

Nanocomposites on the Basis of Film-forming Polysiloxane Polymers

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Creation of polymeric nanocomposites is considered as a promising direction of creation of polymeric materials of new generation. Nanocarbons of detonation synthesis include Diamonds Carbon Black (DCB) and the Detonation Nanodiamonds (DND), are made on pilot scale. DCB is possible to consider as a composite material, including the DND and a number of nanocarbons of uncertain structure. DCB is actually a product of detonation synthesis, therefore its application in polymeric material science for economic reasons is most expedient.

In the given work polymeric composite materials on the basis of the ladder block-copolymer polyphenylsilsesquioxane with polydimethylsiloxane, modified with DCB are received. Thus, the problem was put to improve strength characteristics of the material with preservation of adhesive properties to metals. The technique of introduction of modifying additives in volume of polymer has developed. It was shown, that primary distribution DCB occurs in the dispersive medium at preservation of uniform distribution.

Physicomechanical parameters of nanocomposites are obtained and their comparison with those initial is lead. It is shown, that updating of polymers (0.5-3 mass.%) provides with nanocarbons growth strength parameters by 12-20%. Presence of local maxima of strength parameters depending on a degree of filling is assumed. It is assumed, that optimum degrees of filling lay in an interval of 0.05-0.5 mass.%

Within the limits of work on creation of polymeric coverings with antibacterial properties have been received the DND modified Me-R by compounds. Thus it has been shown, that updating of dry powders of nanodiamonds Me-R compounds allows to receive their fine suspensions. It has been shown, that there is optimum time of insonification which up to 50% of the DND passes in nanodispersed condition. The DND modified Me-R have been used for reception films with concentration of 1 mass.% Properties of grafted nanodiamonds do not vary at warming up to 250°C, that in our opinion testifies to presence of covalent bond.