

Surface-modified nanocellulose for ultra-high molecular weight polypropylene composite

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Ultra-High Molecular Weight Polypropylene (UHMWPP) was compounded with modified nanocellulose. UHMWPP was a hydrophobic material, but nanocellulose was a highly hydrophilic material and the surface of the nanocellulose needs to be modified. Nanocellulose was modified using octadecyl isocyanate (ODI) and compounded with UHMWPP. The equipment used for compounding was a twin-screw extruder, and the test pieces were prepared by the hot press method. The processing temperature of the extruder was 230°C, and the processing temperature of the hot press was 180°C. Specimens were manufactured according to the ASTM D638 standard and evaluated using UTM. Composite specimens prepared by modifying the surface show excellent elongation and have potential as composite materials in future industries.