

INFRARED ACTION SPECTROSCOPY OF INDENYL AND FLUORENYL ANIONS

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Polycyclic aromatic hydrocarbons (PAHs) play an important role in the chemistry of the interstellar medium. The recent unambiguous detection of several comparably small PAHs in the cold interstellar medium through radioastronomical observations^a has rekindled the interest in spectroscopic studies of PAHs consisting of only two or three aromatic rings and their derivatives.

In this work, the vibrational spectra of indenyl and fluorenyl anions has been studied by infrared predissociation (IRPD) action spectroscopy using the Free Electron Laser for Infrared eXperiments, FELIX, at Radboud University, in combination with the cryogenic 22 pole ion trap setup FELion^b. The range of 650 – 1650 cm⁻¹ was sampled by measuring the depletion of the signal of the H₂-tagged ion as a function of the laser wavelength. High-level quantum-chemical calculations at the CCSD(T) level of theory have also been performed for the spectroscopic assignment of the detected vibrational bands.

^aMcGuire *et al.* *Science* 2021 **371** 1265, Cernicharo *et al.* *A&A* 2021 **649** L15

^bJusko *et al.* *Faraday Discuss.* 2019 **217** 172