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油酸钠对微细粒钛铁矿的捕收机理

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摘 要： 以油酸钠为捕收剂，通过浮选实验、溶液化学计算、动电位和红外光谱检测研究了微细粒钛铁矿的可浮性及药剂与矿物的作用机理。结果表明：当油酸钠浓度为0.2 mmol/L时，微细粒钛铁矿可浮性较好的pH值为4~10。油酸钠对钛铁矿的捕收作用主要由两方面因素控制：当pH值为4~6时，以油酸根离子与钛铁矿表面铁质点间发生化学作用为主，红外光谱分析显示作用产物为油酸铁；当pH值为6~10时，上述化学作用减弱，但油酸钠溶液中高表面活性组分离子−分子缔合物浓度增大，使钛铁矿保持了较好的可浮性。

关键字： 钛铁矿；油酸钠；溶液化学；浮选

Flotation mechanism of fine ilmenite by sodium oleate

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Abstract: The flotation of fine ilmenite using sodium oleate as collector and the collection mechanism were studied through flotation tests, solution chemistry calculations, zeta potential measurements and infrared spectroscopic analysis. The results show that fine ilmenite shows good floatability in pH range of 4−10, when the concentration of sodium oleate is 0.2 mmol/L. The collection of sodium oleate to ilmenite is controlled by two factors. In pH range of 4−6, chemical reactions between oleate and iron play important roles, and infrared spectroscopic analysis shows that the product of their reactions is ferrous oleate. While in pH range of 6−10, the above reactions become weaker, but the concentration of ion and molecular association of a high surface activity component in sodium oleate solution becomes higher and keeps the floatability good.

Key words: ilmenite; sodium oleate; solution chemistry; flotation

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