

INVESTIGATING THE INTERSTELLAR SULFUR CHEMISTRY THROUGH ROTATIONALLY RESOLVED DISCHARGE EXPERIMENTS

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While the number of sulfur containing species detected in the interstellar medium has grown in recent years, the detected species still cannot account for the interstellar abundance of sulfur. Thus, in a effort to identify new species that might be of astrochemical interest, an electrical discharge nozzle has been used to generate terrestrially unstable sulfur-bearing species. In our experiment we have paired an electrical DC-discharge nozzle with a broadband microwave spectrometer to measure the resulting products of the discharge of small organic compounds previously identified in the molecular inventory. The rotational spectra from new species are then used for astronomical searches with radio telescopes. Furthermore, we investigate probable reaction pathways that these species could participate in through quantum chemical calculations, providing a global view of the matter cycle in the interstellar medium. In this talk we will present the optimization and benchmarking of our newly-built source as well as some preliminary results on sulfur chemistry and their interpretation.