Supporting Information

A Two-Step Etching Route to Ultrathin Carbon Nanosheets for High Performance Electrical Double Layer Capacitors

Bing Ding, Jie Wang, Ya Wang, Zhi Chang, Gang Pang, Hui Dou and Xiaogang Zhang

Jiangsu Key Laboratory of Materials and Technology for Energy Conversion, College of Material Science and Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, 210016, P. R. China

*Corresponding authors: E-mail: dh_msc@nuaa.edu.cn (H. Dou); azhangxg@nuaa.edu.cn (X. G. Zhang)

Fig. S1 XRD patterns of (a) Ti₃AlC₂ and MXene and (b) MDC-900.
Fig. S2 SEM images of Ti$_3$AlC$_2$.

Fig. S3 SEM images of (a) MDC-700 and (b) MDC-900.

Fig. S4 (a, b) SEM images of CDC-900.
Fig. S5 (a) AFM image of MDC-900 and (b) thickness profile.

Fig. S6 TEM image of CDC-900.
**Fig. S7** (a) XPS and (b) high resolution C 1s XPS spectra of MDC-900.

**Fig. S8** N$_2$ sorption isothermals of MDC-700, MDC-900, and CDC-900.
Fig. S9 (a-c) CV curves and (d-f) galvanostatic charge/discharge curves of MDC-700, MDC-900, and CDC-900.

Fig. S10 Evolution of the (a) charge current and (b) discharge current versus scan rate of MDC-700, MDC-900, and CDC-900.
Fig. S11 Nyquist plots of MDC-700, MDC-900, and CDC-900. The inset shows the magnified high-frequency regions.

Fig. S12 Ragone plots of MDC-700, MDC-900, and CDC-900.
Table S1: Summaries of the porosity properties and specific capacitances of MDC-700, MDC-900, and CDC-900.

<table>
<thead>
<tr>
<th>Samples</th>
<th>$S_{BET}$</th>
<th>$S_{Micro}$</th>
<th>$S_{Meso}$</th>
<th>Volume</th>
<th>Capacitance</th>
<th>Retention$^d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDC-700</td>
<td>773</td>
<td>462</td>
<td>311</td>
<td>0.68</td>
<td>142</td>
<td>51%</td>
</tr>
<tr>
<td>MDC-900</td>
<td>1766</td>
<td>573</td>
<td>1193</td>
<td>1.45</td>
<td>220</td>
<td>79%</td>
</tr>
<tr>
<td>CDC-900</td>
<td>910</td>
<td>558</td>
<td>352</td>
<td>0.88</td>
<td>160</td>
<td>55%</td>
</tr>
</tbody>
</table>

(a) SSA of micropores, (b) SSA of mesopores; (c) Specific capacitance at 0.5 A g$^{-1}$; (d) Capacitance retention at 20 A g$^{-1}$. 