

# TANGHONG YI

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## SKILLS AND ABILITIES

**Characterization** Single crystal and powder X-ray diffraction (XRD), thermogravimetry (TG), differential scanning calorimetry (DSC), scanning electron microscopy (SEM), transmission electron microscopy (TEM), inductively coupled plasma mass spectrometry (ICP-MS), Fourier transform infrared spectroscopy (FTIR), ultraviolet-visible spectroscopy (UV-Vis), magnetic property measurement system (MPMS), multi-channel battery cycler, transport properties measurement

**Sampling** Synthesizing nanostructured bulk materials with mechanochemical/ball milling method  
Fabricating nanoparticles using colloidal synthetic process with Schlenk line  
Conducting conventional solid state reaction  
Growing crystals with flux method  
Densifying metal alloys and ceramics by spark plasma sintering (SPS)  
Working with air-sensitive materials

## EDUCATION

Ph.D., Chemistry, University of California Davis, June 2012

M.S., Materials Science, University of New Orleans, September 2007

B.S., Materials Science and Engineering, University of Science and Technology of China (USTC), June 2005

## RESEARCH EXPERIENCE

July 2012 - present Lawrence Berkeley National Laboratory, Berkeley, CA

- Explore new materials of fluorides and oxyfluorides with solid state and colloidal methods for battery application

September 2007 – June 2012 University of California Davis, Davis, CA

- Developed new synthetic routines to synthesize high performance thermoelectric materials
- Investigated new Zintl phases as potential thermoelectric materials
- Characterized and analyzed crystal structures, transport and magnetic properties of novel materials

July 2006 – September 2007 University of New Orleans, New Orleans, LA

- Studied the structure changes of cathode materials for lithium-ion batteries
- Explored a new method of synthesizing  $\text{LiNiPO}_4$  and investigated the delithiation chemically

January 2006 – July 2007 Lawrence Berkeley National Lab, Berkeley, CA

- Examined the phase transitions of  $\text{Li}_x\text{CoO}_2$  with delithiation

September 2005 – December 2005 Massachusetts Institute of Technology, Cambridge, MA

- Conducted the safety study of lithium ion batteries

September 2003 – June 2005 University of Science and Technology of China, Hefei, Anhui, China

- Investigated electrolyte additives to improve the safety of lithium ion batteries
- Synthesized CuO and Cu nanoparticles using electrochemical method with batteries

## OTHER EXPERIENCE

- Worked effectively in collaborated projects, contributed to well-coordinated collaborations from sample preparation, data analysis to progress report and publications
- Initiated projects and managed undergraduates working for the projects
- In charge of the instruments in the lab, trained lab mates with the use of instruments
- Volunteer for chemistry department for recruiting potential graduate students, 2010-2011
- Mentored three undergraduate students, two high school students, and a visiting scholar in the lab, 2008-2011
- Two years teaching assistant in general chemistry lab at University of California Davis, 2007-2009

## SELECTED PRESENTATIONS

- 2011 *242<sup>th</sup> American Chemical Society National Meeting & Exposition*, Denver, CO, USA  
Poster: Transport and Magnetic Properties of Te doped Yb<sub>14</sub>MnSb<sub>11</sub>
- 2011 *The 30<sup>th</sup> International Conference on Thermoelectrics*, Traverse City, MI, USA  
Oral: Enhancement of Thermoelectric Efficiency of Mg<sub>2</sub>Si with Si Nanocomposites
- 2010 *Gordon Research Conferences Solid State Chemistry*, New London, NH, USA  
Poster: Transport Properties of New Rare-Earth Phosphide Zintl Phases: Eu<sub>3</sub>Ga<sub>2</sub>P<sub>4</sub> and Eu<sub>3</sub>In<sub>2</sub>P<sub>4</sub>
- 2010 *2010 Materials Research Society Spring Meeting*, San Francisco, CA, USA  
Poster: Transport Properties of a New Rare-Earth Phosphide Zintl Phases: Eu<sub>3</sub>Ga<sub>2</sub>P<sub>4</sub>
- 2009 *13<sup>th</sup> International IUPAC Conference on High Temperature Materials Chemistry*, Davis, CA, USA  
Oral: New Zintl Phase CaFe<sub>4</sub>As<sub>3</sub> for Thermoelectric Applications

## SELECTED PUBLICATIONS

1. **Yi, T.**; Chen, S. P.; Bux, S. K.; Fleurial, J.-P.; Bian, Z.; Mingo, N.; Shakouri, A.; Kauzlarich, S. M., Enhancement of Thermoelectric Efficiency in Mg<sub>2</sub>Si with Si Nanocomposites. *J. Mater. Chem.* **2012**, 22, 24805-24813
2. **Yi, T.**; Tsujii, N.; Cox, C.; Zevalkink, A.; Fleurial, J.-P.; Snyder, G. J.; Kauzlarich, S. M., Transport Properties of Two Rare-Earth Zintl Phases Eu<sub>3</sub>Ga<sub>2</sub>P<sub>4</sub> and Eu<sub>3</sub>In<sub>2</sub>P<sub>4</sub>. *In preparation.*
3. **Yi, T.**; Klavins, P.; Makhmudov, F.; Abdusalyamova, M. N.; Kauzlarich, S., Transport and Magnetic Properties of Te Doped Yb<sub>14</sub>MnSb<sub>11</sub>. *J. Mater. Chem.* **2012**, 22, 14378-14384
4. **Yi, T.**; Dioguardi, A. P.; Klavins, P.; Curro, N. J.; Zhao, L. L.; Morosan, E.; and Kauzlarich, S. M., Synthesis and Thermal Stability Studies of CaFe<sub>4</sub>As<sub>3</sub>. *Eur. J. Inorg. Chem.*, **2011**, 3920-3925.
5. **Yi, T.**; Cox, C. A.; Toberer, E. S.; Snyder, G. J.; Kauzlarich, S. M., High-Temperature Transport Properties of the Zintl Phases Yb<sub>11</sub>GaSb<sub>9</sub> and Yb<sub>11</sub>InSb<sub>9</sub>. *Chem. Mater.*, **2010**, 22, 935-941.
6. Zhao, L.; **Yi, T.**; Fettinger, J. C.; Kauzlarich, S. M.; Morosan, E., Fermi-Liquid State and Enhanced Electron Correlations in the Iron Pnictide CaFe<sub>4</sub>As<sub>3</sub>. *Phys. Rev. B*, **2009**, 80, 020404(R).
7. Gabrisch, H.; **Yi, T.**; and Yazami, R., Transmission Electron Microscope Studies of LiNi<sub>1/3</sub>Mn<sub>1/3</sub>Co<sub>1/3</sub>O<sub>2</sub> before and after Long-Term Aging at 70 °C. *Electrochem. Solid-State Lett.*, **2008**, 11 (7) A119-A124.
8. **Yi, T.**; Kombolias, M.; Gabrisch; H., Investigation of Li<sub>x</sub>CoO<sub>2</sub> Phases Produced by Heat Treatment of Delithiated LiCoO<sub>2</sub> Powders. *ECS Trans.* **2007**, 3, (36) 145.
9. Zhang, D. W.; **Yi, T. H.**; Chen, C. H., Cu Nanoparticles Derived from CuO Electrode in Lithium Cells. *Nanotechnology*, **2005**, 16(10), 2338-2341.