

## ADSORPTION BEHAVIOR OF CHITOSAN-MWCNTs NANOCOMPOSITE FOR THE ELIMINATION OF OFLOXACIN MEDICATION

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**Abstract.** A nanocomposite of p(CS-co-AA)/MWCNTs was produced using free radical polymerization to study its efficiency in eliminating the antibiotic Ofloxacin (OFL) from aqueous solutions. The synthesized nanocomposite has undergone characterization using FTIR, XRD, FESEM, TEM, EDX and Zeta potential techniques. The adsorption of OFL on the p(CS-co-AA)/MWCNTs has been evaluated using three established Langmuir, Freundlich, and Temkin isotherm models. The isotherm constant ( $K_F$ ) of 0.218 and the separation factor ( $R^2$ ) of 0.956 indicate a strong and desirable adsorption of OFL on p(CS-co-AA)/MWCNTs with a concentration of 100 mg/L at a temperature of 293K and an acidic medium with a pH of 7.0. The primary cause of the reduction in OFL adsorption and dehydrogenation is the increase in pH level. The Van't Hoff equation indicates that the OFL adsorption process exhibits fast kinetics, as seen by a negative thermodynamic parameter  $\Delta H$  of -0.012 kJ/mol. Additionally, the pseudo-second-order kinetic model ( $R^2= 1.00$ ) confirms this observation. The results indicate that the synthesized nanocomposite has the capability to effectively remove OFL from polluted aqueous solutions.

**Keywords:** multi-walled carbon nanotubes, chitosan nanocomposite, Ofloxacin drug, adsorption, thermodynamic.