**Nanooptics and photonics**

**Influence of carbon nanotubes on the transparency of**

**Polytetrafluoroethylene**

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Introduction of carbon nanotubes to PTFE polymer at concentrations of 0.05; 0.1; 0.5; 2 and 5 wt. % in general leads to the decreasing of the light transmission coefficient. The lowest value was observed, as expected, for the PTFE–CNT composite with the highest concentration of CNT (5 wt.%). For the samples with minimum thickness (15 m)the transmission coefficient is reduced from 3% for  1000 nm to 1% for  320 nm. The transmittance decreases with increasing of sample’s thickness. The thickness of the sample at which the inversion of the *K*tr.  *f*() curve occurs increases to 50 μm for the minimal concentration of the CNT (0.05 wt.%). For the higher CNT concentration (0.1 wt.%) this critical thickness increases up to 70 m.

 

a b

Figure 1. Dependences of the light-transmission factor for PTFE–CNT composites with different thickness (*a* – 0.05 wt.% CNT, *b* – 5.0 wt.% CNT)

Also at work were studied the darkened and mirrored sunglasses and, for comparison, the transmission spectrum of glass. It appeared that the common dark glasses perfectly transmit the UV (315–400 nm), with the maximum transmission in the range 360–380 nm. That means that such pass the light which causes the lenticular opacity and damage of the eye’s retina. In the IR band sunglasses are also quite transparent – 70%.