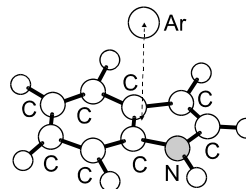
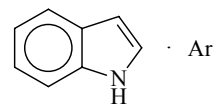


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LIF $\text{C}_8\text{H}_7\text{ArN}$ **1H-Indole – argon (1/1)**
(weakly bound complex) C_1
(large-amplitude motion)

State	$\tilde{X}^1\text{A}'$	$\tilde{\text{A}}^1\text{A}''$
Energy [eV]	0.0	4.365
$r_0(\text{C}_8\text{H}_7\text{N} \cdots \text{Ar}) [\text{\AA}]$	3.435(4)	3.401(4)



A molecular beam was formed by expanding indole seeded in Ar carrier gas into a molecular beam apparatus. Fluorescence was excited by a frequency-doubled dye laser, collected using spatially selected optics and detected by a photomultiplier and photon counting system. The

experiment was repeated with indole- d_1 . Rotational analyses of the spectra yield rotational constants for the ground and the excited states of both molecules. For the ground state these constants are consistent with a structure in which the Ar atom lies 3.435 Å above the plane of the indole molecule and is displaced towards the N atom (see figure). For the excited state the Ar atom lies 3.401 Å above the plane of the indole molecule and is similarly located. The transition $\tilde{\text{A}} - \tilde{X}$ is accompanied by a rotation of the principal axes of inertia.

Kortner, T.M., Küpper, J., Pratt, D.W.: J. Chem. Phys. **111** (1999) 3946.