Pembuatan MnO2 dari Bijih Mangan kadar rendah dengan proses pelindian pemanggangan reduktif = Fabrication of mno2 from low grade manganese ores with reductive roast leaching

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Abstrak

ABSTRAK
Pelindian mangan dari bijih mangan kadar rendah telah berhasil dilakukan menggunakan larutan sulfat. Pada percobaan ini, bijih mangan dipanggang dengan arang kayu sebagi reduktor pada 700 oC selama 120 menit. Kemudian kalsin hasil pemanggangan dilindi menggunakan larutan asam sulfat. Parameter proses pelindian yang diamati meliputi pengaruh kecepatan pengadukan, konsentrasi asam, temperatur, waktu dan persen padatan terhadap mangan terekstrak. Hasil optimum didapat pada proses pelindian dengan konsentrasi 12% H2SO4, kecepatan pengadukan 400 rpm, rasio padatan 1:10, dan temperatur 75 oC selama 3 jam dengan mangan terekstrak sebesar 84,61%. Kinetika reaksi pelindian mangan dalam asam sulfat dikendalikan oleh proses difusi dengan nilai energi aktivasi sebesar 4,88 KJ/mol.
<hr>ABSTRACT
The leaching of manganese from low-grade manganese ores in aqueous sulfuric acid solution was investigated. In this study, manganese ores were prepared by reduction roasting using charcoal as a reductant at 700 oC for 120 min. The roasted samples were then leached with aqueous sulfuric acid solution. The effects of agitation rate, sulfuric acid concentration, solid/liquid mass ratio, leaching temperature and leaching time on the leaching efficiency of manganese were studied. The optimal leaching conditions are achieved at 12% H2SO4, agitation rate of 400 rpm, solid/liquid mass ratio of 1:10, and the leaching temperature of 75 oC for 180 min. Under the optimal condition, the leaching efficiency of manganese can reach 84.61%. The kinetical reaction of manganese dissolution in aqueous sulfuric acid solution was found to be controlled by diffusion process with activation energy is 4.88 KJ/mol.