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# POLYETHYLENE MADE LITHIUM-ION COIN CELL ANODE

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## Abstract

Plastic is observed as the most useable substance worldwide because of its light weight, accessibility and low cost production but on the other side it has adverse effects on the environment, human and the aquatic life because of its wrong disposal and low recycling percentage. Moreover the release of toxic gases such as carbon dioxide , carbon monoxide and other greenhouse gas emissions result in environmental degradation. These gases elevate the global temperature as a result of which climate change occur. Keeping these factors in view this research is mainly focused to reuse polyethylene plastic as anode material in energy storage device which in this case is lithium-ion coin cell battery. This research shows a practical way to use polyethylene in an environment friendly manner which can play a very significant role in the reduction of polyethylene plastic waste and toxic greenhouse gas emissions. In this research polyethylene grains are used as the main source. The research exhibits an innovative approach known as solvo thermal method by which polyethylene grains are converted to sulphonated black grains after reacting with H<sub>2</sub>SO<sub>4</sub> which acts as a solvent. These black grains are turned to a carbon black powder and carbon slurry in the later stages of the process. The subsequent process is continued with detailed characterization method in which weight reduction of the sulphonated polyethylene grains is observed. After performing characterization method carbon slurry is made to form the anode of lithium-ion coin cell which leads to the testing phase in which considerable charging and discharging results are significantly apparent.

**Keywords:** Polyethylene, Waste Enviornment

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