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Time-resolved studies of small molecules employing coincidence detection techniques

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With the implementation of the European x-ray free electron laser a unique tool for time-resolved studies of small molecules and clusters emerges. The targeted pulse durations and photon energies will enable investigations which, firstly, involve more tightly bound K-shell electrons, and, secondly, address typical timescales of molecular decay process in the low fs-regime. By means of coincidence detections techniques as, for example, Cold Target Recoil Ion Momentum Spectroscopy (COLTRIMS) it was demonstrated in the past, that in a few special cases, the molecular time domain is already accessible in measurements using synchrotron radiation. The talk will give a brief introduction to the topic and present two examples of such time-resolved coincidence measurements.

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