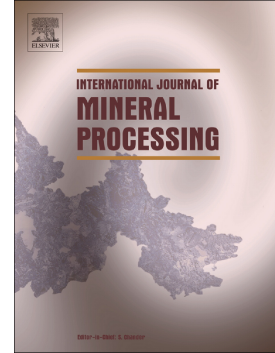


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A study on novel reactive oily bubble technology enhanced collophane flotation

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Abstract: Collophane is an important phosphate mineral, which has proven to be difficult to float from gangue. In this work, the novel application of reactive oily bubbles to enhance collophane flotation is reported. Three different types of bubbles, conventional air bubble, oily bubbles (kerosene only) and reactive oily bubbles (kerosene containing fatty acids) approaching collophane particles were studied by measurements of zeta potential, induction time and contact angle. The reactive oily bubble shows negligible effects on the zeta potential of collophane particles. A shorter induction time of reactive oily bubble was found at pH 6.0 and/or at pH 9.0 relative to the conventional air bubbles and the oily bubbles. This suggests a strong collection power of reactive oily bubble. Advancing contact angles of the reactive oily bubble on collophane increased dramatically with pH. At pH 9.0, a contact angle of 120 degrees was observed where the reactive oily bubble flotation is anticipated. Micro-flotation results demonstrate the superiority of reactive oily bubbles over air bubbles for

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