

ABSTRACT:

This research thesis deals with an evaluation of the ability of graphene powder to reduce organic matter in wastewater at the secondary treatment level measured with the Chemical Oxygen Demand (COD) parameter.

The method used for the thesis work consisted of obtaining synthetic wastewater samples generated from a liquid food coloring dye (princess pink, from the Fratello brand), where the adsorption capacity of graphene powder was observed. This involved dilution with distilled water to obtain different concentrations of organic matter reflected in the changes of the COD parameter. As a reference standard, granular activated carbon was used, to compare with the efficiency in the use of Graphene in various stages of tests. For the experimental design, the factorial model of two levels of fluctuation 2^k was used, which having 3 independent variables the factorial design would be 2^3 , that is, 8 experiences, per replicate, it should be noted that two replications were carried out.

Prior to the proposed methodology, tests of color reduction capacity were started as a function of time, in order to obtain the contact times and concentration of the Graphene to be used, having obtained times of 5 to 60 minutes and 1 to 4 g / l concentration respectively.

The results obtained show that the behavior of Graphene to reduce organic matter would reach values of 50% efficiency in just 5 minutes, and 100% efficiency in approximately 10 minutes in color reduction.