

## Gases in Debris disks

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The circumstellar disks found around main-sequence stars are mainly gas poor and faint, which are called debris disks. Protoplanetary disks in which planets are believed to form may evolve to be debris disks after or during planet formation. Gas in protoplanetary disks plays important roles for planet formation such as gas giant formation, planetary migration, onset of giant impact stage, etc. Recently, CO gases in debris disks are observed, which give information about gas depletion from protoplanetary to debris disks. However, planet formation is sensitive to surface densities of gases that are determined by the amount of hydrogen. We calculate the chemical reaction in debris disks and try to give a constraint on the amount of hydrogen molecule in debris disks.

Keywords: debris disks, gas depletion, chemical reaction