

ABSTRACT

Master's thesis for master's degree in specialty 161 "Chemical technologies and engineering" on the topic: « **Nanocomposite sorbent material based on montmorillonite and silica gel**»/ Igor Sikorsky Kyiv Polytechnic Institute; Supervisor: *Kornilovych B.Yu.*; Student: *Leshchenko K.I.*, XM–61m group.

Explanatory note: 56 pages, 14 figures, 5 tables, 41 sources.

Graphic part: 13 slides.

Object of the research: natural clay mineral - montmorillonite and nanocomposites on its basis.

Purpose of the work is to study the physical and chemical properties of obtained nanocomposites and investigation of the structure formation process in the dispersions of montmorillonite in the presence of tetraethoxysilane and sodium silicate hydrolysis products.

In this work, the rheological properties of dispersions of montmorillonite were studied in the presence of tetraethoxysilane and sodium silicate hydrolysis products, sorption properties of synthesized materials for the removal of cationic toxicants (methylene blue and cobalt (II)) from aqueous solutions, the influence of the composition of the source systems on the structural and sorption properties of synthesized nanocomposites.

Sorption properties of the material were studied by sorption of methylene blue and cobalt (II) ions. X-ray diffraction analysis of samples was performed using a diffractometer DRON-4-07. The rheological properties of the dispersions were studied using the Rheotest-2 rotary viscometer.

Keywords:

KEY WORDS: NANOCOMPOSITE, SILICAGEL, MONTMORILLONITE, SORBENT, SOL-GEL SYNTHESIS, SODIUM SILICATE, TETRAETHOXYLANE.