

Hefei Hu

Non-Volatile Memory Solutions Group, Intel Corporation, Folsom, CA 95630

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Education

University of Illinois at Urbana-Champaign, Urbana, IL Aug 2006 to Dec 2012

Ph.D., Physics

University of Manitoba, Winnipeg, MB, Canada Aug 2003 to Aug 2006

M.S., Physics

Wuhan University, Wuhan, China Aug 1999 to Aug 2003

B.S., Physics

Employment

Senior R&D Engineer, Intel Corporation, Folsom, CA Jun 2014 to present

Research Associate, Brookhaven National Laboratory, Upton, NY Jan 2013 to Jun 2014

Honors and Awards

- NSG Operational Excellence Division Recognition Award, Intel Corporation, Folsom, California, 2018
- NSG QRE Department OpX Award, Intel Corporation, Folsom, California, 2016
- NSG QRE Department OpX Award, Intel Corporation, Folsom, California, 2015
- Poster Award (2nd place), American Vacuum Society Prairie Chapter, Urbana, Illinois, 2012
- Yee Memorial Fund Fellowship, University of Illinois at Urbana-Champaign, Urbana, Illinois, 2012
- FEMMS student fellowship, Frontiers of Electron Microscopy in Materials Science Conference, Rohnert Park, California, 2011
- Distinguished Scholar Award, Microanalysis Society, Nashville, Tennessee, 2011
- Distinguished Scholar Award, Microanalysis Society, Richmond, Virginia, 2009
- People's Scholarship, Wuhan University, Wuhan, 1999 – 2002

Presentations and First-Author Posters

- Poster Presentation, Microscopy & Microanalysis 2014 Meeting, Hartford, Connecticut, 2014
“Quantitative structural analysis of nanoparticles using electron pair distribution function (ePDF)”
- Oral Presentation, March Meeting, American Physical Society, Denver, Colorado, 2014
“The structure of oxygen-annealed $\text{La}_{1.9}\text{Ca}_{1.1}\text{Cu}_2\text{O}_{6+\delta}$ superconductor”
- Invited talk, Center for Emergent Superconductivity 2012 Fall Workshop, Argonne National Laboratory, Argonne, Illinois, 2012
“Why does superconductivity occur in Fe_{1+y}Te thin films?”
- Poster Presentation, AVS Prairie Chapter Symposium 2012, Urbana, Illinois, 2012
“Structure of heavy-ion irradiated High- T_c superconductors”

- Poster Presentation, Materials and Mechanisms of Superconductivity Conference, Washington, D.C., 2012
“Scanning Transmission Electron Microscopy Evidences of Interstitial and Substitutional Oxygen in MBE Grown Fe_{1+x}Te Thin Films and Emergence of Superconductivity”
- Invited seminar talk, Condensed-Matter Physics & Materials Science Seminar, Brookhaven National Laboratory, Upton, New York, 2012
“Structure of Iron-Chalcogenide Superconductors and Thin-films”
- Oral Presentation, March Meeting, American Physical Society, Boston, Massachusetts, 2012
“The Structure of the Oxygen-annealed $\text{Fe}_{1.08}\text{Te}_{0.55}\text{Se}_{0.45}\text{O}_x$ Superconductor”
- Invited talk, Center for Emergent Superconductivity 2011 Fall Workshop, Urbana, Illinois, 2011
“Study of Electron Microscopy and Electron Energy Loss on Iron-based Superconductors”
- Poster Presentation, Frontiers of Electron Microscopy in Materials Science Conference, Rohnert Park, California, 2011
“Nano-scale Atomic and Electronic Structures of Iron-based Superconductors”
- Oral Presentation, Microscopy & Microanalysis 2011 Meeting, Nashville, Tennessee, 2011
“Nanostructure of the Iron Chalcogenide Superconductor $\text{Fe}_{1+y}\text{Te}_x\text{Se}_{1-x}$ ”
- Oral Presentation, March Meeting, American Physical Society, Dallas, Texas, 2011
“Nanometer Scale Phase Separation and Chemical Inhomogeneity in the Iron Chalcogenide Superconductor $\text{Fe}_{1+y}\text{Te}_x\text{Se}_{1-x}$ ”
- Oral Presentation, Microscopy & Microanalysis 2009 Meeting, Richmond, Virginia, 2009
“Atomic-Resolution Imaging of Crystals using Charge Flipping and Precession Electron Diffraction”

Peer-reviewed Publications

1. Ivan A Sadovskyy, Ying Jia, Maxime Leroux, Jihwan Kwon, Hefei Hu, Lei Fang, Carlos Chaparro, Shaofei Zhu, Ulrich Welp, Jian-Min Zuo, Yifei Zhang, Ryusuke Nakasaki, Venkat Selvamanickam, George W Crabtree, Alexei E Koshelev, Andreas Glatz and Wai-Kwong Kwok, “Toward Superconducting Critical Current by Design”, *Advanced Materials*, Volume 28, Issue 23, (2016)
2. A. M. Milinda Abeykoon, Hefei Hu, Lijun Wu, Yimei Zu and Simon J. L. Billinge, “Calibration and data collection protocols for reliable lattice parameter values in electron pair distribution function (ePDF) studies”, *Journal of Applied Crystallography*, 48, 244-251 (2015)
3. Benjamin A. Frandsen, Emil S. Bozin, Hefei Hu, Yimei Zhu, Yasumasa Nozaki, Hiroshi Kageyama, Yasutomo J. Uemura, Wei-Guo Yin & Simon J.L. Billinge, “Intra-unit-cell nematic charge order in the titanium-oxypnictide family of superconductors”, *Nature communications*, 5, 5761 (2014)
4. Hefei Hu, Ji-Hwan Kwon, Mao Zheng, Can Zhang, Laura H. Greene, James N. Eckstein, Jian-Min Zuo, “Impact of interstitial oxygen on the electronic and magnetic structure in superconducting $\text{Fe}_{1+y}\text{TeO}_x$ thin films”, *Phys. Rev. B* 90, 180504(R) (2014)
5. Hefei Hu, Yimei Zhu, Xiaoya Shi, Qiang Li, Ruidan Zhong, John A. Schneeloch, Genda Gu, John M. Tranquada, and Simon J. L. Billinge, “Nanoscale coherent intergrowthlike defects in a crystal of $\text{La}_{1.9}\text{Ca}_{1.1}\text{Cu}_2\text{O}_{6+\delta}$ made superconducting by high-pressure oxygen annealing” *Phys. Rev. B* 90, 134518 (2014)

6. Yiqun Zheng, Wenyong Liu, Tian Lv, Ming Luo, Dr. Hefei Hu, Dr. Ping Lu, Dr. Sang-II Choi, Chao Zhang, Dr. Jing Tao, Prof. Yimei Zhu, Prof. Zhi-Yuan Li and Prof. Younan Xia, "Seed-Mediated Synthesis of Gold Tetrahedra in High Purity and with Tunable, Well-Controlled Sizes", *Chem. Asian J.* **9**, 2635(2014)
7. Xiaodong Wang, Jian-Min Zuo, Hefei Hu and Yonghua Rong, "Direct Evidence for the Modulation Caused by Ti Substitution of Ta in a (Ta₂O₅)_{0.92}(TiO₂)_{0.08} Ceramic by Analytical Electron Microscopy", *Journal of the American Ceramic Society* **97**[2], 350(2013)
8. X. Chen, W.P. Gao, S. Sivaramakrishnana, H.F. Hu and J.M. Zuo, "In situ RHEED study of epitaxial gold nanocrystals on TiO₂ (1 1 0) surfaces", *Applied Surface Science* **270**, 661(2013)
9. L. Fang, Y. Jia, C. Chaparro, G. Sheet, H. Claus, M. A. Kirk, A. E. Koshelev, U. Welp, G. W. Crabtree, W. K. Kwok, S. Zhu, H. F. Hu, J. M. Zuo, H.-H. Wen, and B. Shen, "High, magnetic field independent critical currents in (Ba,K)Fe₂As₂ crystals", *Appl. Phys. Lett.* **101**, 012601 (2012)
10. Hefei Hu, Jian-Min Zuo, Mao Zheng, James N. Eckstein, Wan Kyu Park, Laura H. Greene, Jinsheng Wen, Zhijun Xu, Zhiwei Lin, Qiang Li, and Genda Gu, "Structure of the oxygen-annealed chalcogenide superconductor Fe_{1.08}Te_{0.55}Se_{0.45}O_x", *Phys. Rev. B* **85**, 064504 (2012)
11. C. Croenne, E. J. S. Lee, Hefei Hu, and J. H. Page, "Band gaps in phononic crystals: Generation mechanisms and interaction effects", *AIP Advances* **1**, 041401 (2011)
12. Jae Cheol Shin, Kyou Hyun Kim, Ki Jun Yu, Hefei Hu, Leijun Yin, Cun-Zheng Ning, John A. Rogers, Jian-Min Zuo, and Xiuling Li, "In_xGa_{1-x}As Nanowires on Silicon: One-Dimensional Heterogeneous Epitaxy, Bandgap Engineering, and Photovoltaics", *Nano. Lett.* **11**, 4831–4838 (2011)
13. Yong Huang, Jae-Hyun Ryou, Russell D. Dupuis, Daniel Zuo, Benjamin Kesler, Shun-Lien Chuang, Hefei Hu, Kyou-Hyun Kim, Yen Ting Lu, K. C. Hsieh and Jian-Min Zuo, "Strain-balanced InAs/GaSb type-II superlattice structures and photodiodes grown on InAs substrates by metalorganic chemical vapor deposition", *Appl. Phys. Lett.* **99**, 011109 (2011)
14. Jinsong Wu, Sheng Zhao, Hefei Hu, Jiaying Huang, Jian-Min Zuo, Vinayak P. Dravid, "Construction of an organic crystal structural model based on combined electron and powder X-ray diffraction data and the charge flipping algorithm", *Ultramicroscopy* **111**, 812–816 (2011)
15. Hefei Hu, Jian-Min Zuo, Jinsheng Wen, Zhijun Xu, Zhiwei Lin, Qiang Li, Genda Gu, Wan Kyu Park and Laura H Greene, "Phase separation in the iron chalcogenide superconductor Fe_{1+y}Te_xSe_{1-x}". *New J. Phys.* **13**, 053031 (2011)
16. Hefei Hu, A. Strybulevych, J. H. Page, S. E. Skipetrov and B. A. Van Tiggelen, "Localization of ultrasound in a three-dimensional elastic network", *Nature Physics* **4**, 945-948 (2008)
17. Xiaoling Li, Fugen Wu, Hefei Hu, Shao Zhong and Youyan Liu, "Large acoustic band gaps created by rotating square rods in two-dimensional periodic composites", *Journal of Physics D: Applied Physics* **36** L15 (2003)

Synergistic Activities

- Member of Microbeam Analysis Society, Microscopy Society of America and American Physics Society
- Referee for Physical Review Letters, Physical Review Materials, Reports on Progress in Physics, Applied Physics Letters, Advances, Dalton, Nanoscale, Materials Characterization, Journal of Physics: Condensed Matter, Materials Letters, Journal of Physics D: Applied Physics, Materials Research Express, Nanotechnology, Semiconductor Science and Technology, Microscopy and Microanalysis.