

Carbon sorbents in the processes of disinfection of air

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Abstract

The presence of microorganisms in the air is determined by many factors. They can be represented by separate cells, but basically they exist as aggregates with dust. 1 g of dust can contain up to 1 million microorganisms. Given the good adaptability of microorganisms to environmental changes and anthropogenic effects, it becomes clear the need for filters for cleaning atmospheric air and air that has been used in the process of fermentation. This work is devoted to the study of the effectiveness of carbon sorbents for use in filters for air purification and disinfection.

Representative samples of active carbons of different grades, obtained from various types of raw materials (carbon, wood, walnut shell, fruit bone), distinguished for their shape and physico-chemical properties, were selected for the study.

The efficiency of the sorbents was checked with the use of a dynamic laboratory instrument with a fixed flow rate of air supply to a container for the cultivation of microorganisms. The air spent during fermentation was collected and tested for the number of viable bacteria and fed to a dynamic column with a sorbent.

The bactericidal properties of the samples of carbon sorbents are studied. Their protective properties in the layer are evaluated in a dynamic process of air purification from microorganism cells.

Dependences of the adsorption capacity of carbon materials on the length of their layers have been studied, and the optimal characteristics of the fixed filtering layer of sorbents have been determined.

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