Nano Carbon Implanted Ag Doped Medical Cotton Fabrics by Plasma Implantation Technique for Health Applications

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Abstract

Cotton fabrics are well known for its textile usages. In addition to this, its role in medical applications such as surgical, wound dressing and sport wearables are also inevitable. In this favour, our research focuses on the incorporation of nano carbon-based materials over cotton fabrics found to be a promising technology for the medical applications. Incorporation of nano carbons over cotton fabric was done by using plasma implantation technique. Further, we have extended our plasma implanted nano carbons to make it anti-microbial by incorporation of silver nanoparticle (Ag-NPs) on the plasma treated cotton fabrics. These resultant nano carbon implanted Ag-NPs deposited cotton fabrics show admirable biomedical results. The processed cotton fabric samples were analysed by using various studies such as FTIR to identify the presence of its functional groups, surface morphology was carried out using electron microscopes (SEM & TEM). Further its biological activities were analysed to identify its antimicrobial behaviour, cell adhesion property and anti-cancer activity.

Keywords: Cotton fabric; Plasma implantation technique; nano carbon; Silver nanoparticles; antibacterial activity.