SYNLETT
Spotlight 54

This feature focuses on a reagent chosen by a postgraduate, highlighting the uses and preparation of the reagent in current research

Tetra Butyl Ammonium Fluoride: TBAF

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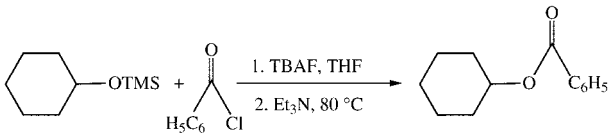
Tetra butyl ammonium fluoride (TBAF) has been used widely as a reagent for the efficient cleavage of various silyl protecting groups from O-silylated nucleosides[1,2] and pyrophosphates,[3] as well as N-silyl,[4] and S- silyl derivatives.[5] These reactions are carried out under very mild conditions in excellent yields.

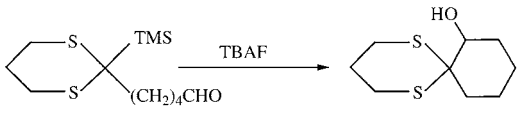
Preparation: Aqueous HF is passed through an amberlite IRA 410 OH column, followed by an aqueous solution of tetra-butylammonium bromide. After the resin is washed with H_2O, the combined H_2O fractions are repeatedly evaporated until no water is present. TBAF is collected as an oil in quantitative yield.

Abstracts

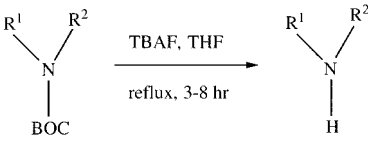
Silyl ethers can be converted to esters in one pot when they are treated with TBAF, followed by exposure to acyl chlorides[6,7] or anhydride[8] in the presence of a base.



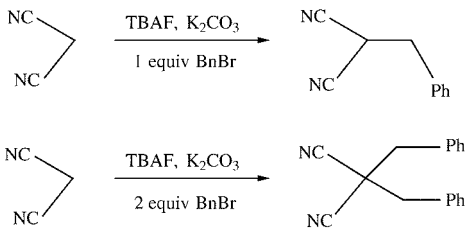
The anions generated in situ by desilylation of silylacetylenes,[9,10] allysilanes,[11–13] propargylsilanes[14] and other silane derivatives can undergo nucleophilic addition to ketones and aldehydes.[15]



N-tert-Butyloxy carbonyl groups can be removed by using TBAF in refluxing THF.[16]



Under phase transfer conditions, selective mono- and dialkylation of malononitrile have been achieved by using neat TBAF with potassium carbonate or potassium *tert*-butoxide.[17]



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