

**Deposition of silver nanoparticles/poly (amidoamine) dendrimer/graphene oxide nanohybrids on sensor surface for anti-biofouling**

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Surface fouling, which leads to a decrease in sensitivity and life-time of sensors, has been considered as a severe problem in sensing system. Therefore, there is an urgent demand for finding suitable anti-fouling materials in order to protect against or minimize the fouling on surface of sensor. It has been found that Graphene Oxide (GO), Silver Nanoparticles (Ag NPs) and Poly (amidoamine) (PAMAM) dendrimers exhibit strong antibacterial and anti-biofouling behaviour. Moreover, the highly branched and well defined PAMAM dendrimer has shown promising advantages on controlling the shape, size, stability, and solubility of metal nanoparticles due to its uniform compositions and structures. In this work, a nanohybrid, comprising silver nanoparticles within third-generation NH<sub>2</sub>-terminated PAMAM dendrimer which grafted onto GO, was applied on the surface of sensor by dip coating. The content of PAMAM grafted on GO was determined by a Thermal Gravimetric Analyzer (TGA). The structure of this nanohybrids was characterized by Fourier transform infrared spectroscopy (FT-IR) and Raman spectroscopy. The morphologies of Ag NPs with different size, which synthesized and deposited on GO/PAMAM, were investigated by Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM). Furthermore, the anti-biofouling properties of the nanohybrid was also investigated by SEM and TEM after inserting control sensor and sensor with coating surface into closed-containment aquaculture systems for eight weeks.

**Biography**

Xiaoxue Zhang has completed her master at the age of 25 years old from Soochow University. She is the PhD candidate of department of chemistry at Norwegian University of Science and Technology now. Her project is coating nanomaterials on the surface of sensor to protect against or minimize fouling.

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