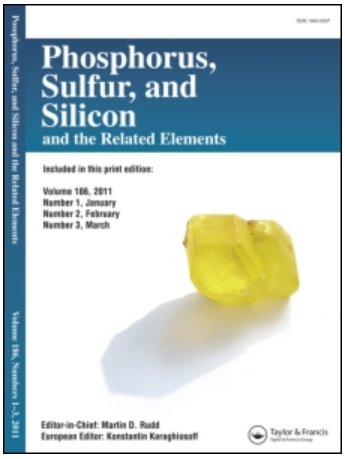

Phosphorus, Sulfur, and Silicon and the Related Elements
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713618290

The Structure and the Properties of Polyphosphates Recieved by Gasophase Method on Polyoxides Surface

R. S. Saifullin[a]; O. S. Sirotkin[a]; G. G. Chisameev[a]
[a] Kirov Institute of Chemical Technology, Kazan, USSR

To cite this Article Saifullin, R. S. , Sirotkin, O. S. and Chisameev, G. G.(1990) 'The Structure and the Properties of Polyphosphates Recieved by Gasophase Method on Polyoxides Surface', Phosphorus, Sulfur, and Silicon and the Related Elements, 51: 1, 431
To link to this Article: DOI: 10.1080/10426509008040955
URL: http://dx.doi.org/10.1080/10426509008040955

Phosphorus, Sulfur, and Silicon, 1990, Vols. 51/52, p. 431
Reprints available directly from the publisher
Photocopying permitted by license only

THE STRUCTURE AND THE PROPERTIES OF POLYPHOSPHATES RECIEVED BY GASOPHASE METHOD ON POLYOXIDES SURFACE

R.S.SAIFULLIN, O.S.SIROTKIN, and G.G.CHISAMEEV
Kirov Institute of Chemical Technology, K.Marx Str. 68, Kazan 420015, USSR

The gasophase method of polyphosphate (PPh) synthesis through the reaction between gaseous P_4O_{10} or mixture P_4O_{10} - activator and surface of polyoxides was developed. The methods of investigation were: IR- and Laser-mass-spectroscopy, photocolorimetry, X-ray analyse, gravimetry, gel-sol-fraction, and others. The synthesis characteristics of the mono- or polyoxide (MgO, Al_2O_3, CaO, SiO_2, TiO_2, MnO_2 and other ceramics) systems have been investigated. The structure and physical properties of synthesis products, possibility of their modification by thermo- and photochemical influences, and surface anisotropy of composition have been evaluated. The reaction has diffusion nature. Anisotropy determines the peculiarities of the products properties and modification possibility. The results of the investigations allow us to consider the macromolecular structure of glasslike polyphosphates as chains, which consist of various regularly placed components (ROC), e.g. for Mg-, Al-, Mn- or Ti-PPh tetracyclophosphate is ROC as to Si-PPH - it is copolymer with structure ROC in the form of Si-pyrophosphate. PPh structure and the degree of PPh sewing synthesized on polyoxide ceramic surface have been determined mostly by the composition of ceramics. Thus PPh is presented by polytetracyclophosphate of aluminium and by pyrophosphate, of silicon on "Al_2O_3-ceramic" surface (Al_2O_3 + SiO_2). The chains sewing takes place by the mechanism of substitution (by atoms of Mg, Al, Si) or introduction (Ca, Zn). The present method has been applied for protection of ceramics by thin films and other coatings, soldering and obtaining composite materials.