

An-Ping Li

R&D Staff

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Education

Chinese Academy of Sciences, University of Science and Technology of China	Solid State Physics	M.S., 1991
Peking University, China	Condensed Matter Physics	Ph.D., 1997

Professional Experience

2002–present	Research Scientist, Oak Ridge National Laboratory, USA
2009–present	Adjunct Associate Professor, Department of Physics & Astronomy, The University of Tennessee, USA.
2001–2002	Senior R&D Scientist, Project Leader, Galian Photonics, Inc., Canada
1999–2001	Visiting Scientist, Center for Sensor Materials, NSF MRSEC, Michigan State University, USA
1997–1999	Max-Planck-Institute Research Fellow, Max Planck Institute of Microstructure Physics, Halle, Germany

Professional and Synergistic Activities

2011-2012	Organizing Committee Chair, AVS-59 Focus Topic Conference on Electron Transport at the Nanoscale.
2011-2012	Organizing Committee Member, AVS Focus Topic Conference on Scanning Probe Microscopy.
2010-2011	Organizing Committee Chair and Session Chair, AVS-58 Focus Topic Conference on Electron Transport in Low-Dimensional Materials.
2010-present	Editorial Board Member, Journal of Nanoscience Letters
2009-present	Adjunct Associate Professor, Department of Physics & Astronomy, The University of Tennessee, USA.
2008	Session Chair, APS March meeting, Oxide Surfaces, Interfaces and Thin Films, DCMP.
Referee to journals:	Nature Physics, Physical Review Letters, Physical Review B, Applied Physics Letter, Journal of Applied Physics, Journal of Physics: Condensed Matter, Physics Letters A, Solid State Communication, Surface Science, Nanotechnology, Nanoscale, Carbon, Composites Science and Technology, IEEE Transactions on Magnetics, Nanoscale Research Letters.
Reviewer for proposals:	NSF, Swiss NSF, Academic Senate of Vienna University of Technology, Chinese Academy of Sciences, University of Wisconsin, ORNL LDRD

Honors and Awards

1997-1999	Max Planck Society Fellowship
1996	Guanghua Award for Graduate Research, Peking University

Publications: Author of over 50 articles in refereed journals with total citations of more than 2400 on Web of Science, 2 patents, 4 invited book chapters, more than 30 invited and plenary talks.

Research Synopsis

1. *Electron Transport in Low-Dimensional Materials.*
We use a cryogenic four-probe scanning tunneling microscope (STM) to study electrical transport at the level of single nanostructure, nanojunction, interface, and grain/domain boundary. The four-probe STM combines STM local imaging and spectroscopy functions, the 4-point contact electrical transport, scanning electron microscope (SEM), and molecular-beam epitaxy (MBE) in the same cryogenic system. We perform both STM and transport measurements on the same nanostructured materials so that the structure-transport relations could be established down to the atomic scale. A scanning tunneling potentiometry mode is employed to map electronic transport and structural information around individual scattering centers.
2. *Metal-Insulator Transitions and Electronic Inhomogeneity in Multiple Length Scale.*
We use multiple local probing and transport techniques to image and manipulate of competing electronic phases near the critical point of metal-insulator transitions in complex oxide, and examine the microscopic variations of superconducting transitions in new high T_c superconducting materials from mesoscopic to the atomic scale.
3. *Self-Assembled Fabrication of Ordered Pore Arrays and Nanowires.*
We fabricate periodic pore arrays in anodic aluminum oxide using a self-assembly process. We then utilize this porous membrane as template to fabricate semiconducting nanowires and nanotubes and their junctions, and study the study the transport, electronic, and photonic crystal properties of these nanostructures.
4. *Magnetism and Spin-Dependent Transport in Magnetic Semiconductors and Quantum Dots.*
We grow Mn-doped Ge magnetic semiconductor films and study the magnetic and transport properties, such as impurity segregations, percolative magnetic transitions, metal-insulator transitions, and spin polarizations of the materials. We fabricate magnetic nanodots with MBE and magnetic tunneling junctions with nanofabrication facilities and study the magnetic interactions and spin injection and transport properties.

Postdoctoral Scholars Advised:

Kendal Clark, 2010-present

Shengyong Qin, 2009-2012. Currently: R&D Scientist, RHK Technology, Troy, Michigan, USA

TaeHwan Kim, 2006- 2010. Currently: Assistant Professor, in POSTECH, S. Korea

Tho Duc Nguyen, 2008. Currently: Assistant Professor, University of Georgia, Georgia, USA

Ruifang Wang, 2007. Currently: Professor, Xiamen University, China