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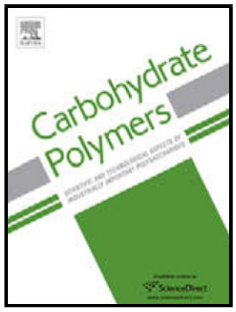

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Multifunctional properties of cotton fabrics coated with in situ synthesis of Zinc oxide nanoparticles capped with date seed extract

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Highlights

- In situ formation of ZnO-NPs within cotton substrates were synthesized
- Bio-extract of date seed via water extraction of grinded date seed waste.
- date seed extract was used as stabilizing agent for ZnO-NPs.
- The capped ZnO-NPs is sustainable for antibacterial activity and UV-properties.

Abstract

In situ formation of zinc oxide nanoparticles (ZnO-NPs) was studied within the framework of several factors. variables examined include (i) innovation of a new capping agent; (ii) nature of the cotton fabric related to its processing; (iii) formation of Zinc hydroxide ($Zn(OH)_2$) due to reduction of zinc acetate with sodium hydroxide (iv) treatment of the differently processed cotton fabrics with ($Zn(OH)_2$) functionalized dispersion as per the exhaustion method, (v) further treatment of the cotton fabrics with ($Zn(OH)_2$) dispersion according to the pad-dry-cure method and (Vi) conversion of ($Zn(OH)_2$) to ZnO-NPs during the curing step in the latter method. Results depict that the incorporation of the bio-extract obtained

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