

**Research Title:** Effect of melt mixing time on selective dispersion of carbon nanotubes in polyurethane

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## ABSTRACT

Nowadays polyurethane (PU) has widespread application because it can be developed properties as requirement, but it has poor electrical conductivity. Therefore this research was focused on preparation of nanocomposite between PU and multiwall carbon nanotube (MWCNT) by melt mixing. The effects of mixing time on dispersion of MWCNT in PU were studied. Nanocomposites between MWCNT and PU were prepared at 0.25 %wt. PU matrices have two different soft segments which were polyester (PU-ester) and polyether (PU-ether). Nanocomposites were prepared by Barbender for 4-12 minutes at 190°C then shaped into sheet by compression moulding. Nanocomposites were investigated by FESEM, DSC and LCR meter. It was found that MWCNT/PU-ester nanocomposites showed an increase in conductivity as increasing mixing time. MWCNT dispersed in hard segment of PU-ester. On the other hand, MWCNT/PU-ether nanocomposites prepared at 8 minutes showed maximum conductivity. MWCNT dispersed in soft segment of PU-ether.

**Keywords:** Carbon Nanotube, Polyurethane Nanocomposite, Conductivity and Melt Mixing Method