Carbon fiber composites electrodes with Ag and Ni in basic aqueous electrolyte for supercapacitors

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Electrochemical supercapacitors (ESs) has received great attention in recent years because of their promising results such as high cycle life, high power density and variety of applications. The main challenge for the development of these storage devices is the electrode material that should have a high specific electrical capacitance and low electrical resistance enables an increase of energy accumulated. In addition, it is expected that the electrode material presents a simple procedure of preparation, environmental friendly and low cost. The purpose of this subject is based on the use of activated carbon fiber, obtained from polyacrylonitrile (PAN) textile, and its composites with silver and nickel (ACF-Ag and ACF-Ni) as supercapacitor electrode, tested in a basic aqueous solution electrolyte. The samples were characterized scanning electron microscopy (SEM) and x-ray photoelectron spectroscopy (XPS). The supercapacitor characteristics behavior ware evaluated by galvanostatic charge-discharge curves and cyclic voltammetry using a symmetric two-electrode Swagelok type cell. A 6 M KOH aqueous solution as electrolyte. The main results shown capacitance over 170 F g

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and 6 ohms of resistance for all specimens. The results indicate that ACF (from textile PAN fiber) in combination to Ag and Ni showed a promising material for supercapacitor

application.

Acknowledgments:

The author would like to thank BEVA-PCI-MCTI (Institutional Process Number 454779/2015-1 and Individual Process Number 170136/2016-7) and Capes for financial support, ITA and INPE for the support and infrastructure.