DOUBLE RESONANCE IN MB-FTMW-SPECTROSCOPY : A USEFUL TOOL FOR THE ASSIGNMENT OF THE ROTATIONAL SPECTRA OF WEAKLY BOUND COMPLEXES

HEINRICH MÄDER and KAI BRENDEL, *Institut für Physikalische Chemie, Universität Kiel, Olshausenstr. 40, D-24098 Kiel, Germany*.

The technique of molecular beam Fourier transform microwave (MB-FTMW) spectroscopy has proven to be an excellent tool for the investigation of weakly bound molecular complexes. However, the assignment of the corresponding spectra can often be difficult since the recorded spectrum may consist of a superposition of several spectra originating from different species in addition to the complex under investigation (isotopomers of the monomers, other complexes, etc.). Furthermore, compared to stable molecules, predictions of the spectra of complexes on the basis of *ab initio* calculations are sometimes less reliable as the calculations for these species require higher level methods combined with large basis sets. Thus, a novel double resonance scanning technique has been developed and incorporated in our MB-FTMW spectrometer which considerably simplifies the process of assignment and allows its verification. The new setup is presented and its features are demonstrated with recent studies on complexes of fluorinated benzenes with water.