Optimal Methods to Determine the Physical Parameters for Activated Carbons Absorption

張怡怡

Chiang YC;Chiang PC;Chiang HL;Chang EE

摘要.

Abstract

The objectives of this research were to examine the physical characteristics of activated carbons made of different materials, thereby suggest a preferable approach to obtaining the optimal estimation of the parameters for the activated carbons by the statistical techniques. After the appropriate pretreatments, the apparent and true densities of activated carbon, adsorption iso- therms of argon, nitrogen and mercury. and the adsorptive capacity of benzene were determined byusing the recommended approaches. The results showed that the shapes of hysteresis loop indicated that the pores were probably slit-shaped or formed by plate-like particles, which could be confirmed by the SEM examination. It was noted thatthe apparent density used for pore volume calculation presented a higher possibility of underestimation. Through the use of the statistical techniques, such as factor analysis (FA) and correspondence analysis (CA), the prin- cipal physical parameters on adsorption phenomena could be characterized. Finally, the optimal methods for obtaining the surface area and pore volume of activated carbons were suggested.