

SYNTHESIS OF ORGANO-NEORGANIC POLYMERIC BOROSILOXANES

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Using sol-gel methods, new synthetic approaches to the preparation of boron-containing organic-inorganic hybrid polymers based on boron oxide (boric anhydride), have been developed¹.

Functional borocyclosiloxanes were synthesized by the condensation between boric acid and 1,3-dichlorotetraphenyl disiloxane. The reaction conditions, spectral and thermal characteristics of condensation products were investigated. It is shown the increasing in the synthesis time to 15-18 h, a bicyclic borosiloxane is formed.

The conditions for obtaining saturated solutions of boron oxide in organic solvents were found and it was found that boric anhydride is most completely dissolved in triethyl orthoformiate at 100-110 °C retaining its structure.

Boron-containing hybrid polymers obtained by interaction between boric anhydride solution and mono-functional cyclic borosiloxanes. It was found that the formation of Si-O-B bonds at 110-120 °C is due to the use of anhydrous sol-gel process. A number of properties of the obtained polymers were studied.

Reference

1. Zachernyuk A.B., Zachernyuk B.A., Solov'eva E.N., Nedel'kin V.I., Korneeva L.A., Bezryadin S.G. *Butlerov commun.*, 2019, 57(2), 35