

# The Structure of Carbohydrate-Aromatic Complexes Investigated by Broadband Microwave Spectroscopy

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Novel investigations of cyclic carbohydrates and aromatic molecules complexes are presented in this contribution. This molecular recognition is of significant importance in biological systems, e.g. the binding of lectins to cell surfaces. Earlier research used infrared ion dip vibrational spectroscopy to characterize the binding mechanism of these systems. Measuring the rotational spectra will complement this work by allowing the direct investigation of the structure of the molecular complexes. This knowledge will deepen the understanding of the conformational properties and interactions contributing to the recognition process.

The carbohydrate partners will be represented by gluco-, galacto- and fucopyranose, whereas benzene, indole, and tryptophan serve as model molecules for the aromatic recognition sites. The complexes will be formed in a supersonic expansion using laser desorption methods. The rotational spectra of these complexes will be recorded by employing the Chirped Pulse Fourier Transform Microwave (CPFTMW) spectroscopy technique. This method will allow the fast acquisition of the molecular response to microwave radiation in the range of 2 to 8 GHz and thus enables the in-depth comparison of different molecular complexes on reasonable time scales.

