

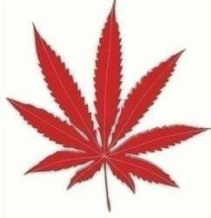


CONSORTIUM



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emissions. But some of these sources cannot provide a continuous supply of energy that potentially can cause an imbalance in the energy production and demands. Therefore, a solution to these challenges is not only energy generation, but energy-storage as well. Energy storage field is attracting attention from industrial and scientific communities to develop expertise in clean and renewable energy storage systems. Corresponding to their utilization in hybrid electric vehicles, wireless home appliances and communication devices of power requirement; the research in developing advanced miniaturized storage devices finds an enormous and vast future ahead. Among various energy storage systems, micro-supercapacitors (MSCs) has been regarded as alternative promising power sources to be integrated into miniaturized devices, emerging due to their significantly long cycling life and high power density. A significant factor for the energy efficient applications demands a considerably higher specific surface area to enhance the capacitance by incorporation of new materials. Based on 2D architectures with improved conductivity, enlarged specific surface, enhanced redox activity, as well as the unique synergetic effect exhibit great promise in the application of miniaturized supercapacitors with highly enhanced performance. Herein, the architecture engineering of emerging materials toward optimizing the performance of micro-supercapacitors is discussed, in order to promote the application of 2D architectures in miniaturized energy-storage devices.

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