The role of a nuclear power plant is to convert heat to electricity efficiently, but the ability to transfer heat from the core is limited by the thermal properties of the fuel system and the coolant. With the development of new nuclear fuels and new reactor designs, there is a need to measure the thermal properties of these materials in extreme environments. Unfortunately, our standard measurement techniques cannot be applied in these circumstances, so we must development new novel methods to accomplish this. This presentation will focus on how the use of complementary measurement techniques for both solid fuels and molten salts can improve the uncertainty of these new measurement, resulting in more efficient designs and safer operation of nuclear power plants.

BIO
Dr. Troy Munro joined the Mechanical Engineering department at BYU as an assistant professor in 2016. He received a concurrent BS/MS from Utah State University in 2012 and a dual PhD from Utah State University and the Katholieke Universiteit (KU) Leuven in 2016 in both Mechanical Engineering and Physics. His background is in microgravity boiling behavior, thermal property measurement technique development (applied to natural and synthetic spider silks), optical fiber-based laser furnace for high temperature thermal property measurements, and fluorescence thermometry. His research is focused on the thermal behavior of materials and energy systems, along with developing the instrumentation needed to measure these systems. Current specific research areas include development of improved, non-contact in situ temperature sensing systems and spatial resolution of the thermophysical properties of materials.