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Mimicking elephant mud bathing to produce wettable polyester

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Abstract

Bio-inspired and biomimetic surface modifications are identified as one of the fascinating areas of research. In this study, nature's way of cooling elephants' body temperature using mud bathing was mimicked to create a superior wettable polyester fabric with improved comfortability. For that, bentonite nanoclay was covalently grafted on polyester fabric using (3-aminopropyl) triethoxysilane as a coupling agent. FTIR spectroscopy and SEM were used to characterize bentonite grafted polyester while the wettability was proved by standard protocols. This fabric coating strongly withstands more than 50 cycles of laundry. It is expected that this bio-inspired wettable polyester fabric may break the barrier of using polyester in various hydrophilic textile applications.

Keywords: Bentonite nanoclay; Covalent modification; Surface; Polyester; Biomimetic; Wettability

1. Introduction

Polyester is a manmade fabric, which has a greater demand in the clothing industry due to its low cost and low maintenance properties. It could also be developed to mimic many aesthetic properties

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