

## FOURIER TRANSFORM MICROWAVE DETECTION OF FREE RADICALS RELEVANT TO COMBUSTION AND ATMOSPHERIC CHEMISTRY

N. HANSEN, H. MÄDER, and F. TEMPS, *Institut für Physikalische Chemie, Christian-Albrechts-Universität Kiel, Olshausenstr. 40, D-24098 Kiel, Germany.*

We report on first applications of a Laser Photolysis-Molecular Beam-Fourier Transform Microwave (LP-MB-FTMW) spectrometer in the spectral region 8 to 40 GHz, constructed for investigations of rotational spectra of free radicals. The experimental set-up consists of a near semi-confocal Fabry-Perot type microwave resonator mounted in a stainless steel vacuum chamber. The cavity resonance can be adjusted by moving the spherical mirror. A current actuated slit nozzle valve is situated near the center of the flat mirror, just above the microwave antennas. The performance of the spectrometer was optimized by recording SO ( $X^3\Sigma$ ) microwave spectra. SO radicals were produced by 193 nm photodissociation of SO<sub>2</sub> in a pulsed supersonic free jet expansion in Ar. Additionally, first results of the LP-MB-FTMW detection of the C<sub>2</sub>H<sub>3</sub>O (vinoxy) and of CF<sub>2</sub> radicals will be presented.