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Abstract Formulary

Presentation type: **Oral** ✔ **Poster** ☐

Title: Improvement of pore properties by the addition of acetonitrile in sodium silicate-based aerogel

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ABSTRACT (Space limited to 2200 characters)

The silica aerogel has advantages in commercialization due to the cheap cost of a sodium silicate solution as a precursor and safe drying conditions as ambient pressure drying. But, generally, the sodium silicate-based aerogel retains lower physical properties than silicon alkoxide-based aerogel that uses supercritical drying. In this work, the drying control chemical additive (DCCA) is introduced to enhance the pore properties of sodium silicate-based aerogel. Due to the lower boiling point and lower surface tension than the other DCCAs, the acetonitrile was selected. For investigating the influence on the addition of acetonitrile, acetonitrile was added to the silica sol. The acetonitrile can suppress the agglomeration of particles by the formation of a steric shield by methyl groups and keep the pore size distribution uniformly with an appropriate molar ratio of acetonitrile/Na_2SiO_3. The sodium silicate-based aerogel showed a high specific surface area (577 m^2/g), pore volume (3.29 cc/g), and porosity (93%) that are comparable to the pore properties of silica alkoxide based silica aerogels.

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