

### Characterization of silica aerogel modified by surfactant adsorption and heat treatment

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Highly porous silica aerogel with nano-sized pore structure has drawn attention for the thermal insulator application. In preparation of aerogel hybrid coating materials for the thermal insulations, however, the incorporation of hydrophobic aerogel with organic polar binders is very limited due to dissimilar surface property between two materials. Accordingly, the surface modification of the aerogel is required to obtain compatible aerogel hybrid coating sols. In this study, the surface of aerogel particles was modified by using surfactant adsorption and heat treatment methods. Four different types of relatively long chain surfactants with various HLB were used to hinder the penetration of them into the nano-sized pores. The surface property of aerogel was evaluated in terms of observation for dispersion, contact angle and FT-IR measurement. In surface modification via surfactants, the effects of surfactant types and content, and mixing time as process parameter on the degree of hydrophobicity or hydrophilicity for the aerogel. In addition, the temperature in heat treatment process was revealed to be significant parameter to prepare highly hydrophilic aerogel.