

Nanocomposites and nanomaterials

Conductivity of cross-linked polyurethanes, modified with multiwalled carbon nanotubes

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Immobilization *in situ* in polymers, including polyurethanes (PUs), of low quantity of carbon nanotubes (CNTs) strongly improves the electrical, thermal and mechanical properties of the composites [1].

The cross-linked polyurethanes, modified with various amount (0,02-1%wt.) of multi-walled CNTs, were synthesized *in situ*. CNTs were dispersed in ultrasonic bath in dichloromethane (CH₂Cl₂) for 2,5 minute. Then the dispersion of CNTs in solvent were added into reaction mixture and dispersed for 2,5 minute again.

It was shown (Figure 1) the influence of CNTs concentration on the mechanical and electrical characteristics of polyurethanes-CNTs composites.

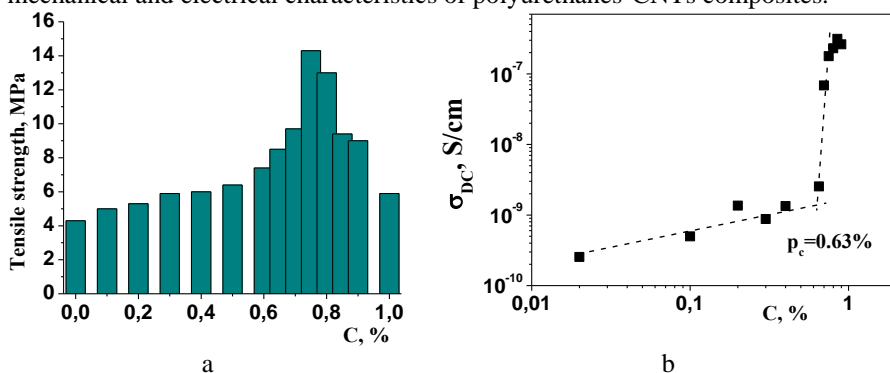


Fig. 1. The dependence of tensile strength (a) and direct current (b) vs. CNTs concentration for cross-linked polyurethanes.

1. Koerner H., Liu W., Alexander M. et al. Deformation–morphology correlations in electrically conductive carbon nanotube — thermoplastic polyurethane nanocomposites // Polymer. – 2005. – 46. – P. 4405-4420.