

# SHUAIDI ZHANG

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## EDUCATION

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**School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, United States**

Ph.D. in Materials Engineering

Aug 2014 – Present

**School of Materials Science and Engineering, Central South University, Changsha, P.R. China**

Bachelor of Science in Materials Sci&Engr

Sept 2010 – Jun 2014

Overall GPA: 3.6/4.0 (Ranking: Top 5%) Major GPA: 3.8/4.0 (Top 3%)

Core courses: Computational Materials Science (97/100, Top 1)/ Quantum Mechanics and Statistic Physics (93, Top 1%)/ Structural Chemistry (88, Top 5%)/ Crystallography (91, Top 1)/ Solid State Physics (94, Top 1%)/ Electronic Materials (94, Top 1)/ Preparation Technology of Materials (93, Top 5%)/ Macromolecular Physics (95, Top 1%)

**School of Electrical & Electronic Engineering, Nanyang Technological University, Singapore**

Exchange Student & Research Assistant

Courses: Fabrication of Micro- & Nano-electronic Devices/ Advanced Manufacturing and Nanotechnology /Nanomaterials & Biomaterials

Sept 2013 – Jan 2014

## STANDARDIZED TESTS

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TOEFL iBT Reading: 30 Listening: 30 Speaking: 26 Writing: 28 Total: 114

GRE 163 (91%) + 169 (97%) + 3.5

## RESEARCH PROJECTS

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### *Theory-Focused:*

**School of Electrical & Electronic Engineering, Nanyang Technological Univ, Singapore**

Advisor: Prof. Changqing Sun

September 2013 – January 2014

Project: **Investigation of Supersolidity in Monolayer Water Molecules**

- Aimed to further advance the H:O van der Waals bond / H-O covalent bond cooperativity theory to fully explain the supersolidity of monolayer H<sub>2</sub>O and its related properties, such as anomalies in thermal conductivity and phonon behavior.

**School of Materials Science and Engineering, Central South Univ**

Advisor: Prof. Weihong Qi

April 2012 – April 2014

Project: **Order-disorder Transition in Bimetallic Nanoalloys**

- Developed a quantitative theoretical model based on Johnson-Mehl-Avrami equations to describe the L1<sub>0</sub>-A1 transition in FePt and CoPt nanoparticles.
- Systematically illustrated the size and shape effect of the nanoparticles on their transition kinetics.
- Predicted the thermodynamic feasibility of O-D transition and its related kinetic energy barrier, which was independently verified by experimental evidences.

### *Experiment-Focused:*

**School of Materials Science and Engineering, Central South Univ**

Advisor: Prof. Anqiang Pan

April 2013 – October 2013

Project: **Preparation of Vanadium Based Advanced Cathode Materials for Lithium Ion Batteries**

- Developed an expedient method to synthesize silver vanadium oxide from vanadyl citrate and silver nitrite using sol-gel technique
- Characterized the as-synthesized Ag<sub>0.33</sub>V<sub>2</sub>O<sub>5</sub> using XRD, SEM and TEM, and revealed the temperature dependence of its morphology and crystallinity.
- Investigated the formation mechanism of silver vanadium oxide during the calcination process using thermal gravimetric analysis and differential scanning calorimetry
- Achieved major improvements in both cycling and specific capacity from previously synthesized silver vanadium oxides.

## School of Materials Science and Engineering, Central South Univ

Advisor: Prof. Zhou Li

April 2012 – September 2013

### Project: **In Situ Synthesis of Nanoparticle Dispersion Strengthened Copper Alloys**

- Synthesized Cu-TiB<sub>2</sub> nanoparticle dispersion strengthened copper alloys using double-beam melts injection technologies.
- Studied the reaction kinetics responsible for the formation of TiB<sub>2</sub>, and unveiled the dependence of the alloy's electric conductivity on the size and distribution of the synthesized nanoparticles.
- Achieved substantial mechanical performance improvements for the prepared alloy, with acceptable loss in electrical conductivity.

## School of Materials Science and Engineering, Central South Univ

Advisor: Prof. Yuchang Su

November 2012 – September 2013

### Project: **The Application of Perovskite Structure in Wave Absorption Nanomaterials**

- Synthesized Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> nanoparticles using hydrothermal method, and attempted lattice atom substitution in the perovskite oxide structure with lanthanide elements.
- Realized control of microstructure morphology in as-synthesized crystals by tuning the concentration of alkali mineralizer.
- Designed absorption spectrum experiment to investigate the electromagnetic radiation absorption properties of the synthesized nanoparticles.

## PUBLICATIONS

- **Shuaidi Zhang**, Weihong Qi, Baiyun Huang, Size Effect on Order-Disorder Transition Kinetics of FePt Nanoparticles, 2014, The Journal of Chemical Physics, Vol.140, 044328, DOI: [10.1063/1.4863350](https://doi.org/10.1063/1.4863350)
- Shuquan Liang, Ya Yu, Tao Chen, Anqiang Pan, **Shuaidi Zhang**, Jiang Zhou, Yan Tang, Xiaoping Tan, Facile Synthesis of Rod-like Ag<sub>0.33</sub>V<sub>2</sub>O<sub>5</sub> Crystallites with Enhanced Cyclic Stability for Lithium Batteries, 2013, Materials Letters, Vol.109, 92-95, DOI: [10.1016/j.matlet.2013.07.063](https://doi.org/10.1016/j.matlet.2013.07.063)
- Yong Pang, Zhou Li, Wenting Qiu, Guang Yang, Tao Xiao, Zhiqi Xiang, Zhu Xiao, Haigen Wei, Leinuo Shen, **Shuaidi Zhang**, Fabrication of W-20wt.%Cu alloy by mechanical alloying and hot pressing sintering, submitted to Materials Science and Engineering: A

## HONORS AND AWARDS

- Meretricious Winner of the Interdisciplinary Contest in Modeling (ICM) (121/957 Worldwide) 2013
- First Prize in National English Contest for College Students (Top 0.6% Nationwide) 2012
- Sapa Fellowship (Top30/~5000 in the whole school) 2013
- Academic Fellowship (Top 20/~450 in the whole school) 2010-2013
- CSU outstanding student (Top 5% in the whole school) 2012
- CSU outstanding graduate (Top 3% in the whole school) 2014

## PROFESSIONAL SKILLS

Programming and Software: Proficient user of Matlab, Materials Explorer, LAMMPS Molecular Dynamics Simulator

Experimental Techniques: Solid-state Sintering, Hydrothermal Synthesis, Qualified practitioner of X-Ray Diffraction Analysis, Transmission Electron Microscopy, Scanning Electron Microscopy, Thermal Gravimetric Analysis, Differential Scanning Calorimetry, Raman Spectroscopy