**Project Manager Qualifications & Organization Description**

1. **Project Manager Qualifications**

**Xiaojia Wang** is an assistant professor in the Department of Mechanical Engineering at the University of Minnesota (UMN) starting in the fall of 2014. She received her Ph.D. in Mechanical Engineering from the Georgia Institute of Technology in 2011, and her M.E. in 2007 and B.E. in 2004 from Xi'an Jiaotong University, China, all in Mechanical Engineering. She was a postdoctoral research associate in the Department of Materials Science & Engineering at the University of Illinois, at Urbana-Champaign from 2012 to 2014. Her research focuses on the fundamental mechanisms of thermal transport in micro/nano-engineered structures for energy conversion and harvesting, by utilizing the ultrafast pump-probe technique and other optical spectroscopic approaches. She received the 3M Non-Tenured Faculty Award (2018), Innovation Award for poster competition at ASME 2009 IMECE, and the Outstanding Reviewer Award for the *Journal of Quantitative Spectroscopy and Radiative Transfer* in 2014. Her work has been featured on the cover images of *Advanced Functional Materials, Advanced Electronic Materials*, and *Nanoscale and Microscale Thermophysical Engineering*. She is currently a member of ASME Heat Transfer Division K9 Committee on Nanoscale Thermal Transport. She also serves as the editor of *Scientific Reports* and *Instruments*.

**Uwe Kortshagen** is Distinguished McKnight University Professor and Head of the Department of Mechanical Engineering at the UMN, and a member of the graduate faculties of Physics, Chemical Engineering and Materials Science, and Nanoparticle Science and Engineering. He earned his Diploma degree in Physics in 1988, and his Ph.D. in Physics in 1991 from the University of Bochum, Germany, under Hans Schlüter. He came to the U.S. in 1995 with an Alexander von Humboldt Fellowship and spent a year at the University of Wisconsin-Madison. He earned the Habilitation in Experimental Physics at the University of Bochum in 1995. In 1996, he joined the Department of Mechanical Engineering at the UMN as Assistant Professor, where he was promoted to Associate Professor in 1999, and to Full Professor in 2003. He served as President of the International Plasma Chemistry Society and is a Fellow of the American Society of Mechanical Engineers, the American Physical Society, the Institute of Physics (IOP, London, UK), and the International Plasma Chemistry Society. He was awarded the 2005 Institute of Technology-George Taylor Award for Distinguished Research and was named Distinguished McKnight University Professor of the University of Minnesota in 2007. His work is in the area of kinetic theory of plasmas, nonthermal plasmas at atmospheric pressures, and in the plasma synthesis and functionalization of nanomaterials. His work has been published in more than 140 articles in peer-reviewed journals and received more than 5,000 citations with an H-index of 39.

**Xiaojia Wang** will lead this proposed work and she will be responsible for the overall management of this project and the status reports of project update. Her expertise lies in the heat transfer in micro- and nano-scale using novel ultrafast optical characterization techniques. She will be in charge of investigating the thermal properties of the proposed aerogel materials for superinsulation and thermoelectric power generation and correlate the material thermal performance to their structure/property characterization. **Uwe Kortshagen** has directed research on grants exceeding $25M. For this project, he will be working on the synthesis of aerogel materials with precisely controlled structures and doping concentration to tailor the materials’ electrical properties for device fabrication. Two PIs will coordinate with each other to experimentally develop and characterize the proposed materials and device fabrication and to theoretically explore and validate the relation between the device design and property performance.

1. **Organization Description**

# Micro/Nanoscale Thermal Transport Laboratory, Directed by PI Wang

The materials property characterization will be will be performed at the UMN in the **Micro/Nanoscale Thermal Transport Laboratory (MNTTL)** led by Wang.The labhas 1200-ft2 room space and is fully functional for users to conduct ultrafast and standard spectroscopic measurements. **Figure 1** depicts (a) the optical layout of the ultrafast time-domain thermoreflectance system (TDTR), (b) accessories for advanced ultrafast transient absorption measurements, (c) setup for Time-resolved Magneto-Optical Kerr Effect measurements, and (d) gimbal stage for mapping out