

Ion-Exchange-Resin-Supported Hydrogen Fluoride for Fluorination Reactions

Category

Polymer-Supported Synthesis

Key words

hydrogen fluoride

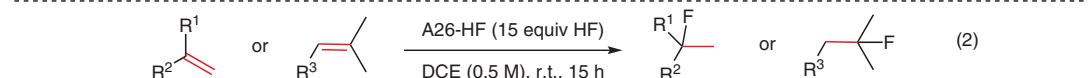
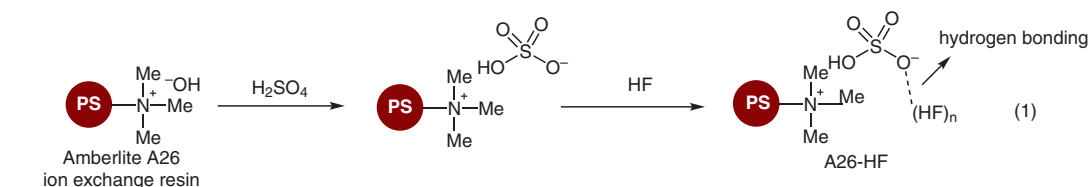
fluorination

flow reaction

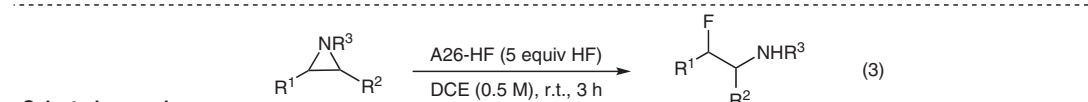
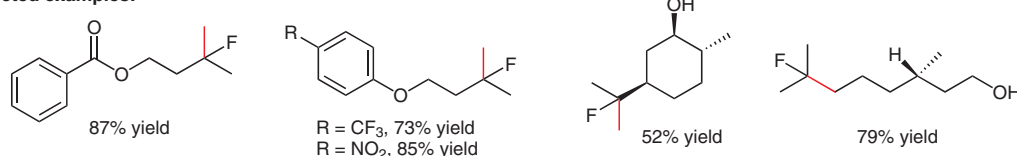
hydrofluorination

ion-exchange resin

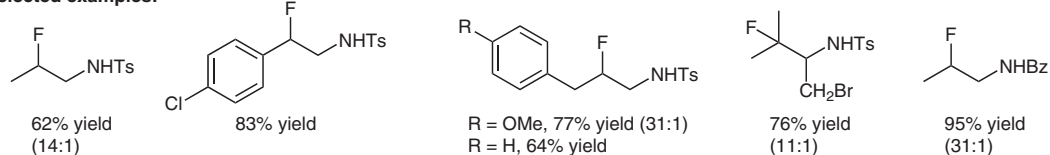
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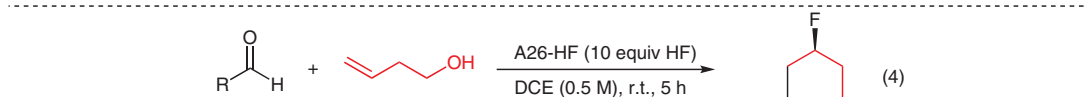
Selected examples:



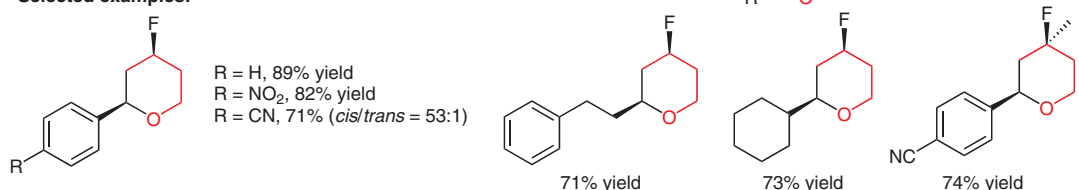
Selected examples:



value in parenthesis are regioisomeric ratio



Selected examples:



Significance: A solid anhydrous hydrogen fluoride-equivalent reagent (A26-HF) was prepared by treatment of ion-exchange resin with HF gas (eq. 1). A26-HF was used as a source of HF in the hydrofluorination of alkenes (eq. 2), the ring-opening fluorination of aziridines (eq. 3), and a fluoro-Prins reaction (eq. 4) to give a variety of fluorinated products in up to 89% yield.

Comment: The ion-exchange-resin-supported hydrogen fluoride was applied to the flow hydrofluorination of 3-methylbut-3-en-1-yl benzoate to give 3-fluoro-3-methylbutyl benzoate in 92% NMR yield. In a thermostability test, only a 2 wt% loss of HF was detected when A26-HF was exposed to air at room temperature for 30 hours.