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用N503/TBP从碱性氰化液中萃取低浓度金

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摘 要： 研究酰胺N503和TBP从碱性氰化液中萃取低浓度Au(Ⅰ)，考察N503体积浓度、水相pH值、TBP浓度、NaCl浓度、改性剂种类和相比等因素对萃取率的影响。结果表明：当溶液的pH在7~11范围内，Au(Ⅰ)的萃取率均大于98%；当pH＞11后，Au(Ⅰ)的萃取率显著变小；尽管TBP的浓度对Au(Ⅰ)萃取率的影响较小，但提高TBP浓度可以提高萃取pH_{50}值。对矿山浸出液的萃取结果表明，N503/TBP萃取体系对金具有良好的选择性，其萃取金属氰配阴离子的由难至易的次序为$Fe(CN)_6^{4-}$＞$Ni(CN)_4^{2-}$＞$Zn(CN)_4^{2-}$＞$Cu(CN)_3^{2-}$＞$Au(CN)_2^-$。

关键字： 溶剂萃取；$KAu(CN)_2$；N, N′-二(1-甲基庚基)乙酰胺；磷酸三丁酯

Solvent extraction of trace Au(Ⅰ) from alkaline cyanide solution by N503/TBP system

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Abstract: The extraction of trace Au(Ⅰ) from alkaline cyanide solution by N, N′-di(1-methylheptyl) acetamide (N503) and tri-butylphosphate (TBP) was studied. The influence of several variables on the gold extraction, including the N503 volume fraction, pH value of the solution, TBP concentration, NaCl concentration and phase ratio(A/O) in aqueous phase were investigated. The results show that almost all of Au(Ⅰ) in the aqueous phase can be extracted into the organic phase when the volume fraction of N503 is more than 10% and pH value of the solution is in the range of 7−11, and the extraction rate is more than 98%. When pH＞11, although TBP concentration has little effect on the extraction rate of Au(Ⅰ), the increase of TBP concentration can increase pH_{50} value of N503/TBP extraction system. The experiments with a real cyanide leaching solution show that the extractive selectivity for different metal ions from difficult to easy is $Fe(CN)_6^{4-}$＞$Ni(CN)_4^{2-}$＞$Zn(CN)_4^{2-}$＞$Cu(CN)_3^{2-}$＞$Au(CN)_2^-$.

Key words: solvent extraction; $KAu(CN)_2$; N, N′-di(1-methylheptyl) acetamide; tri-butylphosphate

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