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脆硫锑铅矿与捕收剂作用的界面电化学

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摘要: 采用线性极化、交流阻抗法, 研究了脆硫锑铅矿在自然pH介质中, 有无二乙基二硫代氨基甲酸钠(DDTC)存在时的界面电化学行为。结果表明: 随着DDTC浓度增加, φ_{corr} 负移, i_{corr} 减少, 抑制了阴极反应, 促进了阳极反应; 有DDTC比无DDTC存在时的电阻增大了4倍, 双电层电容减少, 且随着DDTC浓度的增加, 电化学电阻稍为减少而双电层电容增大; DDTC在脆硫锑铅矿表面呈扁平状化学吸附, 并伴随DDTC-金属离子的盐沉积, 产生钝化作用, 氧化反应受阻; 脆硫锑铅矿在无DDTC存在时, 因存在明显的硫钝化膜, 可实现无捕收剂浮选, 可浮电位范围为: 0.173-0.373V; 有DDTC时, 主要表现出因DDTC的化学吸附、DDTC-金属离子盐沉积而浮选, 也存在疏水性硫对浮选的影响, 可浮电位范围为: 0.100-0.473V。

关键词: 脆硫锑铅矿; 捕收剂; 界面电化学

Interface electrochemistry of interaction of collector with jamesonite

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Abstract: The interface electrochemical characterization of jamesonite in 0.1mol·L⁻¹ KNO₃ media (pH=6.9) with and without diethyl dithiocarbamate(DDTC) was studied by potentiodynamic and impedance measurements. With increasing Et₂NCSSNa concentration, its corrosive potential moves negatively and its corrosive current decreases, so its cathodic reaction is inhibited and anodic reaction is promoted. The electrochemical resistance with Et₂NCSSNa in solution is as four times as the electrochemical resistance without Et₂NCSSNa, at the same time, double capacitance decreases. The electrochemical resistance slows down and its capacitance rises with Et₂NCSSNa concentration raised. Et₂NCSSNa is adsorbed chemically, and the salts of its metal ions are deposited, and passive action appears on jamesonite surface, so its oxidization reaction is limited. Jamesonite can be floated without collector because of obvious passive film of sulfur on the surface of jamesonite and its potential range of flotation is between 0.173 and 0.373V. In the case of Et₂NCSSNa, jamesonite can be floated due to chemical adsorption and salt deposition of Et₂NCSS-metal ions mainly, also deposition of sulfur on its surface and its potential range of flotation is between 0.100 and 0.473V.

Key words: jamesonite; collector; interface electrochemistry

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