

Manufacture of EPDM / Na_{0.33}WO₃ nanocomposites for improved thermal properties

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Tungsten bronze nanorods (TBNs) were synthesized by hydrothermal synthesis, which also includes a combination process with Ammonium metatungstate hydrate (AMT). The TBNs capped with oleylamine has a size of about 16 nm and absorb near-infrared radiation (NIR, wavelengths ranging from 780 to 2500 nm). The resulting TBNs were mixed completely with an ethylene propylene diene monomer (EPDM) toluene solution to form composites films upon solvent removal with uniformly distributed TBNs. TBNs/EPDM composites films showed excellent photothermal properties, suggesting the usefulness of TBNs as an efficient light harvesting and storage materials. TBNs/EPDM composites have improved mechanical properties compared to pristine EPDM.