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(57) Abstract :

The present invention relates to a method of preparing nanographene-based photonics and optoelectronics. Nanographene refers to graphene nanoflakes with a size range of 1-10 nm, which exhibit superior optical and electronic properties due to their unique two-dimensional structure. By incorporating nanographene into various matrices, such as polymers, the present invention provides a scalable and cost-effective approach to the preparation of a wide range of photonic and optoelectronic devices. The invention includes the preparation of nanographene-based photovoltaic cells, LEDs, photodetectors, optical sensors, transparent conductive films, and optical fiber sensors, among others. The use of nanographene enhances the performance of these devices, resulting in higher efficiency, faster response time, and improved sensitivity and selectivity. The resulting devices can be used in a wide range of applications, such as energy harvesting, communications, sensing, and displays.

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