



## International Journal of ChemTech Research

CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555  
Vol.9, No.10, pp 232-240, 2016

# Investigation of Applying NF Membrane for Dye Removal Using Multivariate Regression Model

Ghada A. Al Bazed<sup>\*</sup>, Marwa M. Elsayed, Mona A. Abdel-Fatah

Chemical Engineering and Pilot Plant Department, National Research Center,  
El-Bohouth Street, Dokki, Egypt

**Abstract** : Recently, Nanofiltration plays an important role in dye wastewater treatment. The efficiency of membrane separation system for wastewater treatment plant is complicated due to different operating conditions involved in the separation process. Estimation of the Nanofiltration membrane performance is essential to evaluate the final water quality for further reuse. This work focus on the development of a simplified predictive model for membrane performance estimation under a set of parameters. A linear multiple regression model with coefficient of determination ( $R^2$ ) of 1 has been developed for COD values in the permeate stream, while ( $R^2$ ) of 0.85 for membrane rejection estimation. Seven investigated parameters have been related to formulate the model. The model has been applied for dye wastewater scheme comprising Nanofiltration with proper pretreatment. The model has been validated with an average deviation of 15% for membrane rejection and almost no deviation for COD level estimation in the permeate stream.

**Keywords** : Nanofiltration, Membrane separation, Wastewater Treatment, predictive model, Reactive dye.

Ghada A. Al Bazed *et al* /International Journal of ChemTech Research, 2016,9(10): 232-240.

\*\*\*\*\*