

## Structural and physical properties of MWNT/polyolefine composites

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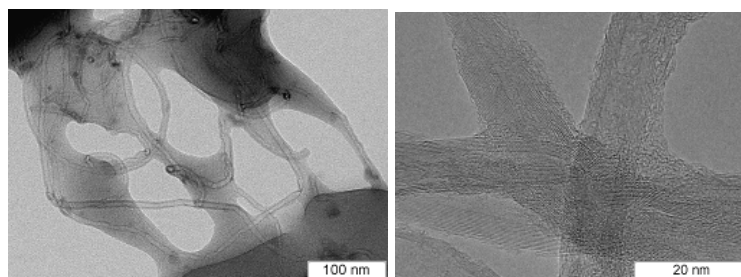
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In the present work we have investigated structural and physical properties of polymer composites, comprising multiwalled carbon nanotubes (MWNTs) in polyolefine (polyethylene (PE) and polypropylene (PP)) matrix.

Carbon nanotubes with average outer diameter 8-10 nm were prepared by decomposition of ethylene over metallic catalySt and incorporated in polymer matrix using so-called coagulation technique. Composites with MWNT loading 0.5-20 wt.% were synthesized and investigated using various physical-chemical methods.

MWNT state in the polymer matrix was investigated by means of electron microscopy both for powder samples and hot-pressed composite films. It was shown that the surface of MWNTs is wetted by the polymer (Fig. 1) thus resulting in good interaction between filler and the matrix.



**Figure 1.** TEM images of MWNT-polypropylene composite (8 wt. %) showing good wetting of MWNT surface with polymer.

Thermal, electrical and electromagnetic properties of composites were also investigated, showing improvement with growing MWNT loading. Electromagnetic response properties of MWNT/PP and MWNT/PE composites were studied in broad frequency range, showing high shielding efficiency due to both reflection and absorption of EM radiation.

Thus MWNT-polyolefine composite materials are perspective for design of durable EM-shielding coatings for wide application range.