Supporting Information

Ultralight and Highly Flexible Aerogels with Long Cellulose I Nanofibers

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Table 1  Porosity of the aerogels obtained from hydrogels with different solid content.

<table>
<thead>
<tr>
<th>Aerogels</th>
<th>aerogel-01</th>
<th>aerogel-02</th>
<th>aerogel-05</th>
<th>aerogel-08</th>
<th>aerogel-10</th>
<th>aerogel-15</th>
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<tbody>
<tr>
<td>Porosity (%)</td>
<td>99.91</td>
<td>99.86</td>
<td>99.69</td>
<td>99.37</td>
<td>99.17</td>
<td>98.94</td>
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</table>
**Fig. S1**  SEM image of the chemically purified cellulose fibers.
**Fig. S2** TEM images of (A) hydrogel-02, (B) hydrogel-08 and (C) hydrogel-15.
**Fig. S3** FT-IR spectra of (A) raw wood fibers, (B) chemically purified cellulose fibers, (C) hydrogel-01, (D) hydrogel-02, (E) hydrogel-05, (F) hydrogel-08, (G) hydrogel-10 and (H) hydrogel-15.
**Fig. S4** Photograph of aerogel-02. Due to the extremely low density of the aerogel, electrostatic charge is sufficient to make the sample stick to a finger in a way seemingly defying gravity.
Fig. S5  SEM images showing that some long nanofibers with uniform width 30-150 nm were still existed in aerogel-05.
Fig. S6  SEM images showing that some long nanofibers with uniform width 30-150 nm were still existed in aerogel-08.
Fig. S7  SEM images of aerogel-08 (A, B), aerogel-10 (C, D) and aerogel-15 (E, F). (A,C,E) Low-magnification ($\times$1000) and (B,D,F) high-magnification ($\times$40000) images of the aerogels.
Fig. S8  SEM images showing large sheet-like aggregates in the aerogels obtained by freeze-drying the ~ 0.018% CNF content suspensions prepared by diluting the hydrogel-02.
**Fig. S9**  SEM images of the ultralong cellulose nanofibers. (A) low-magnification SEM image showing that the length of the nanofibers is exceeding 6 mm. (B to E) SEM images taken from four different segments of the ultralong cellulose nanofibers in (A), showing the uniformity in width along the entire length.