

Multifunctional Coating of Nylon Using Nano-Si, Nano-Ti and SiO₂-TiO₂ Nanocomposite :Properties of Colorimetric and Flammability

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Abstract : The present research, nylon fabric dyed by pressure method with nano-Si, nano-Ti particles and SiO₂-TiO₂ nanocomposite. The influence of the amount of Si, Ti and SiO₂-TiO₂ on the performance of nylon fabric was investigated by the use of Fourier transform infrared spectrophotometer (FTIR), horizontal flammability apparatus (HFA), scanning electron microscope (SEM), electron dispersive X-ray spectroscopy (EDX), water contact angle tester (WCA) and CIE LAB colorimetric system. The possible interactions between particles and nylon fiber were elucidated by the FTIR spectroscopy. Results indicated that the stabilized nanoparticles and nanocomposite enhances flame retardancy of nylon fabrics. Also, the prominent features of nanoparticles and nanocomposite treatment can note increase of adsorption and fixation of dye.

Keywords : nano-Si, nano- Ti, SiO₂-TiO₂ nanocomposite, nylon fabric, flame retardant nylon

Conference Title : ICTE 2016 : International Conference on Textile Engineering

Conference Location : Miami, United States

Conference Dates : March 24-25, 2016