NT-007

Fabrication of nanoporous gold thin films on glass substrates for amperometric detection of aniline

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Nanoporous gold (NPG) is a very promising material in various fields such as sensor, actuator, and catalysis because of its high surface to volume ratio and conducting nature. In this study, we fabricated a NPG based amperometric sensor on a glass substrate by means of co-sputtering of Au and Si. During the sputtering process, we found the optimum conditions for heat treatment to reduce the residual stress and to improve adhesion between NPG films and the glass substrate. Subsequently, Si was selectively etched from Au-Si alloy by KOH solution, which forms nanoporous structures. Scanning electron microscopy (SEM) and auger electron spectroscopy (AES) were used to estimate the structure of NPG films and their composition. By employing appropriate heat treatments, we could make very stable NPG films. We tested the performance of NPG sensor with aniline molecules, which shows high sensitivity for sensing low concentration of aniline.

Keywords: nanoporous gold, thin film, aniline, amperometric sensing

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Composite Nanofilm of Polypyrrole and Mycosporine-like Amino Acids for UV sensor

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Mycosporine-like amino acids (MAAs) are small secondary metabolites produced by organisms that live in environments with high volumes of sunlight, is an important group of novel bioactive compounds having immense biotechnological poten-tials due to their UV screening properties and Polypyrrole (PPy) is a type of organic polymer formed by polymerization of pyrrole. A novel composite nanofilm (~60 nm) of mycosporine-like amino acid (MAA) and polypyrrole is synthesized by interfacial polymerization technique. This composite nanofilm is conductive and has strong photoresponse. A photoelectric UV sensor is fabricated by depositing the composite film onto a silicon chip. This UV sensor shows good sensitivity, selectivity and stability for UV detection.

Keywords: Polypyrrole, Mycosporine-Like Amino Acids, Nanocomposite Film, UV Sensor.