

Testing Carbon Deficit Mechanism of Grain Sputtering in Hot Surface Layer of Protoplanetary Disks

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Molecular line observations tell us information of not only chemical but also physical properties of protoplanetary disks. ALMA has made it possible to detect complex organic molecules in the disks. In addition, our ALMA observations of CO isotopologue lines show CO gas depletion even inside the CO snowline, which suggests formation of larger and less volatile species on grain surface. In addition, our model calculations predict that destruction of carbon grains in hot surface layer very close to the central star will lead to formation of more carbon-bearing species and it can be testable by ALMA observations.

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