

PULSED-FIELD IONIZATION ELECTRON AND PHOTOIONIZATION SPECTROSCOPY OF Li-NAPHTHALENE AND ANTHRACENE COMPLEXES

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Li-naphthalene ( $C_{10}H_8$ ) and anthracene ( $C_{14}H_{10}$ ) were produced by reactions of laser-vaporized Li atoms and ligand vapor. Although naphthalene has a sufficient vapor pressure at the room temperature, the vapor pressure of anthracene is rather low. Therefore, anthracene was co-vaporized by laser ablation of a target made of Li and organic powders. The pulsed-field ionization electron spectrum of Li-naphthalene shows a band origin at  $35489(5) \text{ cm}^{-1}$  and extensive vibrational structures with intervals in the  $140\text{-}1400 \text{ cm}^{-1}$  range. These vibrational structures were assigned to excitations of Li-naphthalene stretches and bends as well as in-plane and out-of-plane ring deformations. This complex has a Cs structure with Li located above one of the rings, and the naphthalene plane is significantly distorted in the neutral state. Unlike naphthalene where two six-membered rings are the same, the side and central rings are different in anthracene. Although vibrationally resolved electron spectrum has not been obtained, the photoionization efficiency spectrum of Li-anthracene exhibits two thresholds at  $33800(300)$  and  $37200(200) \text{ cm}^{-1}$ , which correspond to ionization of two structural isomers with Li binding to the side and central rings, respectively.