

Mussel-inspired biocompatible alginate hydrogel for stretchable supercapacitor electrode

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The development of foldable smart devices has rocketed in recent years which in turn has increased the demand for flexible energy storage materials with excellent mechanical and electrical properties. In this study, we prepared alginate/polypyrrole conductive hydrogel and applied it as a flexible and tough supercapacitor electrode. To improve its energy density and induce pseudocapacitance,  $M(OH)_2$  was introduced into the hydrogel matrix (where M= divalent metal). The composition of the as prepared hydrogel was determined by XRD and FTIR. The electrochemical activity of the electrode was examined using CV, GCD and EIS techniques while mechanical properties were studied using UTM. The electrode exhibits decent activity and cyclic performance.