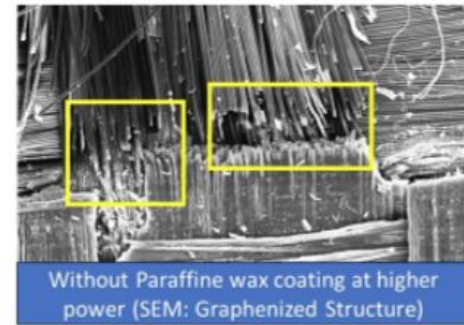
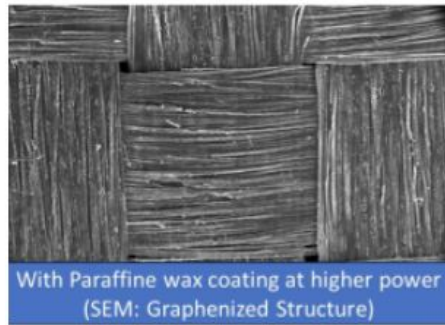


PENDING

(IN202411011567)

Laser-induced graphene (LIG) and a method of fabrication thereof



NEED

Over 50% of flexible electronics fail under mechanical stress or heat due to unstable substrates. Traditional methods struggle to balance durability and conductivity. But what if the material got stronger with heat?

TECHNOLOGY OVERVIEW

This patent presents a method to synthesize laser-induced graphene (LIG) on wax-coated Kevlar using a blue light laser. The result is a durable, conductive surface ideal for wearable electronics, supercapacitors, and sensors. The process uses selective coating and precision laser control to form graphene without structural damage to the base fabric.

TECHNOLOGY KEY FEATURES

Uses wax-stabilized Kevlar as a base, laser-converted at 450 nm to form graphene. Achieves conductive, heat-resistant graphene sheets for wearable electronics. Enables strong, flexible, and scalable fabrication on lightweight substrates using less than 0.1 mm of coating.

[Read more here](#)

MARKET ANALYSIS

The global laser-induced graphene market is projected to grow at 18.3% CAGR till 2033, driven by demand for flexible electronics, biosensors, and energy storage. India's advanced materials market is growing at 12.7% CAGR. Key trends include eco-friendly substrates and high-strength wearables. (Sources: ResearchAndMarkets 2024, MarketsandMarkets 2023, Statista 2024)

Target Industries

1) Flexible sensor developers for sports and healthcare, 2) Energy storage component makers for wearable supercapacitors, 3) Materials R&D units for developing heat-resistant, conductive textiles in defense, aerospace, and smart fabrics sectors.

AT A GLANCE

- SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), SDG 7 (Affordable and Clean Energy)

Technology is available for licensing/ co-development.

Reach out to Prof. Deepak Chitkara, Coordinator, BITS Technology Enabling Centre,

BITS Pilani Contact Details: tec.bits@pilani.bits-pilani.ac.in, 91 1596-255913