A preliminary study of reverse-micelle dyeing of polyester/cotton blended fabric – high energy disperse dye approach

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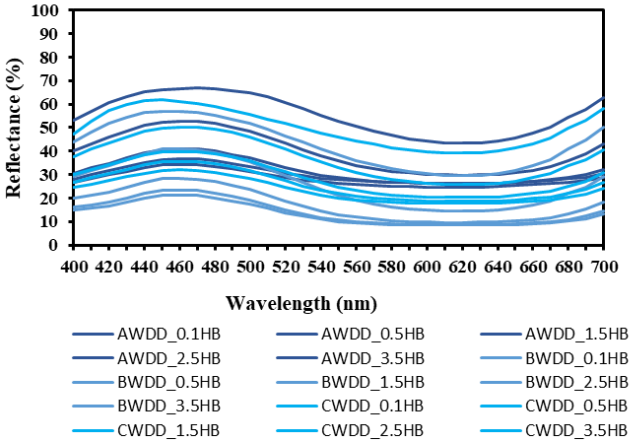
Abstract

In this work, reverse micelle dyeing system was used for dyeing of polyester/cotton blend fabrics in various polyester/cotton percentages (32/68, 40/60 and 65/35). High energy disperse dyes and warm type reactive dyes were encapsulated and applied on polyester/cotton blend fabrics in a one-bath one-step dyeing process. Comparison of reverse micellar-based and aqueous-based (water-based) dyeing was conducted in terms of colour reflectance. Experimental findings revealed that the colour shade of the dyed fabrics in reverse micellar non-aqueous dyeing system at a lower dyeing temperature of 98ºC is slightly lighter than that of conventional aqueous dyeing system in two-step process (130ºC for disperse dyeing and 70ºC for reactive dyeing).

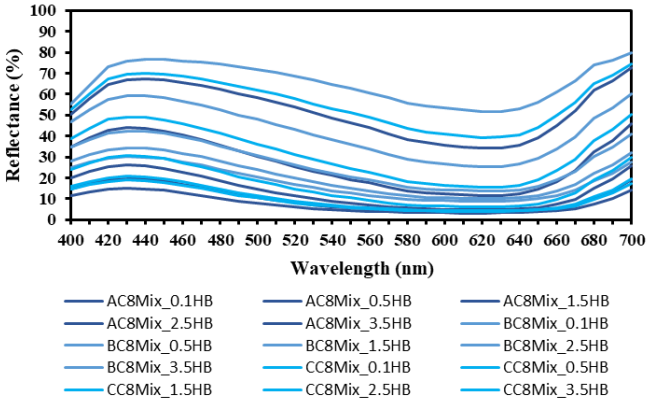
Keywords: One-bath dyeing, polyester/cotton blends, high energy disperse dye, reactive dye, reverse micelle

Content:

Dyeing of polyester/cotton blend fabrics in various polyester/cotton percentages (32/68, 40/60 and 65/35) was investigated using (poly(ethylene glycol), PEG) based reverse-micelle. High energy disperse dyes and warm type reactive dyes were encapsulated and applied on polyester/cotton blend fabrics in a one bath one step dyeing process. Comparison of reverse micellar-based and aqueous-based (water-based) dyeing was conducted in terms of colour reflectance. Experimental findings revealed that the colour shade of the dyed fabrics in reverse micellar non-aqueous dyeing system at a lower dyeing temperature of 98ºC is slightly lighter than that of conventional aqueous dyeing system in two-step process (130ºC for disperse dyeing and 70ºC for reactive dyeing). The exhaustion of dye in polyester-cotton blend fabrics, in terms of colour reflectance, were found to be highly fluctuated at dyeing temperature of 98ºC.



Water-based dyeing results



Reverse micelle-based dyeing results

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