BENEFICIATION OF LOW-GRADE GOLD ORE BY HYDROMETALLURY METHOD

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Abstract
Beneficiation of low-grade gold ore by hydrometallurgy method has been investigated. The aims of this study are to determine the influence of roasting on the beneficiation process and to know the optimum concentration of acid (HCl, H₂SO₄, and HNO₃) in major metal removal from gold ore, so the recovery of gold increase and reduce the environmental impacts. Three rock samples that have been crushed to 60 mesh, was roasting at 500°C for 1 hour. XRF analysis show that roasting increase the dissolution of major metal from sample which contain sulfide mineral. Next step is gradual dissolution with aquades with the ratio of samples and solvent 1:1,5 for 24 hours. The aquades dissolution was not give any significant influence on dissolution major component of mineral. The optimum concentration are 30% of HCl, 20% of H₂SO₄, and 10% of HNO₃ can increase ratio of Au in A and B samples from 0,01% to 0,03% and 0,02% to 0,03%, respectively. It is also can reduce the concentration of Cu in A, B and C sample from 212,8 ppm to 12,8 ppm, from 7583,4 ppm to 169 ppm, and from 6802,4 ppm to 253,8 ppm, respectively.

Keywords: hydrometallurgy, gold ore, cyanidation, roasting