Полученные нанокомпозиты были исследованы следующими физико-химическими методами анализа, такими как рентгенофлуоресцентный анализ (РФА) для идентификации ионов серебра, ИК-Фурье-спектроскопия для определения функциональных групп и СЭМ-анализ до модификации и после модификации для изучения морфологии поверхности и полученных композитов. Общие результаты проведенных анализов показали улучшение химической поверхности диатомита и каолина, также наличие нано частиц серебра в составе нано композита.

Полученные нанокомпозиты являются перспективным материалом, который может быть использован в качестве адсорбента для антимикробной очистки сточных вод, фильтрующего агента, системы доставки лекарственных препаратов в медицине, а также как носители для перевязочных материалов.

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## TECHNOLOGICAL CHARACTERISTICS OF EPOXY/CARBON BLACK COMPOSITES

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**Abstract.** The set of epoxy composites based on Alfa Aesar$^{TM}$ carbon black (CB) (0-1.5 wt.%) has been prepared. Dependence of shaft torque on the rotation frequency in batch mixer with overhead stirrer for epoxy/CB system was obtained. Chemical resistance tests of epoxy resin/carbon black composites were carried out by sample immersing in 30% $H_2SO_4$ and 95% $H_2SO_4$. The increase of apparent viscosity of epoxy/CB mixture was observed for relatively low temperatures (30-40°C). Immersion of epoxy/CB composite in concentrated $H_2SO_4$ induced strong oxidation of sample and mass loss. Dilution of sulfuric acid led to the mass gain of the composite sample due to the increased uptake. The improvement of chemical resistance of epoxy/CB composites was obtained 95% $H_2SO_4$.

Epoxy resins found their applications due to a set of special characteristics, such as good adhesion, relatively low viscosity, good chemical stability and mechanical properties. Various carbon fillers and reinforcing agents were used to improve characteristics of epoxy composites, e.g. carbon nanotubes [1,2], carbon fibers [3], carbon nanofibers [4], expanded graphite [5] etc. Carbon black (CB) is one of the most popular fillers for thermosetting resins and epoxy resin, in particular. Epoxy/CB composites can be used as protective coatings [6], electromagnetic interference shields [7], and antistatic paints [8].

There are a lot of articles devoted to corrosion tests and chemical resistance of epoxy/CB composites in 3% NaCl [6]. In [9] epoxy/glass fibre composite behavior in HCl and $H_2SO_4$ was determined. In [10] anticorrosion properties of epoxy/$TiO_2$ composites were determined in 1M HCl. In this connection, the data of chemical resistance of epoxy/CB composites are very important from technological point of view, taking into account, that carbon black is one of the most frequently used fillers.

This work is devoted to study of technological characteristics, such as viscous behavior, chemical resistance in sulfuric acid, water uptake of epoxy/CB composites with various concentrations of filler.