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

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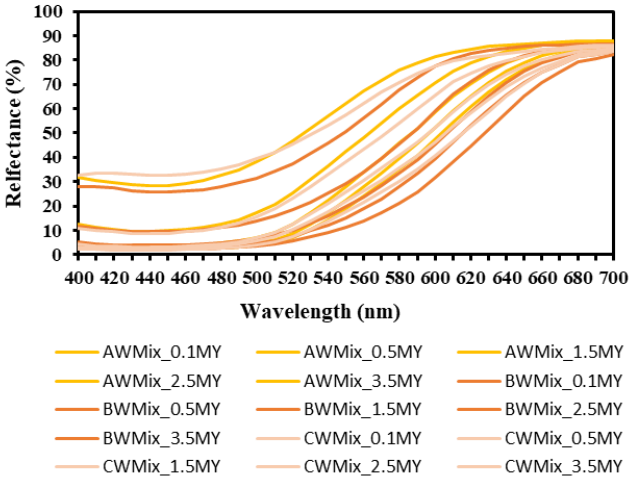
Abstract

In this work, reverse micelle dyeing system proposes a novel dyeing approach for dyeing polyester/cotton (T/C) blended fabric with different T/C ratios of 32/68, 40/60 and 65/35. Warm type reactive dyes and medium energy disperse dyes were used for dyeing cotton and polyester part respectively. The dyeing was conducted in a one-bath one-step dyeing process and the experimental results revealed that this dyeing approach can achieved a better colour yield than conventional two-step aqueous dyeing system (130ºC for disperse dyeing and 70ºC for reactive dyeing).

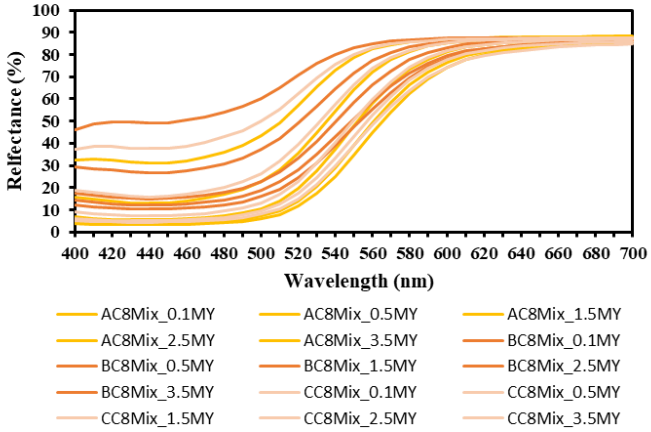
Keywords: One-bath dyeing, polyester/cotton blends, medium energy disperse dye, reactive dye, reverse micelle

Content:

In this work, one-bath one-step dyeing of polyester/cotton blend was carried out using poly(ethylene glycol)-based reverse micelle as dye carrier in non-aqueous solvent using octane. Polyester/cotton blend fabrics with different T/C fibre content ratios (32/68, 40/60 and 65/35) were used in the dyeing system using a mixture of medium energy disperse dyes and warm type reactive dyes. Both disperse and reactive dyes were encapsulated in the core of the PEG-based reverse micelle under mild dyeing conditions. The colour reflectance findings revealed that one-bath one-step dyed polyester/cotton blend fabric in octane presents better colour shade property than that of conventional two-step water dyed fabric (130ºC for disperse dyeing and 70ºC for reactive dyeing). The results obtained from this study suggest that the reverse micellar dyeing of polyester/cotton blend can be achieved in one step without consumption of water.



Water-based dyeing results



Reverse micelle-based dyeing results

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