

MORPHOLOGICAL STRUCTURE AND ELEMENTAL COMPOSITION ANALYSIS OF THE DMK+FK IONITE

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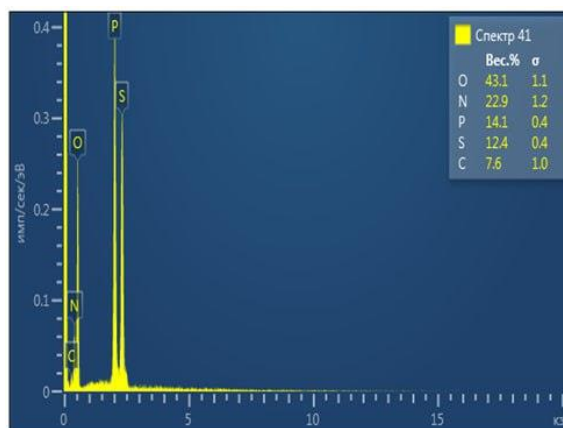
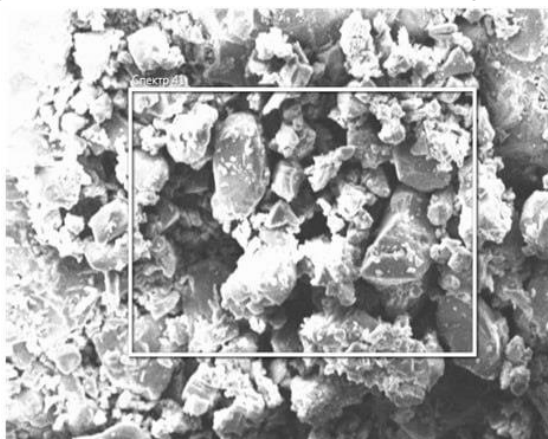
Introduction

In recent years, the development of effective sorbent materials to ensure environmental safety and reduce industrial waste has become a pressing issue. Ion-exchange resins with high sorption properties play an important role, especially in the separation and recovery of metal ions. In this study, an ionite compound based on dimethylcarbamoyl (DMK) and a phosphorus-containing component (FK) was synthesized, and its surface morphology and elemental composition were investigated using scanning electron microscope

Results and Analysis

During the study, the DMK+FK ionite sample was analyzed morphologically using a scanning electron microscope (SEM). The SEM image revealed that the surface of the ionite is irregular, consisting of particles of various shapes and sizes, with visible pores and cavities between certain structures. This indicates a developed surface area and the presence of active sites, which can enhance the efficiency of sorption processes. Furthermore, the results of EDX spectral analysis enabled the determination of the elemental composition of the DMK+FK ionite. According to point analysis labeled as

"Spectrum 41", the following elements were detected in the sample:



-	Oxygen	(O):	43.1%
-	Nitrogen	(N):	22.9%
-	Phosphorus	(P):	14.1%
-	Sulfur	(S):	12.4%
-	Carbon	(C):	7.6%

These results confirm that the DMK (dimethylcarbamoyl) and FK (phosphorus-containing) components were successfully incorporated into the ionite matrix. The high content of oxygen and nitrogen indicates the presence of functional groups such as –OH and –NH₂. The presence of phosphorus and sulfur suggests the inclusion of phosphonate and sulfonate groups, which significantly enhance the ionite's affinity for metal ions.

Overall, the morphological and elemental analysis results demonstrate that the DMK+FK ionite possesses high sorption activity, making it a promising material for the selective separation or immobilization of D-metal ions.

References:

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