World Academy of Science, Engineering and Technology
International Journal of Chemical and Molecular Engineering
Vol:10, No:04, 2016

Facile, Cost Effective and Green Synthesis of Graphene in Alkaline Aqueous Solution

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Abstract : We report a simple, green and cost effective synthesis of graphene via chemical reduction of graphene oxide in alkaline aqueous solution. Extensive characterizations have been studied to confirm the formation of graphene in sodium carbonate solution. Cyclic voltammetry was used to study the electrochemical properties of the prepared graphene-modified glassy carbon electrode using potassium ferricyanide as a redox probe. Based on the result, with the addition of graphene to the glassy carbon electrode the current flow increases and the peak also broadens as compared to graphite and graphene oxide. This method is fast, cost effective, and green as nontoxic solvents are used which will not result in contamination of the products. Thus, this method can serve for the preparation of graphene which can be effectively used in sensors, electronic devices and supercapacitors.

Keywords : chemical reduction, electrochemical, graphene, green synthesis
Conference Title : ICCBE 2016 : International Conference on Chemical and Biomedical Engineering
Conference Location : Lisbon, Portugal
Conference Dates : April 14-15, 2016