

Production of Strontium Carbonate from Strontium Sulfate by Utilizing Black Ash Process

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High-purity strontium carbonate (SrCO_3) is produced using strontium sulfate (SrSO_4) as a feedstock through the black ash process that consists of carbothermic reaction, hot-water leaching, and carbonation. In this study, each stage for the production of SrCO_3 from SrSO_4 utilizing black ash process was experimentally verified. In the experiment, strontium sulfide (SrS) was produced from SrSO_4 at 1273 K in the presence of carbon, and thermodynamic analysis was conducted by utilizing chemical potential diagram. Subsequently, the products obtained from carbothermic reaction were leached in a DI-water at 353 K. The leachate obtained from hot-water leaching was reacted with sodium carbonate (Na_2CO_3) at room temperature, and high-purity SrCO_3 was obtained. Therefore, black ash process was demonstrated to be feasible for producing high-purity SrCO_3 from SrSO_4 .