A NEW TECHNIQUE FOR THE CONVERSION OF OLEFINS INTO ORGANOBORANES AND RELATED ALCOHOLS

Sir:

In the presence of aluminum chloride the reducing powers of sodium borohydride are greatly enhanced. We now wish to report that this reagent readily reacts with simple olefins, such as ethylene, 1- and 2-pentene, cyclohexene, and styrene, at temperatures of 25°C, to form the corresponding trialkylboranes in yields of 90%.

Trialkylboranes are readily oxidized to the borate esters which can be hydrolyzed to the corresponding alcohols. The reaction can be carried out without isolation of any of the intermediates. In this way cyclohexene has been converted into cyclohexanol, 1-hexene into 1-hexanol, styrene into 2-phenylethanol and 1,1-diphenylethylene into 2,2-diphenylethanol. The yields based on olefin are good, in the range of 70–90%.

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