

Zhihai Zhu

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EDUCATION

Ph.D. in Physics, University of Connecticut, Storrs, Connecticut, May 2016

Thesis on "Electronic Structure and Phase Separation of Transition Metal Oxides" (Advisor: Prof. B. O. Wells)

M.S. in Physics, Nanjing University of Aeronautics and Astronautics, Nanjing, China, June 2009

B.S. in Physics, Nanjing University of Aeronautics and Astronautics, Nanjing, China, June 2006

HONORS /AWARDS

- 2016/1/29 Provost's Award for Excellence in Teaching, University of Connecticut
- 2015 Fall Doctoral Dissertation Fellowship, University of Connecticut
- 2014 Best Poster Winner, Poster Session of Physics Department, University of Connecticut
- 2011-2012 Summer Predoctoral Fellowship Awarded, University of Connecticut
- 2009 Predoctoral Fellowship Awarded, University of Connecticut

EMPLOYMENT

- Postdoctoral Scholar, Massachusetts Institute of Technology, 2017/3/1-present (*PI: Prof. Riccardo Comin*)
- Gratis Research Scientist, Physics Department at the University of Connecticut, 2017/2/1-2017/3/1
- Instructor for PHYS 1201Q-Physics for Engineers, University of Connecticut, Spring 2016
- Research assistant, University of Connecticut, 2010-2015 (*Advisor: Prof. Barrett O. Wells*)
- ✓ Achieved a right recipe of growing BaCrO₃ films by using Pulsed laser deposition(PLD) and carried out some primary characterizations.
- ✓ Established two spatially separated phases in SrCoO_{3-y} by using muon spin rotation(μ^+ SR) and powder neutron diffraction; showing the phases exist over regions with a length scale intermediate between nanoscale charge inhomogeneity and systems such as manganites or super-oxygenated cuprates with large length scale phase separation.
- ✓ Carried out the resonant X-ray scattering (REXS) on Pr₂NiO_{4.25} and Pr₂NiO_{4.22} single crystal samples to study the local charge pattern. Observed two resonant peaks which probably indicate long-range charge ordering.
- ✓ Built up a film growth chamber system for PLD which is under normal operation at the University of Connecticut.
- ✓ Some trip training and team work including:

Curriculum Vitae

- ❖ Carried out neutron scattering experiments with colleagues to study the magnetic properties of $\text{La}_{2-x}\text{Sr}_x\text{CuO}_{4+y}$ at the Institut Laue-Langevin (ILL) at Grenoble France. 21/05/2011~01/06/2011
- ❖ Carried out synchrotron XRD experiments with teammates to study the structural properties of FeTeOx films at BNL. 07/11/2010~14/11/2010
- ❖ Carried out resonant X-ray scattering with teammates to study of charge ordering in super-oxygenated $\text{La}_{2-x}\text{Sr}_x\text{CuO}_{4+y}$ samples at CLS. 03/29/2016~04/03/2016
- Teaching assistant, University of Connecticut, 2012-2015
- ✓ Laboratory Instructor for PHYS 1202Q-Physics for Engineers, Fall 2015
- ✓ Grader for PHYS 1501Q-Physics for Engineers, 1010Q-Elements of Physics, 1030Q, Fall 2014
- ✓ Laboratory Instructor for PHYS 1501Q-General Physics with Calculus, Spring 2014
- ✓ Laboratory Instructor for PHYS 1401Q-General Physics with Calculus, Spring 2013
- ✓ Laboratory Instructor for PHYS 1202Q-Physics for Engineers, Fall 2013
- ✓ Laboratory Instructor for PHYS 1201Q-General Physics, Fall 2012
- ✓ Laboratory Instructor for PHYS 1401Q-General Physics with Calculus, 2012
- ✓ Laboratory Instructor for PHYS 1010Q-Elements of Physics, Spring 2012

CONFERENCES/PRESENTATIONS

- Presenter, “Electronic Structure and Phase Separation of ABO_3 Perovskite Transition Metal Oxides”, Massachusetts Institute of Technology Department of Physics, Boston, MA, 10/20/2016
American Physical Society (APS) March-Meeting
- Contributor, “Charge Order and (001) Order in Superoxygenated Lanthanum Cuprates”, New Orleans, LA, March 2017
- Contributor, “Preparation of epitaxial ScF_3 thin films”, New Orleans, LA, March 2017
- Contributor, “The Long-Forgotten Compound: CoTe , and its Epitaxial Film Growth and Properties”, Baltimore, MD, March 2016
- Presenter, “Spatial Magnetic Phase Separation in the Oxygen Deficient Perovskite SrCoO_{3-y} ”, San Antonio, TX, March 2015
- Presenter, “Local Structure in Magnetically Phase Separated Perovskite SrCoO_{3-y} ”, Denver, CO, March 2014
- Presenter, “Perovskite BaCrO_3 : completing a materials system with an anomalous Mott transition”, Baltimore, MD, March 2013

PUBLICATIONS

Curriculum Vitae

- **Z. H. Zhu**, F. J. Rueckert, J. I. Budnick, W. A. Hines, Ch. Niedermayer, L. Keller, H. Luetkens, B. Dabrowski, S. Kolesnik, B. O. Wells, Distinct Magnetic Phases in Structurally Uniform SrCoO_{3-y} , Phys. Rev. B 93, 224412 (2016)
- **Z. H. Zhu**, F. J. Rueckert, J. I. Budnick, W. A. Hines, M. Jain, H. Zhang, and B. O. Wells, Magnetic and electronic structure of the film-stabilized Mott insulator BaCrO_3 , Phys. Rev. B 87, 195129 (2013)
- **Z. H. Zhu** and X. H. Yan, Half-metallic properties of perovskite BaCrO_3 and $\text{BaCr}_{0.5}\text{Ti}_{0.5}\text{O}_3$ superlattice: LSDA+U calculations, J. Appl. Phys. 106, 023713 (2009)
- **Z. H. Zhu** and X. H. Yan et al., lateral confinement in unidimensional noble metal (Au, Pt) nanowires, Sur. Sci. 602 (L104-L107) (2008)
- **Z. H. Zhu** and X. H. Yan et al., First -principles study of MgB_2 film on the MgO (111) polar surface, Phys. Lett. A. 372(1671-1675) (2008)

LANGUAGE SKILLS

- English: Fluent (both verbal and written)
- Chinese: Native

REFERENCES

- Dr. Riccardo Comin, Department of Physics, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139-4307
- Dr. Barrett O. Wells, Department of Physics, University of Connecticut, 2152 Hillside Road, Storrs CT 06269-3046, wells@phys.uconn.edu (860) 486 0444
- Dr. Joseph I. Budnick, Department of Physics, University of Connecticut, 2152 Hillside Road, Storrs CT 06269-3046, budnick@phys.uconn.edu (860) 486 5541
- Dr. Christof Niedermayer, Paul Scherrer Institute (PSI), WHGA/145, 5232 Villigen, Switzerland, christof.niedermayer@psi.ch, +41 56 310 2086