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### Carbamoylmethylphosphoryl Compounds: Ch-Acidity and Basicity

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## CARBAMOYLMETHYLPHOSPHORYL COMPOUNDS: CH-ACIDITY AND BASICITY

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Carbamoylmethylphosphoryl compounds (CMP) are used as neutral bifunctional extractants. However, little is known about acid-base properties of these compounds. We have studied CH-acidity and basicity of selected CMP,  $RR'P(O)CH_2C(O)NEt_2$  with  $R, R' = Alk, Alk_2N, Ar, AlkO$ , and also H-complexes of CMP with  $HNO_3$ .

Equilibrium acidities (pK's) are determined in  $Me_2SO$  by overlapping indicator method. We have found acidity constants for CMP to be in the range of 22,4-25,7 pK units. The correlations between these pK's and  $\Sigma\sigma^P$ -constants of substituents at the phosphorus atom, and  $\Sigma\sigma_{CH_2}^-$ -constants of substituents at the central carbon atom have been obtained. The structure of carbanions are discussed using the data of IR and UV-spectroscopy.

Protonation of CMP has been studied by potentiometric titration with perchloric acid in  $MeNO_2$ . Basicity constants of CMP in the range of 3,1 to 7,0 are reported. There is a correlation between  $pK(MeNO_2)$  and  $\Sigma\sigma^P$ -constants. The structure of protonated salts has been established by X-ray analysis and IR spectra.

The interaction of CMP with  $HNO_3$  in  $CCl_4$  has been investigated by termometric titration and IR-spectra. The formation of molecular complexes proceeds via two steps; the first one is the coordination of  $HNO_3$  to  $P=O$  group, and the second one is the coordination of  $HNO_3$  to  $C=O$  groups.