

CHAPTER 5

Conclusions and suggestions for future work

5.1 MWNTs/LLDPE composites prepared via melt mixing process

The experiment results can be concluded as follows:

1. Using four-step heating to melt LLDPE/MWNT composites can reduce the porosity in the composite materials, resulting in increased mechanical properties in LLDPE.
2. The 3 vol.% MWNT sample prepared using four-step heating showed the highest values for tensile strength, elastic modulus, and impact strength (21.40 MPa, 147.87 MPa, and 23.947 kJ/m², respectively).

5.2 Solar heat absorbing coating from MWNTs/ LLDPE coated on the copper sheet

The experimental results for the solar heat absorption from MWNTs/LLDPE composites coated on the copper sheets. The simple hot press method was applied to prepare MWNTs/LLDPE coatings. The results showed that the MWNTs in the LLDPE were evenly spread and the surface fraction of MWNTs increased with increasing the volume ratio. Due to the nanostructures and black MWNTs as compared to other materials, the solar absorbance of the coatings was achieved at 0.95 for the sample condition at 5 vol.% MWNTs/LLDPE composites. The results also suggested that the novel coatings of MWNTs/LLDPE composites for use as a solar heat collector can be further improved their efficiency by mixing a higher volume ratio of MWNTs as well as making the zig-zag arrangement of water pathways on the collector.