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Silicon Nanoparticle Dust Grains in the Interplanetary and Interstellar Medium

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Nanometer size dust grains in the interstellar medium have been proposed as the carriers of the observed broad and structureless Extended Red Emission (ERE) and Blue Luminescence (BL) in the Red Rectangle. The presence of silicon nanometer-sized dust grains has also been recently proposed as a potential source of the observed polarized fluorescence in the inner corona that is distinguishable from the emission from known spectral lines in the near infrared. We will present the properties of silicon nanoparticle dust grains, their laboratory spectra, and their signatures in the interstellar and interplanetary medium. An estimate of their density in the inner corona is derived, and the implication of their existence for the ionic composition in the inner corona and solar wind will be discussed.