

## Polymer Application in Fashion and Textile Engineering

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**Abstract :** The fashion and textile industry is undergoing a profound transformation, with polymers playing an increasingly pivotal role in driving innovation and sustainability. This paper explores the application of polymers in fashion and textile engineering, focusing on their impact on material properties, sustainability, and the future of garment production. Polymers, both synthetic and bio-based, offer unique opportunities to enhance the performance, durability, and environmental footprint of textiles. By examining recent advancements in polymer science and their integration into fashion design and production, we provide insights into how these materials are reshaping the industry. This paper also discusses the challenges and opportunities associated with the use of polymers, particularly in the context of sustainable fashion and circular economy practices. Through case studies and industry examples, we highlight the innovative ways in which polymers are being utilized to meet the evolving demands of consumers and the industry's sustainability goals.

**Keywords :** polymer textiles, sustainable fashion, bio-based polymers, smart textiles, fashion innovation, circular economy, textile engineering

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