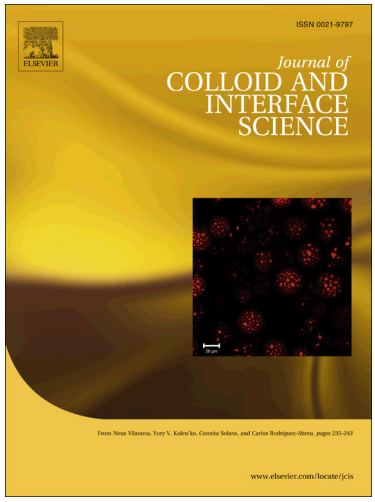

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ABSTRACT

Manganese phosphate ($Mn_3(PO_4)_2$ hexagonal micro-rods and ($Mn_3(PO_4)_2$ with different graphene foam (GF) mass loading up to 150 mg were prepared by facile hydrothermal method. The characterization of the as-prepared samples proved the successful synthesis of $Mn_3(PO_4)_2$ hexagonal micro-rods and $Mn_3(PO_4)_2$/GF composites. It was observed that the specific capacitance of $Mn_3(PO_4)_2$/GF composites with different GF mass loading increases with mass loading up to 100 mg, and then decreases with increasing mass loading up to 150 mg. The specific capacitance of $Mn_3(PO_4)_2$/100 mg GF electrode was calculated to be 270 F g^{-1} as compared to 41 F g^{-1} of the pristine sample at a current density of 0.5 A g^{-1} in a three-electrode cell configuration using 6 M KOH. Furthermore, the electrochemical performance of the $Mn_3(PO_4)_2$/100 mg GF electrode was evaluated in a two-electrode asymmetric cell device where $Mn_3(PO_4)_2$/100 mg GF electrode was used as a positive electrode and activated carbon (AC) from coconut shell as a negative electrode. AC//$Mn_3(PO_4)_2$/100 mg GF asymmetric cell device was tested within the potential window of