PROBING BROAD π-RESONANCES OF TETRACENYL ANION

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Polyaromatic hydrocarbon (PAH) anions are proposed to be present in the interstellar medium. These molecules, which do not feature a large enough dipole moment to capture an electron via a dipole-bound state, are instead purported to capture electrons via broad π-resonances. These π-resonances are closely spaced anion excited electonic states. We use an action spectroscopy that monitors total photoelectron yield of these anions above detachment threshold. This investigates the many states present in the dense manifold of electronic states. With the resolution of our instrument, we are able to deconvolute these π-resonances. In addition, we report new electron affinity values for isomers of tetracenyl radical using high resolution photoelectron spectroscopy. One radical in particular, 9-tetracenyl, EA = 1.845eV, disagrees with the previous literature value, 2.6eV.