# PROBING CO FREEZE-OUT AND DESORPTION IN PROTOPLANETARY DISKS

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Snow lines, the boundaries where the most abundant volatiles such as $H_2O$, $CO_2$ and CO freeze out from the gas phase onto dust grains in the midplane of protoplanetary disks, are believed to play an important role in planet formation and composition. Locating the CO snow line is challenging in disks. This has prompted an exploration of chemical signatures of CO freeze-out and desorption. We present ALMA observations of the CO, $N_2H^+$ and $DCO^+$ emission to probe the CO freeze-out and desorption in protoplanetary disks, and evaluate their utility as tracers of the CO snow line location.