ELECTRONIC SPECTRA OF BENZENE ISOTOPOMERS IN HELIUM NANODROPLETS

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We have recorded high-resolution ultraviolet spectra of four benzene isotopomers (C_6H_6, C_6H_5D, 1,3,5-$C_6H_3D_3$, and C_6D_6) in helium nanodroplets in the region of the first Herzberg-Teller allowed vibronic transition $^1B_{2u} \leftarrow {}^1A_{1g}\ 6^1_0$. The spectra could not be observed by laser-induced fluorescence, but were recorded by beam depletion using bolometric detection. Like tetracene and pentacene,[a] these benzene isotopomers show multiple absorption lines spread over $\sim 10\,\mathrm{cm}^{-1}$. The structures of these lines are found to be qualitatively different for the various isotopomers. The zero-phonon lines are blue shifted with respect to the gas phase transitions by 3 to $4\,\mathrm{cm}^{-1}$, as predicted by Even *et al.*[b]

[a] M. Hartmann, A. Lindinger, J. P. Toennies, and A. F. Vilesov, *Phys. Chem. Chem. Phys.* **4**, 4839 (2002)
[b] U. Even, I. Al-Hroub, and J. Jortner, *J. Chem. Phys.* **115**, 2069 (2001)