PEIHONG ZHANG

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Education

Ph.D., 2001 : Condensed Matter Physics, with Vincent H. Crespi
Ph. D. minor, High Performance Computing
Pennsylvania State University

M.S., 1996 : Atomic & Molecular Physics, with J.-M. Li (C. M. Lee)
Institute of Physics, Chinese Academy of Sciences, China

B.S., 1993 : Physics, Xiamen (Amoy) University, China

Employment

2011 — : Associate Professor, Physics Department, University at Buffalo, SUNY

2005 — 2011 : Assistant Professor, Physics Department, University at Buffalo, SUNY

2003 — 2005 : Postdoctoral researcher, Physics Department, UC Berkeley

2001 — 2003 : Research scientist, Corning Incorporated

1997 — 2001 : Research assistant, Physics Department,
The Pennsylvania State University

1996 — 1997 : Teaching assistant, Physics Department,
The Pennsylvania State University

1993 — 1996 : Research assistant, Institute of Physics,
Chinese Academy of Sciences, China

Visiting Positions

- Visiting professor, University of Science and Technology of China, July to August, 2009
- Visiting professor, Tsinghua University, May to June, 2008
- Visiting Professor, UC Berkeley and LBNL, August, 2008

Awards

- NSF CAREER Award, 2010
- Doctoral New Investigator Award, ACS Petroleum Research Fund, 2009
- Departmental Award, Integrated Optical Physics, Corning Incorporated, 2002
- Departmental Award, Applied Fiber Research, Corning Incorporated, 2001
- Xerox Award for outstanding Ph.D. thesis in the area of materials, 2001
- Braddocks Fellowship, Physics Department, The Pennsylvania State University, 2000
- Braddocks Fellowship, Physics Department, The Pennsylvania State University, 1998

Patent

- Dispersion flattened non-zero dispersion shifted fiber, US Patent 2006

Grant Awards

- Single PI

1 NSF-CAREER (2010-2015): $450,000.

2 ACS-PRF (2009-2011): $100,000

3 NSF-CBET (2008-2010): $90,000

- Co-PI

1 DOE-BES (2009-2012): collaborative research that involves RPI, MIT, Princeton and UB (Peihong Zhang), total amount $1,800,000, UB amount $360,000

2 UB-IRDF (2008-2009): UB internal grant, co-PI with S. Ganapathy, S. Banerjee, $39,000

- Senior Investigator

1 NSF-DMS (2008-2013): CSUMS: Urge to Compute, $495,904

2 NSF-DBI: MRI-R2: $4,600,351

Professional Activities

- Refereed papers for Physical Review Letters, Physical Review B, Solid State Communications, Journal of Physics, Applied Physics, Applied Physics letters, Journal of Applied Physics, Nanotechnology, Philosophical Magazine, Molecular Physics, Nanoscale Research Letters, Journal of Materials Chemistry, Journal of Materials Science, Journal of Magnetism and Magnetic Materials, and Chemical Physics Letters. I review 10 $\sim$ 15 papers each year.
- Served as a panelist for the NSF (2007, 2009, 2011)
- Individual reviewer for NSF-DMR, NSF-CBET (Reviewed about 4 proposals each year since 2007)
- Individual Reviewer for the US Department of Energy (Reviewed one proposal, 2006)
- Individual Reviewer for the Molecular Foundry, Lawrence Berkeley National Laboratory (Reviewed about 5 Users Proposals each year since 2007)
- Individual Reviewer for the Center Center for Functional Nanomaterialsi, Brookhaven National Laboratory (reviewed 4 proposals, 2011)
- Individual Reviewer for the Science Foundation Ireland (Reviewed one proposal, 2006)
- Delivered a lecture at a conference that aims for "Training Faculty to Support Scholarly Work and Undergraduate Research with High Performance Computing Tools", 2007

Research Supervision

- Graduated two Ph. D. Students (Pratibha Dev, 2009; Yu Xue, 2011)
- Currently supervising 2 PhD students: Bi-ching Shih, Peng-Jen Chen
- Currently supervising 2 postdoctoral researcher: Dr. Tesfaye Abtew, Dr. Zhijun Yi
- Supervised undergraduate students: Dean Kirby, Giuseppe Passucci
- Currently serving (or served) in thesis committees for: Pratibha Dev (Ph.D., graduated 2009, Chair), Yu Xue (Ph.D., graduated 2011, Chair), Tailung Wu (Ph.D., graduated, 2011), Myoung-Hwan Him (Ph.D., graduated, 2010), Ryan J Heary (Ph.D., graduated, 2009), Tarek Ragab (CSEE Department, Ph.D., graduated, 2009), Peng-Jen Chen (M.S., graduated, 2009), Demez Neibi (M.S., graduated, 2008), Hema Subramanian (Ph.D), Brian Bezanson (Ph.D), Justin Perron (Ph.D), John Hatch (Ph.D), Chase Ellis (Ph.D), Yanbiao Chu (Civil Engineering Department, Ph.D.), Peng-Jen Chen (Ph.D., Chair), Bi-Ching Shih (Ph.D., Chair)

Articles in Refereed Journals (Times cited: $\sim$ 900 as of June 2011; h index: 16)

40 T. A. Abtew and **P. Zhang**, *Charging assisted Hydrogen Release Mechanism in Layered Boron Hydride* , Phys. Rev. B, in press, (2011).

39 C. Patridge, C. Jaye, T. A. Abtew, B. Ravel, D. A. Fisher. A. C. Marschilok, **P. Zhang**, K. J. Takeuchi, E. Takeuchi, and S. Banerjee, *An X-ray Absorption Spectroscopy Study of the Cathodic Discharge of $Ag_2VO_2PO_4$: Geometric and Electronic Structure Characterization of Intermediate Phases and Mechanistic Insights* , J. Phys. Chem. C **115**, 14437 (2011).

38 Y. Zhang, X. Yuan, X. Sun, B.-C. Shih, **P. Zhang**, and W. Zhang, *Comparative Study of Structural and Electronic Properties of Cu-based Multinary Semiconductors* , Phys. Rev. B **84**, 075127 (2011).

37 X. Wang, R. Yang, Y. Zhang, *P. Zhang*, and Y. Xue, *Rare-earth Chalcogenide Ce_3Te_4 as High Efficiency High Temperature Thermoelectric Material* , Appl. Phys. Lett. **98**, 222110 (2011).

36 T. A. Abtew, B.-C. Shih, P. Dev, V. H. Crespi, and **P. Zhang**, *Prediction of a Multi-center Bonded Solid Boron Hydride for Hydrogen Storage* , Phys. Rev. B **83**, 094108 (2011).

35 P. Dev, H. Zeng, and **P. Zhang**, *Defect Induced Magnetism in Nitride and Oxide Nanowires: Surface Effects and Quantum Confinement*, Phys. Rev. B **82**, 165319 (2010).

34 B. Shih, Y. Xue, M. L. Cohen, S. G. Louie, and **P. Zhang**, *Quasiparticle Band Gap of ZnO: High Accuracy from Conventional GW Approach*, Phys. Rev. Lett. **105**, 146401 (2010).

33 P. Dev and **P. Zhang**, *Unconventional Magnetism in Semiconductors: Role of Localized Acceptor States*, Phys. Rev. B **81**, 085207 (2010).

32 R. E. Tallman, G. Lindberg, B. Shih, **P. Zhang**, B. A. Weinstein, R. Lauck, and M. Cardona, *Anomalous pressure behavior of ZnSe Raman spectrum*, High Pressure Research **29**, 476 (2009).

31 Y. Xue, Y. Zhang, and **P. Zhang**, *Theory of the color change of Na_xWO_3 as a function of Na-charge doping*, Phys. Rev. B **79**, 205113 (2009).

30 F. Zhang, V. H. Crespi, and **P. Zhang**, *Prediction that uniaxial tension along $\langle 111 \rangle$ direction produces a direct band gap in germanium*, Phys. Rev. Lett. **102**, 156401 (2009).

29 S. Delikanli, S. He, Y. Qin, **P. Zhang**, H. Zeng, H. Zhang, and M. Swihart, *Room temperature ferromagnetism in Mn-doped CdS nanorods*, Appl. Phys. Lett. **93**, 132501 (2008).

28 **P. Zhang**, Y. Xue, and P. Dev, *Electron phonon renormalization and phonon anharmonicity in metals*, Solid State Commun. **148**, 151 (2008).

27 P. Dev, Y. Xue, and **P. Zhang**, *Defect-induced intrinsic magnetism in wide-gap III-nitrides*, Phys. Rev. Lett. **100**, 117204 (2008).

26 E. Kioupakis, **P. Zhang**, M. L. Cohen, and S. G. Louie, *GW quasiparticle corrections to the LDA+U/GGA+U electronic structure of bcc hydrogen*, Phys. Rev. B **77**, 155114 (2008).

25 **P. Zhang**, S. Saito, S. G. Louie, and M. L. Cohen, *Theory of alternating MgB_2 and graphene layers*, Phys. Rev. B **77**, 052501 (2008).

24 W. D. Luo, **P. Zhang**, and M. L. Cohen, *Splitting of zone center transverse phonon in NiO and MnO*, Solid State Commun. **142**, 504 (2007).

23 **P. Zhang**, S. G. Louie, and M. L. Cohen, *Electron-phonon renormalization in cuprates* , Phys. Rev. Lett. **98**, 067005 (2007).

22 K. T. Chang, J. D. Sau, **P. Zhang**, and M. L. Cohen, *Ab Initio Calculation of Phonon Splittings in Antiferromagnetic $ZnCr_2O_4$*, Phys. Rev. B **75**, 054304 (2007).

21 T. Miyake, **P. Zhang**, M. L. Cohen, and S. G. Louie, *Quasiparticle energy of semicore d electrons in ZnS: combined LDA+U and GW approach*, Phys. Rev. B. **74**, 245213 (2006)

20 **P. Zhang**, S. G. Louie, and M. L. Cohen, *Nonlocal screening, electron-phonon coupling, and phonon renormalization in metals*, Phys. Rev. Lett., **94**, 225502 (2005).

19 **P. Zhang**, R. B. Capaz, M. L. Cohen, and S. G. Louie, *Theory of Na ordering in Na_xCoO_2*, Phys. Rev. B **71**, 153102 (2005).

18 **P. Zhang**, W. Luo, S. G. Louie, and M. L. Cohen, *The Fermi surface of Na_xCoO_2*, Phys. Rev. Lett. **93**, 236402 (2004).

17 **P. Zhang**, W. Luo, V. H. Crespi, M. L. Cohen, and S. G. Louie, *Doping effects on the electronic and structural properties of CoO_2: An LSDA+U study*, Phys. Rev. B **70**, 085108 (2004).

16 Dragan Stojkovic, **P. Zhang**, P. E. Lammert, and V. H. Crespi, *Collective stabilization of hydrogen chemisorption on graphenic surfaces*, Phys. Rev. B **68**, 195406 (2003).

15 B. Pradhan, A. Harutyunyan, D. Stojkovic, J. Grossman, **P. Zhang**, M. Cole, V. H. Crespi, H Goto, J. Fujiwara, and P. Eklund, *Large cryogenic storage of hydrogen in carbon nanotubes at low pressures*, J. Mater. Res., **17**, 2209 (2002).

14 **P. Zhang** and V. H. Crespi, *Theory of B_2O and BeB_2 nanotubes: new semiconductors and metals in one dimension*, Phys. Rev. Lett. **89**, 56403 (2002).

13 **P. Zhang** and V. H. Crespi, *Theory of metastable group-IV alloys formed from CVD precursors*, Phys. Rev. B **64**, 235201 (2001).

12 **P. Zhang**, V. H. Crespi, E. Chang, S. G. Louie, and M. L. Cohen, *Computational design of direct bandgap semiconductors that lattice-match silicon*, Nature **409**, 69 (2001).

11 D. Stojkovic, **P. Zhang**, and V. H. Crespi, *Smallest nanotube: Breaking the symmetry of sp^3 bonds in tubular geometries*, Phys. Rev. Lett. **87**, 125502 (2001).

10 **P. Zhang** and V. H. Crespi, *Plastic deformation of boron nitride nanotubes: an unexpected weakness*, Phys. Rev. B. **62**, 11050 (2000).

9 P. E. Lammert, **P. Zhang** and V. H. Crespi, *Gapping by squashing: metal-insulator transitions in collapsed carbon nanotubes*, Phys. Rev. Lett. **84**, 2453 (2000).

8 **P. Zhang** and V. H. Crespi, *Nucleation of carbon nanotubes without pentagonal rings*, Phys. Rev. Lett. **83**, 1791 (1999).

7 **P. Zhang**, P. E. Lammert, and V. H. Crespi, *Plastic deformations of carbon nanotubes*, Phys. Rev. Lett. **81**, 5346 (1998).

6 J.-M. Li, **P. Zhang**, Y. Yang, and L. Liu, *Theoretical study of adatom self-diffusion on metallic fcc{001} surfaces*, Chinese Phys. Lett. **14**, 768 (1997).

5 Y. Zhang, **P. Zhang**, and J.-M. Li, *Near-threshold structure in inner-shell photo-absorption process of N_2 and CO*, Phys. Rev. A **56**, 1819 (1997).

4 J.-M. Li, Lan Vo Ky, Y.-Z. Qu, J. Yan, **P. Zhang**, H.-L. Zhou, and P. Faucher, *Eigenchannel treatment of R-matrix theory*, Phys. Rev. A **55**, 3329 (1997).

3 **P. Zhang** and J.-M. Li, *Geometry and electronic structure of Na_3*, Acta Phys. Sin. **46**, 870 (1997).

2 **P. Zhang** and J.-M Li, *Theoretical studies of electronic excited states for Na_3*, Phys. Rev. A **54**, 665 (1996).

1 J. Yan, **P. Zhang**, and J.-M Li, *Fine structure inversion in the f channel of alkali atoms*, Acta Phys. Sin. **45**, 1978 (1996).

Articles in Non-refereed Journals

3 D. C. Allan, N. F. Boreelli, M. R. Gallagher, D. Muller, C. M. Smith, N. Venkatarman, J. A. West, **P. Zhang**, and K. W. Koch, Proc. SPIE Int. Soc. Opt. Eng. 5000, 161 (2003).

2 P. Eklund, B. K. Pradhan, A. Harutyunyan, M. W. Cole, D. Stojkovic, J. C. Grossman, **P. Zhang**, V. H. Crespi, H. Goto and J. Fujiwara, *Large Storage of Hydrogen in SWNT's*

at Low Temperature and Pressure, in MRS Symposium Process Series: Making functional Materials with Nanotubes, (2002).

1 V. H. Crespi, **P. Zhang** and P. E. Lammert, *Sliding, stretching, and Tapering: Recent Structural Results for Carbon Nanotubes, Electronic Properties of Novel Materials*—Science and Technology of Molecular Nanostructures, XII International Winter School, Kircgberg, Tirol, Austria, 1999 (American Institute of Physics) 364-370.