عنوان مقاله:

Comparison of the effectiveness of natural dolomite and modified dolomite in the removal of heavy metals from aqueous solutions

محل انتشار:

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خلاصه مقاله:

Presence of heavy metals in water resources is a critical environmental challenge in various communities. To date, various methods have been applied to remove heavy metals, such as the use of cost-efficient materials. The present study aimed to evaluate the adsorption of heavy metals (iron, zinc, nickel, lead, and cadmium) on dolomite and thermally-modified dolomite. We assessed the potentials of natural and thermally-modified dolomite in terms of the adsorption of heavy metals from aqueous solutions. The samples were analyzed to determine the concentrations of metal ions using Spectra 200 Varian. For the optimization and evaluation of the influential factors in the adsorption amount, factors such as the initial concentration of the solution, pH, contact time, and adsorbent dosage were considered. Comparison of the final removal results indicated that lead and cadmium had the shortest contact time (15 minutes), while the longest contact time belonged to iron and nickel (60 minutes). In addition, the highest and lowest removal efficiency within the optimum time was 99% and 93%for cadmium and iron, respectively, while the minimum dosage of the optimum adsorbent belonged to iron and zinc. The minimum removal efficiency belonged to nickel (3 mg/l), while the maximum removal efficiency was obtained for cadmium, iron, and zinc (10, 5, and 5 mg/l) with the concentrations of 99%. According to the results, modified dolomite has great potential to remove metals and .heavy metals

کلمات کلیدی:

Dolomite, Natural Dolomite, Modified Dolomite, heavy metals