Electronic Supplementary Information

Towards the outstanding dielectric consumption derived from designing one-dimensional mesoporous MoO$_2$/C hybrid heteronanowires.

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Fig. S1. EDS spectrum and element content of MoO\textsubscript{2}/C nanowires in the inset of panel.

Fig. S2. (a) SEM and (b) TEM images of S-800.
Fig. S3. XRD pattern of S-800.

Fig. S4. Reflection loss spectrum and reflection loss curve of S4, S5 and S6.
**Fig. S5.** Reflection loss spectrum and reflection loss curve under 2mm thickness for S-800 at 25 wt% filling ratio.

**Fig. S6.** 3D representation of the RL performance of commercial MoO$_2$ with 25 wt% filling ratio.

**Fig. S7.** Electromagnetic parameters of the samples with higher filling ratio of S4, S5, S6.
Fig. S8. Cole-Cole curve of S3.

Fig. S9. The impedance matching values and attenuation constants of S4, S5 and S6.

Table S1. Specific surface areas and pore volumes of S-700 and S-800.

<table>
<thead>
<tr>
<th>Sample</th>
<th>$S_{\text{BET}}$</th>
<th>$S_{\text{Langmuir}}$</th>
<th>$V_{\text{pore}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-700</td>
<td>109.8</td>
<td>222.8</td>
<td>0.159</td>
</tr>
<tr>
<td>S-800</td>
<td>41.2</td>
<td>132.5</td>
<td>0.156</td>
</tr>
</tbody>
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