

عنوان مقاله:

Desulfurization of Tabas coal using chemical (Meyers, Molten caustic leaching) and biological (bioleaching) methods

محل انتشار:

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خلاصه مقاله:

From an economic, technological, and environmental perspective, sulfur removal from coal resources has received increased attention in recent years. The present work investigates the ability of chemical (Meyers and Molten caustic leaching (MCL)) and biological methods for the desulfurization of Tabas coal. Accordingly, in the Meyer process, at 1 M ferric sulfate concentration, during 90 minutes at 90 ° C, 61.78 % of ash and 82% of pyrite, and 51.35% of total sulfur were removed from Tabas coal, respectively. The MCL method was also investigated. Hence, based on the MCL experimental condition of caustic soda /coal ratio of 2, leaching time of 60 minutes, and constant temperature of 180 ° C, 71.82 % of ash, 88% of pyrite sulfur, and 57.85% of total sulfur content were removed from Tabas coal, respectively. Furthermore, biodesulfurization of Tabas coal was conducted using a mixed culture of acidophilic iron- and sulfur-oxidizing mesophilic bacteria. The effect of time, bacterial medium, solid/liquid (S/L) %, and the absence of bacteria were investigated, and based on the results, time was the most significant parameter. Accordingly, 68.98% of ash, 92% of pyrite sulfur, and 72.43% of total sulfur were removed from Tabas coal with 20% v/v bacterial inoculum during 20 .days, respectively

کلمات کلیدی:

Tabas coal, Coal desulfurization, biodesulfurization, Chemical desulfurization, ash removal, Bioleaching

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