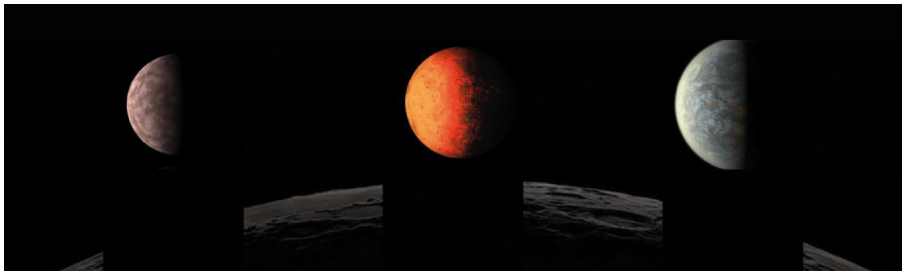

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Spectroscopic measurements for possible cometary dust analogues

Friday 24 October 2025 12:30 (1 hour)

We present new spectroscopic measurement results for two sample dust analogues: charcoal derived from walnut wood and willow wood, respectively. These measurements were performed in our laboratory using a Cary 5000 spectrometer with an integrating sphere. This measurement setup enabled the measurement of hemispherical albedo as a function of wavelength in the range of 200 to 2500 nm. The obtained hemispherical albedo values ranged from 0.10 to 10.89%. Based on the spectral profiles obtained from the measurements, Bond albedo and geometric albedo values were calculated for selected possible analogues of the cometary refractory material. In the case of walnut charcoal, the Bond albedo values ranged from 1.39 to 2.15%, while the geometric albedo values ranged from 5.49 to 8.49%. In the case of willow charcoal, the Bond albedo value ranged from 1.29 to 2.49%, while the geometric albedo value ranged from 5.09 to 9.87%. The obtained geometric albedo calculations were compared with the actual geometric albedo of comet 67P/Churyumov-Gerasimenko, which is 6.5 ± 0.2% at 649 nm, with local variations of up to 16% in the Hapi region. This analysis showed that the obtained geometric albedo values fit within the wide range of local variations of the geometric albedo for comet 67P/Churyumov-Gerasimenko.

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