

# Nanochemistry and Nanobiotechnology

## Features of formation of structure of nanocomposites of dipyridamole ether of diphenylolpropane and glucose

Ovsyankina V.A.<sup>1</sup>

<sup>1</sup> National Technical University of Ukraine "KPI".

Prospekt Pobedy 37, Kiev-03056, Ukraine.

E-mail: ovsyankina.viktoriya@mail.ru

Synthesis of new materials is energy intensive process. Because of this fact modification of existing widely used polymer is economically valuable. polyepoxides and their oligomers are polymers that are constantly used as composite matrix. they yield on its ability to satisfy the demands of modern technologies only polyolefines and some representatives vinyl polymers. Intentions of multi-purpose using of epoxy composite materials stimulate the introduction in their composition of impurities. These impurities improve the heat resistance, wear resistance, chemical resistance, ability to protection from penetrating radiation and also perform the role of structural modifiers.

For work epoxy kompozitsionnye of materialia were received on basis of dipyridamole of ether diphenylolpropane, cured by triethylenetetramine in the ratio 1:0.18, and D - glucose (glucose monohydrate) with a particle size of 5. Mass concentration of glucose in the composition of polyepoxides amounted were 0,5, 1, 2, 10, 20, 30 and 50%. Samples of initial components and obtained composite materials were investigated by the methods of scattering of x-ray radiation in large angles. Specific heat was investigated by the method of differential scanning calorimetry in the temperature range from 20 to 200<sup>0</sup>C .

Diffraction pattern of obtained composite allows to make the following conclusions: the chemical grid has amorphous structure and this structure is preserved until reaching the mass concentration of glucose 2% in the composite material. The existencing of individual crystalline phase in the chemical structure of the grid appears as diffraction maximum at  $\Theta=19$ . In the interval of concentrations of glucose 10-50% separate inclusions crystalline phase merge and formcrystal structure, which similar to the structure of individual glucose. These resultes are consistent with research data of the specific heat of the parent compounds and epoxy composite materials and thermograms re-write these samples. it was established that the relaxation transitions disappear at repeated entries in the initial composite materials, in the area of 20-60 <sup>0</sup>C. So they can be explained of the presence of nedovrsenij phase of epoxy resin, which share can reach 20% without additional thermal action. Crystalline phase of glucose of epoxy composite material connected interaction with its reaction groups of polyepoxides matrix and hardener.

