

SUBMILLIMETER WAVE SPECTROSCOPY AND ISM SEARCH FOR PROPIONIC ACID

L. MARGULÈS, R. A. MOTIYENKO, UMR 8523 - PhLAM - Physique des Lasers Atomes et Molécules, University of Lille, CNRS, F-59000 Lille, France; V. ILYUSHIN, OLGA DOROVSKAYA, E. A. ALEKSEEV, Radiospectrometry Department, Institute of Radio Astronomy of NASU, Kharkov, Ukraine; ELENA R. ALONSO, LUCIE KOLESNIKOVÁ, Grupo de Espectroscopia Molecular, Lab. de Espectroscopia y Bioespectroscopia, Unidad Asociada CSIC, Universidad de Valladolid, Valladolid, Spain; JOSE CERNICHARO, Instituto de Física Fundamental, CSIC, Madrid, Spain; J.-C. GUILLEMIN, UMR 6226 CNRS - ENSCR, Institut des Sciences Chimiques de Rennes, Rennes, France.

Two compounds with a $C_2H_4O_2$ formula have been detected in the Interstellar Medium (ISM): acetic acid (CH_3CO_2H) and methyl formate ($CH_3OC(O)H$), the latter being thermodynamically less stable than the former but more abundant. Among the higher homologues with a $C_3H_6O_2$ formula where a hydrogen atom in $C_2H_4O_2$ has been replaced by a CH_3 group, two compounds have already been detected: ethyl formate ($EtOC(O)H$) and methyl acetate ($CH_3OC(O)CH_3$). The higher thermodynamic stability of another isomer, the propionic acid ($EtCO_2H$), pushed us to record its rotational spectrum, since this compound has a high probability of being present in the ISM. The methyl top internal rotation should be taken into account, therefore the analysis is performed using RAM36 code.^a The spectroscopic results and its search in ISM will be presented.

This work was supported by the CNES and the Action sur Projets de l'INSU, PCMI

^aIlyushin, V.V. et al.; *J. Mol. Spectrosc.* **259**, (2010) 26