Supplementary Information

High strength films with gas-barrier fabricated from chitin solution dissolved at low temperature

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Table S1  Solid-State CP/MAS $^{13}$C NMR Spectral Data of the purified chitin, RChE, α-Chitin and β-Chitin.

<table>
<thead>
<tr>
<th>Samples</th>
<th>Chemical Shift/ppm</th>
<th>Refs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C7 (C=O)</td>
<td>C1</td>
</tr>
<tr>
<td>Purified chitin</td>
<td>172.2</td>
<td>103.2</td>
</tr>
<tr>
<td>RChE</td>
<td>173.4</td>
<td>103.1</td>
</tr>
<tr>
<td>α–chitin</td>
<td>173.0</td>
<td>104.0</td>
</tr>
<tr>
<td>β–chitin</td>
<td>173.6</td>
<td>104.1</td>
</tr>
</tbody>
</table>

**Fig. S1** FT-IR spectra of the purified chitin, RChS and RChE, respectively.
Fig. S2 Stress-strain ($\sigma$-$\varepsilon$) curves of the RChD (a, c) and RChE (b, d) dried at 60 °C in vacuum (a, b) and 75% relative humidity (c, d), respectively.
Fig. S3 Light transmittance ($T_r$) of the RChE (a, b) and RChD (c, d) dried at 60 °C in vacuum (b, c) and 75% relative humidity (a, d), respectively.
**Fig. S4** TG (a) and DTG (b) curves of the purified chitin and RChE film.
**Fig. S5** SEM images of the cross-sections of the RChE (a), RChG2 (b), RChG4 (c) and RChG6 (d) films dried at ambient temperature (scale bar = 2 μm).