PREPARATION OF UNSYMMETRICALLY SUBSTITUTED 2,4,8,10-TETRAOXASPIRO-[5.5]UNDECANES BY AN EXCHANGE REACTION

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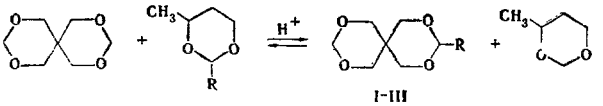
We used an exchange reaction for the synthesis of unsymmetrically substituted 2,3,8,10-tetraoxaspiro-[5.5]undecanes, which, up until now, have been obtained only as a result of addition to the double bond of 3,9-divinyl-substituted compounds [1].

The reaction was carried out for 5-10 h in sulfolane or toluene with a starting reagent molar ratio of 1:1 at 100° in the presence of $BF_3 \cdot O(C_2H_5)_2$ or H_2SO_4.



I-III

I R = CH_3; II R = n-C_3H_7; III R = iso-C_3H_7

Compound I had bp 105° (8 mm), d_4^{20} 1.1089, and n_D^{20} 1.4526. Compound II had bp 130° (8 mm), d_4^{20} 1.0950, and n_D^{20} 1.4620. Compound III had bp 120° (8 mm), d_4^{20} 1.0952, and n_D^{20} 1.4585. The results of elementary analysis and the molecular weights found by mass spectrometry were in agreement with the calculated values.

The IR spectra of the compounds contained intense bands at 1010-1200 cm^{-1}, which constitute evidence for the presence of a cyclicacetal structure.

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