FAR–IR SPECTROSCOPY FROM SPACE: FROM LIGHT HYDRIDES TO CARBON CHAINS

J.R. GOICOECHEA, J. CERNICHARO, *Departamento de Astrofísica Molecular e Infrarroja. Instituto de Estructura de la Materia. CSIC. Serrano 121, 28006, Madrid, Spain*.

Due to the atmospheric opacity, the far–IR domain has been the last window used by *Molecular Astrophysics*. The potential of opening a new spectral frequency range through *molecular spectroscopy* begun to be exploited with the *Infrared Space Observatory* (**ISO**). The sensitivity of the instrumentation on board this satellite had no comparison with the few previous space missions or airborne observations carried before the launch of **ISO**. Almost all the operative range of **ISO** in the far–IR was not explored before. The far–IR spectrum of the most significant galactic sources was unknown. In particular, the main radiation emitters, the molecules, were unidentified. Some of these sources: *Sgr B2* in the Galactic Center and the *Proto–Planetary Nebulae*, are paradigmatic objects for our knowledge of the *chemical complexity* of the Galaxy. The molecular species that can be detected in the far–IR domain, apart of its intrinsic interest, are excellent diagnostics of the physical and chemical conditions of the interstellar and circumstellar media. Specific examples of what have been observed are the rotational lines of light hydrides such as $OH/H_2O/H_3O^+$ or $NH/NH_2/NH_3$, and the low energy bending modes of linear carbon chains such as C_3 or C_4.