**Abstract**

 A facile sol-gel thermolysis route was adopted to synthesize KNiPO4 nano-sheets for the hybrid supercapacitor applications. The phase purity, homogeneity, and functional groups present in the synthesized KNiPO4 were characterized through X-ray diffraction and FTIR measurements. Field emission scanning electron microscopy (FESEM) and transmission electron microscopy (TEM) images showed that the nano-sheet-like particles were loosely stacked. The electrochemical properties of the KNiPO4 electrode were studied in various aqueous-based electrolytes such as 1 M LiOH, 1 M NaOH, and 1 M KOH to explore their superior performances. Among these electrolytes, the KNiPO4 electrode provided a maximum specific capacity of 278 C g-1 in 1 M KOH at 5 mV s-1. A hybrid supercapacitor was fabricated using the synthesized KNiPO4 as the positive electrode and activated carbon as the negative electrode in a 1 M KOH aqueous electrolyte. The supercapacitor exhibited a specific capacitance of 48 F g-1 in 1 M KOH at 0.6 mA cm-2 and energy density of 13 Wh kg-1 at a power density of 59 W kg-1. In addition, the hybrid system retained 93% of its initial specific capacitance even after 2000 cycles. KNiPO4 based hybrid system thus exhibits super characteristics and hence is a promising candidate for high-performance electrochemical energy storage devices.