

Tetra-constituent Co-assembly Synthesis of an Ordered Mesoporous Carbon-Silica-Titania Composite

Zhou Yuanyuan^{1,2}, 윤성훈^{1,*}, 이철위¹

¹한국화학연구원; ²과학기술연합대학원(UST)

(yoonshun@kriect.re.kr*)

Recently, ordered mesoporous materials have been investigated in various fields such as catalysts, membranes, fuel cells, supercapacitors, secondary batteries and so on and shown well-improved performance.

In this study, an ordered mesoporous carbon-silica-titania material was successfully prepared using a novel tetra-constituent co-assembly method. In the preparation, PF oligomer was chosen as a carbon precursor and F127 as a soft template. Most importantly, a Ti citrate was used as a precursor of amorphous titania particles while TEOS added for the reinforcement of the mesostructure. The mesostructure of the composite was confirmed by TEM, SAXS, WXR and EDX. The results showed a highly ordered mesoporous carbon matrix with amorphous TiO₂ and SiO₂ homogeneously dispersed.