr/Ru(0001), CH₄/Graphite
- STM study of N and Co atoms on Cu(110)
- Semiconductor material property study and device design with VHDL

Assistant Professor, Northeastern University, July, 1997 -- December, 1999

- Supervising graduate student thesis in superconductor experimental part
- Doing high T_c superconductor material I_c, mechanical and AC loss test
- Designed low temperature superconductor AC loss test equipment for Hehui Plasma Institute of Chinese Academic; design MRI magnet and system

Research Assistant, Sichuan University, September, 1994 -- June, 1997

- Studying high level physics theory: Solid State Physics, Quantum Field Theory
- STM, SEM, AFM, XPS, ESR, DLTS, Raman/FTIR
- Doing research of Palladium-doped fast diode research using DLTS, FTIR and Raman
- Instructed electrical and optical lab courses of undergraduate level

Electronic Engineer, Ganzhou No. 852 Radio Station, July, 1988 -- August 1994

- High power electronic circuit and device design.

Education

- Ph. D. in Computational Physics with a co-discipline in ECE
University of Missouri-Kansas City, 2006 (with Dr. James M. Phillips)
Emphasis area: *Ab initio*(and semi-*ab initio*) DFT simulation of nano-material surface,
Electronic Material and Device, Raman/IR Spectroscopy, STM, condensed matter physics
- M. S. in Electrical Engineering

- University of Missouri, 2005
- M. S. in Condensed Matter Physics
Sichuan University, P. R. China, 1997
- B. S. in Semiconductor Physics with honors
Sichuan University, P. R. China, 1988

Teaching Experience

Instructor, Southern University, September, August, 2006--present

- Teaching undergraduate Physics recitation, labs

Lab Instructor, University of Missouri, January, 2000--July, 2006

- Teaching undergraduate general physics labs including mechanics, thermodynamics, electromagnetism, atomic physics, electronic circuit, optics, and spectroscopy labs

Faculty, Northeastern University, July, 1997--December, 1999

- Teaching undergraduate material test courses
- Supervising graduate student thesis in experimental part

Research Interests

- High performance computation algorithm, software design
- *Ab initio* plane wave and full potential material simulation: doped C₆₀ and CNT
- *Ab initio* MD code design and simulation on nano-materials: Au, Co, Fe and Ni
- Computational surface physics: physisorption and chemisorption
- GW and quantum Monte-Carlo method and application in material simulation
- STM, SEM, AFM, XPS, ESR, DLTS material testing
- Raman and FT-IR spectroscopy, X-ray diffraction
- Superconductor AC loss testing and control
- Semiconductor material properties and devices

Representative Publications

10. W. Wang, Z. Wang, J. Tang, S. Yang, H. Jin, G. L. Zhao, and Q. Li, “Seebeck coefficient and thermal conductivity in doped C₆₀”, *Journal of Renewable Sustainable Energy* **1**, 023104 (2009).

9. G. L. Zhao, S. Yang, D. Bagayoko, J. Tang and Z. J. Wang, “Electronic structure of C₆₀ semiconductors under controlled doping with B, N, and Co atoms”, *Diamond and Related Materials* **17**, 749(2008).

8. S. Yang and J. M. Phillips, "The geometric and electronic structures of commensurate 4Ar/Ag (111) - ($\sqrt{7} \times \sqrt{7}$) R19.1° by density functional theory", *Physical Review B* **75**, 235408(2007).
7. S. Yang, J. M. Phillips, and L. Ouyang, "A density functional calculation for the geometric and electronic structure of a (1x1) and a (1x3) supported gold system: Au/TiO₃/Mo(112)", *Physical Review B* **74**, 245424(2006).
6. S. Yang, L. Ouyang, J. M. Phillips and W. Y. Ching, "Density-Functional calculation of methane adsorption on graphite (0001) surface", *Physical Review B* **73**, 165407(2006).
5. S. Yang, F. M. Leibsle, J. M. Phillips, "Quantum chemical calculations of coupled vibrations of adsorbates: A comparative study of CO/Cu (110) and O/diamond (100)", *Surface Science* **579**, 107(2005).
4. Y. Liao, S. Yang, Z. Chen and Z. You, "Study on VF-TRR tradeoff of palladium doped fast recovery silicon diode", *Journal of Sichuan University (Natural Science Edition)* **40**, 74(2003).
3. L. Hu, L. Zhou, J. Wang, P. Zhang, C. Li, S. Yang, Y. He, and J. Li, "AC loss of Bi2223/Ag superconducting tape measured by transport current method", *Rare Metal Materials and Engineering* **30**, 169(2001).
2. S. Yang, Y. He, C. Lu, J. Li, J. Sun, J. Wang, P. Zhang, C. Li, Y. Feng, L. Zhou, W. Lin, Y. Zhou, H. Deng, P. Hua and G. Yuan, "The AC loss of transport current in (Bi, Pb)-2223 superconducting tapes", *Physica C* **337** 213(2000).
1. Z. Li, S. Yang, J. Sun, X. Huang, J. Wang, Z. Duan, P. Zhang, Y. Feng, and L. Zhou, "Effects of axial tensile and bending strains on the critical current of Bi-2223 superconducting tapes", *Physica C* **337**, 150(2000).

Dissertation: "Ab initio and semiempirical studies of molecules adsorbed on surfaces", Shizhong Yang, July, 2006

Awards

- Distinguished Dissertation Fellowship, University of Missouri, 2005
- Chancellor Ph. D. Fellowship, University of Missouri, 2003-2005
- Distinguished Paper Award of National Superconductor Research Center, 1999

Collaborations

- With Dr. S.M. Guo on TBC materials.
- With Dr. S. Bai and E. Khosravi on Biochemistry and BioInformatics.
- With Dr. G.L. Zhao and D. Bagayoko on simulation method development and nano-material simulation.

- With Dr. Ouyang Lizhi at TSU, high performance *ab initio* nano-material simulation.
- With Dr. Jim Phillips and Wai-Yim Ching at UMKC, *ab initio* surface and bulk calculation.

Memberships

- APS, American Physical Society

Grants

- Co-PI with S. M. Guo,
NASA-Dart2,
A Study on New Highly Reflective Thermal Barrier, \$61,125. 5/01/08---10/31/09.
- PI,
NASA-LaSPACE,
Ab Initio and Experimental Study of A Novel Nano Ceramic Thermal Barrier Material,
\$29,905. 4/01/08---3/31/10.

Students

- Casey Stevens(September, 2007 to May 2008), Kiara Williams(May, 2008 to July 2008, Summer SMART research), Christopher Clayton(current graduate student), Laura Hurst(current student), Kimberlee Lyles(current student), Kiante Roberson(current student), Charles A. Shropshire(current student).