Nanostructured surfaces

Unit with fluidized bed for gas-vapour activation of coal for various purposes. Design, computation, implementation.

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We propose the technology of obtaining the promising material with wide specter of application – activated nanostructured carbon [1]. In terms of technical indicators it will stand next to the materials produced by complex regulations with the use of costly chemical operations. It can be used for such needs: as a sorbent for hemosorption, enterosorption, for creation the newest source of electric current (lithium and zinc air batteries, supercapacitors) [2], for processes of short-cycle adsorption gas separation, etc.

In the study author gives recommendations concerning design of the apparatus with fluidized bed and examples of calculation of a specific devices. On the whole given information can be used as guidelines for design of energy effective aggregates. [3, 4]

Calculation and design of the reactor was carried out using modern software complexes (ANSYS and SolidWorks) [5, 6]. The set of assemble drawings for the apparatus with capacity of 1-3 kg/h on the activated coal was developed (see Fig. 1).

Fig. 1. The external view of the activation unit.

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