

Xun Shi

1295 Dingxi Road

Shanghai, P. R. China

Tel: 001-13818710650

ylxshi@gmail.com

Name: Xun Shi
Sex: Male
Date of birth: July 22, 1976

➤ **EDUCATION**

1995.9-2000.7 Bachelor in Material Science and Engineering, Tsinghua University, Beijing, China
2000.9-2005.7 Doctor of Philosophy in Material Science and Engineering, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

➤ **POSITIONS**

2000.9-2005.10 Research Assistant, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China
2005.11-2007.9 Postdoctor, Department of Physics, University of Michigan, Ann Arbor, Michigan, USA
2007.10-2010.3 Material Processing Scientist, Optimal Incorporated, Plymouth, Michigan, USA
2010.4-present Professor, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

➤ **PROFESSIONAL MEMBERSHIP AND SERVICE**

2007-present Member, American Physical Society
2007-2008 Full Member, Sigma Xi
2008-present Member, International Thermoelectric Society
2008-2009 Member, The Minerals, Metals & Materials Society
2009-present Member, Materials Research Society

➤ **PATENT**

1. Yang J., Meisner G.P., Chen L. D, and **Shi X.**, “Method of Improving Figure of Merit of High Efficiency Thermoelectric Materials”, US Patent, Office Serial # 10/836643.
2. Yang J., **Shi X.**, Ctirad U., Chen L., Bai S. Q., and Zhang W., “High Efficiency Skutterudite Type Thermoelectric Materials and Devices” US Patent, Office Serial # 61/036715.
3. Yang J., **Shi X.**, Chen L., Bai S. Q., and Zhang W., “Thermoelectric Material Including a Filled Skutterudite Crystal Structure” US Patent, GM Office number P008792-RD-MJL.

4. Yang J., **Shi X.**, Chen L., and Zhang W., “Thermoelectric Material Including a Multiple Transition Metal Doped Type-I Clathrate Crystal Structure” US Patent, GM Office number P008791-RD-MJL.
5. Chen L. D., **Shi X.**, Huang X. Y., Wang D. L., Bai S. Q., Yao Q., Jiang J., “Sample Holder and Temperature Controlling Equipment for the Measurement of Seebeck Coefficient”, China Patent, No. ZL200420110412.2.
6. Chen L. D., **Shi X.**, Bai S. Q., “Method of Improving Figure of Merit of High Performance $Ba_yCo_4Sb_{12}$ -based Thermoelectric Materials”, China Patent, Application No. 200410025544.x.
7. **Shi X.**, Chen L. D., Huang X. Y., Wang D. L., Bai S. Q., Yao Q., Jiang J., “Method and System for the Measurement of Seebeck coefficient under Non-thermal-equilibrium State”, China Patent, Application No. 200410084659.6.
8. Chen L. D., Fan J. F., Bai S. Q., **Shi X.**, “Method for the Fabrication of Electrode of $CoSb_3$ -based Thermoelectric Element”, China Patent, Application No. 10024777.8.
9. Chen L. D., Zhao X. Y., Bai S. Q., **Shi X.**, “Method of Synthesizing Filled Skutterudite-based Thermoelectric Composites”, China Patent, Application No. 200610027340.9.

➤ **REFEREED PUBLICATIONS**

■ **First Author’s**

1. **Shi X.**, Chen L. D., Bai S. Q., Huang X. Y., Tang X. F., “Effect of C_{60} Particle Dispersion on the Thermoelectric Performance of $CoSb_3$ ”, 21th *Proc. Inter. Conf. on Thermoelectrics* 68-71 (2002).
2. **Shi X.**, Chen L., Bai S. Q., Tang X. F., “Effect of C_{60} Particle Dispersion on Thermal Conductivity of $CoSb_3$ ”, *Key Eng. Mater.* Vol. 249, 75-78 (2003).
3. **Shi X.**, Chen L., Yang J., Meisner G. P., “Enhanced Thermoelectric Figure of Merit of $CoSb_3$ via Large-defect Scattering”, *Appl. Phys. Lett.* 84, 2301-2303 (2004).
4. **Shi Xun**, Chen Li-Dong, Bai Sheng-Qiang, and Tang Xin-Feng, “Synthesis and Thermoelectric Properties of $CoSb_3/C_{60}$ Composites”, *Acta Physica Sinica* 53, 1469-1473 (2004). (in Chinese).
5. **Shi X.**, Zhang W., Chen L. D., Yang J., “Filling Fraction Limit for Intrinsic Voids in Crystal: Doping in Skutterudites”, *Phys. Rev. Lett.* 95, 185503 (2005).
6. **Shi X.**, Chen L., Bai S. Q., Zhang W. B., Zhao X. Y., “Electrical and Thermal Transport Properties of Ba_6C_{60} Compound”, *Physica B* 369, 23-32 (2005).
7. **Shi X.**, Zhou Z., Zhang W., Chen L. D., Yang J., and Uher C., “Solid Solubility of Ir and Rh at the Co Site of Skutterudites”, *J. Appl. Phys.* 101, 123525 (2007).
8. **Shi X.**, Zhang W., Chen L. D., Yang J., and Uher C., “Theoretical Study of the Filling Fraction Limits for Impurities in $CoSb_3$ ”, *Phys. Rev. B* 75, 235208 (2007).
9. **Shi X.**, Chen L. D., Bai S. Q., Huang X. Y., Zhao X. Y., Yao Q., and Uher C., “Influence of Fullerene Dispersion on High Temperature Thermoelectric Properties of $Ba_yCo_4Sb_{12}$ -based Composites”, *J. Appl. Phys.* 102, 103709 (2007).

10. **Shi X.**, Zhang W., Chen L. D., Yang J., and Uher C., “Thermodynamic Analysis of the Filling Fraction Limits for Impurities in CoSb₃ based on *ab initio* Calculations”, *Acta Mater.* 56, 1733-1740 (2008).
11. **Shi X.**, Kong H., Li C.-P., Yang J., Salvador J. R., Wang H., Uher C., Chen L., and Zhang W., “Low Thermal Conductivity and High Thermoelectric Figure of Merit in *n*-type Ba_xYb_yCo₄Sb₁₂ Double-Filled Skutterudites”, *Appl. Phys. Lett.* 92, 182101 (2008).
12. **Shi X.**, Zhang W., Chen L. D., and Uher C., “Phase-diagram-related Problems in Thermoelectric Materials: Skutterudite as an example”, *Int. J. Mater. Res.* 99, 638-643 (2008).
13. **Shi X.**, Salvador J. R., Yang J., and Wang H., “Thermoelectric Properties of *n*-type Multiple-filled Skutterudites”, *J. Elec. Mater.* 38, 930-933 (2009).
14. **Shi X.**, Yang J., Bai S., Yang J., Wang H., Salvador J. R., Zhang W., Chen L., Wong-Ng Winnie, “On the Design of High Efficiency Thermoelectric Clathrates through a Systematic Cross-substitution of Framework Elements”, *Adv. Func. Mater.* 20, 755-763 (2010).
15. **Shi X.**, Cho J. Y., Yang J., Wang H., Salvador J. R., Meinser G. P., “Thermoelectric Transport Properties of In₄Se₃ and In₄Te₃ Polycrystalline Compounds”, *Appl. Phys. Lett.* (accepted)
16. **Shi X.**, Yang J., Wang H., Chi M., Salvador J. R., Yang J., Bai S., Zhang W., Chen L., and Copley J., “Phonon-glass Materials with High Thermoelectric Performance” *Nat. Mater.* (submitted).

■ Other Papers

17. Chen L. D., Jiang J., **Shi X.**, “Thermoelectric Performance of Textured Bi₂Te₃-based Sintered Materials Prepared by Spark Plasma Sintering”, *Mat. Res. Soc. Symp. Proc.* Vol. 793, S9.3.1-S9.3.9 (2004).
18. Fan Junfeng, Chen Lidong, Bai Shengqiang, **Shi Xun**, “Joining of Mo to CoSb₃ by Spark Plasma Sintering by Inserting a Ti Interlayer”, *Mater. Lett.* 58, 3876-3878 (2004).
19. Yao Q., Wang D. L., Chen L. D., **Shi X.**, and Zhou M., “Effects of Partial Substitution of Transition Metals for Cobalt on the High-temperature Thermoelectric Properties of Ca₃Co₄O₉₊₅”, *J. Appl. Phys.* 97, 103905 (2005).
20. Chen L. D., Huang X. Y., Zhou M., **Shi X.**, Zhang W. B., “The High Temperature Thermoelectric Performance of Zr_{0.5}Hf_{0.5}Ni_{0.8}Pd_{0.2}Sn_{0.99}Sb_{0.01} Alloy with Nanophase Inclusions”, *J. Appl. Phys.* 99, 064305 (2006).
21. Zhao X. Y., **Shi X.**, Chen L. D., Zhang W. Q., Zhang W. B., and Pei Y. Z., “Synthesis and Thermoelectric Properties of Sr-filled Skutterudite Sr_yCo₄Sb₁₂”, *J. Appl. Phys.* 99, 053711 (2006).
22. Zhao X. Y., **Shi X.**, Chen L. D., Zhang W. Q., Bai S. Q., Pei Y. Z., Li X. Y., and Goto T., “Synthesis of Yb_yCo₄Sb₁₂/Yb₂O₃ Composites and Their Thermoelectric Properties”, *Appl. Phys. Lett.* 89, 092121 (2006).
23. Zhang W., **Shi X.**, Mei Z. G., Xu Y., Chen L. D., Yang J., Meisner G. P., “Prediction of an Ultrahigh Filling Fraction for K in CoSb₃”, *Appl. Phys. Lett.* 89, 112105 (2006).

24. Pei Y. Z., Chen L. D., Zhang W., **Shi X.**, Bai S. Q., Zhao X. Y., Mei G. Z., Li X. Y., "Synthesis and Thermoelectric Properties of $K_yCo_4Sb_{12}$ ", *Appl. Phys. Lett.* 89, 221107 (2006).
25. Qin C., **Shi X.**, Bai S. Q., Chen L. D., and Wang L. J., "High Temperature Electrical and Thermal Properties of the Bulk Carbon Nanotube Prepared by SPS", *Mater. Sci. Eng. A* 420, 208 (2006).
26. Zhao J., Zhang W., Li X., Feng J., and **Shi X.**, "Convergence of the Formation Energies of Intrinsic Point Defects in Wurtzite ZnO: First-principles Study by Projector Augmented Wave Method", *J. Phys.: Condens. Matter* 18, 2495 (2006).
27. Kong Huijun, **Shi Xun**, Uher Ctirad, and Morelli Donald, "Thermoelectric Properties of Rare Earth-Ruthenium-Germanium Compounds", *J. Appl. Phys.* 102, 023702 (2007).
28. Drašar Č., Kašparova J., Lošták P., **Shi X.**, and Uher C., "Transport and Magnetic Properties of the Diluted Magnetic Semiconductors $Sb_{1.98-x}V_{0.02}Cr_xTe_3$ and $Sb_{1.984-y}V_{0.016}Mn_yTe_3$ ", *Phys. Stat. Sol. (b)* 244, 2202 (2007).
29. Salvador J. R., **Shi X.**, Yang J., Wang H., "Synthesis and Transport Properties of $M_3Ni_3Zn_4$ ($M = Zr$ and Hf): An Intermetallic Semiconductor", *Phys. Rev. B* 77, 235217 (2008).
30. Uher Ctirad, **Shi Xun**, and Kong Huijun, "Filled $Ir_xCo_{1-x}Sb_3$ -based skutterudite solid solutions", 26th *International Conference on Thermoelectrics* 189-192 (2007).
31. Zhao X. Y., Li X. Y., Chen L. D., Pei Y. Z., Bai S. Q., **Shi X.**, and Goto T., "Effective of Ge Doping on Thermoelectric Properties of $Sr_yCo_4Sb_{12-x}Ge_x$ ", *Jpn. J. Appl. Phys.* 47, 7470-7473 (2008).
32. Salvador J. R., Yang J., **Shi X.**, Wang H., Wereszczak A. A., Kong H., and Uher C., "Transport and Mechanical Properties of Yb-filled Skutterudites", *Philosophical Magazine* 89, 1517-1534 (2009).
33. Salvador J. R., Yang J., **Shi X.**, Wang H., and Wereszczak A. A., "Transport and Mechanical Property evaluation of $(AgSbTe)_{1-x}(GeTe)_x$ ($x=0.80, 0.82, 0.85, 0.87, 0.90$)", *J. Solid Stat. Chem.* 182, 2088-2905 (2009).
34. Beekman M., Salvador J., **Shi X.**, Nolas G. S., and Yang J., "Characterization of delafossite-type $CuCoO_2$ prepared by ion exchange", *J. Alloy Comp.* 489, 336-338 (2010).
35. Salvador J. R., Yang J., **Shi X.**, and Wang H., "Double-Filled Skutterudites of the Type $Yb_xCa_yCo_4Sb_{12}$: Synthesis and Properties", *J. Appl. Phys.* 107, 043705 (2010).

➤ TALKS

1. July 2004. The 23th International Conference on Thermoelectrics, Adelaide, Australia: "Thermoelectric Properties of Ba_xC_{60} compounds".
2. March 2007. March Meeting of the American Physical Society, Denver, Colorado, USA: "High Temperature Thermoelectric Properties of $Ba_xYb_yCo_4Sb_{12}$ Composites".
3. August 2008. The 27th International Conference on Thermoelectrics, Corvallis, Oregon, USA: "Thermoelectric Properties of n -type Multiple-filled Skutterudites".
4. October 2008. Materials Science & Technology 2008 Conference and Exhibition, Pittsburgh, Pennsylvania, USA: "Low and High Temperature Thermoelectric Properties

of *n*-type Multi-filled Skutterudites”.

5. February 2009. Oak Ridge National Lab., Oak Ridge, Tennessee, USA: “Material Design in Advanced Thermoelectric Applications”.
6. April 2009. 2009 MRS Spring Meeting, San Francisco, California, USA: “Novel Type-I Clathrates with Tunable Band Gap”.