



## Starbon® Case Study - Starene® as super capacitors

Starene® has been shown to be effective in the production of electrodes for super capacitors. A major advantage of Starene® is that it can be prepared in monolithic form (Figure 1a).

Using a constant current galvanostatic charge/discharge technique, the stability of the Starbon®800 was assessed over 10,000 cycles at an applied current density of  $25 \text{ mA cm}^{-2}$ . The high degree of graphite dispersion (incorporation) possible gives rise to a pronounced increase in conductivity. This is a factor essential for good long-term capacitance use, as well as chemical and mechanical stability.

Throughout the galvanostatic charge-discharge tests, Starene® with 20% w/w graphite added was found to display <1% reduction in capacitance over 10,000 cycles, in sharp contrast with the standard that lost approximately 15% capacitance (Figure 1c). This result can be explained by the higher conductivity reducing the internal resistance of the electrodes (Figure 1d).

The high concentration of graphite incorporation and use of bio-derived starting materials are also important to reduce the cost of the electrodes, whilst maintaining their credentials as a sustainable alternative electrode material.

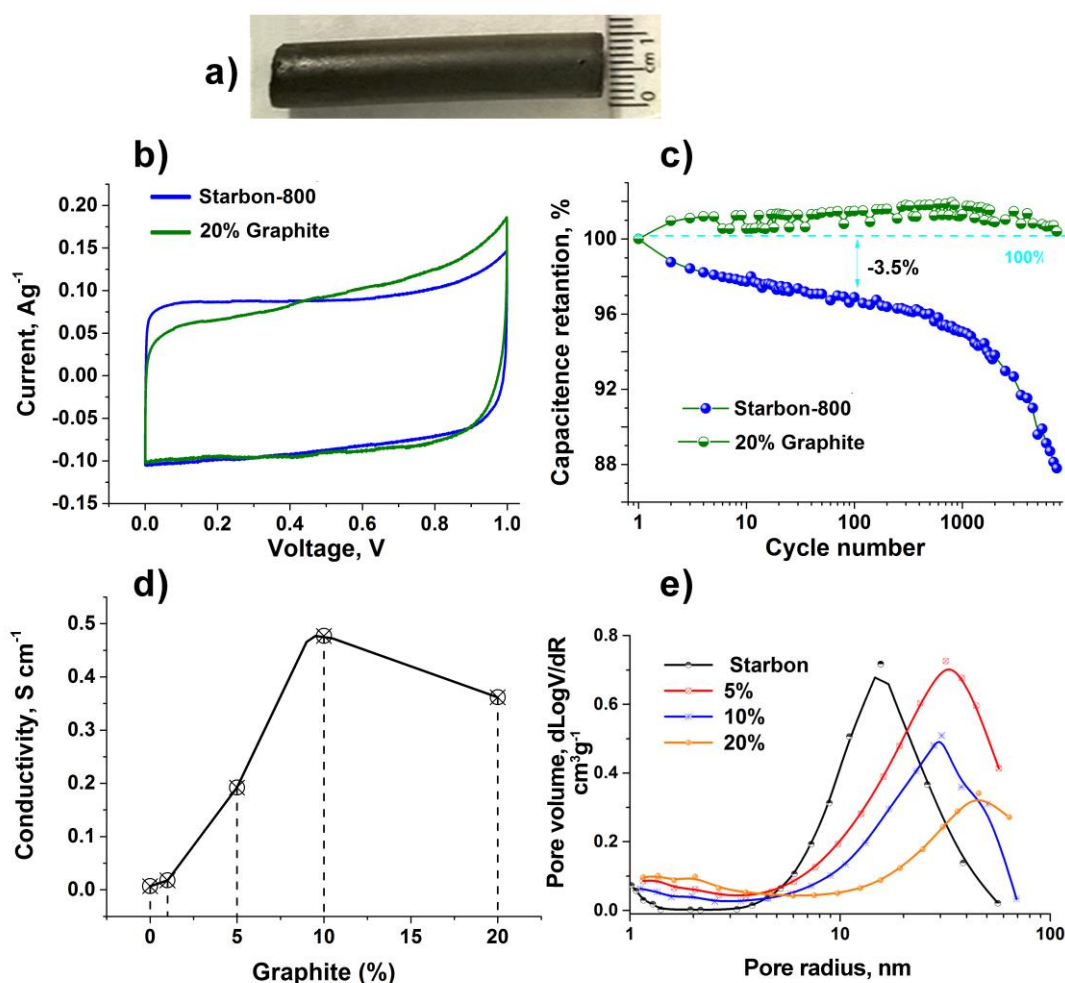


Figure 1