

Use of Box-Behnken design in the preparation of mesoporous carbon coated monolith - BET surface area

ABSTRACT

Preparation of furfuryl alcohol based activated carbon monolith is reported. The effects of the preparation parameters like carbonization temperature, concentration of polyethylene glycol (PEG) and molecular weight of PEG on surface area are investigated. Based on Box-Behnken design, a quadratic model is developed to correlate the preparation parameters to surface area. From the analysis of variance. (ANOVA), carbonization temperature, concentration of polyethylene glycol (PEG) and molecular weight of PEG are identified the dominant parameters in controlling the surface area. The maximum surface area found from the LiSM is 585.6 m²/g at carbonization temperature of 660° C and concentration of PEG of 31% vol. with molecular weight of PEG of 1000 g/mol.

Keyword: Box-Behnken design; Furfuryl alcohol; Mesoporous carbon; Monolith