

Physikalisches Kolloquium

Thursday, 25.06.15, 17:15, HS 100
 Reception with coffee & cookies 16:45



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Electronic Spectroscopy of Hydrocarbon Radicals and Ions of Relevance to Interstellar Space and Combustion

Abstract

Several modern approaches of chemical physics are used to identify for the first time the electronic spectra of reactive organic radicals and ions. The species targeted are selected because they are intermediates in terrestrial processes, such as combustion and in chemical reactions, as well as their possible presence in interstellar clouds. Initial information on the systems is often obtained by measuring the absorptions in neon matrices following mass-selection. In the gas-phase the transient molecules are produced in discharges coupled with supersonic free jets. The transitions of neutral radicals are observed by resonance enhanced two-photon ionization. For the studies of the cations, mass-selected species are constrained in a 22-pole radiofrequency trap, cooled there by collisions down to 5 K, prior to the measurement of the electronic transitions using a number of schemes. The availability of the laboratory gas-phase spectra enables a direct comparison with astronomical observations and allows conclusions to be drawn on the potential carriers of the diffuse interstellar absorptions.

All of you interested in physics are cordially invited!

