| Session | Poster Session |
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## INFLUENCE OF SILICON-ORGANIC COMPOUNDS ON THE CRYSTALLIZATION ABILITY OF FUSED SILICA GLASSES OBTAINED BY A GAS-FLAME METHOD FOR USE IN THE PRODUCTION OF REFRACTORIES

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Fused silica ceramics is a special group among the materials used to obtain refractory products. The characteristics of fused silica ceramics are isotropic and are determined by the main raw material component - fused silica glass, due to it has high chemical resistance, fire resistance, radiation resistance, electrical insulation properties, significant heat resistance and high operating temperatures. The use of fused silica ceramics is limited due to difficulties associated with undesirable crystallization processes during sintering, which occur at temperatures above 1100 °C. Crystallization processes intensity increases with increasing temperature, which necessitates the search for ways to reduce the sintering temperature of fused silica ceramics. Fused silica glass is thermodynamically unstable, since its free energy is greater than the free energy of any crystalline form of silica. To reduce the firing temperature in the preparation of fused silica ceramic materials, it is proposed to use organosilicon compounds, the pyrolysis of which leads to the formation of SiO2, CO2, and H2O. Currently, the influence of nature and the amount of organosilicon compounds on the physicochemical properties, structure and phase composition of fused silica ceramic materials has not been studied enough and needs to be clarified. It was found that the addition of polyphenylsiloxane to the composition for the production of fused silica ceramics provides an increase of crystallization resistance up to 1300 °C due to the formation of a layer of amorphous silicon oxide on the fused silica glass particles surface which leads to decrease diffusion processes in structure of the material and increases the content of hydroxyl groups in the glass. This phenomenon leads to prevent the formation of cristobalite. Binder properties of polyphenylsiloxane were experimentally confirmed due to high plasticizing properties, which provide strong bonding of particles in the structure of the material.

**Keywords:** *fused silica ceramics, glass, refractories, polyphenylsiloxane, binder, heat resistance, crystallization*