ROTATIONAL SPECTROSCOPY OF SOME MONOSAACHARIDES AND THEIR SIMPLIFIED MOLECULAR MODEL

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The conformational landscapes of four monosaccharides (i.e., 1-O-methylated derivatives of alpha- and beta-glucose and galactose) and tetrahydro-2H-pyran-2-ol (THP), a simplified model for monosaccharides, were investigated using chirped pulse Fourier transform microwave spectroscopy and theoretical modelling. Several conformers of each were identified and interesting methyl internal rotation splittings in some of them were observed and analyzed. Furthermore, in solution, THP is in equilibrium with its linear counterpart, 5-hydroxypentanal, and readily interconverts between these two chiral forms. Here we report our recent efforts to explore such interconversion in the gas phase using CP-FTMW and also cavity-FTMW spectroscopy.

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