

# DEVELOPMENT HIGHLY CONDUCTIVE POLYAMIDE 6 / CARBON BLACK COMPOSITES AND CORE/SHEATH FILAMENTS FOR SMART TEXTILES

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**Abstract:** Textiles present a promising platform for wearable electronics due to their ability to cover the entire human body and be worn throughout the day by individuals across society. One of the major challenges is to render textile fibers, which are naturally insulating, electrically conductive without compromising their physical properties.

Various methods have been developed to address this challenge, such as coating textile products with conductive materials in fiber, yarn, or fabric form [1], incorporating metal filaments into the core of core yarn structures, or utilizing metal yarns in weaving and knitting [2]. However, each of these methods comes with its own drawbacks.

Our study focuses on utilizing PA6/carbon black composites in the production of conductive filaments via

the bicomponent melt spinning method. The goal is to create electrically conductive nanocomposite filaments that maintain textile physical properties, making them suitable for smart textile applications.

**Keywords:** smart textiles, nanomaterials, melt spinning, carbon nanotubes, conductivity

## REFERENCES

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