

Optimization of Dysprosium leaching from used permanent magnets in sulfuric acid using response surface methodology design

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Abstract

Nowadays, the recycling of materials due to environmental aspects, economic and the shortage of some metals has been attention. Recovery of Rare Elements (RE) from scrap is important from this point of views. Every permanent magnet normally contains up to 3 percent Dysprosium element. In this study, at first the method of removing Nickle cladding from used permanent magnets was examined and then Dysprosium leaching was optimized using RSM design method. The best condition for leaching was obtained at acid concentration of 0.5 M, temperature of 25°C and time of 20 min. This situation led to the 98% recovery of Dysprosium from used permanents magnets.

Keywords: Recovery of Dysprosium, Rare Earth, Nd-Fe-B magnets

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