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粗糙集理论在阳离子反浮选控制中的应用

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摘 要: 针对阳离子反浮选生产过程被控对象复杂、数学模型不确定以及控制精度要求高等特点, 提出了一种基于粗糙集理论的智能控制方法. 通过对控制过程中的一些有代表性的状态以及操作人员在这些状态下采取的控制策略所构成的决策表进行约简, 归纳出一系列控制规则. 运用该方法进行准确度测试和命中率试验, 结果表明控制模型的给出值与现场实际数值基本吻合, 命中指标满足综合指标要求. 在阳离子反浮选控制中运用粗糙集理论时, 便于现场技术人员和操作工人的操作, 能合理添加药剂, 避免了传统工艺由人为加药造成的浪费.

关键字: 浮选过程控制; 粗糙控制; 粗糙集; 信息系统

Rough set theory and its application in cation anti-flotation control

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Abstract: Intelligent control methods based on the rough set theory are proposed for the cation anti-flotation process due to its complexity, model uncertainty and the high requirement of its control quality. Using rough set theory to reduce the decision tables that are made up of some representative of state and the corresponding control strategy in the control process, a series of control rules can be obtained. Accurate-rate test and process running test are done by using the proposed method. The test results show that control model value and field value are basically inosculated and the results satisfy the target request of floatation process control. Consequently rough set theory has an important application value in cation anti-flotation control, and facilitates the operations of the technical workers and operators and implements the reasonable addition of medicine. It avoids the waste caused by the manual addition traditionally. So it can bring large economic benefit. The proposed method has a general meaning, therefore it can be used in analyses and control of other complicated processes.

Key words: flotation process control; rough control; rough set; information system

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