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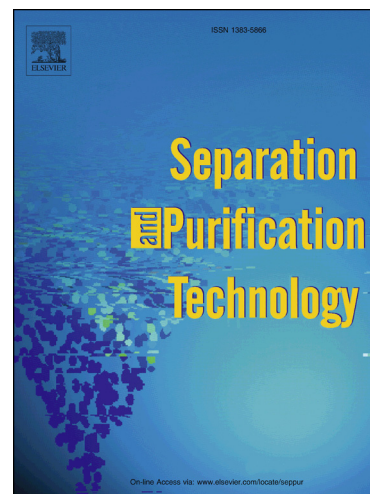
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Utilization of acetic acid-[(hydrazinylthioxomethyl)thio]-sodium as a novel selective depressant for chalcopyrite in the flotation separation of molybdenite

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Abstract: The flotation response of chalcopyrite and molybdenite when using a novel compound, acetic acid-[(hydrazinylthioxomethyl)thio]-sodium (AHS), as the depressant was investigated through micro-flotation and batch flotation in this study. The depressing mechanisms were studied by means of zeta potential, FTIR and XPS measurements. The micro and bench flotation results indicated that AHS exhibited a strong influence on the depression of chalcopyrite and had little effect on the flotation of molybdenite minerals; these results might be attributed to the significant improvement of the molybdenite/chalcopyrite selectivity index after the addition of AHS. The results of the FTIR spectra, zeta potential and XPS measurements indicated that AHS chemisorbs onto the chalcopyrite surface through its S and N atoms, forming a five-membered chelate ring. A possible depressant mechanism along with a postulated adsorption mode for the surface interaction between AHS and chalcopyrite are provided.

Keywords: Chalcopyrite; molybdenite; depressant; AHS; separation.

1. Introduction

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