Synthesis of Highly Ordered Mesoporous Metal Chalcogenide Compounds *via* Nano-replication Method

이윤연, 배수연, 나현정, 김지만*
성균관대학교
(jimankim@skku.edu*)

Ordered mesoporous materials have been extensively investigated in the last two decades because of their uniform pore size, tunable pore structures, ease of functionalization, and high surface areas. Beyond the most investigated silica- and carbon-based materials, compound semiconductors have attracted considerable interest due to their more diverse electronic functionality, which includes photocatalytic activities, and semiconductor properties. Nano-replication is an efficient approach for synthesis of highly ordered crystalline mesoporous materials, because the hard templates provide stable supports for high temperature crystallization.
In the present work, we report on a facile synthetic route to highly ordered mesoporous metal chalcogenide compound semiconductors with crystalline and various framework thicknesses via the nano-replication method using bicontinuous cubic Ia3d ordered mesoporous silica KIT-6 with various pore diameters as hard-templates. The physicochemical and unique optical properties of the synthesized metal chalcogenides were investigated by X-ray diffraction, N2-sorption isotherms, electron microscopy, and UV-visible spectroscopy.