Curriculum Vitae

First name: Wei **Surname: Liu**

Personal Information

Date of Birth: August 11, 1985

Gender: Male

Citizenship: Chinese

Current Address

High Performance Thermoelectric Materials Laboratory, State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology (WUT), Wuhan 430070, China.

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Education

PhD, Material Science, in progress (September 2009 to July 2012)

Affliation: State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology (WUT)

Major: New Energy Materials

Advisor: Prof. Xinfeng Tang

Master of Science, Material Science, (September 2006 to July 2009)

Affliation: State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology (WUT)

Major: Materials Science

Advisor: Prof. Xinfeng Tang

Bachelor of Science, Material Science & Engineering, (September 2002 to July 2006)

Affliation: Department of Material Science & Engineering, Wuhan University of Technology (WUT)

Major: Material Science & Engineering

Advisor: Professor Hao Wang

Research Interest in PhD's Period

- Preparation and thermoelectric transport properties characterization of $Mg_2Si_{1-x}Sn_x$ based solid solutions
- The exploration of electrode materials regarding $Mg_2Si_{1-x}Sn_x$ based solid solutions, including thermal expansion coefficient matching and low contact resistance between $Mg_2Si_{1-x}Sn_x$ and electrodes, along with their high temperature thermal stability
- Microstructure analysis, including SEM, HRTEM and EPMA characterisation
- Correlation among the compositions, microstructure, band structure and related properties

Skills

- Solid background on material science and engineering
- Rich experience in preparation with solid-state reaction technique; familiar with synthesizing nanostructured materials through melt-spining and ball milling
- Skillfully in analyzing SEM, EPMA, HRTEM and SEAD results, as well as electrical and thermal transport properties
- Familiar with handling and maintaining a Physical Properties Measurement System (PPMS-9)
- Acquainted with the management and use of lab equipments

Honors & Awards

- 2011-2012 ***Excellent Doctoral Graduate*** awarded by WUT

Excellent Paper awarded by WUT

- 2009-2010 ***Outstanding Graduate Student*** awarded by WUT

  Excellent Paper awarded by WUT

- 2006-2008 ***Outstanding Graduate Student*** awarded by WUT

- 2002-2006 ***National Stipend*****,** awarded by Chinese Education Department

  Second-class Scholarship, Outstanding Student awarded by WUT

  Third-class Scholarship, Outstanding Student awarded by Department of Material Science & Engineering, WUT

Participated Research Projects

- National Basic Research Program of China (Grant No. 2007CB607501)
- Cooperative Project between Marlow Industries, Inc. and Wuhan University of Technology; from September 2007 to present
- Natural Science Foundation of China (Grant No. 51172174)
- International Science & Technology Cooperation Program of China (Grant No. 2011DFB60150)
- 111 project of China (Grant No. B07040)
- Natural Science Foundation of China (Grant No. 50731006)
- Natural Science Foundation of China (Grant No. 50672118)
- Natural Science Foundation of China (Grant No. 51002112)

Professional membership and service

2009- Member, International Thermoelectric Society

2009- Member, Chinese Materials Research Society

Publications

1. **Wei Liu**, Xiaojian Tan, Kang Yin, Huijun Liu, Xinfeng Tang, Jing Shi, Qingjie Zhang and Ctirad Uher, Convergence of conduction bands as a means of enhancing thermoelectric performance of n-type $Mg_2Si_{1-x}Sn_x$ solid solutions, ***Physical Review Letters*****, 2012, 108, 166601**.

2. **Wei Liu**, Xinfeng Tang, Han Li, Jeff Sharp, Xiaoyuan Zhou, and Ctirad Uher, Optimized thermoelectric properties of Sb-doped $Mg_{2(1+z)}Si_{0.5-y}Sn_{0.5}Sb_y$ through adjustment of the Mg content, ***Chemistry of Materials*, 2011, 23, 5256-5363**.
3. **Wei Liu**, Xinfeng Tang and Jeff Sharp, Low-temperature solid state reaction synthesis and thermoelectric properties of high-performance and low-cost Sb-doped $Mg_2Si_{0.6}Sn_{0.4}$, ***Journal of Physics D: Applied Physics*, 2010, 085406**.
4. **Wei Liu**, Qiang Zhang, Xinfeng Tang et al., Thermoelectric properties of Sb-doped $Mg_2Si_{0.3}Sn_{0.7}$, ***Journal of Electronic Materials*, 2011, DOI: 10.1007/s11664-011-1541-0**.
5. Xiaoyuan Zhou, Guoyu Wang, **Wei Liu** et al., Thermoelectric Performance of Sb- and La-Doped $Mg_2Si_{0.5}Ge_{0.5}$, ***Journal of Electronic Materials***, **2012, DOI: 10.1007/s11664-012-2018-5**.
6. **Wei Liu**, Xinfeng Tang, Han Li, Kang Yin, Jeff Sharp, Xiaoyuan Zhou and Ctirad Uher, Enhanced thermoelectric properties of n-type $Mg_{2.16}(Si_{0.4}Sn_{0.6})_{1-y}Sb_y$ due to nano-sized Sn-rich precipitates and optimized electron concentration, 2012, submitted to ***Journal of Materials Chemistry***, under review (**minor revision**).
7. **Wei Liu**, Kang Yin, Xianli Su, Han Li, Yanyong Gao, Xinfeng Tang, and Ctirad Uher, Enhanced hole concentration through Ga doping and excess of Mg and thermoelectric properties of p-type $Mg_{2(1+z)}(Si_{0.3}Sn_{0.7})_{1-y}Ga_y$, 2012, submitted to ***Intermetallics***, under review.
8. Xiaojian Tan, **Wei Liu**, Huijun Liu , Jing Shi and Xinfeng Tang, Multi-scale simulation of thermoelectric properties for *n*-type $Mg_2Si_{1-x}Sn_x$ ($0.25 \leq x \leq 0.875$) solid solutions, 2012, submitted to ***Physical Review B***.
9. **Wei Liu**, Xinfeng Tang, Han Li, Qiang Zhang, Gen Chen, and Ctirad Uher, Enhanced thermoelectric properties of $Mg_{2.16}(Si_{1-x}Sn_x)_{1-y}Bi_y$ (y=0.6 and 0.7) due to optimized electron concentration and conduction band structure, 2012, preparing for submission.
10. **Wei Liu**, Xinfeng Tang, Han Li, Kang Yin, and Ctirad Uher, The role of changed existential states of excess Mg, and effective enhancement on electrical

properties of $Mg_{2(1+z)}(Si_{0.3}Sn_{0.7})_{1-y}Sb_y$ through cooperative control of Mg content and Sb doping amount, 2012, preparing for submission.

11. **Wei Liu**, Xinfeng Tang, Han Li, Qiang Zhang, Yun Zheng, and Ctirad Uher, Thermal stability and mechanical properties of $Mg_2Si_{1-x}Sn_x$ based solid solutions with the potential to be utilized in power generation, 2012, preparing for submission.

Conferences

1. **Wei Liu**, Xinfeng Tang and Jeff Sharp, "Low-temperature solid state reaction synthesis and thermoelectric properties of high-performance, Sb-doped $Mg_2Si_{0.6}Sn_{0.4}$", **ICT 2009, Freiburg, Germany**.
2. **Wei Liu**, Xinfeng Tang and Jeff Sharp, "Composition optimization and high-performance, Sb-doped $Mg_2Si_{0.5}Sn_{0.5}$", **ICT 2010, Shanghai, China**.
3. **Wei Liu**, Xinfeng Tang, Ctirad Uher, "Cooperative adjustment of Ga amount and Mg content and enhanced electrical conductivity of $Mg_{2(1+z)}(Si_{0.3}Sn_{0.7})_{1-y}Ga_y$", **ICT 2011, Traverse City, Michigan, America**.

Titles and Locale of Presentations Given in the Last 24 Months

1. **Wei Liu**, Xinfeng Tang and Jeff Sharp, "Composition optimization and high-performance, Sb-doped $Mg_2Si_{0.5}Sn_{0.5}$", **ICT 2010, Shanghai, China**.
2. **Wei Liu**, Xinfeng Tang, Ctirad Uher, "Cooperative adjustment of Ga amount and Mg content and enhanced electrical conductivity of $Mg_{2(1+z)}(Si_{0.3}Sn_{0.7})_{1-y}Ga_y$", **ICT 2011, Traverse City, Michigan, America**.