

Silsesquioxanes as preceramic materials.

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Pyrolysis of silsesquioxane polymers is a very promising method for ceramics processing. Using ladder-like silsesquioxanes allows us to control amount of carbon introduced to ceramic material. It is vital from the point of view of structure and chemical and mechanical properties.

Sol - gel method was used for obtaining xerogels from siloxanes with methyl groups bonded to silicon atom (units T_1 - one methyl group, units D_1 - two methyl groups). Different types of $T_1:D_1$ units ratio were used. As a result ladder type structure was obtained. Xerogels were burned at 800°C in flowing argon atmosphere. SiO_xC_y - ceramic material was obtained. Detailed middle infrared and XRD studies were carried out to confirm the creation of amorphous silicon oxycarbide.

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