



COCKRELL SCHOOL OF ENGINEERING

THE UNIVERSITY OF TEXAS AT AUSTIN

*Materials Science and Engineering Program, Department of Mechanical Engineering •ETC 8.174
204 E. Dean Keeton St. Stop C2200 •Austin, Texas •78712-0292 •(512) 981-8552*

October 21, 2018

Search Committee,
Department of Physics, Texas Tech University

Dear Search Committee,

I am writing to apply for the position of Assistant Professor in the Department of Mechanical Engineering at Iowa State University. After receiving my Ph.D. degree in Materials Science and Engineering in December 2014, I am currently pursuing postdoctoral research at The University of Texas at Austin. I am confident that my research and teaching experiences make me an ideal candidate for this position in your department.

My eleven years of academic training have focused on thermal management materials, thermoelectrics, spin caloritronics, and all-solid-state batteries. My Ph.D. dissertation was conducted in consultation with Profs. Li Shi, Jianshi Zhou and John B. Goodenough, and I investigated thermoelectric (TE) materials/devices based on earth-abundant silicides. As postdoctoral researcher, I am currently investigating the magnetic oxides with unique spin-mediated thermal transport properties. Also, I have discovered ultrahigh thermal conductivity in boron arsenide for thermal management. In addition, I have designed several high-performance all-solid-state lithium ion batteries with novel ceramic oxide electrolytes. My research has resulted in eleven first-authored (including first-coauthored) papers published in *Science*, *Nature Communications*, *PNAS*, *Advanced Energy Materials* and so on. During my eleven years of academic training, I have developed skills in thermal transport properties measurements, single-crystal growth and neutron scattering.

My future research will primarily focus on developing advanced functional bulk and nanomaterials for energy and spintronic applications. I am excited to explore these areas and collaborate with faculty in your department. I believe my experiences in thermoelectrics, spin caloritronics, batteries and thermal management materials match well with the mission of your department and will help you fill a current gap in expertise.

I have experience teaching undergraduate students from Mechanical Engineering, Aerospace Engineering and Chemical Engineering. My teaching interests include *Fundamentals of Physics*, *Solid State Physics*, *Semiconductor Materials and Processing*, etc. Furthermore, I plan to develop some new courses, such as *Nanoscale Energy Transport and Conversion*, *Advanced Energy Materials* and *Fundamentals of Crystal Growth and Design*. I am also open and happy to teach other related courses.

I have enclosed my curriculum vitae, list of publications, research statement, teaching statement and a list of references. Please do not hesitate to contact me if you would like any other materials. Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read 'Xi Chen'.

Xi Chen