THE RADIO SPECTRA OF 1,2,3- and 1,2,4-TRICYANOBENZENE

JENS-UWE GRABOW, MICHAEL ROSEMEYER, *Gottfried-Wilhelm-Leibniz-Universität Hannover, Institut für Physikalische Chemie, Callinstraße 3A, 30167 Hannover, Germany*; ALBERTO LESARRI, *Universidad de Valladolid, Departamento Química Física y Química Inorgánica, Facultad de Ciencias, Prado de la Magdalena, s/n, 47005 Valladolid, Spain*; HENNING HOPF, *Technische Universität Braunschweig, Institut für Organische Chemie, Hagenring 30, 38106 Braunschweig, Germany*; ROBERT J. McMAHON, *University of Wisconsin, Department of Chemistry, 1101 University Avenue, Madison, WI 53706, USA*.

Aromatic hydrocarbons and their polycyclic representatives (PAH) are often stated to be the most abundant free organic molecules in space. However, with the now more than 140 astronomically known species no aromatic compound besides the IR-spectroscopically detected benzene itself is confirmed so far. Possibly because PAHs typically have only a small dipole moment - the prerequisite for a radioastronomical detection.

Tricyanobenzenes offer a new approach for the detection of aromatic species: Easily formed by condensation of - in the interstellar medium abundant - cyanoacetylene, they exhibit a considerable dipole moment. With the analysis of the previously unkown microwave spectra - complicated by the quadrupole coupling of the three nitrogen nuclei - the spectroscopic data for an astronomical search are now available. In addition, the analysis of the nuclear quadrupol hyperfine structure allows for some insight into the chemical bonding of the substituted aromatic systems.