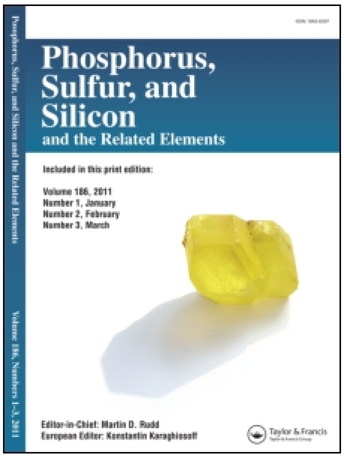

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Frozen Friedel-Krafts Type Reaction of Phosphorus Halides with Tetraphenylborate Anion

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FROZEN FRIEDEL-KRAFTS TYPE REACTION OF PHOSPHORUS HALIDES WITH TETRAPHENYLBORATE ANION

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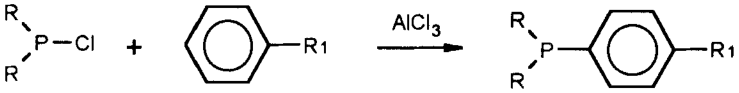
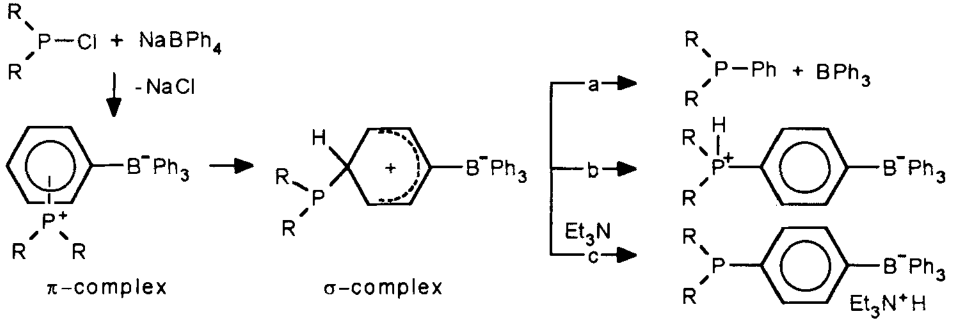
The Friedel-Krafts type reaction of phosphorus halides are well known and widely used in organic synthesis. Usually it requires catalyst and elevated temperature and spreads on the most electrophilic phosphorus halides.



We have shown that tetraphenylborate anion reacts at very mild conditions - at room temperature and without catalyst - and so is a viable substrate for the detailed investigation of this reaction. It provides an opportunity to freeze reaction, observe or even isolate intermediate products and reveal some new reaction pathways.

The reaction proceeds through the formation of π- and σ-complexes and in general case can be presented by the following scheme:



Transformations of σ-complexes showed a clear dependence of substituents R and reaction medium. The proton transfer can induce cleavage of B-C bond (path a) or protonation of phosphorus or other basic centers of molecule (path b). In the presence of outer base products of phosphorylation of tetraphenylborate anion are formed (path c).

The investigation of possibility of polyphosphorylation of BPh_4^- and examination of ligating properties of phosphorus-substituted BPh_4^- towards transition metals are in progress.