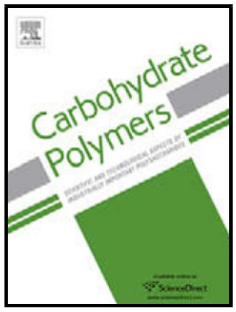

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Structure-property relationships in sterculia urens/polyvinyl alcohol electrospun composite nanofibres

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Abstract

Sterculia urens (Gum Karaya) based polyvinyl alcohol (PVA) composite nanofibres have been successfully electrospun after chemical modification of sterculia urens to increase its solubility. The effect of deacetylated sterculia urens (DGK) on the morphology, structure, crystallization behaviour and thermal stability was studied for spuned fibres before and after spinning post treatment. An apparent increase in the PVA crystallinity were observed in the PVA-DGK composite nanofibres indicating sterculia urens induced crystallization of PVA. The pure PVA nanofibre and the nanofibres of PVA-DGK composites were introduced to post electrospinning heat treatment at 150 ^{o}C for 15 mins. The presence of sterculia gum reduced the fibre diameter and distribution of the nanofibres due to the increased stretching of the fibres during spinning. Switching of the thermal behaviour occurs due to post spinning heat treatments.

***Keywords*:** PVA; Sterculia urens; Nanofibres; Deacetylation; Thermal properties; Crystallinity.

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