

## **Modeling Cosmic Dust: How to Use Optical "Constants"**

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We all know that dust is an important constituent in many astrophysical environments; however, to truly understand its impact on its surrounding we need to know its precise nature. In order to determine the precise nature of cosmic dust we use combination of multiwavelength spectroscopy, imaging, laboratory data and modeling. Dust grains both scatter, and absorb and re-radiate light according to their optical properties, which are sensitive to e.g. the temperature, chemical composition, size, shape, and lattice structure of the dust grains. For example, graphite and diamond are both carbon, and will form under very similar conditions, but their interactions with light are very different. This presentation will give an overview of the how we apply basic physics concept to modeling different dusty environments and where implicit assumptions are valid. In addition we will discuss what we have learned about the optical properties of cosmically-relevant solids in laboratory astrophysics. We will see how the physical nature of the dust grains impacts their interaction with light in terms of changes in spectral feature and how these data are applied to understanding cosmic dust.