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Preparation of metal-complexed mesoporous carbon membrane using monodispersed silica nanoparticlesJihyun Bae¹, Seongho Choi¹, Kyongeun Yu², Seungho Lee² and Woonjung Kim¹¹Hannam University, Republic of Korea²Chemtree Co. Ltd, Republic of Korea

Mesoporous materials have been applied in various fields such as catalysts, supports for nanomaterials, adsorption and separation, and sensors. One of the important points for some applications is to control the pore size or the pore structure depending on the purpose. It is necessary to control the size of the pores according to the size of the molecules or substances entering the pores of the mesoporous material. Also, it is very important that the change of the material constituting of the skeleton and the properties of the mesoporous material depending on the purpose of use. The mesoporous carbon material is expected to be applied in fields such as electrode materials of a fuel cell because it has a surface area of 1,000 to 2,000 m²/g, excellent thermal stability, absorption and performance as a carrier. Especially, mesoporous materials are mostly utilized as catalysts or adsorbents because they have uniform nanopores. Despite its many advantages, the carbon material is weak in strength depending on the orientation and is easily cracked and has a low applicability in general. In this study, a mesoporous carbon membrane based on silica nanoparticle was prepared. Various synthesis parameters were systematically investigated to study the effects on the size and the size distribution of silica nanoparticles. The silica nanoparticles were pressurized into a disk and then calcinated to obtain mesoporous carbon membrane. Then the membrane was chemically treated with COOH group, and Ag was complexed on the surface of the membrane. In addition, our study suggests a new method to fix the metal to the surface of the mesoporous carbon membrane as well as to increase the strength of them.

Biography

Jihyun Bae has earned his undergraduate degree in Chemistry at Hannam University, Republic of Korea in 2017. Presently he is a graduate student of Chemistry at the same university.

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