

P104a The Curious Sulfur Chemistry in IRAS 4C

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Sulfur-bearing molecules are effective probes of the composition and structure of protostellar systems. We present the analyses of recent ALMA observation of the Class 0 protostar NGC 1333 IRAS 4C which shows unique sulfur chemistry. Key sulfur-bearing species (e.g., CS and SO) unveiled its disk/envelope/outflow system. Notably, CCS is resolved at the disk scale for the first time with multiple high excitation lines (E_u up to ~ 140 K), challenging the conventional view of CCS as a tracer of early-stage, cold, extended gas. With the detected species, we determine excitation conditions, constrain physical properties (e.g., temperature and density), estimate abundances, and test chemical pathways, particularly for CCS. Such analyses offer new insights for not only the curious case of IRAS 4C but also sulfur chemistry in embedded protostellar environments in general.