Contribution ID: **90** Type: **Oral Presenter**

Fabrication of copper oxide nanoparticles and their application on textiles to make it multi-functional

Monday 2 April 2018 13:20 (20 minutes)

With growing demands for hygienic and smart textiles, development of multifunctional textile is increasing day-by-day. Researches have been continuously working on such textiles. In this study copper oxide nanoparticles were synthesized by aqueous precipitation method using different concentrations of CuSO4.5H2O, Na2S2O4 and NaOH, then, characterized by X-Ray diffraction spectroscopy (XRD) and scanning electron microscopy (SEM). Afterward, prepared nano-dispersion was applied on cotton textile by padding then dried at 100oC for 1 minute and cured at 150oC for 3 minutes using cross-linker to make it durable. Finished cotton fabric was investigated for antibacterial, resistivity and UV protection properties. The treated fabric showed electrical conductivity along with UV protection and excellent activity against bacterial strains (S. Aureus and E.coli) upto 15 washes. This textile can find application in sports wear, medical textiles and textile based flexible solar cells.

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Session Classification: Textile Engineering and Technology

Track Classification: Textile Engineering & Technology