

Endothermic solvent extraction of copper (II) with furfuryl thioalcohol from sulfate medium

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Abstract

A simple solvent extraction method was developed to extract copper (II) from sulfate solution. The extraction of copper (II) with furfuryl thioalcohol was investigated. The effect of variables such as aqueous phase pH, furfuryl thioalcohol concentration, temperature, stripping reagents, and diluents was investigated. The extraction data revealed that using 15% (v/v) furfuryl thioalcohol with aqueous solution containing $0.5 \text{ mol L}^{-1} \text{ Na}_2\text{SO}_4$, equilibrium pH 5.5, and phase ratio organic phase: aqueous phase (O:A) of 1:1 resulted in 98.20 percent extraction of copper (II) without nickel coextraction (II). Extraction isotherm results show that the extraction procedure is endothermic, with $\Delta H = 28.542 \text{ kJ mol}^{-1}$ and $\Delta S = 41.740 \text{ J K}^{-1} \text{ mol}^{-1}$. Using 2.0 M H_2SO_4 , copper loaded in organic phase was stripped at a rate greater than 99 percent.

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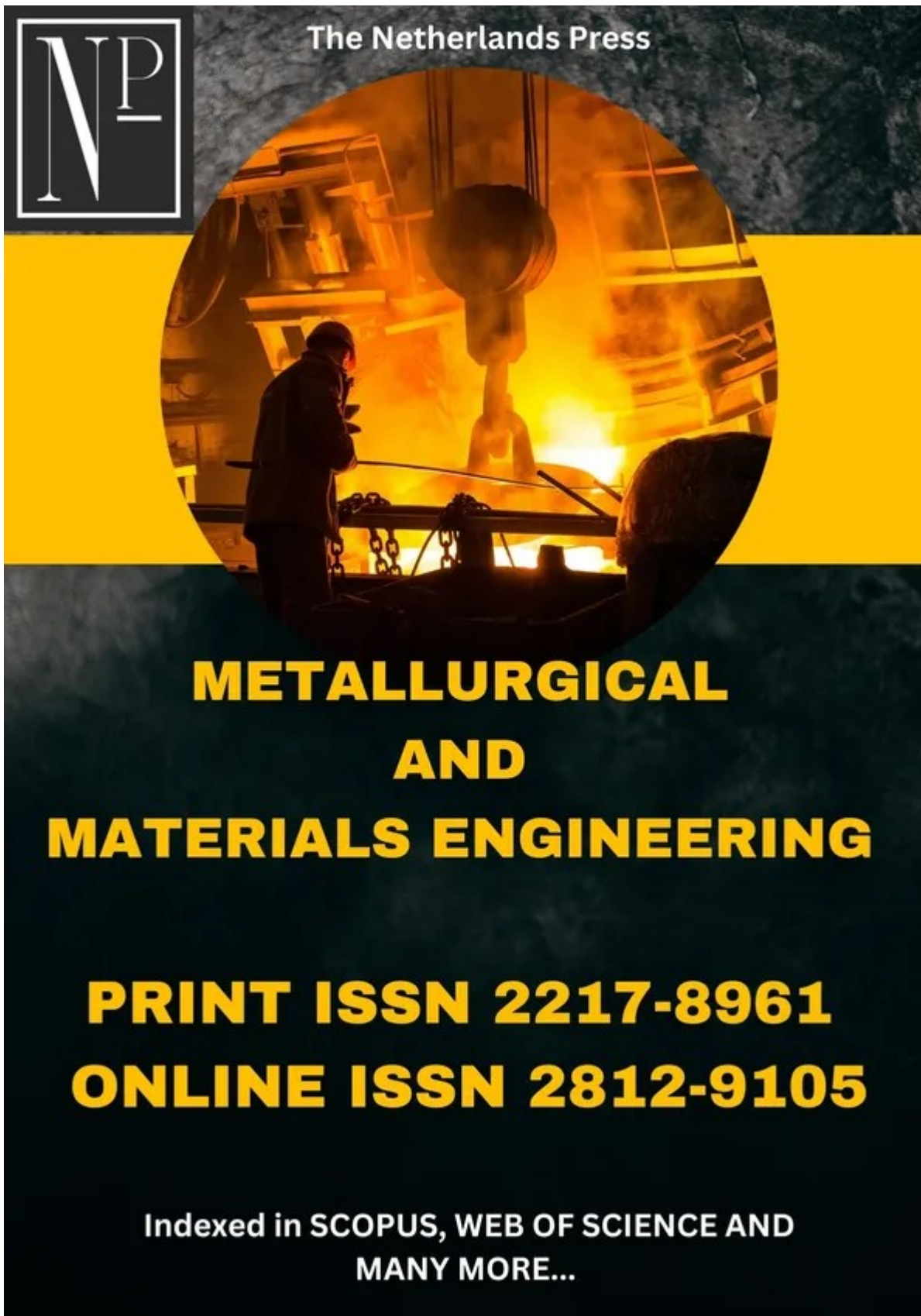
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