

Elucidating structures of Sugars by High Resolution Spectroscopies

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Sugars are one of the major building blocks in biology, playing numerous key roles in living organisms. We present several studies on carbohydrates exploiting an experimental strategy which combines microwave, laser spectroscopies in high-resolution, computation and synthesis. Laser spectroscopy offers high sensitivity coupled to mass and conformer selectivity, making it ideal for polysaccharides and glycopeptides studies. On the other hand, microwave spectroscopy coupled with ultrafast laser vaporization provides much higher resolution and direct access to molecular structure of monosaccharides. This combined approach provides not only accurate chemical insight on conformation, structure and molecular properties, but also benchmarking standards guiding the development of theoretical calculations.

In order to illustrate the possibilities of a combined microwave-laser approach we present results on the conformational landscape and structural properties of several monosaccharides,^[i] polysaccharides^[iii] and glycopeptides including microsolvation and molecular recognition processes.^[iv]

References

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