

ABSTRACT SUBMISSION



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Bioinspired Structures for Functional Textiles

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ABSTRACT (NO MORE THAN 500 WORDS:)

The design and fabrication of bioinspired structural textiles for various applications requires a fundamental understanding of the interfacial behaviors of functional nanostructures. Structural coloration in some animals and plants is the production of color by microscopically structured surfaces fine enough to interfere with visible light. The structural colors could be generated on the fabrics by functional structures formed using magnetron sputtering. Surface modification of textiles by physical vapor deposition produced "Lotus-Effect" structures on the textiles. The in-situ self-assembling technique was also tried to prepare porous bacterial cellulose/textile fibers (BC/TF) 3D hybrid structure. BC nanofibril network was successfully grown over the TF surface and penetrated into the fibrous structure, which helped to interlock the fibers and resulted into stable 3D hybrid structure. We have also developed a speed-adjustable electrospinning machine to produce the nanofibrous materials with microstructure gradient, which have great potential in tissue engineering and filtration.