

## DETECTION, IDENTIFICATION AND CORRELATION OF COMPLEX ORGANIC MOLECULES IN 32 INTER-STELLAR CLOUDS USING SUBMM OBSERVATIONS

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We present spectral line surveys of 32 galactic sources using the Caltech Submillimeter Observatory (CSO) and the HIFI instrument on the Herschel Space Observatory. This study covers the 220 – 265 GHz frequency range using the CSO, as well as higher frequencies, 645 – 676 GHz and 1.14 THz – 1.19 THz using the HIFI instrument. Deconvolution of the double sideband spectra was performed using the CLASS program and the Herschel/HIFI pipeline. Analysis of the data sets was performed using Global Optimization and Broadband Analysis Software for Interstellar Chemistry (GOBASIC), a new software program developed by our group for the evaluation and study of large astronomical spectroscopic data sets.

Initial analysis has focused on 12 complex organic molecules that can be used to trace grain-surface and gas-phase chemical processing in the interstellar medium. GOBASIC was used to determine molecular column densities and rotational temperatures. This information is being used to study correlations between molecular abundances within a given source, and source-to-source correlations for a given molecule, with the ultimate goal of determining which molecules can be used as clocks of the star-formation process. The spectra and the results of this initial analysis will be presented.