



MODIFICATION OF THE PEROXYDISED SURFACE BY CHITOSAN

O.O. Kudina, O.G. Budishevskaya, I.A. Myskova, N.Yu. Solomko, S.A. Voronov

Lviv Polytechnic National University, Department of organic chemistry, Lviv, Ukraine

solomko_nadia@rambler.ru

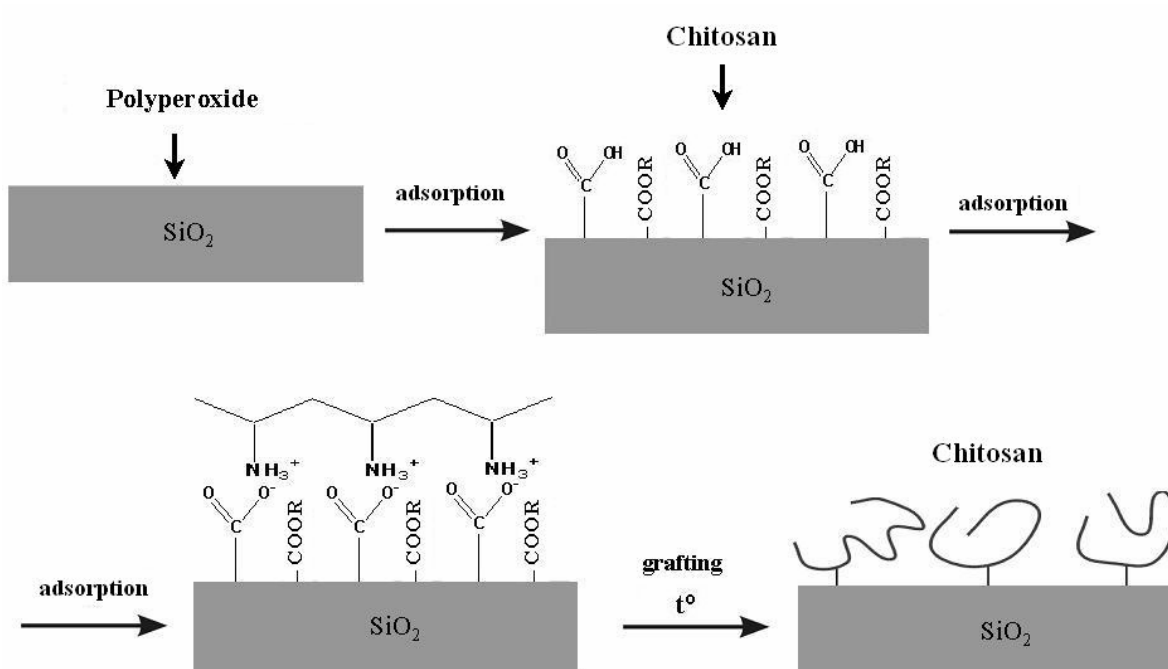
The materials, which are disperse systems with highly-developed interface have different issues, i.e. as nanocomposites, water-polymer and organic-polymer dispersions. Their properties are defined by the structure of the interface layers.

However, recently the object of close interest in the field of new material developing is an interface modification by biopolymers – polysaccharides. Such modification allows to attach the already existing materials such properties as biocompatibility, biodegradability, hydrophilicity. The usage of aminopolysaccharide chitosan allows to obtain materials with antibacterial activity [1, 2].

The purpose of this work is the creation of grafted chitosan layer on the silica dioxide surface in order to achieve biosorbents.

The SiO₂ surface modification includes three stages:

- I. Immobilization of styrene-co-maleic anhydride-co-tertbutylperoxymethylmaleinate (St-MA-PM) via adsorption from the organic solvent on the silica dioxide surface.
- II. Chitosan adsorption from the water solution to the SiO₂ surface, modified by St-MA-PM
- III. Grafting of adsorbed on the SiO₂ chitosan macromolecules to the St-MA-PM layer due to heating.



Scheme 1. Scheme of the modification of SiO₂ surface by chitosan macromolecules

The microbiological analysis of modified SiO₂ was carried out on the *Saccromyces cerevisiae* yeast culture, has shown that the analyzed samples depress the vital activity of cells and their colonies.

Thus, it has been shown that using surface modification of SiO₂ via successive absorption of polyperoxide with primary-tertiary groups St-MA-PM and chitosan modified silica dioxide was produced, which depresses the vital activity of yeasts and can be used as a biosorbent.

Literature: 1. Хитин и хитозан. Получение, свойства и применение / Под. ред. акад. РАСХН К.Г.Скрябина и др. – М.:Наука. – 2002. – 368с. 2. Будішевська О.Г., Соломко Н.Ю., Воронов С.А., В.В.Кочубей, Паляниця Л.Я. Пероксидовмісні кополімери хітозану // Вісник Національного Університету «Львівська політехніка». – 2005. – № 529. – с.232-236.