B-14

CF_2-INSERTIONS IN THE PRESENCE OF TRIMETHYLAMINE

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The reaction of $(CH_3)_3SnCF_3$ with BX_3 (X = Cl, Br) at low temperature yields trifluoromethyl boron compounds, which are unstable above -40 °C and decompose with elimination of difluorocarbene. This carbene can be trapped by $(CH_3)_3N$ and subsequently inserted into BX bonds (X = Cl, Br). Thus the amine adducts $CF_2XBF_2 \cdot N(CH_3)_3$ and the borate anions $CF_2XBF_3^{\ominus}$ and $(CF_3)_nBF_2(CF_2X)^{\ominus}_{2-n}$ (n = 0,1; X = Cl, Br) are formed. Several of these species have been isolated and characterized.

The CF_2 trapped by $N(CH_3)_3$ has been identified by its ^{19}F NMR spectrum; it reacts with protons to form the $(CH_3)_3NCF_2H^{\oplus}$ cation. The synthesis and structures of fluoro-tetramethyl-ammonium cations will be discussed.