

TIME RESOLVED DYNAMICS OF ELECTRONIC EXCITATIONS IN C_3^-

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Experiments have been performed on the ultrafast electron dynamics of mass selected cluster anions.

The setup consists of a pulsed arc cluster ion source (PACIS), a time-of-flight mass spectrometer, a magnetic-bottle-type time of flight electron spectrometer, and a femtosecond laser. Time resolved pump/probe photoelectron spectra are recorded. We present first data on C_3^- ^a.

Photoelectron spectra were obtained for a set of increasing delays between pump pulse (excitation of the anion) and probe pulse (detachment of the ad-electron).

Interpretation of the series of spectra yields an assignment of the involved electron states and, moreover, the lifetime of the excited state.

The method is suitable to study all kinds of electronic excitation and relaxation processes in mass selected nanoparticles.

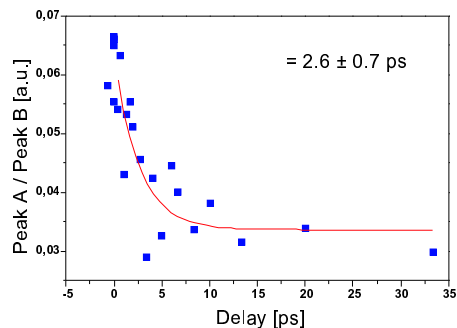


Fig. 1: The decay of the first excited state of C_3^- as extracted from the time-resolved pump/probe photoelectron spectra. An exponential fit is shown corresponding to a lifetime of 2.6 ± 0.7 ps

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