

CHEMICAL INVENTORIES OF MOLECULAR CLOUDS REVEALED BY HERSCHEL HIFI SPECTRAL LINE SURVEYS

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Accurate models of interstellar chemistry enable predictions of the chemical inventory of molecular clouds. Observations probing the effects of physical conditions of interstellar clouds on their chemical complexity allow the refinement of astrochemical models. To this end, we observed ten sources including hot cores, hot corinos, Class 0 protostars, HII regions, and shocked regions using Herschel HIFI Bands 2 and 5 in 12 GHz windows centered at 670 GHz and 1.16 THz. We constrained the temperatures and column densities of detected complex organic molecules using GOBASIC, a global fitting algorithm which performs Boltzmann analyses under the assumption of local thermodynamic equilibrium. Here we present the observations and comparisons of the molecular abundances to the physical properties of their environments for benchmarking of astrochemical models.