

Supporting Information:

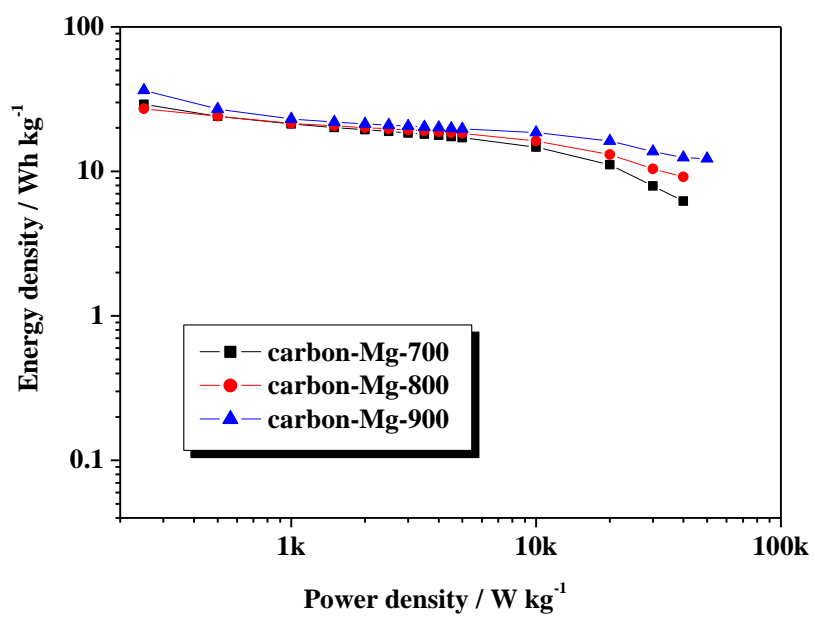


Figure S1. Ragone plots showing energy density vs. power density of the **carbon-Mg-700/800/900** samples.

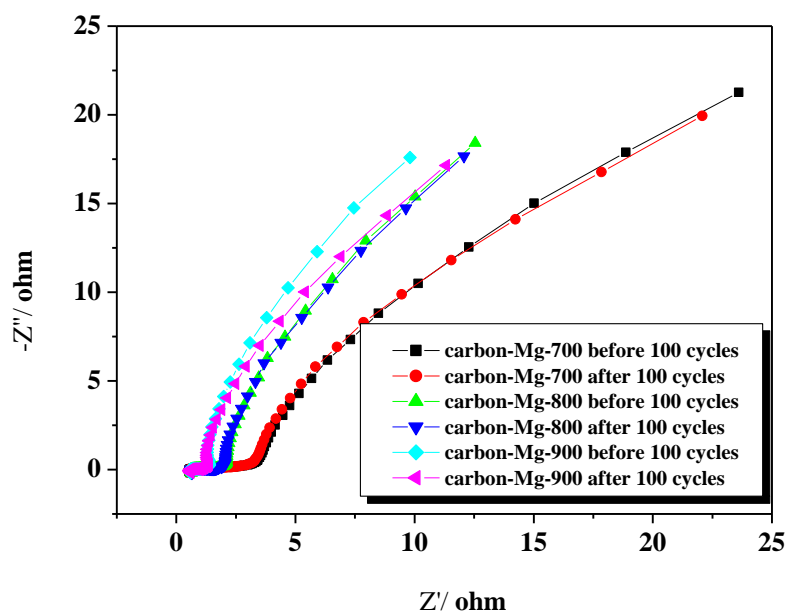


Figure S2. Nyquist plots before/after 100 cycles of the **carbon-Mg-700/800/900** samples.

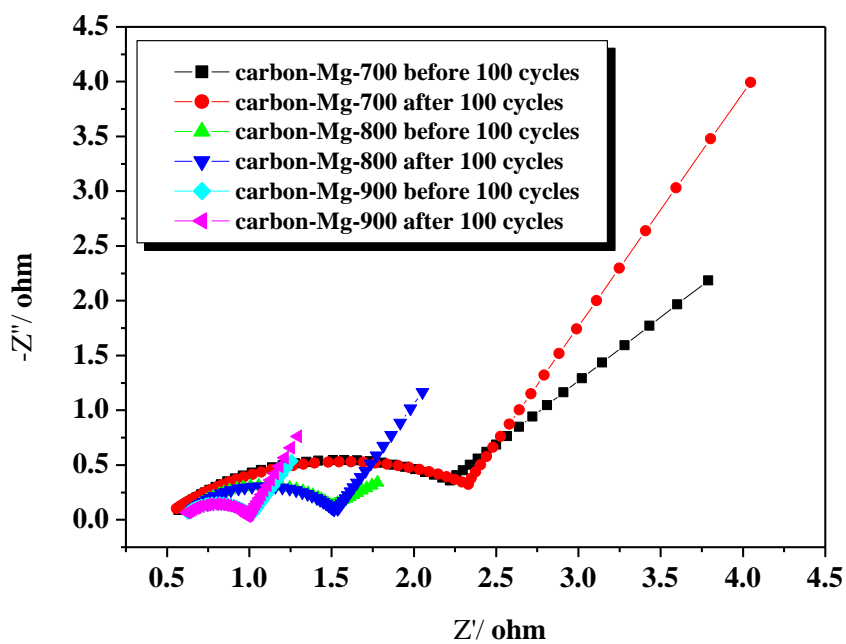


Figure S3. Nyquist plots before/after 100 cycles of the **carbon-Mg-700/800/900** samples fitted by Zview software.

Table S1. The overall resistance (R_t), electrical connection resistance (R_e), electrolyte resistance (R_s), and resistance of ion migration in carbon micropores (R_p) of the carbon samples.

Samples	R_t	R_s	Resistance (Ohm)		
			R_e	R_p	
carbon-Mg-700 -before 100 cycles	3.7888	0.5697	1.6491	1.5700	
carbon-Mg-700 -after 100 cycles	4.0459	0.5571	1.7750	1.7138	
carbon-Mg-800 -before 100 cycles	1.7785	0.6580	0.8451	0.2754	
carbon-Mg-800 -after 100 cycles	2.0519	0.6577	0.8573	0.5369	
carbon-Mg-900 -before 100 cycles	1.2569	0.6261	0.3758	0.2550	
carbon-Mg-900 -after 100 cycle	1.2958	0.6221	0.3661	0.3077	