

Synthesis of Amino-Functionalized Graphene/ Bacterial Cellulose/Polyaniline Nanocomposite Materials by in-situ Chemical Oxidative Polymerization for Gas Detection

Hanan Abdali , Bentolhoda Heli and Abdellah Ajji[1]

Department of Chemical Engineering, Polytechnique Montréal, P.O. Box 6079, Station Centre-Ville, Montreal, Quebec, Canada H3C 3A7

Nanomaterial have become more relevant because of their widespread and common applications in the several areas including industrial production, environmental studies, medical applications, etc.. Among these nanomaterial, graphene has attracted particular interest due to its exceptional chemical and excellent electronic properties, optimal mechanical stiffness, and electrical conductivity, which are desirable properties in fabrication of gas sensors. Bacterial cellulose (BC) has many structural aspects favourable for several applications, among which high surface area, a large number of mesopores and macropores and nanoscale fibers in three dimensional (3D) structure. These advantages have led to successful covalent intercalation of amino-functionalized graphene (AG) with BC fibres *via* a one-step esterification. Conducting polymers including polyaniline (PANI) is easily synthesized and its molecular chain structure can be modified conveniently by copolymerization or structural derivations. Its unique electrical, electrochemical, and optical properties can also be utilized as efficient sensors for monitoring organic and inorganic compounds. Therefore, it is expected that the AG/BC/PANI nanocomposite can enhance the sensitivity and selectivity of sensors, through the combination of these excellent sensing materials. In this study, we designed and synthesized a AG/BC/PANI flexible nanocomposite gas sensor. The morphology of the samples were characterized by scanning electron microscopy (SEM) and the electrical conductivity variation of the AG/BC/PANI with different reaction times at room temperature was investigated.

Biography

Hanan Abdali is currently pursuing her PhD at Polytechnique de Montréal, in Chemical Engineering in Montreal, Quebec. She has completed her Master degree in 2014, in Chemical Engineering from Polytechnique de Montréal. She has published three papers. As results of her projects, She have developed a keen interest in Nanomaterials, Processing Polymers, Polymeric Materials, Biomaterials, and Food Packaging

Presenting author details

Full name: Hanan Abdali
Contact number:5146212242
Twitter account:
Linked In account:
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