

## **MULTI-WALL CARBON NANOTUBES AS SORBENTS FOR REMOVAL OF IBUPROFEN AND DICLOFENAC FROM AQUAEUOUS SOLUTIONS**

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### **Abstract**

Carbon nanotubes (CNTs) are in recognition of scientific community for almost 25 years. They are known for their unique physicochemical and electronic properties. During these years, methods of their production and characterization vastly improved and many new applications were developed in almost every aspect of our daily lives.

This work is focused on verification of the possibility to use sorbents based on nanocarbon to remove drug residues from wastewater, specifically sorbents based on multiwalled CNTs. In this work, commercially available carbon nanotubes Nanocyl 7000 (NC7000) in its original raw and oxidized form have been used. Surface of the pristine CNTs is strictly hydrophobic and due to this fact a surface modification (by oxidation using NaOCl) was made. The surface became more polar and more suitable for interactions with ibuprofen and diclofenac, which have polar functional groups in their structure. Sorption properties of both materials for ibuprofen and diclofenac was observed and evaluated in model aqueous solutions. The materials were characterized by SEM, FTIR, XRD methods to study changes in surface structures. The results obtained showed that carbon nanotubes are suitable adsorbents for drug removal with high efficiency, the modified ones were better than pristine.

**Keywords:** CNTs, oxidation, carbon, nanotubes, evaluation, modeling, sorption, drug, removal

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