A new, versatile facility for studying photophysics of ions in the 5 – 200 eV range at ASTRID2

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Dynamics of excited and ionized states of atomic and molecular ions induced by high energy photoabsorption is one of the key scientific cases for the new 580 MeV low emittance synchrotron-radiation source ASTRID2, which will soon be operational at Aarhus University.

A novel facility is currently under design along with a dedicated ion-beam end station that will allow for either merged- or crossed-beams experiments with a stored fast moving beam of ions. Moreover, the end station will offer several detection schemes, including, momentum-resolved measurements of both charged and neutral fragments as well as electrons.

The photon beamline (the AMO-beamline) is sourced by a U53 undulator and will operate over a photon-energy range of 5 eV up to above 200 eV. Due to the dilute nature of the targets (ion beams), the intensity of the furnished photon beam is critical; in particular a high-flux, low-resolution (resolving power near 100) operation mode is demanded. However the peak resolution will be >10,000 in order provide the possibility of resolving narrow resonances in atoms and small molecules. Efficient suppression of higher-order radiation is mandatory, because many of the planned experiments involve total photoabsorption cross-section measurements.