

Infrared High-Resolution Spectroscopy of Pluto by Subaru Telescope

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We have carried out infrared high-resolution spectroscopy of the Pluto in the *L* band (2.8-4.0 μ m) with the adaptive optics system on the Subaru telescope. The spectra is dominated by the strong absorption features of methane but includes some additional features around 3.1, 3.2, and 3.35 μ m. Instead of the more refractory ices suggested from previous observations of low spectral resolution, we added nonmethane hydrocarbons to the model calculations in order to reproduce the observed spectrum. Although we have no definite identification, the comparison of the spectrum and model calculations suggests the presence of a veneer of nonmethane hydrocarbons on Pluto, the mixing ratio of which to methane is of the order of 10%. We briefly examined several formation mechanisms that could account for the observed species and their relative rations to methane.

Keywords: Spectroscopic observation; Pluto; Nonmethane hydrocarbons



Figure 1: Reflectance spectrum of Pluto with the previous low-resolution data and synthetic spectra of intimate ternary mixture of N2-CH4-CO with the mass ratio 1:0.01:0.002.

References

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