SPATIALLY SEPARATING STRUCTURAL ISOMERS OF NEUTRAL MOLECULES

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Large (bio)molecules exhibit multiple conformers (structural isomers), even under the cold conditions present in a supersonic jet. For various applications, i. e., scattering experiments or time resolved studies, it would be highly desirable to prepare molecular packets of individual conformers.

It is well known that polar molecules can be manipulated using strong electric fields. Recently, we have demonstrated that electrostatic deflection of a molecular beam can be used for quantum-state selection of large molecules. [a] Here, we demonstrate how this quantum state selectivity can be exploited to spatially separate the individual conformers of large molecules based on their distinct mass-to-dipole moment (m/μ) ratios. In a proof-of-principle experiment, we have spatially isolated both, cis and trans, conformers of 3-aminophenol. We will compare this approach to conformer selection using alternating gradient (dynamic) focusing in an m/μ-selector. [b]

[a] L. Holmegaard et al., *Phys. Rev. Lett.*, **102**, (2009),023001

[b] F. Filsinger et al., *Phys. Rev. Lett.* **100**, (2008),133003