

SEM and FTIR Study of Adsorption Characteristics Using Xanthate (KIBX) Synthesized Collectors on Sphalerite

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Abstract : Thiols such as alkyl xanthates are commonly used as collectors in the froth flotation of sulfide minerals. Under the concentration, pH and Eh conditions relevant to flotation, the thermodynamically favoured reaction between a thiol and a sulfide mineral surface is charge transference adsorption in which the collector becomes bonded to metal atoms in the outermost layer of the sulfide lattice. The adsorption of potassium isobutyl xanthate (KIBX 3.10-3M) on sphalerite has been also studied using electrochemical potential, FTIR technique and SEM. Non activated minerals and minerals activated with copper sulfate (10⁻⁴ M) and copper nitrate (10⁻⁴ M) have been investigated at pH = 7.5. Surface species have been identified by FTIR and correlated with SEM. After copper sulfate activation, copper xanthate exists on all of the minerals studied. Neutral pH is most favorable for potassium isobutyl xanthate adsorption on sphalerite.

Keywords : flotation, adsorption, xanthate KIBX, sphalerite

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