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A Bio-Inspired Approach to Produce Wettable Nylon Fabrics

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Abstract : Surface modifications are vital to accomplish the moisture management property in highly demanded synthetic fabrics. Biomimetic and bio-inspired 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 nylon fabric with improved comfortability. For that, bentonite nanoclay was covalently grafted on nylon fabric using silane as a coupling agent. Fourier transform infrared spectra and Scanning electron microscopy images confirmed the successful grafting of nanoclay on nylon. The superior wettability of surface modified nylon was proved by standard protocols. This fabric coating strongly withstands more than 50 cycles of laundry. It is expected that this bio-inspired wettable nylon fabric may break the barrier of using nylon in various hydrophilic textile applications.

Keywords : bentonite nanoclay, biomimetic, covalent modification, nylon fabric, surface, wettability
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