Title: *The sulfuric connection between protostars and comets*

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Abstract:

Comet 67P/Churyumov-Gerasimenko has been studied with unique in situ measurements by various instruments aboard the Rosetta spacecraft. Data from ROSINA, COSAC, VIRTIS and MIRO have shown that the comet has a rich molecular inventory and that there is a complex relationship between production rates and correlations between various species. The currently available data on 67P/C-G is one of the best probes of the innate protosolar disk that evolved into our modern day Solar System. Similar chemical richness, including large complex organic species, extends beyond the Earth and our Solar System as attested by countless observations towards high- and some low-mass protostars. One of the best-studied low-mass systems is IRAS16293-2422, which is thought to be analogous to the earlier phases of our Solar System. The region has been surveyed with the large unbiased Protostellar Interferometric Line Survey (PILS) with ALMA. This dataset has allowed this region to be studied within an unprecedentedly wide spectral range at high spectral and spatial resolutions; thereby, uncovering its full chemical inventory and the spatial distribution of the detected species. This ALMA data on IRAS16293-2422 can be used to probe the extrasolar chemical content and the Rosetta measurements of 67P/C-G as a Solar System diagnostic. By deriving the relative ratios for simple species and complex organic molecules, direct comparisons can be drawn between the two to go after the origins of the chemical content of our Solar System. In this talk, results of such a comparative study will be presented for the case of sulfur-bearing molecules. Sulfur is found in both, volatile and refractory, components and has the unique potential of tracing their simultaneous physicochemical evolution. This study gives clues to the dominant pathways towards various volatiles. The carried out comparative work between protostars and 67P/C-G gives hints to the similarities and differences of chemical evolution across low-mass stellar systems.