

Biomimicry and bioinspired performance apparel: learning lessons from nature

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Abstracts

Innovative companies are looking increasingly to the natural world for inspiration and direction, and materials inspired by nature are being investigated in the quest for sustainable solutions to challenges in the performance apparel industry. For example, surface structures of some plant leaves have inspired the development of water repellent finishes which are free from perfluorinated and polyfluorinated compounds (PFCs), and butterfly wings have inspired the development of dye-free fabrics. Meanwhile, fungi have been used to make a substitute for leather, and an examination of how spiders spin silk has paved the way for the development of high strength lightweight jackets. Nature also offers a number of inherently sustainable possibilities for sustainable production processes based on biotechnology and nanotechnology. Looking to the future, biomimicry holds tremendous potential for inspiring further sustainable products and technologies, and this is considered to be increasingly important in light of the increasing frequency of extreme weather events and challenges such as the COVID-19 pandemic. This report provides a wealth of information on the role of biomimicry in innovation, and the latest performance apparel products and technologies which have been inspired by nature. Topics explored in the report include: the market for bioinspired innovations; the development of biomimicry; the philosophy and principles of biomimicry; bioutilisation; and functional features incorporated in performance apparel which are replicated from nature. The report also discusses the role of biomimicry in helping companies to achieve sustainability and provides an outlook for the future.

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