UV Absorption, Mechanical and Optical Behaviour of Zinc Oxide Containing Poly (vinyl alcohol-g-acrylonitrile) Nanocomposites Films for Skin Protection

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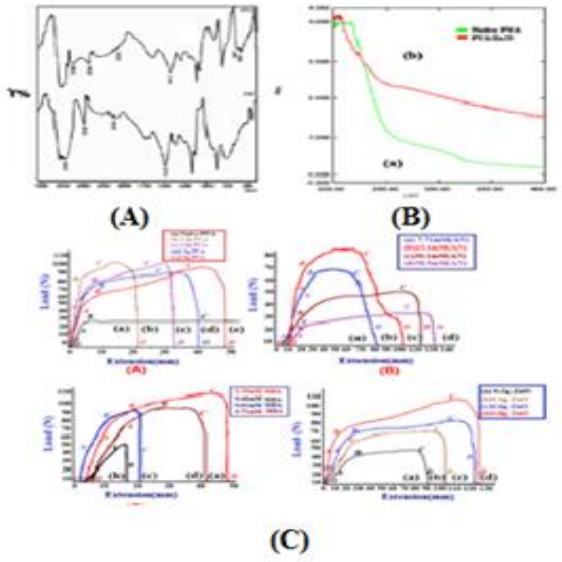
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I Abstract

UV absorption, mechanical and optical properties of PVA-g-PAN/ZnO nanocomposite films prepared by free radical graft copolymerization of acrylonitrile on to PVA and subsequent in situ precipitation of ZnO nanoparticles into the polymer matrix are reported in this abstract. The nanocomposites were characterized by various analytical methods such as FTIR, Raman spectroscopy, DSC, SEM and AFM etc. The size of the crystallites and extent of crystallinity were ascertained by XRD analysis. The SEM with EDX showed that the ZnO nanoparticles were uniformly dispersed within the host co-polymer matrix. TEM results clearly indicated that the size of zinc oxide nanoparticles varied in the range 10–30 nm. The UV-absorption properties of so prepared films were also studied using UV-visible absorption spectroscopy. UV absorption, transmittance and reflection spectra of PVA-g-PAN/ZnO nanocomposites suggest that small amounts of ZnO in the composite films are get high UV shielding above 95% UV absorption, 4% reflection and only 1% transmittance. The results reveal an excellent UV absorption at around 380 nm by nanocomposite films. These results supported to prepared nanocomposite film may be useful for UV protecting devices for defense, high altitude places, UV protecting crème for skin and other possible applications also. PL measurements reveal the existence of defects in the synthesized nanocomposites films. The antibacterial activities of so prepared nanocomposites were determined against the Gram-negative and Gram-positive bacterium. The mechanical properties of the nanocomposites were also studied.

II Images



III References

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IV Biography

Dr. Shikha Chouhan has completed her PhD at the age of 27 from RD University and Recently finished Research associate ship from department of Materials Science, IIT Bombay, Mumbai India. She has published 3 research papers in the international Journals. She has got one of the most prestigious awards such as Young Scientist, Most Ambitious Young Scientist organized by Govt. of India and "Best Oral Research Paper Presentation award" at an international conference on 15-16 January, and "Best Research Paper Poster Presentation award" at University Level on National Science Day Celebration (27-28 Feb 2015).

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