

Fabrication of thermally stable rod-shaped (BaSr)CO₃-SiO₂ core-shell particles

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In the present abstract, we report the fabrication of rod-shape core-shell particles, in which rod-shape (BaSr)CO₃ crystals are coated with a mesoporous silica shell. First, the rod-shape core crystals of (BaSr)CO₃ are prepared by the co-crystallization, in which the Sr ions are incorporated to the barium-based matrix. Then, the nano silica particles are allowed to be deposited on the surface of the core crystals, finally fabricating the core-shell structure of the (BaSr)CO₃-SiO₂ particles in rod shape. The silica shell thickness can be controlled by changing the concentration of TEOS, reaction temperature and hydrodynamic conditions. The influencing factors to the formation of rod-shaped (BaSr)CO₃-SiO₂ core-shell particles are investigated by using SEM, TEM, powder XRD, and other spectroscopy tools.