Supercapacitor Materials 2015-2025: Formulations, Forecasts, Roadmap, Companies

Description: This report explains the materials and performance achievements and objectives of the 80 manufacturers of supercapacitors and supercabatteries. It reveals, in easily accessed form, the performance, formulation and morphology of the key materials used and planned for the future. It concerns materials work both by the device manufacturers and by the many third party developers and suppliers across the world. The structure of a supercapacitor and supercabattery is introduced together with the materials and parameters needed.

Particularly focussed on the primary market need for the future - lower cost and higher energy density - the candidate families of material are assess and progress reported and predicted. Notably that means electrode and electrolyte materials. For electrodes that includes graphene, aerogels and chemically-derived carbons. Important for future electrolyte needs are such things as the new neutral aqueous electrolytes permitting low cost current collectors, ionic liquids that now work at low temperatures and new organic solvents that are less toxic and flammable.

For electrodes, the various hierarchical, exohedral and thin film options are compared and all is related to various end points from micro-supercapacitors to structural ones and large ones in electric vehicles, grid and other electrical engineering applications. For example, we forecast the best energy density that will be achieved in volume production in the next ten years and in 15 years from now, the best candidate materials, capacitor structures and electrolytes for achieving this and the value market resulting.

Key players are identified and their plans revealed based on a host of ongoing interviews. This report is a sister report to our supercapacitor report covering company strategies and the road map of new applications and markets for the devices that is enabled by forecasted improvements in performance. Over these, there is a broad master report introducing the whole breadth of the subject. The years of ongoing research carried out for these earlier reports leverages this new report on materials.

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