Direct enantiomer selective Mass Spectrometry of chiral mixtures by MS-PECD

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Mass Spectrometry is chirally blind, it cannot directly distinguish the two enantiomers of chiral molecules. Simultaneous, enantiomer-specific identification of chiral molecules in multi-component mixtures is extremely challenging. Here we show how enantiomers may be differentiated by Mass-Selective PhotoElectron Circular Dichroism (MS-PECD) using an electron–ion coincidence imaging spectrometer [1-3]. Following an ionizing circular polarized laser pulse, ions and electrons are detected in coincidence on their respective time- and position sensitive detectors. The Mass-Selected PECD asymmetry reveals that the compound is chiral. Here we will present the latest results with regard to the fundamental developments in PECD and the extension to analytical applications employing direct Mass Spectrometry analysis of multi-component mixtures of chiral molecules [4-5].

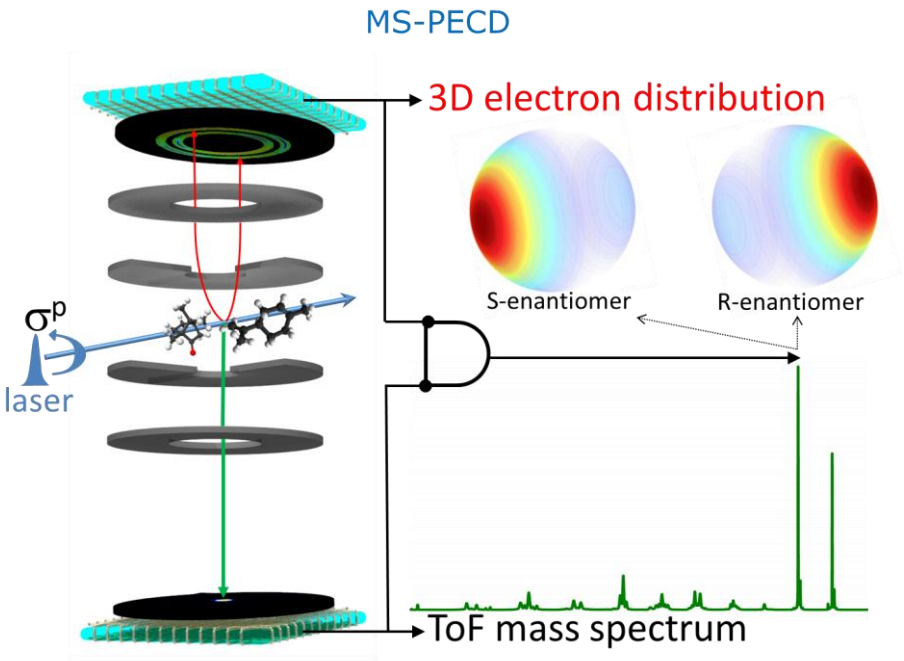

Figure: Concept of Mass-Selective PhotoElectron Circular Dichroism.

References

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