LAYER-BY-LAYER ASSEMBLED COMPOSITE MATERIALS FOR ENERGY STORAGE

PATENT NO. PI 2018702018

APPLICATIONS OF SUPERCAPACITOR

INTRODUCTION OF TECHNOLOGY

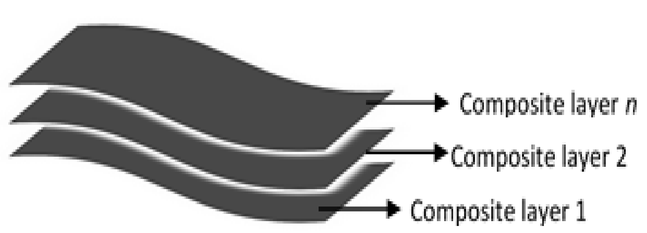
The performance of supercapacitor is strongly dependent on the properties of an electrode material. The properties of electrode material is closely rely on the fabrication method. Constructing multilayer films through layer-by-layer approach is an easy and straightforward procedure for modifying electrode material for supercapacitor.

INVENTION

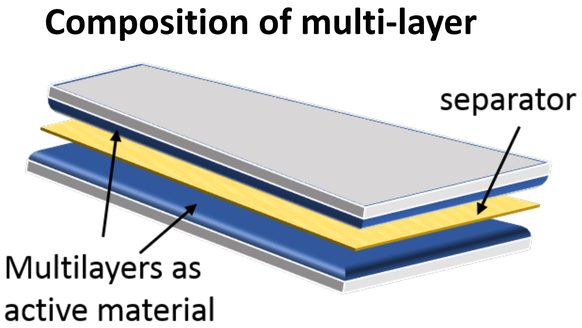
- The electrode material for supercapacitor is composed of multilayers by utilizing a convenient **layer-by-layer approach**.
- Unlike the existing layer-by-layer approach, current invention **allows combination two or more different types of materials in each layer forming composites in each layer.**

ADVANTAGES

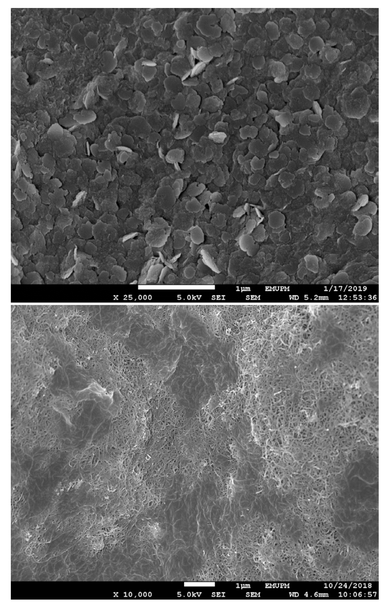
- Capable of combining two or more different types of materials in each layer of a multi-layer composition assembly.
- Allows the possibility to choose material independently for each layer.
- Gives flexibility in tuning the active surface area of electrode and electrode structure architecture, and the presence of type of active components into the electrode.
- Avoids the usage of binder in electrode preparation.
- A straightforward approach with simple preparation method.
- Delivers excellent specific capacitance, high specific energy, high specific power, and extraordinary life cycle than current technology



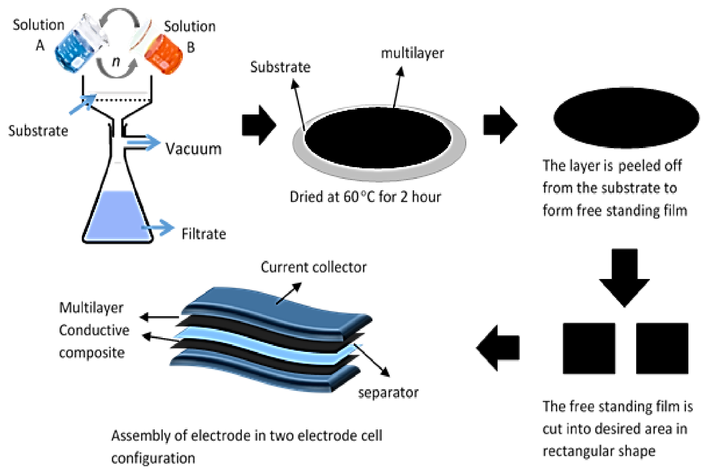
Composition of multi-layer



Assembly for testing of practical supercapacitor



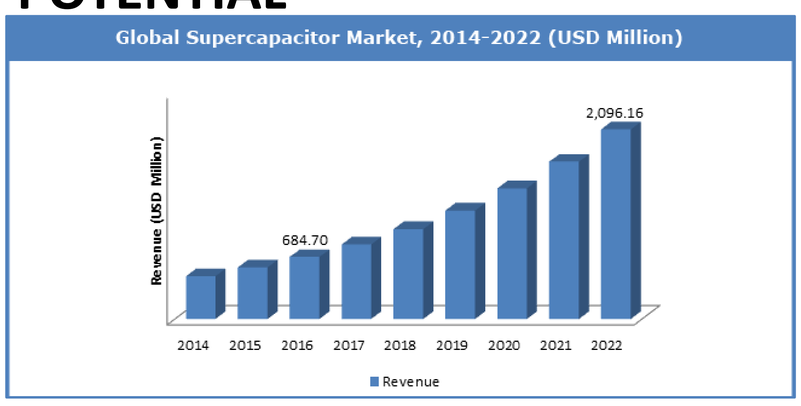
Multi-layered films with mixed morphologies



PROCESS FLOW OF MULTI-LAYER PREPARATION AS ELECTRODE FOR SUPERCAPACITOR

MULTI-LAYERED FILMS

MARKET POTENTIAL



Consumer/End User

- Users of electronics devices such as smartphones, laptops, TVs, cameras, lighting appliances, GPS devices
- Wind, solar and energy harvesters and suppliers.
- Automobile manufacturers, software developers, network distributors.

Industry

- Electrical, electronics and telecommunications
- Automotive and transportation industries
- Industrial applications
- Military and defence
- Medical and health-care
- Energy and power

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