POROUS STRUCTURE PECULIARITIES OF NOVEL LIGNOCELLULOSIC PRECURSOR – DOGWOOD STONE

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The purpose of this present study was to investigate the regularity of activation of new lignocellulosic precursor – dogwood stone, to investigate the porous structure and some sorption characteristics.

Two-step physical activation method was used to prepare the activated carbon. The textural characteristics of derived carbons were determined by the standard N_2 adsorption isotherms obtained at –196 °C using NOVA 2200 apparatus (Quantachrome, USA).

Fig.1 shows the typical nitrogen adsorption-desorption isotherm and differential pore size distribution of the carbon prepared (activation temperature 800 °C, activation time 40 min). The isotherm is of Type II according to UIPAC classification with opened hysteresis loop whose clousure points are varied between 0.45 p/p_o and 0.95 p/p_o. The BET surface area is about 1400 m^2/g, the micropore and external surface area calculated by BJH Method are 912 m^2/g and 483 m^2/g, respectively. Pore size distribution shows (Fig.2) that investigated carbon contains both micro- and mesopores. The average pore radius determined assuming cylindrical pore dimensions is 2 nm. Owing to its high BET surface area and developed pore structure, the carbon derived from cornel stone might be a suitable adsorbent in waste-water treatment. Sufficient amount of micro- and mesopores promotes the diffusion of the contaminants, results to significant improvement of water treatment processes.

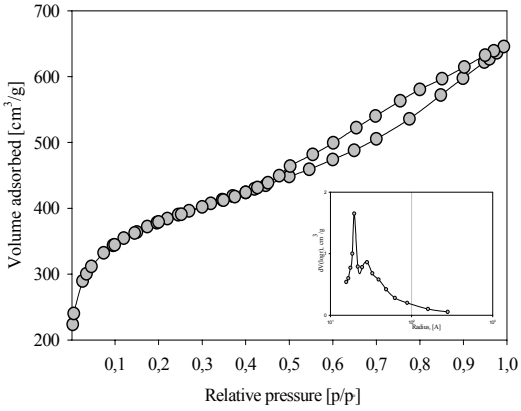

Fig. 1a. Nitrogen adsorption-desorption isotherm of cornel stone-based carbon activated at 800°C for 40 min; **b.** Differential pore size distribution derived from the desorption branch of the isotherm using BJH method (activation temperature 800°C, activation time 40 min).

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