

Reinforcement of mechanical strength of hydrophobic silica aerogel by cross-linking with polyurethane

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Silica aerogel has excellent thermal conductivity as insulation material. Because it attributes superb insulation to high porosity (>95 %), large surface area (500–2000 m<sup>2</sup>/g) by meso pores of silica networks. However, there is a limitation of uses for their brittle nature. On this research, the mechanical strength was improved by adopting polyurethane prepolymer end-capped with silane coupling agent. The cross-linking of polymer chains reinforced the interaction between the surface of silica secondary particles. This synthesis was followed by APD (ambient pressure drying). The characterization focus on the mechanical properties and thermal conductivity for the advanced inorganic/organic hybrid composite.

Acknowledgments

This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government(MSIT) (No. 2020R1A5A1019131) and a grant (10080492) from Korea Evaluation Institute of Industrial Technology under MOTIE, Republic of Korea.