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Recycling of spent electro-nickel-plating solution by electrowinning

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This research aims to study the feasibility of nickel recovery from spent electroplating solution via hydrometallurgy and electro-chemical treatment. The spent nickel-plating solution obtained as an industrial waste was found to contain nickel of 89.4 g/l, which was still in high quantity sufficient for prospective recovery. In this research, precipitation of nickel from the spent electro plating solution was first carried out to separate other unwanted impurities. The remained

nickel precipitate was then leached by using 1 M or 2 M H₂SO₄ for 24 h. at a solid/liquid ratio of 100 g/l. The leached solution was then adjusted to obtain pH 2 prior to electrowinning. It was found that the maximum weight of nickel cathode is 5.07 g or at 90.7% recovery of 97.46% purity can be achieved in a condition using 1 M H₂SO₄ and electrical potential 3.7 V.

Biography

Piamsak Laokhen has completed his bachelor degree in metallurgical engineering with second class honor from the School of Metallurgical Engineering, Suranaree University of Technology, Thailand. Presently, he is pursuing masters at the same school.

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