Complex Organic Molecules in star forming regions

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Complex Organic Molecules (COMs) are now routinely observed in the Interstellar Medium, around massive protostars, in the so called “hot cores”, as well as in low-mass star forming regions, (“hot corinos”).

In this talk I will give an overview of the chemical complexity observed in space with particular emphasis on their astrobiological significance: in massive star forming regions COMs trace the most compact region, where the protostar and (proto-planetary) disk form; COMs can be divided in subgroups, depending on their interrelationship during formation and destruction: ratios of COMs are very time dependent and hence could be used as evolutionary indicators, very much needed for the understanding of the early phases of massive star formation. In solar-like nebulae the importance of COMs may be related to the origin of life and there are now several efforts made to detect glycine in regions where solar-like stars form.

I will finally discuss the possible formation routes of COMs and highlights the needs astronomers have of experimental data including accurate rest frequencies, temperature dependent intensities, as well as rate coefficients for all their gas and solid phase formation routes.

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