Hydroboration and Haloboration of Propyne and 1-Butyne

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Hydroboration, Haloboration, Boron

Hydroboration of propyne and 1-butyne with $HBCl_2$ obtained from BCl_3 and Me_3SiH in equimolar amounts leads to 1,1-bis(dichloroboryl)alkanes **1**. When BCl_3 is used in excess, no 1,1-bis(dichloroboryl)alkanes **1** but E-1-dichloroborylalkene **2** besides E-1-dichloroboryl-2-chloro-alk-1-ene **3** are formed. Other by-products are tris(2-chloro-alk-1-ene-1-yl)borane **4** and bis(2-chloro-alk-1-ene-1-yl)chloroborane **5**. The reaction of **3** with catechol and the formation of pyridine adducts of **4** and **5** lead to crystalline products. The composition of the products was determined by NMR spectroscopy, MS spectrometry and X-ray structure analyses of **6a**, **6b**, **7a** and **8b**.