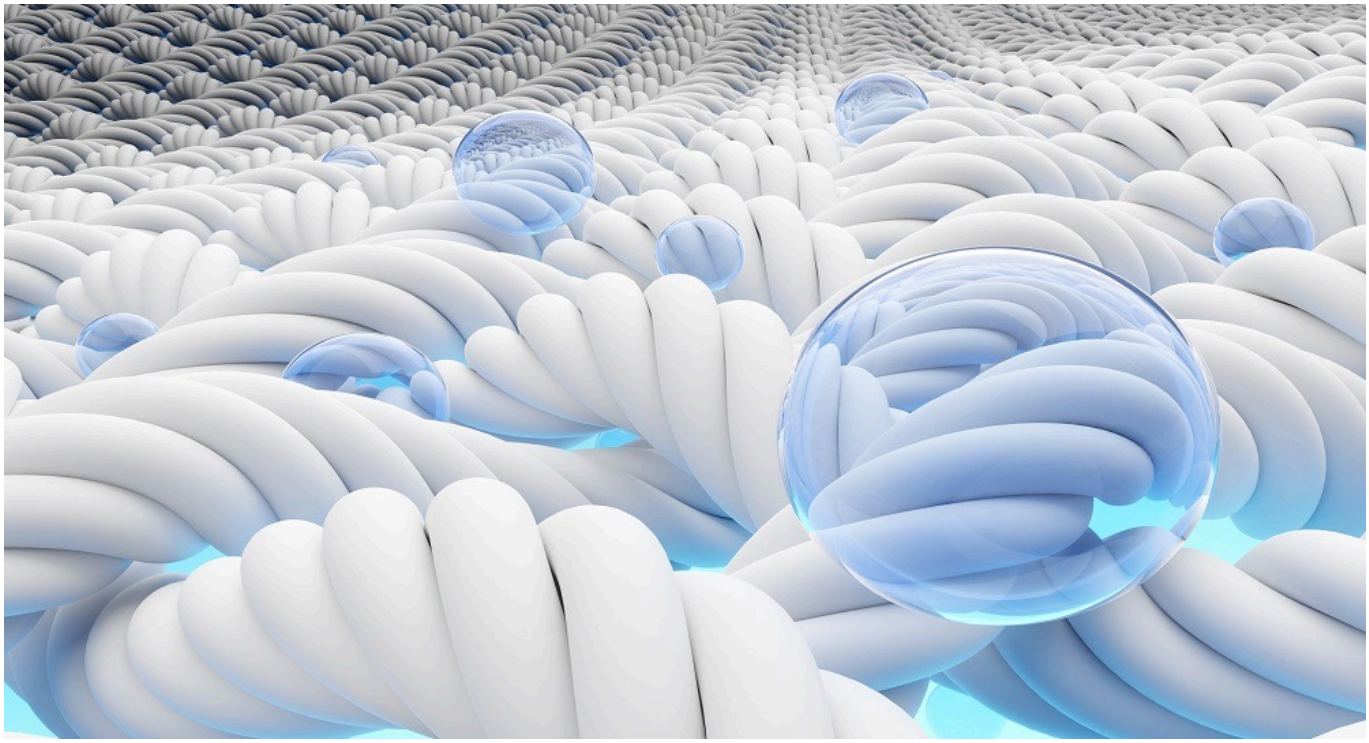
TECH OFFER

# Green and Multifunctional Graphene-based Antibacterial Composite for Textiles



## KEY INFORMATION

TECHNOLOGY CATEGORY:
Materials - Composites
Sustainability - Sustainable Living
Chemicals - Additives

TECHNOLOGY READINESS LEVEL (TRL): TRL9
COUNTRY: CHINA
ID NUMBER: TO175265

## OVERVIEW

Graphene-based antibacterial composite materials are a class of materials that combine graphene's unique properties with antibacterial agents to create surfaces or textiles that can effectively kill or inhibit the growth of bacteria. With its inherent antibacterial properties, graphene's large surface area and high conductivity makes it an ideal carrier for functional molecules that exhibit antibacterial properties naturally. The technology on offer is a proprietary process to prepare and application of a green and multifunctional graphene-based antibacterial composite material for textiles.

These materials can be applied to various textile materials and products, possessing antibacterial, antiviral, and deodorizing properties. Featuring high efficiency (99%), broad-spectrum coverage, non-toxicity, functionalised textiles can be used in healthcare and consumer products for long-lasting and multifunctional antibacterial properties. It is non-leaching and more eco-friendly compared to traditional chemical antibacterial products. This technology can endow textile products with antibacterial, antiviral, and deodorizing properties, enhancing the added value of traditional textile materials for safe and non-toxic

antibacterial performance.

The technology owner is interested in joint R&D projects with companies looking to incorporate this graphene-based antibacterial composite and develop new eco-friendly and multifunctional antibacterial textile products.

## TECHNOLOGY FEATURES & SPECIFICATIONS

This technology comprises of graphene as the primary antibacterial component and pyrethroid antibacterial agents to form the composite.

Some features of this material include:

- Exhibits more than 99% antibacterial (Escherichia coli, Staphylococcus aureus, and Candida albicans) and antiviral (H1N1) performance
- Superior deodorising function
- Highly durable - able to last up to 50 washes when applied on textiles
- Safe and non-toxic e.g., free from heavy metal ions and does not leach

## POTENTIAL APPLICATIONS

Graphene-based antibacterial and antiviral textiles are ideal for medical and health protection applications, including masks, protective clothing, uniforms for healthcare professionals, and patient gowns. These materials can also be adapted for various other clothing items and home textiles.

Additionally, graphene-based antibacterial and deodorizing textiles are well-suited for skin-contact products such as socks, underwear, and T-shirts. They can also be applied to a wide range of items, including insoles, shoe linings, carpets, and decorative fabrics.

## UNIQUE VALUE PROPOSITION

- Safe, eco-friendly and multifunctional antibacterial material for various applications
- Exhibits exceptional antibacterial and antiviral performance on textiles with long-lasting effects