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TITLE: Tracers of Interstellar Chemistry in Exoplanet Atmospheres

ABSTRACT BODY:

Abstract Body: The core accretion model is the dominant theory of formation for the inner planets. Early in this process, icy dust grains are believed to collide and stick together, eventually forming large enough structures to self-gravitate. This ice contains the disk chemistry. After the planet forms, the ice may melt, with the residual disk chemistry released into the planetary atmosphere via outgassing. I model this process for hypothetical rocky exoplanets of size ranging from mini-Neptune to Earth, close in to a sun-like host star. This model treats the atmospheric chemistry by utilising a comperehensive ion-neutral Carbon-Nitrogn-Oxygen chemical network, complete for species up through glycine, and for terrestrial and gas-giant atmospheric compositions. This network is coupled to a simple 1D model for XUV radiative transfer and convection-diffusion. I find that, although the residual disk chemistry does not survive transport to the upper atmosphere, traces of this disk chemistry can persist, although in abundances too low to be detected with present observational capabilities. Predictions for the JWST will be briefly discussed.

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