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Chemical and microstructural characterization of blast furnace slag
Monteiro, M.(1); Martinez-pavetti, M.B.(2); Gill, B.(1);
Universidad Nacional de Asunción(1); Centro de Investigación en Matemática(2);
Universidad Nacional de Asunción(3);

Blast slag is a byproduct of iron and steel production. Its physico-chemical characteristics depend on the type of production process used. The chemical composition of the blast slag depends on the raw materials used, the most common being mineral iron, coke and limestone. The blast slag solidifies into four different forms: crystallized, granulated, pelletized and expanded, being the crystallized slag obtained from blast-furnace production the one studied in this work. This slag has high porosity and reduced mechanical strength, when compared with others, which is advantageous for the production of Portland cement, and promotes chemical reactivity used for the removal of heavy metals, as it reacts easily with their ions. The blast furnace slag received thermal treatment at 860°C, 960°C and 1060°C for one hour. These samples were characterized by X-ray Diffraction (XRD), Infrared Spectrometry (FTIR) and X-ray Fluorescence (XRF). Based on the results, it was possible to predict the behavior of crystallization of the slag and the present phases at each temperature range.