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Perspective On Synthesis Of Polyaniline-Based Nanocomposite Using Radiation-Induced Technique For Sensing Application

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ABSTRACT

Polyaniline (PANI) is a conductive polymer that has been widely used for various applications including sensors, optoelectronic and photonic devices. This is due to its ease of synthesis, low cost, low toxicity, biocompatibility, and environmental stability. In previous study, chemical oxidative polymerization was used to synthesis PANI nanotubes while in-situ polymerization had been used to synthesis graphene/polyaniline (GP/PANI) nanocomposites. The study indicated that the GP/PANI nanocomposites were more effective to be used in electrochemical sensor application as it showed good performance in detecting tuberculosis biomarker. In this paper, we will highlight the other effective technique to synthesis GP/PANI nanocomposite known as Gamma Radiation-Induced Polymerization technique. In this technique, gamma radiation is used to initiate the polymerization reaction of PANI material by generating the active species without using any chemicals & catalysts. Various morphological nanostructure can be prepared during radiation treatment by controlling the chain reaction. From that, the improvement in various application is expected to be developed. Additionally, this technique has the advantage of making PANI nanoparticles and nanocomposites in their pure form in one step by single-pot synthesis.

Keywords : Graphene/polyaniline nanocomposite, Sensor, Synthesis method, Gamma radiation technique