

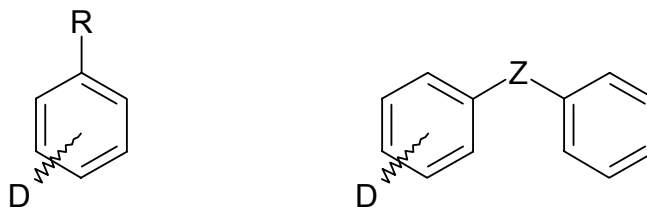
Deuterium Isotope Effects in ^{13}C NMR Spectra of *ortho*-, *meta*- and *para*-Deuterium Labelled Mono- and Binuclear Aromatic Compounds

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Differently deuterium labelled isotopomers of mono- and binuclear aromatic compounds (aniline, *trans*-azobenzene, benzaldehyde, benzoic acid, benzonitrile, benzophenone, *trans*-N-benzylideneaniline, *trans*-N-salicylideneaniline, *cis*-stilbene, *trans*-stilbene and toluene) were studied by ^{13}C NMR spectroscopy. A number of deuterium isotope effects (DIE) on ^{13}C chemical shifts have been observed.



$\mathbf{R} = -\text{CH}_3, -\text{CHO}, -\text{COOH}, -\text{NH}_2, -\text{CN}$ $\mathbf{Z} = -\text{C}=\text{N}-, -\text{N}=\text{C}-, -\text{C}=\text{C}-, -\text{N}=\text{N}-,$

The changes of magnitude, sign and extent of isotope effects in studied isotopomers of aforementioned compounds are quite different. The range of isotope effects, sign alterations, and magnitude variations will be discussed in terms of steric effects, planarity, symmetry, lone-pair interactions and charge redistribution.