

### Leaching Kinetics of Strontianite Concentrated from Magnetite Ore to Strontium Chloride in Aqueous Hydrochloric Acid Condition

유승준\*, 김지혜, 김형섭, 이세일, 조아람, 이수정, 윤호성<sup>1</sup>,  
김철주<sup>1</sup>, 이진영<sup>1</sup>, 정경우<sup>1</sup>, 신선명<sup>1</sup>  
서남대학교; <sup>1</sup>한국지질자원연구원  
(sjyoo001@hanmail.net\*)

The leaching kinetics of strontianite( $\text{SrCO}_3$ ) in hydrochloric aqueous solution (HCl) was investigated for the purpose of recovery of strontium chloride from strontianite concentrate. The strontium component in the raw material was concentrated from 5.57% to 23.6% by dressing treatments with a cone crusher, ball milling, table gravity separator, and flotation from a magnetite ore collected from Hongcheon in South Korea.

The leaching reaction was conducted under the condition of 0.64 M HCl corresponding to the stoichiometric ratio of strontium existing in raw material, a pulp density of 114 g/L, an agitation speed of 520 rpm, and a temperature range of 30 to 60°C.

After the leaching of 3 h at 60°C, the yield was obtained to the maximum value of a 95%. Leaching kinetics was applied by the particle size reducing shrinking core model and the overall rate controlling step was determined by surface reaction. By using the Arrhenius expression, the apparent activation energy was found to be 41 kJmol<sup>-1</sup>