Supplementary Information

Geopolymer Membrane for Structural Mechanics and Energy Storage in Difunctional Supercapacitor Application

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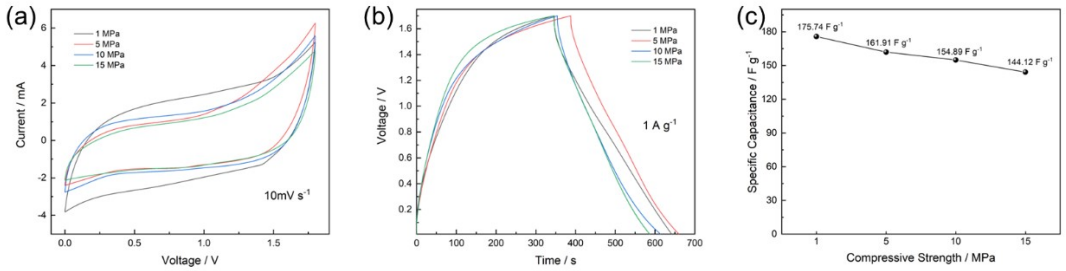

Fig. S1 The electrochemical performance varies with the change under different pressure. (a) Cyclic voltammetry curves at 10mV s^{-1}, (b) Galvanostatic charge-discharge curves at 1A g^{-1}, (c) The relationship between compressive strength and specific capacitance.

We use the best sample (160℃ 24h) to study how electrochemical performance changes under different pressure, and the results are as Figure S1. We can see from S1(a), that the shape of the CV curve has not changed under different pressure, just a little change about the area. This corresponds to the changes in the GCD curve (S1(b)), and the specific capacitance can be calculated from GCD curve as S1(c). We can see that specific capacitance decreased with the pressure on the difunctional supercapacitors increased, this may be due to the electrolyte in the difunctional electrolyte being squeezed out of the difunctional supercapacitors as the pressure increased, and this will cause the fewer ions the in difunctional supercapacitor, inability to conduct sufficient redox reactions. Finally, will cause the decrease of specific capacitance.