Title: Isotopic and elemental studies of presolar graphite grains and what they tell us about their parent stars

Abstract:
The laboratory study of stardust or presolar grains is an important sub-field of astrophysics. It combines sophisticated chemical, structural, and isotopic laboratory measurements, on micron-sub-micron presolar particles, with the theoretical ideas of nucleosynthesis and stellar evolution that exist to understand astrophysical observations. Isotopic data for these grains reveal more precise information about their parent stars than do spectroscopic observations of circumstellar dust. The goal of laboratory measurements is to provide clues on the stellar environments in which the grains formed and on their subsequent histories. Additionally, investigations into the preservation of these grains in different meteorites provide information about early solar system conditions and chronology. These goals can be achieved by coordinated, multi-technique investigations of presolar grains in the laboratory. This talk will focus on results from coordinated, multi-technique measurements of presolar graphite grains and what they tell us about the stars that contributed presolar materials to our nascent Solar System.