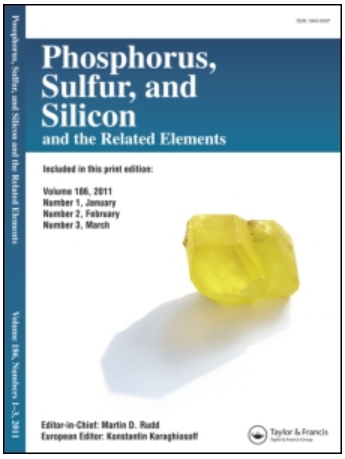

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One Step Synthesis of α-Substituted α, β-Unsaturated Aldehydes

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One Step Synthesis of α-Substituted α,β-Unsaturated Aldehydes

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The conversion of carbonyl compounds into homologated α,β-unsaturated aldehydes ("formylolefination") is a highly useful transformation in organic synthesis. A large number of methods have been reported for effecting such a chain lengthening. These proceed mainly via silylated intermediates or via phosphorylated reagents. The "phosphonate-strategy" has found widespread use, but leads exclusively to α,β-unsaturated aldehydes, non-substituted in the α-position.

We now describe a simple and efficient procedure to convert a carbonyl compound into an α-substituted α,β-unsaturated aldehyde starting from an alkylphosphonate, with the possibility of not isolating any of the intermediates. The key step of this method is the formation of a stabilized lithiated adduct resulting from the addition, in the presence of a two-fold excess of metallating agent (n-BuLi + LDA), of an α-phosphorylated carbanion on the readily available ethyl N-phenylformimidate.