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The production of graphene oxide via electrochemical exfoliation and its application as conductive electrodes**M D Nurhafizah^{1,2}, A B Suriani², A Mohamed² and A K Masrom³**¹Universiti Sains Malaysia, Malaysia²Universiti Pendidikan Sultan Idris, Malaysia³National Nanotechnology Directorate, Malaysia

An electrochemical exfoliation method adopted in this study presents the variations quality of Graphene Oxide (GO) produced under different applied voltages. GOs were produced by assisted anionic surfactant, Sodium Dodecyl Sulfate (SDS) using constant 0.01 M. The effect of applied voltage on the GOs production was characterized using Field Emission Scanning Electron Microscopy (FESEM), micro-Raman and Ultraviolet Visible (UV-Vis) spectroscopies. Further characterizations of GOs as conductive electrode materials were done using four-point measurement (I-V) and cyclic voltammetry (C-V). The thermal stability of the samples was characterized using Thermogravimetry Analysis (TGA). As evident by analysis, GOs produced using 10 V shows the highest quality and several thin GO layers produced with moderate crystallinity of 0.91. In addition, the absorbance peak at 229 nm indicates that the GOs obtained loaded with various oxygen functional groups. In this study, GOs filled in the nanocomposite shows higher electrical conductivity and acceptable capacitance performance at approximate 10^{-7} S cm⁻¹ and 2.5 F g⁻¹, respectively. These as-prepared thin films paved the way and great potential to be implemented as electrodes materials in supercapacitor application.

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