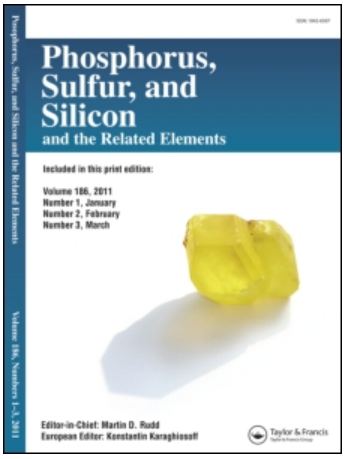

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Dialkylaminoethylation of Trimethylsilyl Esters of Trivalent Phosphorus Acids

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DIALKYLAMINOETHYLATION OF TRIMETHYLSILYL ESTERS OF TRIVALENT PHOSPHORUS ACIDS

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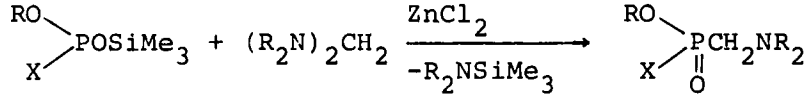
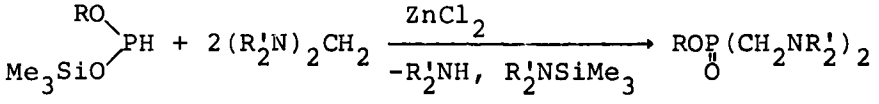
Dialkylaminomethylation of trimethylsilyl esters of trivalent phosphorus acids using bis(dialkylamino)methanes was carried out for the first time. This reaction is a convenient method for preparation of quaternary coordinated phosphorus compounds, including dialkylaminomethyl and functional groups. Thus trimethylsilylphosphites and -phosphonites of various structures react with bis(dialkylamino)-methanes according to Arbuzov reaction in the presence of zinc chloride as a catalyst, when heated to 120°C, resulting in formation of phosphonates and phosphinates (I).



I

R = Alk, X = AlkO, $(AlkO)_2CH$, Me_3SiOCH_2

Trimethylsilylhypophosphites, including two highly reactive fragments (PH and POSi), react with the excess of bis(dialkylamino)methane via double dialkylaminomethylation to give bis(dialkylaminomethyl)phosphinates (II).



II

R = Alk, Me_3Si; R' = Alk

Under similar conditions the reaction between dialkyl(trimethylsilyl)phosphites and dimethylformamide dimethylacetal proceeds with trimethyl(methoxy)silane splitting off and tetraalkyl(dimethylaminomethylene)diphosphonates formation.