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Fabrication of current collector using a composite of polylactic acid and carbon nano-material for metal-free supercapacitors with graphene oxide separators and microwave exfoliated graphite oxide electrodes

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Abstract:

The method of fused deposition modelling has been applied for the preparation of a current collector from a composite of polylactic acid and carbon nano-material. The current collectors are investigated employing IR and Raman spectroscopy. A metal-free supercapacitor has been built on the base of microwave exfoliated graphene oxide electrodes, utilising a graphene oxide membrane as a separator and the current collectors from the polymer-nano-carbon composite. Electrochemical investigations (galvanostatic charge-discharge and cyclic voltammetry at various scan rates) have been performed on the supercapacitor.