

On the L_0/σ Range of the TVFM

Adsorption isotherms of nitrogen, carbon dioxide, methanol, dichloromethane, benzene and neopentane were determined on a range of molecular sieve and super-activated carbons with the objective of establishing the range of validity of the Theory of Volume Filling of Micropores (TVFM) in terms of the ratio of pore width to molecular diameter, L_0/σ . It is shown that, in the absence of molecular-sieving effects, both the characteristic curve concept and the DR equation are valid over the whole of the micropore range, corresponding to values of L_0/σ less than or equal to 5 and to at least a slight enhancement in the characteristic energy, E_0 , of the adsorbent when compared with the corresponding value obtained with non-porous carbon blacks. On the other hand, estimation of the mean micropore width was only possible for values of L_0/σ up to ca. 2.3, corresponding to at least a two-fold enhancement in E_0 . Results obtained using N_2 at 77 K showed some significant differences to those obtained with organic adsorptives at higher temperature.

Corresponding author: Peter@uevora.pt