CONSISTENT ASSIGNMENT OF THE VIBRATIONS OF MONOHALOSUBSTITUTED BENZENES

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When substituted benzenes become a focus of a spectroscopic study there are various well known vibrational labelling schemes present,[a,b] however it was shown in recent works the description of monohalobenzene vibrations in terms of benzene modes (ie. Wilson notation) is questionable in some cases.[c,d] A new scheme is presented which uses the motions of monofluorobenzene vibrations as a basis for labelling vibrational assignments of monosubstituted benzenes.[d] The scheme has been successfully applied to the ground and excited states of toluene and its deuterated-methyl group isotopologue.[e,f] Here we present the application of the scheme to fluorobenzene and its fully deuterated analogue. One-colour resonance-enhanced multiphoton ionization (REMPI) spectroscopy was employed in order to characterise the fluorobenzene and fluorobenzene-d_5 excited state.

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