



The Fe removal in pyrophyllite by physical method

Kanghee Cho (1), Jiyu Jo (1), GeonYeong Bak (1), NagChoul Choi (2), and CheonYoung Park* (1)

(1) Dept. of Energy and Resource Engineering, Chosun Univ, gwang-ju, Korea, Republic Of (cho3577@gmail.com), (2) Dept. of Rual Systems Engineering, Seoul National Univ., Seoul, Korea, Republic Of (nagchoul@empass.com)

The presence of Fe in ingredient material such as limestone, borax and pyrophyllite can prevent their use mainly in the glass fiber manufacturing industry. The red to yellow pigmentation in pyrophyllite is mainly due to the associated oxides and sulfides of Fe such as hematite, pyrite, etc. The removal of Fe in the pyrophyllite was investigated using high frequency treatment and magnetic separation under various alumina grades in pyrophyllite. The hematite and pyrite were observed in the pyrophyllite from photomicrograph and XRD analysis results. On the decrease of Al_2O_3 content in pyrophyllite was showed that SiO_2 , Fe_2O_3 and TiO_2 content were increased by XRF analysis. The high frequency treatment experiment for the pyrophyllite showed that the (1) pyrite phase was transformed hematite and magnetite, (2) mass loss of the sample by volatilization of included sulfur(S) in pyrite. The results of magnetic separation for treated sample by high frequency were identified that Fe removal percent were in the range of 97.6~98.8%. This study demonstrated that physical method (high frequency treatment and magnetic separation) was effective for the removal of Fe in pyrophyllite.

This subject is supported by Korea Ministry of Environment(MOE) as "Advanced Technology Program for Environmental Industry".