

Laser-Scribed rGO Electrodes Decorated with Metal Nanoparticles: Fabrication and Sensing Applications

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Laser scribing techniques provide accurate and scalable methods for fabricating electrodes based on reduced graphene oxide (rGO). These techniques enable the creation of large surface area platforms that can also incorporate metal nanoparticles. The synergy between rGO and metal nanoparticles yields electrodes with enhanced electrical properties and surface area, making them ideal candidates for sensing and biosensing applications. This synergy arises not only from the laser's ability to provide the necessary energy for the photothermal reduction process or the unique chemical and physical properties of nanoparticle-decorated rGO, which is a nanostructured material, but also from the reduction process involving exfoliation, which imparts the necessary shape for subsequent transfer to a suitable substrate.

In this session, we will delve into the theoretical foundations supporting the use of graphene and its derivatives in sensing and biosensing applications. Additionally, we will explore how, with minimal materials and equipment, we can fabricate electrodes using a nanocomposite of rGO and gold nanoparticles. We will also discuss the exciting possibilities in terms of sensing capabilities and overall performance that can be achieved with these electrodes.

References

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