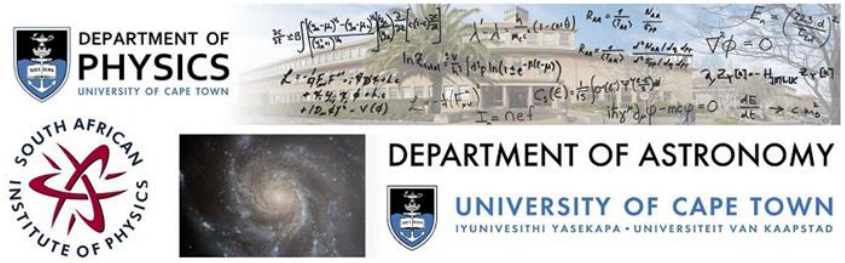

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Preparation and characterization of nanoporous carbon from expanded graphite for high energy density supercapacitor in aqueous electrolyte

Friday, 8 July 2016 15:20 (20 minutes)

Abstract content
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In this work, we present the synthesis of low cost carbon nanosheets derived from expanded graphite dispersed in Polyvinylpyrrolidone, subsequently activated in KOH and finally carbonized in Ar atmosphere. Interconnected sheet-like structure with low concentration of oxygen (9.0 at.%) and a specific surface area of 457 m2 g-1 was obtained. The electrochemical characterization of the carbon material as supercapacitor electrode in a 2-electrode configuration shows high specific capacitance of 337 F g-1 at a current density of 0.5 A g-1 as well as high energy density of 37.9 Wh kg-1 at a power density of 450 W kg-1.This electrical double layer capacitor electrode also exhibits excellent stability after floating test for 120 h in 6 M KOH aqueous electrolyte. These results suggest that this activated expanded graphite (AEG) material has great potential for high-performance electrode in energy storage applications.

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