

## **Adsorption of Xylene Cyanol FF onto Activated Carbon from Brachystegia Eurycoma Seed Hulls: Determination of the Optimal Conditions by Statistical Design of Experiments**

**Authors :** F. G Okibe, C. E Gimba, V. O Ajibola, I. G Ndukwe, E. D. Paul

**Abstract :** A full factorial experimental design technique at two levels and four factors (24) was used to optimize the adsorption at 615 nm of Xylene Cyanol ff in aqueous solutions onto activated carbon prepared from brachystegia eurycoma seed hulls by chemical carbonization method. The effect of pH (3 and 5), initial dye concentration (20 and 60 mg/l), adsorbent dosage (0.01 and 0.05 g), and contact time (30 and 60 min) on removal efficiency of the adsorbent for the dye were investigated at 298K. From the analysis of variance, response surface and cube plot, adsorbent dosage was observed to be the most significant factor affecting the adsorption process. However, from the interaction between the variables studied, the optimum removal efficiency was 96.80 % achieved with adsorbent dosage of 0.05 g, contact time 45 minutes, pH 3, and initial dye concentration 60 mg/l.

**Keywords :** factorial experimental design, adsorption, optimization, brachystegia eurycoma, xylene cyanol ff

**Conference Title :** ICCEMS 2015 : International Conference on Chemical, Environment and Medical Sciences

**Conference Location :** Miami, United States

**Conference Dates :** March 09-10, 2015