Yimin Xiong

Department of Physics and Astronomy
Louisiana State University
202 Nicholson Hall
Baton Rouge, LA 70803
Tel:(240)676-4772
Email: yxiong1@phys.lsu.edu

CAREER GOALS

To obtain a research and/or teaching orientated position in Physics or Materials Science.

RESEARCH INTEREST

Experimental Condensed Matter Physics:

- Mechanism of superconductivity
- Physical properties of magnetic materials
- Investigation of novel materials
- Physical properties of materials with nano-scale

EDUCATION

Ph.D. in Condensed Matter Physics — January 2005
University of Science & Technology of China
Dissertation: *The Investigation of the Properties of Manganese, Cobalt Oxides Thin Films and Copper Oxide Superconductors*
Supervisor: Prof. Xianhui Chen

B.Sc. in Applied Physics — July 1999
Department of Physics
University of Science & Technology of China

SCHOLARSHIP AWARDS RECEIVED

"Qiu Shi" Scholarship for Graduates by Hong Kong Qiu Shi Sci. & Tech. Foundation, 2003
"Guang Hua" Education Scholarship for Graduates by Univ. of Sci. & Tech. of China, 2000
Outstanding Graduate Scholarship for Graduates by Univ. of Sci. & Tech. of China, 1999

PROFESSIONAL EXPERIENCE

PostDoctroal Researcher — January 2010~ present
Dept. of Physics & Astronomy, Louisiana State University,
Co-Supervisor: Prof. Rongying Jin

- Study Quantum Critical properties in the pnictide superconductors.

PostDoctroal Researcher — April 2008~ present
Dept. of Physics & Astronomy, Louisiana State University,
Supervisor: Prof. Philip Adams

- Investigated the magnetotransport of ultrathin, insulating Be films with and without spin-orbit scattering. Studied the properties of high-field Quantum metal phase at low temperature.
- Studied the anomalous Hall Effect in CNi_3, CCo_3 and CFe_3 films and tunnelling of F/I/S junctions with pairing resonance which is an analog to the high Tc superconductor pseudogap.
- Maintain a PPMS and a Dilution Refrigerator.

Post Doctoral Fellowship September 2005~ February 2008
Dept. of Physics and TcSUH, University of Houston,
Supervisor: Prof. Pei-herng Hor

- Built the single-crystal preparation system, prepare $YBa_2Cu_3O_6$ and $Bi_2Sr_2CaCu_2O_8$ superconductor single-crystal with different carrier concentration to study the hypostasis of superconductivity.
- Built and maintained a low temperature transport properties measurement system (Resistance, Thermoelectrical Power, Hall Effect, and so on).
- Designed and built a melting point measurement system.
- Collaborated on sample preparation with the Scanning Tunnelling Microscopy group.
- Improved a high pressure oxygen furnace system (up to 500 atm and 1000 ^oC).
- Characterized the single-crystal, thin-film, multilayer tape and poly-crystal samples; measured the physical properties of these samples.

Graduate Research Assistant September 1999~January 2005
Dept. of Physics, Structure Research Laboratory, Hefei National Laboratory for Physical Sciences at the Microscale, Univ. of Sci. & Tech. of China
Supervisor: Prof. Xianhui Chen

- Designed and built low temperature physical properties measurement systems.
- Designed and operated a High Vacuum Magnetron Sputtering Thin Film Deposit System.
- Prepared superconductors, colossal magneto-resistance oxides and magnetic oxides by techniques of solid-state reaction, self-flux, sol-gel and Magnetron Sputtering.
- Observed the field-induced electron spin-state transition in colossal magneto-resistance oxide $La_{0.5}Sr_{0.5}CoO_3$.
- Collaborated on the investigation of physical properties on thin film samples with the group of Dr. Chonglin Chen at Texas Center for Superconductivity.
- Studied the change of properties in $La_{1-x}Ca_xMnO_3$ thin film when the lattice was affected by substrates and composition, provide the powerful data for the application of this kind of material.
- Studied the annealing effect on amorphous $La_{0.5}Sr_{0.5}CoO_3$ films.
- Observed the effect of carrier concentration compensation in Ru doped $La_{1.85}Sr_{0.15}CuO_4$ superconductor.
- Collaborated on the physical properties measurement of nano-scale samples with other researchers.
- Wrote funding proposal for supervisor on the orientation of novel materials investigation (supported by National Nature Science Foundation of China).
- Supervised more than 10 undergraduate students for their thesis.
- Supervised and trained 5 junior graduate students.

TECHNICAL SKILLS

Sample Preparation

- Solid-state reaction (poly-crystal); Magnetron Sputtering, e-Beam (thin film); self-flux (single-crystal) and sol-gel (poly-crystal).

Measurements of Physical Properties

- Resistance, Thermoelectrical Power, Specific Heat, Hall Effect, Magnetic Susceptibility, Properties under high pressure and high magnetic field.
- Operation of 17 Tesla Superconducting Magnet (Oxford Instruments)
- Operation of Vibrating Sample Magnetometer (Lakeshore Company)
- Operation of Physical Properties Measurement System (Model 6000, Quantum Design)
- Operation of MPMS-XL (1 Tesla) and MPMS-5S (5 Tesla) (Quantum Design)
- Operation of He3/He4 Dilution Refrigerate System

- Operation of ac Resistance Bridge (Linear Research Inc)

Materials Characterization
- Operation of Electron Microprobe (JEOL JXA-8600)
- Operation of Scanning Electron Microprobe (JEOL JSM-6400)
- X-ray diffraction (Power, single-crystal, thin-film and tape; rocking curve and pole figure)

Programming for Physical Measurements by *Labview*

PROFESSIONAL SERVICES

Refereeing for journals: Physical Review Letters, Journal of Physics: Condensed Matter and Nanotechnology.

RECENT and SELECTED PUBLICATIONS

1. Temperature dependence of resistivity and Hall coefficient in strongly disordered NbN thin films
   M. Chand, A. Mishra, **Y. M. Xiong**, A. Kamlapure, S. P. Chockalingam, J. Jesudasan, V. Bagwe, M. Mondal, P. W. Adams, V. Tripathi, and P. Raychaudhuri
   Phys. Rev. **B 80**, 134514 (2009)

2. Measurement of conduction-electron polarization via the paring resonance
   Y. M. Xiong, P. W. Adams, and G. Catelani
   Phys. Rev. Lett. **103**, 067009 (2009)

3. Pairing resonance as a normal-state spin probe in ultrathin Al films
   G. Catelani, ***Y.M. Xiong***, X.S.Wu, and P.W. Adams
   Phys. Rev. **B 80**, 054512 (2009)

4. Spin-orbit scattering and quantum metallicity in ultrathin Be films
   Y. M. Xiong, A. B. Karki, D. P. Young, and P. W. Adams
   Phys. Rev. **B 79**, 020510(R) (2009)

5. Superconducting and magnetotransport properties of $ZnNNi_3$ microfibers and films
   A. B. Karki, ***Y. M. Xiong***, D. P. Young, and P. W. Adams
   Phys. Rev. **B 79**, 212508(2009)

6. Magneto-resistance and field-induced spin-state transition of Pr and Nd substituted $La_{0.5}Sr_{0.5}CoO_3$
   Y. M. Xiong, Y. R. Lu, X. G. Luo, C. H. Wang, G. Y. Wang, T. Chen, and X. H. Chen
   J. Magn. Magn. Mater. **299** (1), 188-194 (2006)

7. Magneto-transport properties in $La_{1-x}Ca_xMnO_3$(x = 0.33, 0.5) thin films deposited on different substrates
   Y. M. Xiong, T. Chen, G. Y. Wang, X. G. Luo, C. H. Wang, X. H. Chen, X. Chen, and C. L. Chen
   J. Appl. Phys. **97**, 083909 (2005)

8. Raman spectra in epitaxial thin films $La_{1-x}Ca_xMnO_3$(x = 0.33, 0.5) grown on different substrates

Y. M. Xiong, T. Chen, G. Y. Wang, X. H. Chen, X. Chen, and C. L. Chen
Phys. Rev. **B 70**, 094407(2004)

9. The effect of annealing on magnetic and transport properties of $La_{0.5}Sr_{0.5}CoO_{3-delta}$ thin films
Y. M. Xiong, X. H. Chen, X. G. Luo, C. H. Wang, H.B. Song, C. L. Chen, and H. Y. Chang
J. Phys.: Condens. Matter **16**, 553(2004)

10. Transport properties of Ru doped $La_{1.85}Sr_{0.15}CuO_4$ and effect of carrier concentration compensation
Y. M. Xiong, L. Li, X. G. Luo, H. T. Zhang, C. H. Wang, S. Y. Li, and X. H. Chen
J. Phys.: Condens. Matter **15**, 1693(2003)