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### **Dissociation of Peptides by Ions and Photons**

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Little is known about biological radiation action on the molecular level. The response of isolated biomolecules upon energetic photons is of great interest i.e. for astrobiology and radiobiology. Key questions concern ion chemistry in the interstellar medium, possible transport of biomolecules from space to earth and molecular mechanisms underlying biological radiation damage. Experiments with small biomolecules in the gas phase have the advantage of studying ionization and fragmentation dynamics in finite systems but are less realistic radiation damage models. To be able to investigate more complex biomolecular systems, such as peptides and proteins, we have developed a new apparatus in which a home-made electrospray source can be interfaced with a low energy (keV) ion beamline or different photon beamlines (e.g. of synchrotrons or free electron lasers). Spectra of peptides obtained with this set-up will be presented. Dependencies on energy and polarization of the radiation as well as peptide length and structure will be thereby discussed.