

ZHONG LI

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191 West Woodruff Avenue, Columbus, Ohio 43210

Department of Physics, THE OHIO STATE UNIVERSITY

EDUCATION

- **Ph.D. in Physics, The University of Alabama, Tuscaloosa, USA** 2013 – 2019
Dissertation topic: “*The Spin Seebeck Effect in Magnetic Insulating Oxides*”
Advisors: Dr. Arunava Gupta & Dr. Gary J. Mankey
- **B.S. in Physics, Central China Normal University, Wuhan, China** 2008 – 2012

RESEARCH EXPERIENCE

Department of Physics, The Ohio State University 2020 – Present
Postdoctoral Researcher Columbus, OH

Topic: Terahertz Spintronics with Antiferromagnetic Insulators

- Grew pitaxial magnetic films and heterostructures using off-axis sputtering
- Patterned micro/nano-scale structures via photolithography technique
- Characterized samples’ structural, electrical, magnetic, and spin transport properties with multiple devices (XRD, AFM, FMR, VSM, etc.)
- Investigated high frequency dynamics and switching of antiferromagnet insulator based structures

Center for Materials for Information Technology 2014 – 2019
Graduate Research Assistant Tuscaloosa, AL

- Proposed research plans, including literature review and summary, experimental design and implementation
- Managed the lab of the research group, including maintenance and replacement of PLD system, purchasing consumables and training other group members
- Achieved higher quality thin films (e.g. NiFe_2O_4) using PLD technique by consecutively optimizing deposition parameters, such as temperature, pressure, laser shot energy and time, lattice mismatch, etc.
- Completed multiple characterizations on thin films with multiple techniques, such as XRD and SEM for thickness, AFM and SEM for surface condition, VSM, MOKE and FMR for magnetic properties, etc.
- Advanced the understanding the fundamental physics principles of affecting thin film’s magnetic properties based on massive data analysis of dozens of samples
- Developed a new alternative vectorial magnetometry for studying magnetization reversal on thin films using the voltage signals of the spin Seebeck effect measurement from two perpendicular directions

TEACHING EXPERIENCE

Department of Physics & Astronomy

2013 – 2019

Graduate Teaching Assistant

Tuscaloosa, AL

- Conducted introductory physics lab courses and helped students grasp basic physics concepts effectively, designed quizzes, led lab experiments, and answered students' questions during weekly office hours
- Designed quizzes for undergraduates, designed and directed lab experiments
- Gave students guidance in studying physics during office hour

PROJECTS

Built a Temperature Control PID LabVIEW Program for Spin Seebeck Effect

2019

Project Leader

Tuscaloosa, AL

- Proposed comprehensive plans, discussed with group members, purchased related devices
- Implemented and customized the basic driver modules' code for thermocouple devices from NI company, and integrated modified codes to the new designed LabVIEW program
- Debugged the LabVIEW program and tuned PID parameters for temperature feedback control by manual adjustment and auto tune program (temperature fluctuation < 0.5 °C)

Built a Laser Positioning LabVIEW Program for Pulsed Laser Deposition

2015

Project Leader

Tuscaloosa, AL

- Proposed comprehensive plans, including literature review, discussion with group members, assessment of the technical and economic feasibility
- Implemented and customized the basic driver modules' code for the motor devices from the company, and integrated modified codes to the new designed LabVIEW program
- Debugged and improved consecutively the LabVIEW program by conducting model and experiment cross-talk testing of laser shot on one-inch diameter target
- Summarized all functions of the program and future possible improvements

HONORS / AWARDS

- Outstanding Poster Award in Center for Materials for Information Technology, UA 2017
- Robert E. Gross Lockheed Fellowship in Physics, UA 2014
- Excellent Student Award, CCNU 2009, 2010, 2011

CONFERENCES / TALKS / POSTERS

- "Vectorial Observation of Spin Seebeck Effect in NiFe_2O_4 Thin Films of Different Crystal Orientations"
MINT Fall Review and Workshop, Tuscaloosa, AL 2018

- “Vectorial Observation of Spin Seebeck Effect in NiFe_2O_4 Thin Films”
InterMAG Conference, Singapore 2018
- “Vectorial Observation of Spin Seebeck Effect in NiFe_2O_4 Thin Films”
MINT Fall Review and Workshop, Tuscaloosa, AL 2017
- “Enhanced Magnetic Properties and Spin Seebeck Effect in Epitaxial Nickel Ferrite Thin Films Grown on Lattice-Matched Substrates”
Conference on Magnetism and Magnetic Materials, New Orleans, LA 2016
- “Structural Characterization and Magnetic Properties of Epitaxial Ce-YIG Thin Films”
MINT Fall Review and Workshop, Tuscaloosa, AL 2016
- “A Hybrid Deposition System for Materials Science Research”
MINT Fall Review and Workshop, Tuscaloosa, AL 2015
- “Enhanced Magneto-optic Kerr Effect and FMR of Ce-YIG Thin Films”
MINT Fall Review and Workshop, Tuscaloosa, AL 2015
- “A Hybrid Pulsed Laser Deposition / Chemical Vapor Deposition System for Nanostructure Fabrication”
MINT Fall Review and Workshop, Tuscaloosa, AL 2014

PUBLICATIONS

1. S. Regmi, Z. Li, A. Srivastava, R. Mahat, S. KC, A. Rastogi, T. Mewes, A. Gupta, *Structural Characterization, Magnetic Properties, and Spin Transport in Nickel Ferrite Thin Film Grown on Lattice Matched Substrates*, [Appl. Phys. Lett. 118, 152402 \(2021\)](#).
2. R. Mahat, S. KC, D. Wines, S. Regmi, U. Karki, Z. Li, F. Ersan, J. Law, C. Ataca, V. Franco, A. Gupta, P. LeClair, *Influence of Cr-substitution on the structural, magnetic, electron transport, and mechanical properties of $\text{Fe}_{3-x}\text{Cr}_x\text{Ge}$ Heusler alloys*, [J. Magn. Magn. Mater. 521, 167398 \(2021\)](#).
3. A. Rastogi,[†] Z. Li,[†] A. V. Singh, S. Regmi, T. Peters, P. Bougiatioti, D. Carsten né Meier, J. B. Moham-madi, B. Khodadadi, T. Mewes, R. Mishra, J. Gazquez, A. Y. Borisevich, Z. Galazka, R. Uecker, G. Reiss, T. Kuschel, A. Gupta, *Enhancement in Thermally Generated Spin Voltage at $\text{Pd}/\text{NiFe}_2\text{O}_4$ Interfaces with Growth on Lattice-Matched Substrates*, [Phys. Rev. Appl. 14, 014014 \(2020\)](#). (Co-first author)
4. Z. Li,[†] J. Kriefft,[†] A. V. Singh, S. Regmi, A. Rastogi, A. Srivastava, Z. Galazka, T. Mewes, A. Gupta, T. Kuschel, *Vectorial Observation of the Spin Seebeck Effect in NiFe_2O_4 Thin Films of Different Crystal Orientations*, [Appl. Phys. Lett. 114, 232404 \(2019\)](#). (Co-first author)
5. P. Zhou, A. V. Singh, Z. Li, M. A. Popov, Y. Liu, D. A. Filippov, T. Zhang, W. Zhang, P. J. Shah, B. M. Howe, M. E. McConney, G. Srinivasan, M. R. Page, and A. Gupta, *Magnetoelectric Interactions in Composites of Ferrite Films on Lattice-Matched Substrates and Ferroelectrics*, [Phys. Rev. Appl. 11, 054045 \(2019\)](#).
6. Z. Li, A. V. Singh, A. Rastogi, J. Gazquez, A. Y. Borisevich, R. Mishra, A. Gupta, *High-resolution structural characterization and magnetic properties of epitaxial Ce-doped yttrium iron garnet thin films*,

[Mater. Res. Express 4, 076101 \(2017\).](#)

7. S. Xiao, T. Liu, C. Zhou, X. Jiang, L. Cheng, Y. Liu, [Z. Li](#), *Strong interaction between graphene and localized hot spots in all-dielectric metasurfaces*, [J. Phys. D: Appl. Phys. 52, 385102 \(2019\).](#)
8. S. Xiao, T. Liu, L. Cheng, C. Zhou, X. Jiang, [Z. Li](#), C. Xu, *Tunable anisotropic absorption in hyperbolic metamaterials based on black phosphorous/dielectric multilayer structures*, [J. Light. Technol. 37, 13 \(2019\).](#)
9. S. Xiao, T. Wang, T. Liu, X. Yan, [Z. Li](#), C. Xu, *Active modulation of electromagnetically induced transparency analogue in terahertz hybrid metal-graphene metamaterials*, [Carbon 126, 271-278 \(2018\).](#)