

Category Thermodynamics and Phase Diagrams
Thermochemical Simulation, Thermogravimetry and Roasting Studies for Selective Sulfation of
Copper in Flash Smelter Dust.

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Abstract

The thermal studies are a useful tool to understand the conversion of chalcopyrite to copper sulfate. We carried out thermochemical simulation in combination with thermogravimetric studies to understand the sulfation behavior of copper and iron in a copper smelter dust sample and to predict suitable roasting condition. Different oxide and sulfate phases of Cu and Fe forms as function of temperature. A temperature range of 150-1000°C was applied; however, a 550-650°C was found suitable for selective sulfation of copper. Further tests in a tube furnace at 600°C for three hours ensured 96% Cu sulfation and only 2.1% Fe sulfation.