

# **Investigation of Self Discharge Mechanism of Local Activated Carbon based Supercapacitor**

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## **Abstract**

Activated carbon is a popular material used in the fabrication of supercapacitors due to its high specific surface area. Sri Lanka is one of the main producers of activated carbon. Due to availability of high quality activated carbon, this is an area of potential interest to Sri Lanka. Activated carbon based ionic electrolyte supercapacitor was fabricated and its electrical properties were investigated to identify the drawbacks in these supercapacitors. Supercapacitors fabricated with local activated carbon and aqueous sodium sulphate ( $\text{Na}_2\text{SO}_4$ ) electrolytes were used in this study. Self-discharge is inevitable in this type of supercapacitors. It was believed that the discharge is mainly due to electrical conduction through ionic electrolyte. However, this study proposes that in addition to the above mechanism, there is another dominant mechanism which governs the early stage self-discharge.