INTERSTELLAR CHEMISTRY: FROM FAR AWAY TO NEARBY

Summary

It is not more than 4 decades ago that the very existence of a complex interstellar chemistry was generally recognized. The development of astro-spectroscopic methods in ultraviolet, visible, infrared, and especially in the microwave range led to the detection of many molecules, from diatomic to complex organic ones, dwelling in cold, gigantic and extremely diluted clouds of interstellar matter. Underlying chemical processes — taking place in disparate regions of the Galaxy, as well in the gas phase as on the surfaces of minute dust grains, or within the icy shells surrounding mineral dust particles — are being uncovered due to the collective effort of researchers specializing in astrophysics, spectroscopy, laboratory experiments and chemical theory. Factors and reasons leading to the synthesis of interstellar molecules, some of them very exotic by terrestrial standards, are briefly described here and put in the context of the stellar evolution and of the galactic recycling of matter. The role of comets, objects which bridge the gap between the interstellar medium and the Solar System, is underlined. Reader's attention is also drawn to potential astrochemical aspects of the prebiotic processes on early Earth.