عنوان مقاله:

Optimization of galena flotation process of Irankouh complex ore using a statistical design of experiments

محل انتشار:

دومین همایش ملی پژوهش های کاربردی در علوم شیمی، زیست شناسی و زمین شناسی (سال: 1393)

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خلاصه مقاله:

In this research the Taguchi and Response Surface method (RSM) were used to optimize the galena flotation process. The combination of Taguchi and RSM minimized the number of required experiments and gives the optimum condition. The effect of chemical parameters, namely type and dosage of collectors, dosage of starch, sodium cyanide, pH and neutralizing agent were investigated. The other parameters were selected in accordance with the condition being applied in the rougher stage flotation plant of Irankouh (Bama Co.), where the samples were chosen from. The total number of experiments designed with Taguchi and RSM for modeling the process was 42; instead of 240 experiments needed if only RSM is applied. In order to achieve the required experiments initially, the most important parameters were identified using Taguchi method and were optimized using response surface methodology (RSM). The results of experiment based on the industrial condition with no optimization showed lead recovery of 79%, zinc recovery of 23.2% and the grade of lead was 13.2%. After optimization no reduction in the grade of concentrates happened while the lead recovery was increased to 87% and zinc recovery was decreased to 17.3%, which shows a 10.1% and 25.3% improvement in lead and zinc recovery, respectively.

کلمات کلیدی:

Lead sulfide, Flotation, Optimization, Irankouh, DOE