

# MODIFIED CARBON-MINERAL MATERIALS WITH COMPLEXING ADDITIVES AND POSSIBILITY OF THEIR APPLICATION FOR PURIFICATION OF DRINKING WATER AND TECHNOLOGICAL SOLUTIONS

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## Introduction

Interest to sorption properties of carbon-mineral sorbents (CM-sorbents) is inspired by searching new effective absorbants of toxic substances to solve ecological problems. Importance and possibilities of adsorption of toxic pollutants from water and technological solutions with the help of CM-sorbents is given in articles [1, 2]. Nevertheless, despite of detected synergism, the efficiency of purification of aqueous solutions by proposed materials is not in agreement with requirements of high technologies.

The present work is devoted to investigation of possibilities of increasing the sorption of various toxic substances by modification of CM-sorbents by complexing agents.

## Experimental

The investigation of sorption of toxic substances from aqueous mediums and technological solutions were carried out under static and dynamic conditions. Modifying of the CM-sorbents by complexing agents was realized by standard schedule of the chemisorption. Analysis of substances were realized by usage of physicochemical methods: atom-adsorptive, spectrophotometric etc.

## Results and Discussion

The results of comparative study of sorption properties of CM-sorbents (initial and modified form) are demonstrated on Fig.1.

Modification of CM-sorbents causes not only change of sorption properties resulted in increasing the quantity of sorbate, but also significant improving of selectivity. It should be noted that increase of the adsorption ability of CM-sorbents towards toxic pollutants of different nature, such as radionuclides, ions of heavy metals, organic compounds, was attained by thorough selection of complexing agents.

The advantage of this approach is complete selective extraction of toxic impurities from water and

technological solutions achieved by the application of complexing agents as the modifiers. It was eliminated usually observed effect of desorption of toxic substances (first of all, of organic nature) via a number of chemical reactions, in which components of a technological solution behave as complexing agents.

Therefore purposive selection of complexing reagents for modifying CM-sorbents allows to attain a highly effective extraction and simultaneous selectivity of sorption of toxic species from water and technological solutions.

The variation of conditions of modifying CM-sorbents by complexing agents allows to find optimal conditions to maintain effective, quality, fast clearing both water from ions of arsenic, boron, calcium, iron, and technological solutions from a number of toxic compounds, and radionuclides.

The designed method of modifying CM-sorbents by complexing reagents is simple, technically reliable, as well as can be easily and fast realized as required to prepare the sorbents to be particularly indispensable at origin of ecological catastrophes.

## Conclusions

CM-sorbents modified by complexing agents for practical usage have been developed.

The technological schemes for purifying water and technological water solutions from especially dangerous substances are offered, what is especially important to solve problems of liquidation of ecological catastrophes.

## References

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2. Glushachenko OA, Strelko VV, Shvets DI, Openko NM. Sorption of Arsenic Compound From Water Solutions by Carbon Fibrous Materials. Ext. Abstr., 22<sup>nd</sup> Bienial Conf. on Carbon. Newcastle, USA, July 1996, Vol.1: 336-337.

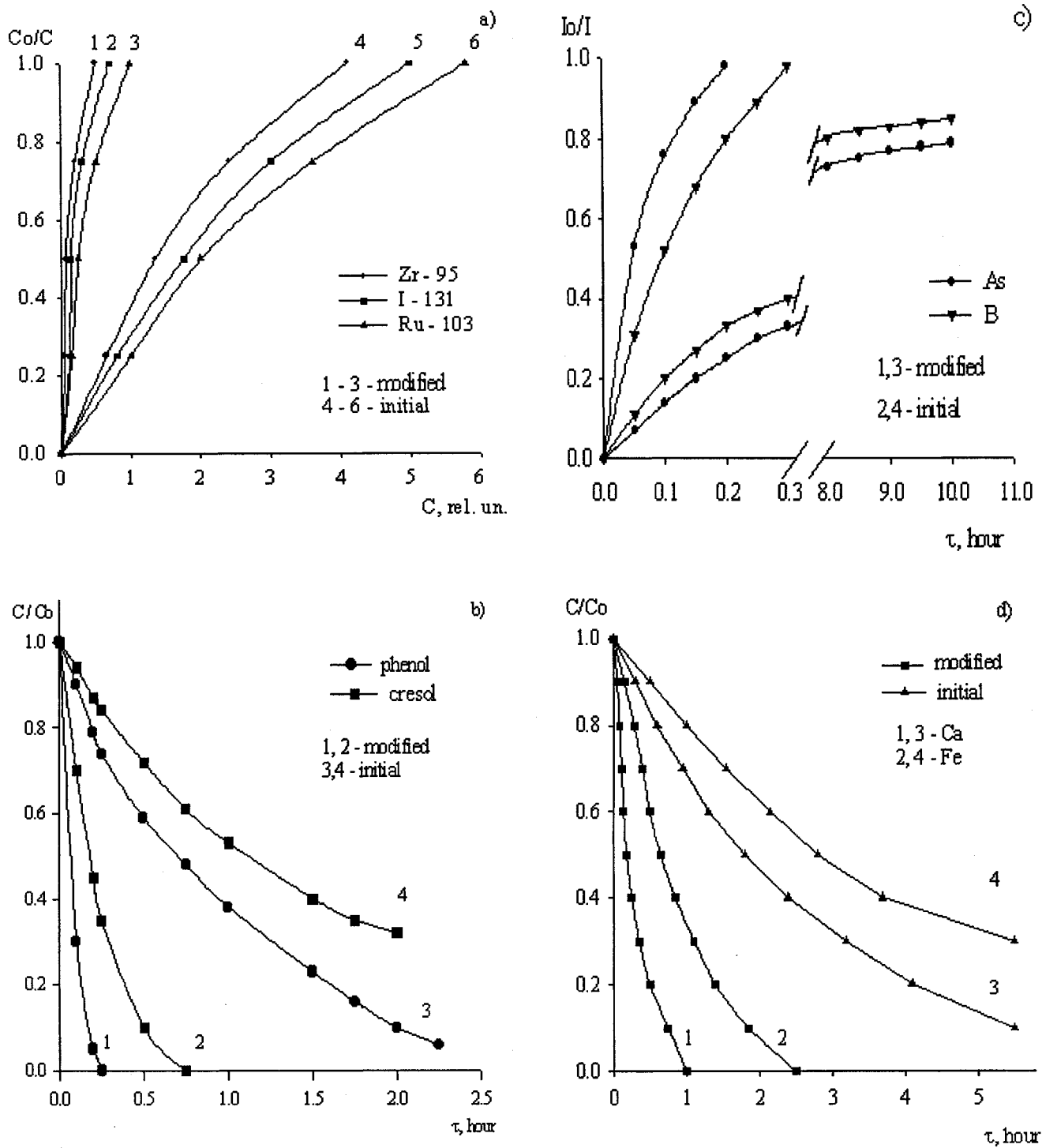


Figure 1. The efficiency of purifying water solutions.