Synthesis of Barium-Strontium-Silicate Hollow Rods by Self-Etching Route

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With high thermal expansion coefficient and good dielectric properties, the metal silicate have been attracting great interest in many applications, including as the gas-tight seals in solid-oxide fuel cells and as tunable dielectric materials. To date, numerous metal silicates have been produced with various structures, such as aggregated spherical Li2FeSiO4 crystals and nanowire-type zinc silicate crystals. However, very few researches are proposed on the general method for preparation of metal silicate with hollow structure which have unique properties such as low density, large surface area, and serve as filter. Herein, we report a facile self-etching route to synthesize metal silicate hollow particles using metal carbonate/silica core-shell particle as precursor. This self-etching method was demonstrated on barium-strontium silicate hollow rods. First, the well distributed (BaSr)CO3 single crystals was synthesized through a hydrothermal approach. Second, the silica was homogenous coating on the (BaSr)CO3 crystals by a stÖber method. After that, the core-shell (BaSr)CO3-SiO2 rods were converted to the