

## VUV PHOTONIZATION OF INTERSTELLAR MOLECULES: MAKING SENSE OF OUR BEAUTIFULLY MYSTERIOUS UNIVERSE, MOLECULE BY MOLECULE

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**Abstract.** VUV photons are important drivers of multiple chemical and physical processes in space. As different molecules can be used as tracers for different types of cosmic environments, it is important to characterize both qualitatively and quantitatively the processes induced by VUV photons in different radiation fields (Hrodmansson & van Dishoeck 2023). This contribution will focus on VUV photoionization of various molecules of astronomical interest, going from diatomics upward to fullerenes, using the light from the DESIRS beamline at the Synchrotron SOLEIL facility (Nahon *et al.* 2012). The talk will cover the importance of absolute photoionization cross sections of small molecules such as OH (Harper *et al.* 2019), SH (Hrodmansson *et al.* 2019), and NH<sub>2</sub> (Harper *et al.* 2021), the importance of dissociative photoionization of astrobiologically relevant molecules (Derbali *et al.* 2019, 2020; Hrodmansson *et al.* 2024a), the contribution of photoelectric heating by polycyclic aromatic hydrocarbons (PAHs) (Hrodmansson *et al. in prep*) and the photoionization of the fullerenes C<sub>60</sub> (Hrodmansson *et al.* 2020, 2024b, *in prep*) & C<sub>70</sub> (Hrodmansson *et al. in prep*) in space.

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