MOLTEN SALT SYNTHESIS OF CALCIUM MANGANITE BASED COMPOUNDS

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Molten salt synthesis is a technique, which uses molten salt as a reaction medium for the preparation of different metal oxides. The large variety of inorganic salts allows achieving the products with specific morphology. This method is considered as simple, reliable, scalable, cost-effective and environmentally friendly to obtain high-purity nanoparticles with high yield. $CaMnO_3$ is an antiferromagnetic and paraelectric insulator with thermoelectric properties, but the preparation of single-phase material still remains a difficult task [1]. Few different techniques were employed for preparation of this perovskite, including co-precipitation [2], autocombustion [3], sol-gel [4] etc. To the best of our knowledge, there is no study regarding synthesis of $CaMnO_3$ by molten salt technique.

In our work, we synthesized a series of calcium manganites $CaO(CaMnO_3)_m$ (m = 1, 2, 3) based compounds by means of molten salt synthesis. We changed a variety of parameters (time, temperature, the different ratios between molten salt and Ca/Mn precursors) in order to obtain samples with high purity. We applied different characterization techniques, including X-Ray diffraction, FT-IR spectroscopy and scanning electron microscopy (SEM) to determine possible morphological and structural changes.

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