

## The Dust Properties in Comet C/199501 Hale-Bopp

M.S. Hanner (JPL/Caltech)

The extensive mid-infrared observations of comet Hale-Bopp can be interpreted in terms of the size and composition of the dust grains. The strong silicate emission seen in all 8-13  $\mu\text{m}$  spectra indicates an unusually high abundance of small ( $< 1 \mu\text{m}$ ) grains, even when the comet was at  $R > 4 \text{ AU}$ . Yet the relative strength of the 11.2  $\mu\text{m}$  peak is about the same as that in other comets, implying that about 20 percent of the silicate is in the form of crystalline olivine. The abundant small silicate grains will cause a higher mean albedo of the dust, i.e., a stronger optical continuum per unit mass of dust, than in other comets. The high color temperature relative to a blackbody indicates that small hot absorbing grains are also abundant, with a mean grain size smaller than that in most other comets. The observed color temperature is not equal to the physical temperature of the grains, however, because the emissivity of these small grains is wavelength-dependent and, indeed, the observed color temperature is higher at shorter wavelengths. Models for the size distribution and the relative mix of silicate and absorbing grains will be presented and compared with other comets.

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Paper presented by Martha Hanner

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