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Author: Ms. S J Amy Dewsyl
Karunya Institute of Technology and Sciences, India, amydewsyl22@gmail.com

Mr. Darshan R
Karunya Institute of Technology and Sciences, India, darshanr21@karunya.edu.in

GRAPHENE BASED BATTERIES FOR ROBOTS

Abstract

To propose a new type of battery for planetary flight and robots. An emerging technology which allows for increased electrode density, faster cycle times, as well as helps to process the ability to hold the charge for longer times and also helps to improve the battery's lifespan. Graphene is an ideal conductor of electricity, which allows electricity to flow without hindrance. In the entire type of capacitors, Graphene has shown the most potential in supercapacitors as it can be used in the carbon coatings on the capacitor plates to form an efficient double layer coating. These supercapacitors, then can be used to store large amounts of energy and by consolidating Li-ion modules to Graphene-based modules, we can increase the lightness, energy density, charge and discharge cycle rates, and stability against the appropriate individual constituents. It has been verified and proved that Graphene batteries have a much higher capacity on average than lithium-ion batteries, even at smaller sizes. Lithium-ion batteries can store up to 180Wh per kilogram, while graphene can store up to 1,000Wh per kilogram, making it a much more space-efficient store of energy. Not only these graphene batteries are safer in the event of crash, but also it can provide a much longer range on a single charge than a smaller or lighter battery. Due to their flat structure , these batteries can even charge much faster and dematerialize excess heat more productively. In former times, Scientists have been able to create supercapacitors that are able to store 150 F/g, however some have suggested that the theoretical upper limit for graphene-based supercapacitors is 550 F/g. CNT can be employed into the graphene matrix in either two or three-dimensions, with an average specific capacitance of 120 F/g and 386 F/g respectively. In the three-dimensional graphene-CNT, the capacitance can increase by up to 20