Effect of Substitution on the Molecular Geometry of *N*-(2/3/4-Substituted-phenyl)-2,2-dichloro-acetamides, 2/3/4-XC_6H_4NH-CO-$CHCl_2$ (X = CH_3 or Cl)

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The effect of ring substitution on the molecular geometry of amides of the type 2/3/4-XC_6H_4NH-CO-$CHCl_2$ (X = CH_3 or Cl) has been studied by determining the crystal structures of the compounds *N*-(2-methylphenyl)-2,2-dichloro-acetamide, 2-$CH_3C_6H_4NH$-CO-$CHCl_2$ (**2MPDCA**); *N*-(3-methylphenyl)-2,2-dichloro-acetamide, 3-$CH_3C_6H_4NH$-CO-$CHCl_2$ (**3MPDCA**) and *N*-(3-chlorophenyl)-2,2-dichloro-acetamide, 3-ClC_6H_4NH-CO-$CHCl_2$ (**3CPDCA**). The results are analyzed along with our earlier crystal structures of the amides *N*-(phenyl)-2,2-dichloro-acetamide, C_6H_5NH-CO-$CHCl_2$ (**PDCA**); *N*-chloro-*N*-(phenyl)-2,2-dichloro-acetamide, C_6H_5NCl-CO-$CHCl_2$ (**NCPDCA**); *N*-(4-methylphenyl)-2,2-dichloro-acetamide, 4-$CH_3C_6H_4NH$-CO-$CHCl_2$ (**4MPDCA**); *N*-(2-chlorophenyl)-2,2-dichloro-acetamide, 2-ClC_6H_4NH-CO-$CHCl_2$ (**2CPDCA**); *N*-(4-chlorophenyl)-2,2-dichloro-acetamide, 4-ClC_6H_4NH-CO-$CHCl_2$ (**4CPDCA**). The results have also been compared and correlated with the crystal structure data of trichloro-acetamide analogues of the type 2/3/4-XC_6H_4NH-CO-CCl_3 (X = CH_3 or Cl): *N*-(phenyl)-2,2,2-trichloro-acetamide, *N*-(2-methylphenyl)-2,2,2-trichloro-acetamide, *N*-(3-methylphenyl)-2,2,2-trichloro-acetamide, *N*-(4-methylphenyl)-2,2,2-trichloro-acetamide, *N*-(2-chlorophenyl)-2,2,2-trichloro-acetamide, *N*-(3-chlorophenyl)-2,2,2-trichloro-acetamide, *N*-(4-chlorophenyl)-2,2,2-trichloro-acetamide, *N*-chloro-*N*-(phenyl)-2,2,2-trichloro-acetamide and *N*-(phenyl)-acetamide. The crystal system, space group, formula units and lattice constants in Å of the new structures are: **2MPDCA**: monoclinic, $P2_1/n$, $Z = 4$, $a = 4.7059(5)$, $b = 11.600(1)$, $c = 18.918(2)$, $\beta = 94.702(9)^\circ$; **3MPDCA**: orthorhombic, $P2_12_12_1$, $Z = 4$, $a = 4.759(1)$, $b = 10.543(3)$, $c = 20.205(5)$; **3CPDCA**: orthorhombic, *Pnma*, $Z = 4$, $a = 9.935(1)$, $b = 6.997(1)$, $c = 14.140(2)$. **2MPDCA**, **3MPDCA** and **3CPDCA** show a molecule each in their asymmetric units, in agreement with the observed ^{35}Cl NQR spectra of the compounds.

Key words: Crystal Structures; *N*-(2/3/4-Substituted-phenyl)-2,2-dichloro-acetamides.