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TERMINAL OLEFINS FROM THE FLUORIDE-INDUCED ELIMINATION OF β-SILYLSULFONES

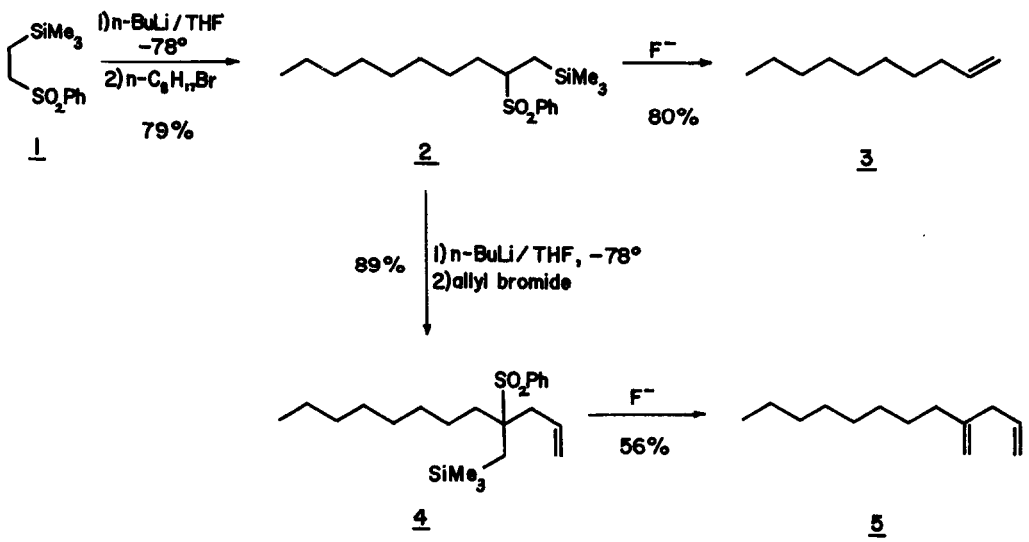
Philip J. Kocienski

Department of Organic Chemistry, The University, Leeds LS2 9JT.

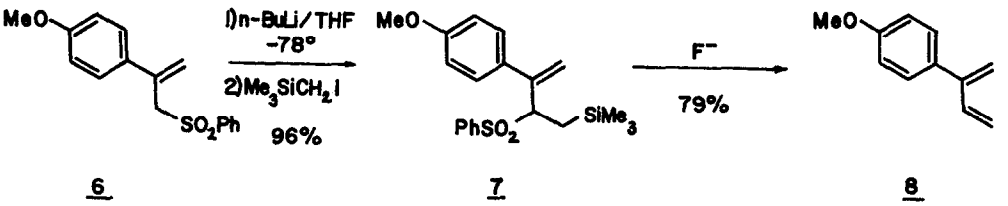
Summary:

Terminal olefins are obtained from the fluoride-induced elimination of β-silylsulfones.

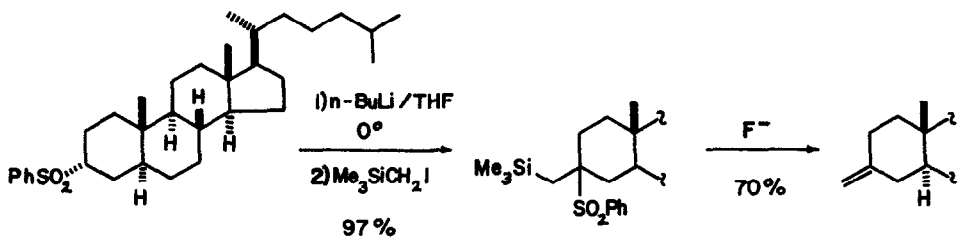
The formation of olefins from the nucleophile-induced elimination of β-halosilanes[1] and β-hydroxysilanes[2] has only recently been applied to synthesis.[3] We report herein that β-trimethylsilylsulfones also eliminate on treatment with $(n\text{-Bu})_4NF\cdot 3H_2O$ in refluxing THF. This, together with the facile α-alkylation of sulfones, represents a new convergent olefin synthesis. Thus, the mono- or dialkylation of the β-trimethylsilylsulfone 1 (m.p. 52 °C) combined with a subsequent elimination, demonstrates that 1 may serve as a synthon for $CH_2=CH^-$ or $CH_2=C^=$ as exemplified for the formation of 1-decene and the homodiene 5 respectively:



Alternatively, mono- or disubstituted sulfones 6 and 9[4] were readily alkylated with Me_3SiCH_2I to give β-trimethylsilylsulfones from which the corresponding olefins were prepared:



6 7 8



9 10 11

The examples cited above demonstrate that the new alkylation-elimination sequence provides access to simple terminal olefins, 1,1-disubstituted olefins, conjugated dienes, and homodienes. Extension to more functionally complex olefins and synthetic applications are under investigation.

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