EQUILIBRIUM NH-ACIDITY OF POLYFLUORINATED ARYLAMINES AND BENZANILIDES

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Equilibrium NH-acidity of the range of polyfluoroaromatic amines and benzanilides containing Ar_F-group (C_6F_5, 4-C_5F_4N) on the nitrogen atom has been established in relation to 9-phenylfluorene (pk 18.5) by overmetallation method in dimethyl sulfoxide (cation K^+). Acidity of para-substituted NH-acids of the type p-$XC_6F_4NHC_6F_5$ and p-$XC_6F_4NHC(O)Ph$ (X = Me_2N,MeO,Me,H, F,Cl,Br,CF_3) has been determined in DMSO. From these data Hammet correlations for these series have been found. Examination of pK values for investigated compounds and respective non-fluorinated NH-acids shows that acidifying effect (ΔpK) of C_6F_5-group to neighboring N-H-bond are more that of Ph-group from 6,5 to 7,5 pK units. The same difference of acidifying effects of C_6F_5 - and Ph-groups have been found in CH-acids (from 5 to 6 pK units from the results of pK s in dimethoxyethane). This is attributed to the increase of inductive influence of C_6F_5-group on the acidity both CH- and NH-acids.

The pK -σ correlations

Series	Equation
p-$XC_6F_4NHC_6F_5$	$pK = -3.45\sigma_p^- + 12.6$
	r -0.972, s 0.33, n 8
p-$XC_6F_4NHC(O)C_6H_5$	$pK = -2.92\sigma_p^- + 13.6$
	r -0.966, s 0.25, n 6

The pK values of polyfluorinated arylamines and benzanilides in DMSO (cation K^+) relative to 9-phenylfluorene(pK 18.5)

Compound	pK
$C_6F_5NH_2$	23.1
4-$NH_2C_5F_4N$	19.2
C_6F_5NHPh	19.2
4-$Me_2NC_6F_6F_4NHC_6F_5$	13.6
4-$MeC_6F_4NHC_6F_5$	13.3
4-$HC_6F_4NHC_6F_5$	12.8
$C_6F_5NHC_6F_5$	12.6
4-$BrC_6F_4NHC_6F_5$	12.2
4-$ClC_6F_4NHC_6F_5$	12.0
$C_6F_5NHC_{10}F_7^-$	11.8
4-$CF_3C_6F_4NHC_6F_5$	10.6
4-$NCC_6F_4NHC_6F_5$	9.1
4-$MeOC_6F_4NHC(O)Ph$	14.1
4-$MeC_6F_4NHC(O)Ph$	14.2
4-$HC_6F_4NHC(O)Ph$	13.6
$C_6F_5NHC(O)Ph$	13.0
4-$CF_3C_6F_4NHC(O)Ph$	11.8
$C_6F_5NHC(O)C_6F_5$	10.8