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NANOFIBER BASED WATER FILTER CARTRIDGE

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Polyamide 6 nanofibers are prepared by free surface electro spinning process in which a cylinder or wire electrode partially immersed in a polymer solution. A thin web layer of polymer is deposited over substrate fabric i.e. melt-blown polypropylene. Additional padding of spun-bond polypropylene coated with low molecular chitosan and nanoparticles is given as protective layer for the nanofibers and as heavy metal removal agent. Surface morphology of deposited nanofibers was determined with the use of a scanning electron microscope. The results show that this nanoweb is capable of removing all the suspended particles from the contaminated water samples. The turbidity test measurement shows that the turbidity limit of filtered water was well within acceptable limit of 1 NTU and below the permissible limit of 5 NTU in absence of any alternative source, which is as per the Indian Standard IS 10500:2012. Filtered water showed excellent results of turbidity removal. Bacteriological water analysis carried out to evaluate bacterial removing efficiency. The filter water was subjected to test the heavy metal removal by atomic absorption spectroscopy shows effective removal of chromium, cadmium, lead, arsenic and iron.

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