



Supplementary Materials

A Comparative Evaluation of Sustainable Binders for Environmentally Friendly Carbon-Based Supercapacitors

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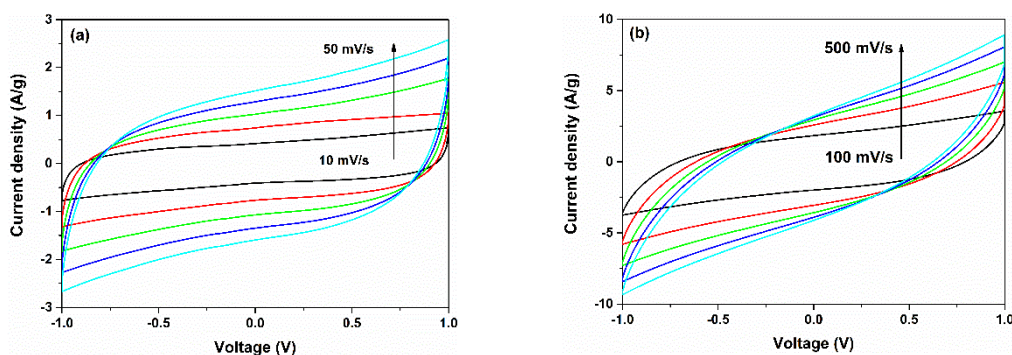


Figure S1. Cycle voltammetry curves of symmetric carbon-based supercapacitors fabricated with Guar gum as a binder in 1 M NaCl electrolytes measured at (a) lower and (b) intermediate scan rate regions, respectively.

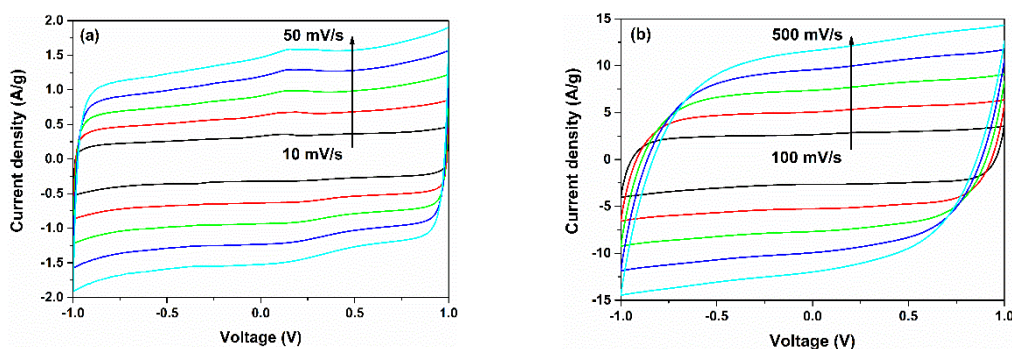


Figure S2. Cycle voltammetry curves of symmetric carbon-based supercapacitors fabricated with chitosan as a binder in 1 M NaCl electrolytes measured at (a) lower and (b) intermediate scan rate regions, respectively.

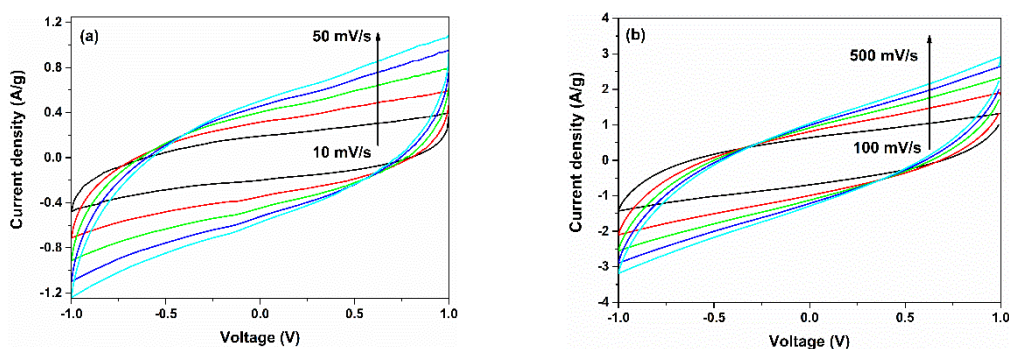


Figure S3. Cycle voltammetry curves of symmetric carbon-based supercapacitors fabricated with casein as a binder in 1 M NaCl electrolytes measured at (a) lower and (b) intermediate scan rate regions, respectively.

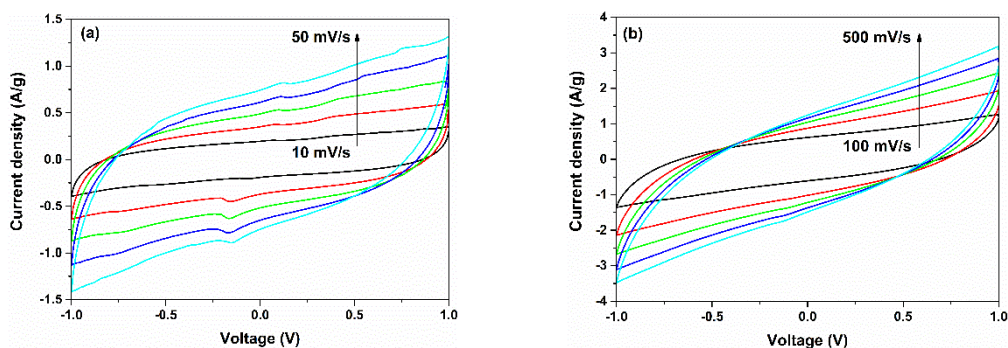


Figure S4. Cycle voltammetry curves of symmetric carbon-based supercapacitors fabricated with CMC as a binder in 1 M NaCl electrolytes measured at (a) lower and (b) intermediate scan rate regions, respectively.

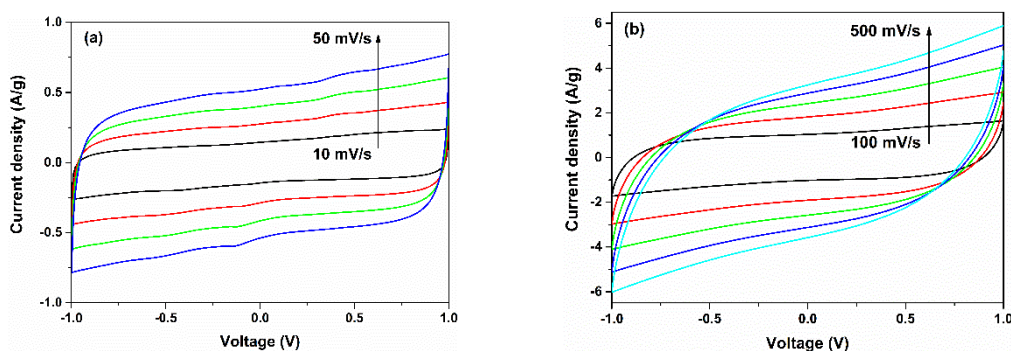


Figure S5. Cycle voltammetry curves of symmetric carbon-based supercapacitors fabricated with gelatin as a binder in 1 M NaCl electrolytes measured at (a) lower and (b) intermediate scan rate regions, respectively.

In order to quantify the reduction of the capacitance value as a function of the voltage scan rate, observed for all the binders used, the ratio $L = C_{10}/C_{500}$ has been computed. Here, C_{10} and C_{500} correspond to the C_s values at 10 mV/s and 500 mV/s, respectively. Figure S6 shows the percentage loss L of the capacitance C_s as a function of the binder types.

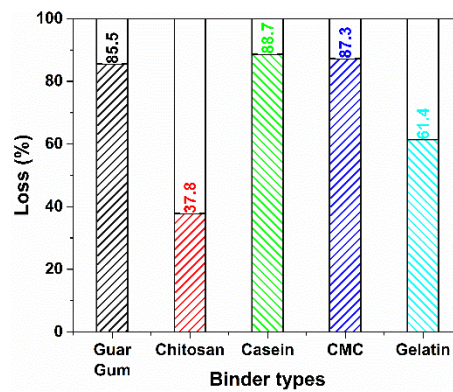


Figure S6. Capacitance percentage loss as a function of the binder types.

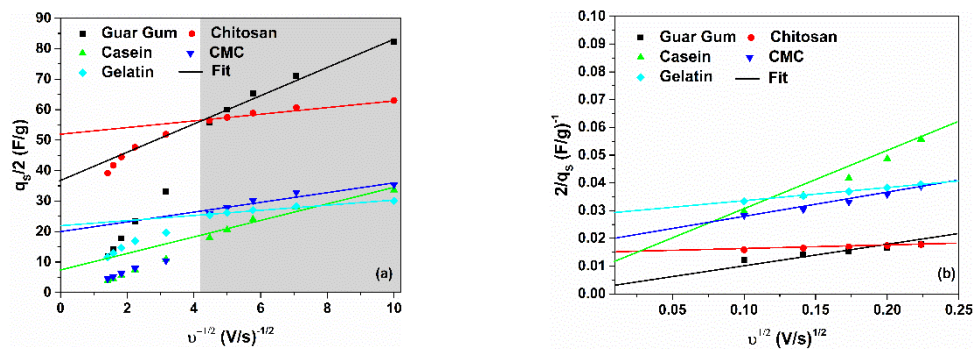


Figure S7. (a) Dependence of q_s on $v^{-0.5}$ and (b) of $1/q$ on $v^{0.5}$ for the binders investigated in 1 M NaCl.