



Kolloquium des Wilhelm-Ostwald-Instituts

Prof. Dr. Marsha I. Lester

University of Pennsylvania

Montag, 14.11.2022, 17:00 Uhr

Arthur-Hantzsch-Hörsaal, Johannisallee 29, 04103 Leipzig

Wilhelm-Jost-Gedächtnisvorlesung

Spectroscopy and unimolecular decay dynamics of reaction intermediates in atmospheric and combustion chemistry

Abstract

Our research is focused on reaction intermediates in atmospheric and combustion chemistry that generate hydroxyl radicals (OH), often called the atmosphere's detergent. The OH radical is one of the most powerful oxidizing agents in the troposphere, which is able to react rapidly with other molecules, including most volatile organic compounds emitted in the atmosphere. Our studies have characterized transient carbonyl oxide intermediates, known as Criegee intermediates, in the chemical reaction pathways for **alkene ozonolysis**, an important non-photolytic source of OH radicals. Our studies have also revealed a prototypical carbon-centered hydroperoxyalkyl radical ($\bullet\text{QOOH}$), a critical intermediate in **alkane oxidation** of volatile organic compounds in the atmosphere and combustion of hydrocarbon fuels in low temperature (< 1000 K) environments, which regenerates OH radicals. Our experimental studies utilize IR action spectroscopy, time-resolved IR pump-UV probe measurements of OH products, and VUV photoionization. The latter has enabled identification of unexpected products arising from novel roaming mechanisms.

Ab 16:15 Uhr findet ein gemeinsames Kaffeetrinken in Raum 410 (TA) statt.