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Synthesis of a Wide Range of Thioethers by Indium Triiodide Catalyzed Direct Coupling between Alkyl Acetates and Thiosilanes

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InI₃-Catalyzed Synthesis of Thioethers Using Thiosilanes

R = (un)saturated aliphatics, aryl carbonyls, adamantyl, OMe-, Cl- and CO₂Et-substituted benzyl, heterobenzyl, propargyl, ferrocene groups

Selected examples:

82% yield

89% yield

75% yield

41% yield

57% yield

28% yield

44% yield

58% yield

Significance: Herein, the authors disclose an indium triiodide catalyzed substitution of the acetoxy group in various alkyl acetates using thiosilanes. This method successfully converts various primary, secondary and tertiary alkyls, as well as propargylic, allylic and benzylic systems into the appropriate thioethers with a high functional group tolerance.

Comment: The corresponding thioethers are obtained in good to excellent yields. In the case of primary alkyl acetates and α -acetoxy carbonyl derivatives, substitution is supposed to proceed via an S_N2 reaction, whereas benzylic, allylic, propargylic and secondary or tertiary alkyl acetates are substituted by an S_N1-type mechanism.

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