Patent Search

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Abstract:

The present invention provides a method for the development of hybrid films composed of graphene and carbon nanotubes (CNTs). The invention specifically targets electrical conductivity and optical properties of these hybrid films for use in flexible display technologies. The fabrication process ensures a homogeneous distributio within the graphene matrix, leading to an interconnected network that improves electron transport paths and subsequently enhances electrical conductivity. The opt properties can be fine-tuned by controlling the density and distribution of carbon nanotubes in the graphene matrix. The method is scalable, cost-effective, and envir friendly, making it suitable for commercial and industrial applications. The hybrid films exhibit superior mechanical strength and resilience, making them suitable for wearable electronics, and the properties can be tailored to specific applications. The invention opens up potential for use in a myriad of other applications, including storage devices, photovoltaic solar cells, and wearable electronics.

Complete Specification

Description:The present invention generally relates to materials science and nanotechnology, and more particularly to the development of hybrid films composed o graphene and carbon nanotubes. The invention presents advancements in the field of flexible display technology by enhancing the electrical conductivity and optica properties of these hybrid films.

These novel hybrid films can be employed in a multitude of applications including but not limited to flexible electronics, wearable devices, electronic displays, and e storage devices. The unique combination of graphene and carbon nanotubes enhances the overall conductive, mechanical, and optical characteristics of the films, t overcoming the limitations of traditional display materials and technologies, and paving the way for more efficient, durable, and flexible display systems.

Background of the invention:

With the evolution of modern technology, electronic displays have become ubiquitous, playing a pivotal role in various sectors ranging from consumer electronics t medical devices, aerospace, and automotive. Traditional display technologies primarily rely on rigid materials, resulting in devices that are prone to mechanical failu lack flexibility. This limitation has led to a continuous quest for innovative materials that can offer enhanced flexibility, durability, and functionality in display technol

Among the many candidates, graphene, a single layer of carbon atoms arranged in a two-dimensional honeycomb lattice, has emerged as a promising material due exceptional properties. It possesses superior electrical conductivity, mechanical strength, and optical transparency. However, the practical application of graphene, especially in flexible display technology, has been impeded due to its scalability issues and relatively low conductivity compared to metals.

On the other hand, carbon nanotubes (CNTs) – cylindrical molecules composed of one or more layers of graphene – have also demonstrated excellent mechanical, t and electrical properties. Single-walled carbon nanotubes (SWCNTs) possess very high aspect ratios, leading to high conductivity and excellent mechanical strength

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