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«Removal of fluorides from solutions with natural sorbent brucite»

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Problem statement

The problem of wastewater treatment from fluorine primarily arises in the areas of mining industrial enterprises activity, in the development of complex ores deposits, containing fluorine compounds. The soluble compounds of this element pollute not only local water objects of surface waterborns are also actively entering groundwater horizons.

The aim of the work was to assess the sorption properties of brucite in relation to fluorine and determine the most optimal temperature conditions, the number and time of reagent interaction for maximum degree of fluoride ions extraction from model solutions.



Solution methods

The objects of the study were model solutions. The initial⁰³ concentration of fluoride ions was 10, 50, 100 mg / L. The model solution with a concentration of 0.1 g / L was prepared by dissolving NaF mood. Solutions with smaller concentrations were prepared by diluting the initial. For impairment of model solutions, a nature mineral brusit $Mg(OH)_2$ was used.

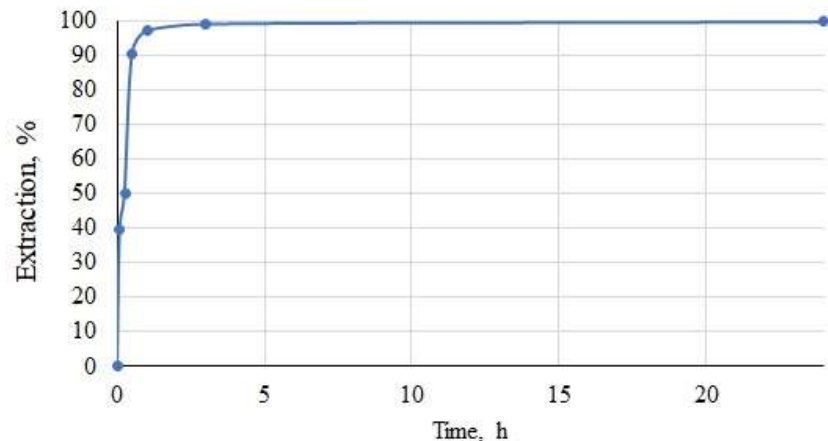
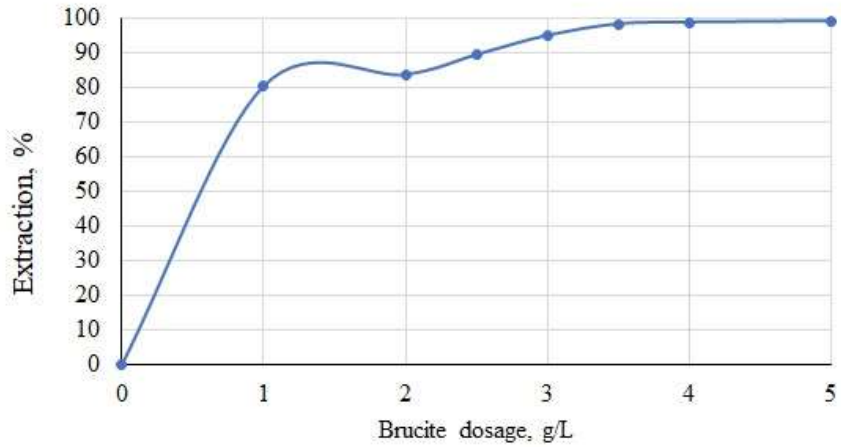
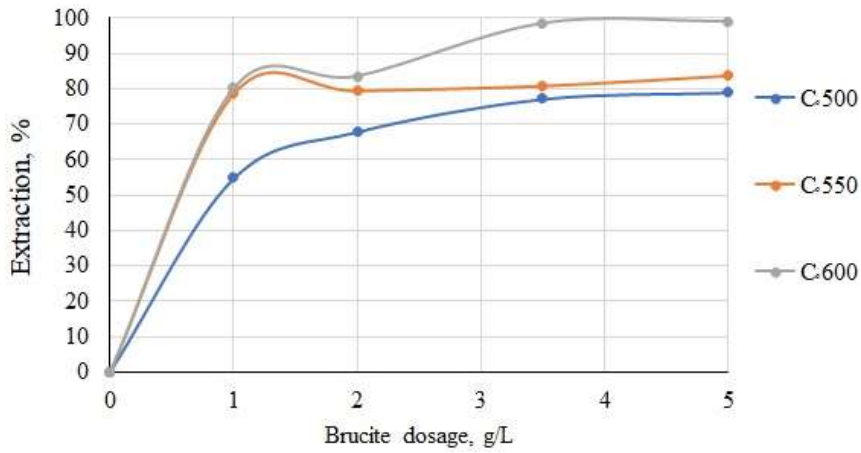
The determination of the fluoride ion concentration in water was carried out by a potentiometric method using an electrode system consisting of a fluoride ion-selective electrode of Alice-131F and auxiliary chlorine-silver electrode ESR-10103.



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- Experiments confirmed the efficiency of using brucite to clean wastewater from fluorine ions. At the same time, for a high initial fluoride content (50-100 mg/L), this reagent can be recommended for a significant decrease in concentration, and for low content (up to 10 mg/L) - as an independent reagent for cleaning.
- On a model solution with a concentration of fluorine ions corresponding to the concentration in the drains of one of the mining enterprises in the Murmansk region, the optimal parameters are selected to achieve the level of maximum permissible concentrations of fluorine (0.75 mg/L): firing temperature 600°C, consumption 3.5 g/L, the interaction time is 1 hour.
- Given that the sorption properties of brucite in relation to heavy metals are widely known, it can be expected to be effective cleaning not only from fluorides, but also from copper, strontium, zinc and other heavy metals.

Contacts

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