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Photoelectron-photoion coincidence spectroscopy for laboratory astrochemistry: VUV Photodynamics of radicals, radical reaction products, PAHs, and more

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The field of astrochemistry is furthered by a synergistic approach between i) telescope-observations, ii) modelling calculations that make use of physical and chemical parameters of relevant molecules and reactions, and iii) laboratory experiments that are designed to inspect and extract the physical characteristics of specific molecules, photon-induced reactions, surface processes, etc., that are relevant to the interstellar medium. This talk will be dedicated to the use of the double imaging photoelectron-photoion coincidence (i2PEPICO) technique to study (dissociative)-ionization processes and the spectroscopy of astrochemically relevant molecules in the VUV range. Experiments are performed at the DESIRS VUV beamline at the Synchrotron SOLEIL (France), on which ~1/3 of projects are carried out annually are relevant to astrophysics and planetary sciences. Recent data obtained on various radical species, radical reaction products, polycyclic aromatic hydrocarbons (PAHs), as well as prebiotically relevant molecules will be presented.

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