Title: "Constraining thermal processing of dust grains in space and on the surface of airless bodies through in-situ laboratory experiments"

Abstract:
Fine-grained material in chondritic meteorites typically consists of a mixture of crystalline and amorphous silicates, oxides, sulfides, Fe-Ni metal grains, and carbonaceous matter that accreted together from the solar protoplanetary disk. Some of these ‘primary’ phases were affected by secondary processing, including both heating and aqueous alteration, on their host asteroid. The response of these materials to secondary alteration is important for understanding active processes on the surfaces and within the chondrite-parent asteroids. Thermal metamorphism, in particular, could have played an important role in processes such as melting, volatile loss, elemental diffusion between grains, and driving hydrothermal processing. In my talk, I will discuss how we are using in-situ heating experiments inside electron microscopes to better understand the effect(s) of heating on the composition and microstructure of fine-grained materials.