COMPARISON OF THE CONFORMATIONS AND BARRIERS FOR INTERNAL ROTATION IN DIPHENYLAMINE AND DIPHENYLETHER

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Electronic spectra have been recorded for two series of isotopically substituted diphenylamines and diphenylethers under supersonic jet expansion conditions. Complete deuteration of a single phenyl ring shows that in both cases the equilibrium conformation contains equivalent rings. The vibrational frequency shifts induced by this and various other deuterations have also been used to make assignments for the low-frequency modes which exhibit substantial Franck-Condon activity. In neither case do the vibrational modes correspond to pure torsion or bending motions. Additional studies on the singly *ortho*-deuterated isotopomers have been used to probe the height of the barrier for internal rotation of the phenyl rings.