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RESEARCH INTERESTS

Spin caloritronics, thermal management, thermoelectrics, lithium ion batteries, crystal growth

EDUCATION

Ph.D., Materials Science and Engineering , The University of Texas at Austin	Dec. 2014
M.S., Materials Science and Engineering , Zhejiang University, China	Apr. 2010
B.S., Materials Science and Engineering (with honor), Southeast University, China	July 2007

PROFESSIONAL EXPERIENCE

Assistant Professor, Department of ECE, UC Riverside Aug. 2019—

Postdoctoral Researcher, UT Austin Jan. 2015—July 2019

Advisors: Li Shi, John B. Goodenough

- *Materials with extraordinary heat/spin coupling*
- *High thermal conductivity materials*
- *Mastering the interface for all-solid-state lithium ion batteries*

Graduate Research Assistant, UT Austin Sept. 2010—Dec. 2014

Ph.D Dissertation: *Synthesis and Thermoelectric Properties of Higher Manganese Silicides for Waste Heat Recovery*
Advisors: Li Shi, Jianshi Zhou

Graduate Research Assistant, Zhejiang University Sept. 2007—Apr. 2010

M.S. Thesis: *Controlled Synthesis of PbTe Nanostructures* Advisors: Tiejun Zhu, Xinbing Zhao

AWARDS AND HONORS

- Professional Development Award, The University of Texas at Austin, USA, 2011, 2014
- Outstanding Student Award and First-Class Scholarship, Zhejiang University, China, 2008, 2009
- Graduate with honors, Southeast University, China, 2007
- Outstanding Student Award, Southeast University, China, 2005

Membership and Services

- Peer reviewer of over 10 journals, including *Advanced Materials*, *Nano Energy*, *Physical Review B*, *Applied Physics Letters*, and *ACS Energy Letters*.
- Members of International Thermoelectric Society, Materials Research Society and American Physical Society

PUBLICATION LIST

23 peer-reviewed papers (including **13 first-authored or co-first-authored**) published in *Science*, *PNAS*, *Nature Communications*, *Physical Review Letters*, *Journal of the American Chemical Society*, *Physical Review B* (editors' suggestion), *Advanced Energy Materials*, and so on

Google Scholar: <https://scholar.google.com/citations?user=hGJq-s0AAAJ&hl=en>

- (1) **X. Chen**, J. Carrete, S. Sullivan, A. Roekeghem, Z. Li, X. Li, J. Zhou, N. Mingo, and L. Shi, "Coupling of Spinons with Defects and Phonons in the Spin Chain Compound Ca₂CuO₃", *Phys. Rev. Lett.*, 122, 185901 (2019).
- (2) **X. Chen**, C. Li, F. Tian, G. Gamage, S. Sullivan, J. Zhou, D. Broido, Z. Ren, and L. Shi, "Thermal Expansion Coefficient and Lattice Anharmonicity of Cubic Boron Arsenide," *Phys. Rev. Applied*, 11, 064070 (2019).
- (3) F. Tian[#], B. Song[#], **X. Chen**[#], N. Ravichandran, Y. Lv, K. Chen, S. Sullivan, J. Kim, Y. Zhou, T.H. Liu, M. Goni, Z. Ding, J. Sun, G. G. U. Gamage, H. Sun, H. Ziyae, S. Huyan, L. Deng, J. Zhou, A. J. Schmidt, S. Chen, C.W. Chu, P. Y Huang, D. Broido, L. Shi, G. Chen, and Z.F. Ren, "Unusual High Thermal Conductivity in Boron Arsenide Bulk Crystals," *Science*, 361, 582 (2018)
- (4) **X. Chen**[#], A. Weathers[#], J. Carrete[#], S. Mukhopadhyay[#], O. Delaire, D. A. Stewart, N. Mingo, S. N. Girard, J. Ma, D. L. Abernathy, J. Yan, R. Sheshka, D. P. Sellan, F. Meng, S. Jin, J. Zhou and L. Shi, "Twisting Phonons in Complex Crystals with quasi-one-dimensional Substructures," *Nat. Commun.*, 6, 6723 (2015)
- (5) **X. Chen**, K. Jarvis, S. Sullivan, Y. T. Li, J. S. Zhou, and L. Shi, "Effects of Grain Boundaries and Defects on Anisotropic Magnon Transport in Textured Sr₁₄Cu₂₄O₄₁," *Phys. Rev. B*, 95, 144310 (2017) [selected as **Editors' Suggestion**; featured in **PRB Kaleidoscopes**]
- (6) **X. Chen**, D. Bansal, S. Sullivan, D. L. Abernathy, A. A. Aczel, J. S. Zhou, O. Delaire, and L. Shi, "Weak Coupling of Pseudoacoustic Phonons and Magnon Dynamics in the Incommensurate Spin Ladder Compound Sr₁₄Cu₂₄O₄₁," *Phys. Rev. B*, 94, 134309 (2016) [selected as **Editors' Suggestion**]
- (7) Y. T. Li[#], W. D. Zhou[#], **X. Chen**[#], X. J. Lv, Z. M. Cui, S. Xin, L. G. Xue, Q. X. Jia, J. B. Goodenough, "Mastering the Interface for Advanced all-solid-state Lithium Rechargeable Batteries," *Proc. Natl. Acad. Sci. USA*, 113, 13313, (2016)
- (8) **X. Chen**, S. Girard, F. Meng, E. Lara-Cruzio, S. Jin, J. B. Goodenough, J. S. Zhou and L. Shi, "Approaching the Minimum Thermal Conductivity in Rhenium-substituted Higher Manganese Silicides," *Adv. Energy Mater.*, 4, 14, 1400452 (2014)
- (9) C. Hu, K. Xia, **X. Chen**^{*} (**corresponding author**), X. Zhao, T. Zhu^{*}, "Transport mechanisms and property optimization of p-type (Zr, Hf)CoSb half-Heusler thermoelectric materials," *Mater. Today Phys.* 7, 69 (2018).
- (10) Y.T. Li, **X. Chen**, A. Dolocan, Z. Cui, S. Xin, L. Xue, H. Xu, K. Park, and J. B. Goodenough, "Garnet Electrolyte with an Ultralow Interfacial Resistance for Li-Metal Batteries," *J. Am. Chem. Soc.*, 140, 6448 (2018)
- (11) J. Xing, **X. Chen**, Y. Zhou, J.C. Culbertson, J. A. Freitas Jr., E. R. Glaser, J.S. Zhou, L. Shi, N. Ni, "Multimillimeter-sized Cubic Boron Arsenide Grown by Chemical Vapor Transport via a Tellurium Tetraiodide Transport Agent," *Appl. Phys. Lett.*, 112, 261901 (2018)
- (12) H. Man, Z. Shi, G. Xu, Y. Xu, **X. Chen**, S. Sullivan, J. S. Zhou, K. Xia, J. Shi, and P. C. Dai,

- “Direct Observation of Magnon-phonon Coupling in Yttrium Iron Garnet,” *Phys. Rev. B Rapid Communication*, 96, 100406 (R) (2017) [selected as **Editors’ Suggestion**]
- (13) K. An, K. S. Olsson, A. Weathers, S. Sullivan, **X. Chen**, X. Li, L. G. Marshall, X. Ma, N. Klimovich, J. S. Zhou, L. Shi, and X.Q. Li, “Magnons and Phonons Optically Driven out of Local Equilibrium in a Magnetic Insulator,” *Phys. Rev. Lett.*, 117, 107202 (2016)
- (14) L. B. Zhang, **X. Chen**, Y. L. Tang, L. Shi, G. J. Snyder, J. B. Goodenough and J. S. Zhou, “Thermal Stability of Mg₂Si_{0.4}Sn_{0.6} in Inert Gases and atomic-layer-deposited Al₂O₃ Thin Film as a Protective Coating,” *J. Mater. Chem. A* 4, 17726 (2016)
- (15) **X. Chen**, J. S. Zhou, J. B. Goodenough and L. Shi, “Enhanced Thermoelectric Power Factor of Re-substituted Higher Manganese Silicides with Small Islands of MnSi Secondary Phase,” *J. Mater. Chem. C*, 3, 10500 (2015) (Invited for ‘themed issue on the chemistry of thermoelectric materials’)
- (16) **X. Chen**, L. Shi, J. S. Zhou and J. B. Goodenough, “Effects of Ball Milling on Microstructures and Thermoelectric Properties of Higher Manganese Silicides,” *J. Alloys Compd.*, 641,30 (2015)
- (17) S. N. Girard, **X. Chen**, F. Meng, A. Pokhrel, J. Zhou, L. Shi, and S. Jin, “Thermoelectric Properties of Undoped High Purity Higher Manganese Silicides Grown by Chemical Vapor Transport,” *Chem. Mater.*, 26, 5097 (2014)
- (18) **X. Chen**, A. Weathers, D. Salta, L. B. Zhang, J. S. Zhou, J. B. Goodenough and L. Shi, “Effects of (Al,Ge)-double Doping on the Thermoelectric Properties of Higher Manganese Silicides,” *J. Appl. Phys.*, 114, 173705 (2013)
- (19) **X. Chen**, A. Weathers, A. Moore, J. S. Zhou and L. Shi, “Thermoelectric Properties of Cold-Pressed Higher Manganese Silicides for Waste Heat Recovery,” *J. Electron. Mater.*, 41, 1564 (2012)
- (20) T. J. Zhu, **X. Chen**, X. Y. Meng, X. B. Zhao and J. He, “Anisotropic Growth of Cubic PbTe Nanoparticles to Nanosheets: Controlled Synthesis and Growth Mechanisms,” *Cryst. Growth Des.*, 10, 3727 (2010)
- (21) **X. Chen**, T. J. Zhu and X. B. Zhao, “Synthesis and Growth Mechanism of Rough PbTe Polycrystalline Thermoelectric Nanorods,” *J. Cryst. Growth*, 311, 3179 (2009)
- (22) T. J. Zhu, **X. Chen**, Y. Q. Cao and X. B. Zhao, “Controllable Synthesis and Shape Evolution of PbTe 3D Hierarchical Superstructures via an Alkaline Hydrothermal Method,” *J. Phys. Chem. C*, 113, 8085 (2009)
- (23) T. J. Zhu, S. H. Yang, **X. Chen**, X. X. Liu, X. B. Zhao, L. Lu, M. O. Lai, “Step-flow Growth of Heteroepitaxial SrRuO₃ Thin Films on 0.04° SrTiO₃ (001) Vicinal Substrates,” *Funct. Mater. Lett.*, 1, 253 (2008)

#contributed equally