Exploring the Molecular Complexity in Protostellar Environments with ASAI.

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The Large Program ASAI carried out at the IRAM 30m telescope joins the efforts of several groups in Astrochemistry, in Spain and France, to address the question of our "chemical origins". Its goal is to obtain a complete census of the gas chemical composition, including pre-biotic molecules, and its evolution along the main stages of the star formation process, from prestellar cores and protostars to protoplanetary disks. This is achieved through highly sensitive and systematic spectral line surveys of a sample of sources illustrative of the various stages of protostellar evolution. The resulting data set is aimed to serve as a reference database for the astrochemical community: astronomers, chemists, and theoreticians.

We will present the first results obtained from the on-going data analysis. Some molecular lines remain to be identified, which will require a close collaboration with molecular spectroscopists. New molecular species have been discovered, both in prestellar cores and in protostellar shocks, opening the door to pre-biotic chemistry in these environments.