

CARBONACEOUS ASTEROIDS AND METEORITES: CLUES TO THE FORMATION AND EVOLUTION OF OUR SOLAR SYSTEM. D. Takir¹, ¹SETI Institute, Mountain View, CA (dtakir@gmail.com).

Primitive (carbon- and water-rich) asteroids and meteorites are particularly important because they record the earliest history of our Solar System. Ground-based observations of primitive asteroids are crucial for addressing many questions related to the abundance and distribution of organic material, water, and their association in the early Solar System. As of March 2018, we have observed 70 primitive asteroids in the 3- μ m spectral region using the NASA Infrared Telescope Facility (IRTF) and the LXD mode of the SpeX instrument. Thus far, the investigation has allowed the identification and distribution of at least four 3- μ m spectral groups, each of which is presumably related to distinct surface mineralogy and formation origin and evolution. We also conducted new spectroscopic measurements of various types of carbonaceous chondrites (e.g., CM, CI, CV, CO, CR, CB), which are thought to be linked to carbonaceous asteroids, in the laboratory under asteroid-like conditions. In this talk, we will discuss these new spectroscopic results of primitive asteroids and meteorites, the association of carbon-rich materials and hydrated minerals, and their implications for the formation and evolution of our Solar System.