

Synthesis and characterization of cordierite precursor derived by semi-colloidal sol-gel route

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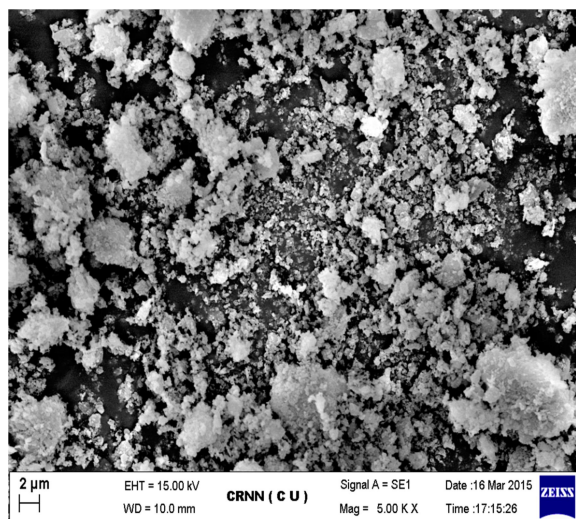
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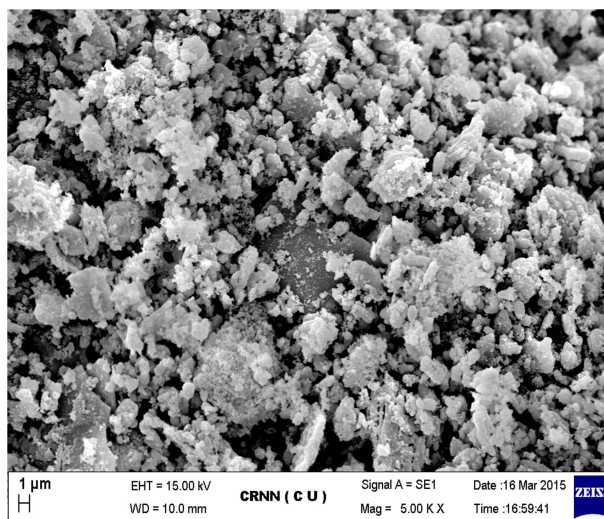
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Abstract:

Microfine cordierite precursor powder of stoichiometric chemical composition, $2\text{MgO} \cdot 2\text{Al}_2\text{O}_3 \cdot 5\text{SiO}_2$, can be synthesized by semi-colloidal route using dehydroxylated china clay, precipitated silica, magnesium hydroxide. The derived cordierite precursor is characterized by chemical analysis, BET surface area, particle size distribution, differential thermal analysis (DTA), FTIR spectroscopy, TG-DTA analysis, X-ray diffraction (XRD) and scanning electron microscopy (SEM) studies. The study reveals that crystallization of μ -cordierite from amorphous precursor starts at 900°C as confirmed by differential thermal analyses, X-rays. The SEM studies of the precursor calcined at 900°C focuses the uniform distribution of platelike particles in the size ranges of $0.5\text{-}4\ \mu\text{m}$



Dried at



Calcined at

Keywords: Cordierite precursor, $\text{MgO} \cdot \text{Al}_2\text{O}_3 \cdot \text{SiO}_2$ system, XRD, SEM