



Efficiency of impurities removal in pyrophyllite using Fe/Si based heating susceptor

Bong-Ju Kim (1), Kang Hee Cho (1), Nag-Choul Choi (2), and Cheon-Young Park (1)

(1) Chosun Univ, Dept. of Energy and Resources Engineering, gwang-ju, Korea, Republic Of (nega6495@hanmail.net), (2) Department of Rural Systems Engineering, Seoul National University, Seoul 151-921, Republic of Korea

The objective of this study was to efficiency of Fe removal in the pyrophyllite observed the mineralogical phase transformation and elevated temperature using Fe-Si based heating susceptor. The impurities in the pyrophyllite were observed hematite of oxide type and pyrite of sulfide type from photomicrograph and XRD analysis results. The impurities removal experiment were performed under microwave exposure condition(30min), heating susceptor type(Fe/Si) and two type(sulfide, oxide) pyrophyllite.

The result showed that increasing of Al_2O_3 content in two type pyrophyllite with decreasing Fe_2O_3 and TiO_2 content may be attributed to the mineral phase transform of impurities selected by microwave reaction. The microwave exposure for the pyrophyllite showed that the (1) pyrite and hematite phase was transformed pyrrhotite(sulfide type) and magnetite(oxide type), (2) The temperature was increased by Fe based heating susceptor: 932 [U+2103](sulfide type), 893 [U+2103](oxide type) and Si based heating susceptor: 615 [U+2103](sulfide type), 415 [U+2103](oxide type). As a result of the microwave Fe-Si based heating susceptor experiments, the Fe_2O_3 removal rates obtained were in the sulfide type case of 94.4%(Fe), 61.7%(Si) and oxide type case of 88.1%(Fe), 54.6%(Si).

Acknowledgment : This subject is supported by Korea Ministry of Environment as “Advanced Technology Program for Environmental Industry”