

Title: Planetary Accretion and Differentiation as Witnessed by Iron Isotopes

Abstract: Direct evidence of the processes by which the inner planets accreted from the solar nebula and differentiated into a core, mantle, and crust is often obscured more recent geological activity or the inaccessibility of planetary reservoirs. The stable isotopes of iron offer a potential window into these processes, as iron has “witnessed” planetary accretion and differentiation at all stages and in all of major reservoirs within planets. In this talk we’ll explore the iron isotope geochemistry of the terrestrial planets and the information that differences in iron isotopes between different planetary samples record about how the terrestrial planets accreted and differentiated.

Bio: Dr. Stephen Elardo is an assistant professor of planetary petrology and geochemistry in the Department of Geological Sciences at the University of Florida in Gainesville. His research focuses on understanding the processes by which rocky planets accrete, separate into a core, mantle, and crust, and how those processes affect a planet’s ability to produce magma over time. He arrived at UF in spring 2019 and is establishing a high-temperature and -pressure Experimental Geochemistry Laboratory there.