CFEL SCIENCE

SEMINAR

31st May 2018 - 10:00

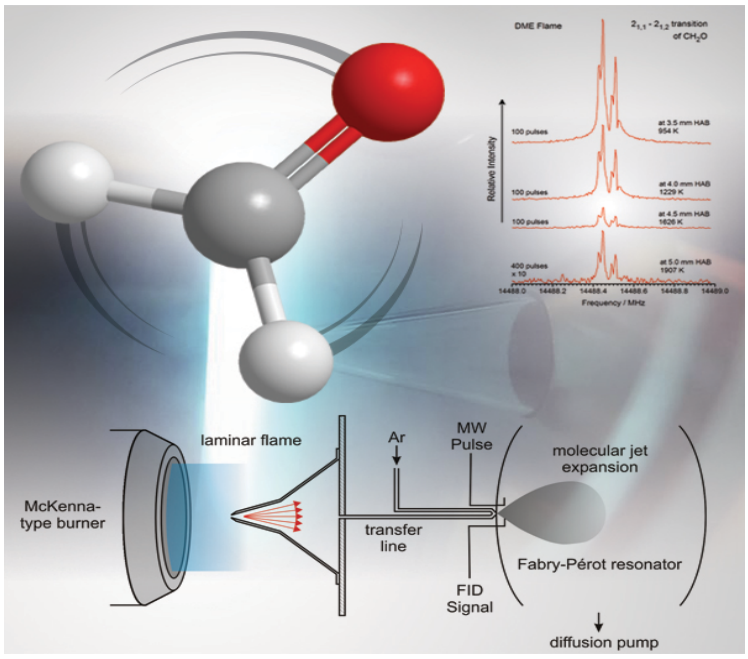
Building 99, Seminar Room I+II (EG)

Daniel Obenchain

Institut für Physikalische Chemie, Leibniz Universität Hannover

An Explorative Study of Flame-Sampled Combustion Intermediates Detected by Microwave Spectroscopy

Microwave spectroscopy probes the rotational transitions of polar molecules in the gas phase and is a proven technique for the detection and identification of short-lived molecules produced from a variety of molecular sources. In this explorative study, it was demonstrated that microwave spectroscopy is a quantitative tool for the analysis of high-temperature gas mixtures as found in combustion environments. Rotational transitions of certain intermediates produced in dimethyl ether flames and in ethylene flames were observed after successfully coupling them into the molecular jet of a cavity-type Fourier transform microwave spectrometer. These initial results are compared to the results from ionization mass spectroscopy studies of the same flames. Once the overall design of the instrument is optimized, the flame source will allow for the study of novel, open-shelled species. Additionally, the flame source may prove a good source of laboratory identification and classification of proposed species in the interstellar medium. Progress on the optimization of the coupling source will be discussed.



Host: Melanie Schnell - CFEL Molecular Physics seminar