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Porous Core-Shell Metal Oxide Composites Derived from Metal-Organic Frameworks

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Metal-organic frameworks (MOFs) have attracted considerable research interest because of their unique structural flexibility with high porosity and a variety of applications including gas separation and storage, catalysis, drug delivery, and sensors. As a special class of MOFs, zeolitic imidazolate frameworks (ZIFs) are constructed by coordination bonds between transition metal cations (*e.g.*, Cd, Co, Cu, and Zn) and imidazolate linkers. In this work, porous core-shell metal oxide composites were successfully obtained through solid-state thermal decomposition of the as-prepared sodalite-ZIF crystals. Specifically, one-step or two-step pyrolysis was conducted at different temperatures, which were chosen from the thermogravimetric analysis of the ZIFs, and the structural properties of the metal oxide composites were investigated by scanning electron microscopy and X-ray diffraction. The optimal oxidation condition was determined so that the ZIF crystals are thermally decomposed to metal oxide while maintaining their original morphology.

Biography:

Do Yeob Kim received his Ph.D. in Electrical Engineering from Clemson University in 2014. Now he is a senior researcher at Electronics and Telecommunications Research Institute (ETRI). His research focuses on synthesis of micro/nanostructured materials andfabrication of energy harvesting and sensing devices.