

SIMULATION OF LEACHING PROCESS OF GOLD BY CYANIDATION

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Abstract

This paper presents a simulation study of leaching process of gold by using HSC Chemistry software (HSC). Cyanide (NaCN) has been used to recover gold from gold bearing ores since 1890's and until today it still playing an important role in the beneficiation process of the gold. This work aims to develop a simulation process model of this solid-liquid leaching process by using cyanide solvent for the dissolution of gold by using HSC simulator. The simulation of the leaching process was carried out in a continuous steady-state condition. The results from this simulation were compared with other researcher which employed Aspen Plus and it shows very good agreement with very small error (less than 1.5%). A case study was carried out using the developed process model where hydrochloric acid (HCl) was used as solvent in order to recover the gold from the ores. The results from the case study show that the chlorination process gives higher amount of gold (Au) dissolved in the solvent compared to cyanidation process. Another case study was carried out in order to study the effect of different concentration of Au in ores and the effect of different concentration of solvent as a leaching reagent. As a conclusion, the develop process model provide an effective means for studying the solid liquid leaching process in the future.

Keywords: *Solid-Liquid Leaching, Gold, Simulation, HSC Software, Cyanidation, Chlorination*