

# Observation of Carbonyl Fluoride, Ketene, Acetic Acid and Fluorocarbene Produced by an Electric Discharge within a Nozzle by Molecular Beam Fourier Transform Microwave Spectroscopy. A Reaction via a Cycloaddition for Carbonyl Fluoride and Keten?

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A molecular beam Fourier transform microwave spectrometer, designed for the study of chemical reactions within electrical discharges, is described in detail. Applications include the production of carbonyl fluoride, ketene, acetic acid, and difluorocarbene. For the production of carbonyl fluoride and ketene with 1,1-difluoroethylene and carbon dioxide as precursor molecules a reaction path via a 2+2 cycloaddition is proposed.

**Key words:** Reactions and Syntheses in Electric Discharges; Molecular Beam; Product Identification by Fourier Transform Microwave Spectroscopy.