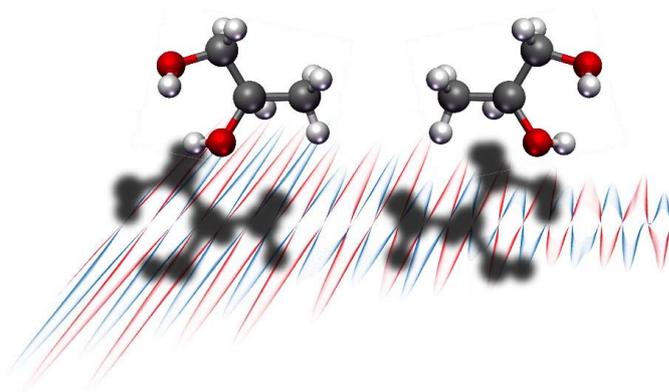


**Dienstag, 25.11.2014****Hörsaal D, Chemiezentralgebäude, 17:15 Uhr****Sprecher: Melanie Schnell**  
(MPI Hamburg)**Titel: Enantiomer differentiation using  
broadband rotational spectroscopy****Abstract:**

Isolated molecules in the gas phase are well suited to study and understand the intrinsic properties of molecules and molecular complexes. We use the newly developed method of broadband chirped-pulse Fourier transform microwave spectroscopy to investigate the structure, dynamics, and chirality of molecular systems, with a particular interest in astrochemically and biologically relevant species.

Very recently, we extended broadband rotational spectroscopy to also become chirality-sensitive in a microwave three-wave mixing approach, i.e., we can now differentiate enantiomers of chiral molecules in the gas phase. In our method, we exploit that the dipole moments of the enantiomers are mirror images of each other. This mirror-image character results in differences in the phases of the acquired microwave three-wave mixing signal by  $180^\circ$  for the two enantiomers, and the signal amplitude is proportional to the enantiomeric excess (ee). A significant advantage of our technique is its inherent mixture compatibility due to the fingerprint-like character of rotational spectra.

In the talk, I will introduce the techniques and present our latest results on molecular spectroscopy and chirality differentiation.

**Organisation: I. Fischer**

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