

Article Abstract

Title:	Use of zinc oxide nano particles for production of antimicrobial textiles
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Abstract:	The application of nanoscale materials and structures, usually ranging from 1 to 100 nanometers (nm), is an emerging area of nanoscience and nanotechnology. Synthesis of noble metal nanoparticles for applications such as catalysis, electronics, textiles, environmental protection, and biotechnology is an area of constant interest. Recently, an awareness of general sanitation, contact disease transmission, and personal protection has led to the development of antimicrobial textiles. The development of antimicrobial cotton fabrics using Zinc oxide nanoparticles has been investigated in this present work. The ZnO nanoparticles were prepared by wet chemical method and were directly applied on to the 100% cotton woven fabric using pad-dry-cure method. The antibacterial activity of the finished fabrics was assessed qualitatively by agar diffusion and parallel streak method, quantitatively by percentage reduction test. The topographical analysis of the treated fabric and untreated fabric were studied and compared. The results show that the finished fabric demonstrated significant antibacterial activity against <i>S. aureus</i> in both qualitative and quantitative tests. The SEM analysis revealed the embedding of ZnO nanoparticles in treated fabrics. The wash durability study of the treated fabric was also carried out and found to withstand up to 25 wash cycles.
Keywords:	Keywords: Nanoparticles, zinc oxide, antimicrobial finish, wash durability