

Nonhydrolytic routes to alumina materials

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Nonhydrolytic processes emerged as promising routes for the preparation of new materials. One family of materials is based on alumina which is very important for many industrial applications.

The main subject of our research was the study of reactions of dichloroethylalane with various alcohols, such as cyclohexanol, *n*-butanol, and phenols leading to the preparation of the precursors for alumina materials. From these reactions, we obtained a series of alumina chloro-alkoxides with variety of structural arrangements. Products were characterized by multinuclear NMR, IR and Raman spectroscopy, thermal analysis, and single-crystal X-ray analysis.

The transformation of these compounds to aluminum oxide materials was performed by a thermal decomposition processes in high boiling solvents. The reaction proceeds by alkylhalide elimination mechanism. Alumina was characterized by TEM, IR spectroscopy, powder XRD, and BET measurements.

References:

Moravec Z., Sluka R., Necas M., Jancik V., Pinkas J.; *Inorg. Chem.* **2009**, *48*, 8106-8114

