

From Interstellar Ices to Polycyclic Aromatic Hydrocarbons

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The UV Signatures of Carbon in the Solar System

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While most studies of interstellar ices and PAHs have focused on infrared wavelengths, we consider the signatures that are evident at UV wavelengths. Certainly PAHs are spectrally active in the UV; even carbon compounds, sometimes spectrally bland throughout much of the visible-nearIR range, can exhibit diagnostic spectral features in the UV. We compile existing UV laboratory measurements of PAHs and carbon compounds, including tholins, coals and graphites, and compare them with spacecraft measurements of solar system surfaces including Saturnian and Galilean satellites and lowalbedo class asteroids. We find that UV measurements display the evidence of varying levels of processing of carbon compounds throughout the solar system: from less-processed PAHs in the outer solar system, to tholins, to carbonized materials in the inner solar system.