

Abstract Submitted
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Absorption Spectra of Silicate Cosmic Analog Dusts Obtained with a Custom-Made Spectrometer RUIHAN ZHANG, Illinois Wesleyan University, BINH PHAN, University of Wisconsin-Milwaukee, SAM NAM, Rutgers University, KATIE NORTH, MARK MATHISON, REBECCA ROESNER, THUSHARA PERERA, Illinois Wesleyan University — A significant fraction of cosmic dust is expected to be in the form of amorphous, metal-containing silicates that are submicron-sized. We have used sol-gel techniques to synthesize analogs of these dusts in the lab. We have built a custom instrument to measure the absorption spectra of these dusts in the frequency range 150-2400 GHz. We can also vary the dust temperature within the astronomically relevant temperatures 5-50 K. The dust grains are embedded in low-density polyethylene (LDPE) pellets. Absorption spectra are obtained by passing light from a calibrated blackbody source through a homemade Fourier Transform Spectrometer (FTS) and then through the cold dust pellets into a 4-Kelvin bolometer. Our data on Fe- and Mg-silicate dusts indicate that the mass absorption coefficient (MAC) of these dusts follows a power law trend within the frequency range 150-1500 GHz and that this trend varies with dust temperature.

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