

Conductive anion exchange ionomer graphene composite films

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Abstract

The synthesis of a soluble and highly conductive quaternary phosphonium-based ionomer (TPQPCL) graphene composites are reported for the first time. TPQPCL was synthesized using the procedure developed by Yan et al^[1] and mixed with high surface non-functional graphene to obtain the composites. These films were characterized using electrochemical techniques. Cyclic Voltammetry (CVs) showed the effectiveness of the ionomer films in preconcentrating anionic redox mediators species such as $K_4Fe(CN)_6$ and K_2IrCl_6 .

A TPQPCL/Graphene modified glassy carbon (GC) electrode was created for the detection of Ascorbic Acid (AA) using CV at different pHs. In comparison to the CV results of bare GC and TPQPCL modified GC electrodes, the TPQPCL/Graphene composites provide a higher detection peak. The modified electrodes exhibited an attractive and easy ability to measure AA and showed good stability and reproducibility.

References

[1] S. Gu, R. Cai, T. Luo, Z. Chen, M. Sun, Y. Liu, G. He, Y. Yan, *Angew. Chem. Int. Ed.* **2009**, 48, 1-5