

Solvent effects on the infrared spectra of nitro-N-methylanilines: Intra- and inter-molecular interactions and molecular configurations

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The influence of various common basic solvents on the i.r. spectra of N-methylaniline and its ortho- and para-nitro derivatives has been studied. The behaviour of the frequency $\nu(\text{N-H})$ depends on the donor strength of the medium. In high donor-strength media, the frequency shifts show a near linear dependence on solvent basicity; in low donor-strength media (as well as for systems exhibiting intramolecular bonding) $\nu(\text{N-H})$ is practically constant. These results can be rationalized by considering the stabilization of species with two different configurations, the degree of planarity of which is enhanced by the donor strength of the medium.