

## Photo-processing of astro-PAHs

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Polycyclic aromatic hydrocarbons (PAHs) are key species in astrophysical environments. Their interaction with UV photons can trigger various molecular processes: -(i)- ionisation resulting in gas heating by thermalisation of the emitted electrons, -(ii) photo-dissociation limiting the survival of PAHs and producing molecules such as H<sub>2</sub> and C<sub>2</sub>H<sub>2</sub>, and -(iii)- radiative cooling leading to the well-known aromatic IR emission bands, which constitute the only direct diagnosis we have so far for the presence of astro-PAHs.

In order to quantify the yield of each of these processes as well as the branching ratios between the different fragments, we used photoelectron spectroscopy on neutral PAHs [1] and action spectroscopy on trapped PAH cations benefitting from tunable synchrotron VUV light [2,3]. To complement these studies, experiments were performed on trapped ions using a multiple photon absorption scheme [4]. We will give an overview of the results obtained so far, emphasizing the complementarity of each technique and the still-opened questions in the photophysics of isolated PAHs. We will also discuss the implication for the survival of PAHs in astrophysical environments, which is described by models (e.g. [5]).

Acknowledgments: The research leading to this result is supported by the European Research Council under the European Union's Seventh Framework Programme ERC-2013-SyG, Grant Agreement n. 610256 NANOCOSMOS. G.W. is supported by the H2020-MSCA-ITN- 2016 Program (EUROPAH project, G. A. 722346).

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