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Synthesis of Substituted Phosphonates and Their Reactions with Carbonyl Compounds

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SYNTHESIS OF SUBSTITUTED PHOSPHONATES AND THEIR REACTIONS WITH CARBONYL COMPOUNDS

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The reaction of the derivatives of 3-phenyl-3-chloro-2-oxopropionic acid with the trivalent phosphorus compounds has been studied. The esterification or amidation of this acid have been shown to influence the course of reaction with Ph_3P . In the reaction with esters enolphosphonium salts are produced, ketophosphonium salts are obtained when amides are involved. Properties of these compounds have also been studied in the Wittig reaction. 3-(α -chlorobenzyl)-2-oxoquinoxaline which reacted with trialkyl phosphites (Arbusov reaction) has been synthesized. These phosphonates are obtained in nearly quantitative yields, in alkaline conditions (Horner-Emmons reaction) they react smoothly with aromatic aldehydes to give the substituted vinylquinoxalines.

α -Alkoxy, α -allyloxy, α -propargyloxy, α -alkoxy(α -carboalkoxy)phosphonates and α -cyanoalkylaminomethyl- and cyanoalkylcarbamoylmethylphosphonates have been synthesized. The influence of the substituents of the phosphorus atom of phosphonates obtained by reaction with aldehydes in Horner-Emmons reaction was investigated.

Phosphorus aminoketones have been obtained by mercury salt catalysed hydration of propargylaminomethylphosphonates. The reactivity of these compounds in reactions with phosphonium salts in the presence of strong bases has been studied.