

### Preparation of Sodium Silicate Based Silica Aerogels via Supercritical Carbon Dioxide Drying Technique

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Silica aerogel is a nanostructured material with high specific surface area, high porosity, low density, low dielectric constant and excellent heat insulation properties. Nowadays, silica aerogels has increasingly attracted attention due to its extraordinary properties and potential applications. The supercritical fluid drying technology (SCFD), replacing the liquid in the pores with air while maintaining the three-dimensional networks of silica particles unchanged, is one of the most important ways to prepare aerogels. Unfortunately the solvent exchange is a complicated process and generally takes over 24 hours to complete, making large-scale implementation to be a challenging task. Here, prepared hydrophobic silica aerogels were characterized and analyzed by FT-IR, TGA, XRD, SEM, TEM, bulk density and BET surface area. Drying process can be completed within 6 hours via either liquid CO<sub>2</sub> or scCO<sub>2</sub> drying medium, and the effect of drying temperature and pressure on products was investigated.

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