
Xiaoyu Che

112F University Village, Ames, Iowa 50011
(C) 215-692-9948 (E) xche@iastate.edu

Career Objective

Obtain a PhD degree after graduation and get involved in academic research field

Education

- 2011-2014 **Iowa State University** – Ames, Iowa, USA
Bachelor of Science: Electrical Engineering
Cumulative GPA: 3.91
- 2009-2011 **University of Electronic Science and Technology of China** – Chendu, Sichuan, China
Electrical Engineering

Research Experience

Jan.2012-Present **Undergraduate Research Assistant, Microelectronic Research Center (MRC), Iowa State University, Ames, Iowa**

Synthesis of topological insulator bulk crystals using tube furnace

- Synthesize Cd/Sb/Gd/Cr doped Bi₂Se₃ crystals. Achieve reduced bulk resistivity by introducing Sb dopants.
- Synthesize Sb/Cr/Mn doped Bi₂Te₃ crystals. Achieve ferromagnetism by introducing Cr dopants
- Synthesize Cr doped SnTe crystals and find high Curie temperature

Application of Molecular Beam Epitaxy (MBE)

- Synthesize high quality Bi₂Te₃ thin films on mica substrate
- Synthesize Sb₂Te₃ thin films on mica substrate and manipulate the band structure by introducing Bi dopant

Application of Probe Station

- Set up a probe station system
- Develop a program for IV measurement using LabView SignalExpress
- Develop a program for CV measurement using Matlab
- Investigate the IV characteristics of the TI samples using probe station

Other Work

- Set up a Chemical Vapor Deposition (CVD) system
- Prepare the thin films in standard Hall bar on sample holders for electron transport measurements using Physical Property Measurement System (PPMS)
- Characterize the surface topography of the thin films using Atomic Force Microscopy

Jul.2013-Aug.2013 **Associated Researcher, Fudan University, Shanghai, China.**

Synthesis of nanostructures using Chemical Vapor Deposition (CVD)

- Synthesize Bi₂Se₃/Bi₂Te₃ nanoplates and introduce In dopant
- Characterize the size/thickness of the nanoplates and exfoliate them for device fabrication

Other Work

- Maintenance work on two refurbished MBE systems (Repairing the source panel, transfer arm, manipulator and control system)
- Electron transport property measurements using PPMS

Publication

K. Wang, Yanwen Liu, Weiyi Wang, N. Meyer, L. H. Bao, L. He, M. R. Lang, Z. G. Chen, **X. Y. Che**, K. Post, J. Zou, D. N. Basov, K. L. Wang, and Faxian Xiu. "High-quality Bi₂Te₃ thin films grown on mica substrates for potential optoelectronic applications". *Applied Physics Letters* 103, (2013): 031605

Technical Proficiency

Programming languages: C, VB, MATLAB, HTML, Verilog

Software: Cadence, ModelSim, LabView Signal Express, Simulink, Multisim

Devices: MBE, CVD, tube furnace, probe station, AFM, photolithography, E-beam evaporator, 4-point probe, Filmetrics

Activities & Awards

- 2012 **Battery balancing project** for *PrISUm Solar Car Team* in ISU
- 2012 **Building a ZVS Flyback Driver** to generate high voltage in *ISU Critical Tinkers*
- 2011 **First Prize** in *E-Promotion Electronic Design Cup* in UESTC
- 2011 **Innovation Funds** for building high voltage generating circuits in UESTC
- 2011 **The Second-Class People's Scholarship** in UESTC
- 2010 **The First-Class People's Scholarship** in UESTC