

Investigating a relationship between structure of polymethylsilsesquioxane aerogel and various solvent

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Unique properties such as extraordinary low thermal conductivity, enormous specific surface area, or extremely low density of an aerogel are resulted from network structure of the aerogel. We surmise that one of the powerful parameters affecting the network structure of the aerogel is solvent (especially, the ratio of carbon to hydroxy group of the solvent). To prove this presumption, solvents having various ratios carbon to hydroxyl group were used in synthesizing polymethylsilsesquioxane (PMSQ) aerogel. Methanol, ethanol, 1-propanol, 2-propanol, benzyl alcohol, 1-heptanol and 1-decanol were used as same volume. The more carbon ratio increased, the more transmittance of PMSQ aerogel increased. Moreover, network structure of PMSQ aerogel had clear tendency by carbon ratio of solvents. This work will give inspiration in sol-gel synthesis.

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