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New Homologation Procedures of Carbonyl Compounds by Means of Diethyl[trimethylsilylethoxymethyl]phosphonate

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The lithiated carbanion of the phosphonate 1 prepared by means of $s\text{-BuLi}$ at -78°C in THF can be treated with $\text{ClSi}(\text{CH}_3)_3$ transforming 1 into its $\alpha\text{-Si}(\text{CH}_3)_3$ substituted derivative 2. Whereas the anion of 1 is thermally unstable at temperatures exceeding -70°C the preparation of the corresponding carbanion of 2 by means of $s\text{-BuLi}$ and the subsequent reaction with carbonyl compounds can be carried out at temperatures about -30°C illustrating the carbanion stabilizing effect of the $\alpha\text{-silyl}$ group. The phosphonate 2 is very suitable to effect conversion of many aldehydes and ketones via the vinylphosphonate-type 3 (applying a Peterson elimination) either to the homologues esters 4 or the special $\alpha\text{-hydroxyesters}$ 5.

