Russian Journal of General Chemistry, Vol. 71, No. 6, 2001, pp. 987–988. Translated from Zhurnal Obshchei Khimii, Vol. 71, No. 6, 2001, p. 1049. Original Russian Text Copyright © 2001 by Kuznetsov.

LETTERS TO THE EDITOR

Reaction of 2-Isobutyl-4,5-dimethyl-1,3,2-dioxaborinane with Anhydrous Aluminum Bromide

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Received September 15, 2000

As shown earlier [1], the reaction of 2-alkyl- and 2-alkoxy-4-methyl-1,3,2-dioxaborinane with anhydrous aluminum bromide in benzene involves heteroring cle-avage to give 1,3-dibromobutane and *tert*-butylbenzene. The formation of the latter shows that 1,3,2-dioxaborinanes, like acyclic boric esters [2], can be used as

alkylating agents in the Friedel–Krafts reaction. The aim of the present work was to evaluate the reactivity of stereoisomers of 2-isobutyl-4,5-dimethyl-1,3,2-dioxaborinane (I) toward anhydrous $AlBr_3$ in benzene. According to GLC data, the reaction yields *tert*-butylbenzene (II) and 2-methyl-1,3-dibromobutane (III).

$$Me \xrightarrow{O}_{Me} B-Bu-i + C_{6}H_{6} \xrightarrow{AlBr_{3}} \swarrow Bu-t + H_{3}C \xrightarrow{Br}_{H_{3}C} H_{3}C$$

The formation of compounds II and III was proved by GLC with use of reference compounds obtained by independent synthesis [2, 3]. The conversion of cyclic ester I was no higher than 40% (GLC). The ratio of the cis and trans isomers of the starting compound before and after reaction is almost the same (56:44, respectively), implying comparable reactivity of both the isomers in the reaction in question. The reaction probably involves Al←O coordination bond formation followed by C–O bond cleavage [4]. The absence of boron derivatives in the organic phase suggests formation of aluminum salts of boric or metaboric acids or their hydrolysis products. Thus, the configurational differences in the aliphatic part of the 1,3,2-dioxaborinane ring here exert almost no effect on processes involving the heteroatomic molecular fragment.

Anhydrous AlBr₃, 0.01 mol, was added slowly

(over the course of 30 min) with stirring at room temperature to 0.01 mol of ester **I** in 100 ml of benzene, after which the mixture was heated under reflux for 1 h on a water bath and poured onto ice. The organic phase was separated, the aqueous phase was treated with benzene $(2 \times 50 \text{ ml})$, the combined organic extracts were concentrated on a rotary evaporator, and the residue was subjected to GLC analysis.

The configurational assessment of the isomers of ester **I** has been described in [5, 6]. Gas chromatography was performed on a Tsvet-126 chromatograph with a flame-ionization detector, column 3000×4 mm, stationary phase 5% OV-17 on Chromaton N-Super, carrier gas argon. REFERENCES

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