Electronic supplementary information for

RSC Advances

Elastic properties of natural single nanofibers

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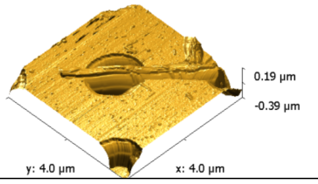
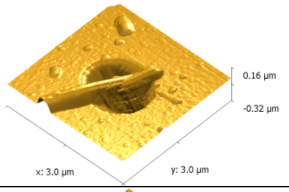
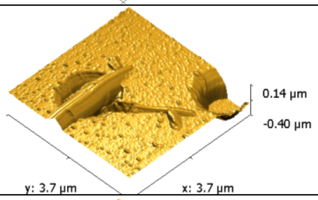
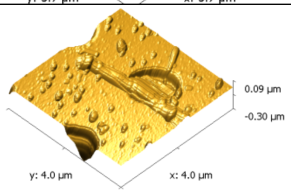
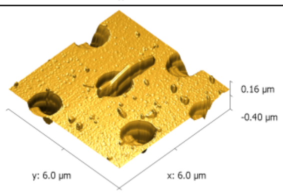
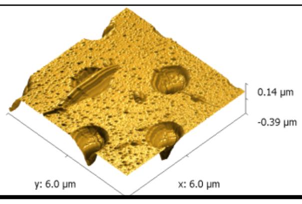
Table S1 – Elastic measurements conditions summary.

<table>
<tr><th>Topographic image of deposited fibers</th><th>Sample Name</th><th>k / Nm⁻¹</th><th>Sensitivity / nmV⁻¹</th><th>Fiber Dimensions / nm</th><th>E / GPa</th></tr>
<tr><td></td><td>S1.Lk</td><td>0.76</td><td>63.38</td><td>x = 616
L = 1488
<r> = 37.8</td><td>8.15</td></tr>
<tr><td></td><td>S2.Lk</td><td>0.76</td><td>63.38</td><td>x = 474
L = 1440
<r> = 51.5</td><td>10.32</td></tr>
<tr><td></td><td>S3.Lk</td><td>0.76</td><td>63.38</td><td>x = 721
L = 1500
<r> = 58.8</td><td>4.82</td></tr>
<tr><td></td><td>S4.Hk</td><td>1.74</td><td>64.85</td><td>x = 430
L = 916
<r> = 30.0</td><td>11.46</td></tr>
<tr><td></td><td>S2.Hk</td><td>1.74</td><td>64.85</td><td>x = 482
L = 1440
<r> = 52.6</td><td>8.60</td></tr>
<tr><td></td><td>S3.Hk</td><td>1.74</td><td>64.85</td><td>x = 721
L = 1500
<r> = 58.8</td><td>6.85</td></tr>
</table>

Model for the bending of a clamped elastic beam

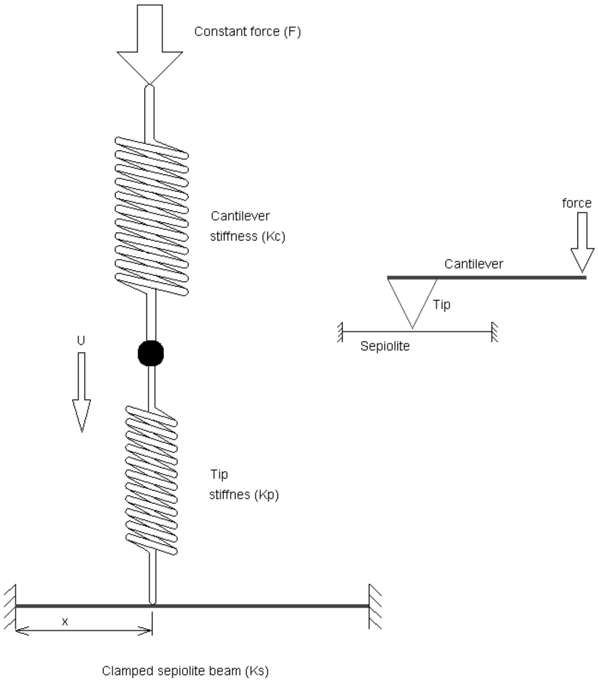


Figure S1. Lumped stiffness model of the tip-clamped sepiolite fiber ensemble.

Figure S1 shows the lumped stiffness model of the tip-fiber group. This model allows to compute the elastic modulus of the sepiolite fiber. In this case, solving the mechanical analogue of the figure, one finds

$$E = \frac{x^3(L-x)^3}{3I_o L^3}\left(\frac{K_p^2}{K_p - \frac{F}{U}} - K_p\right)$$ (Equation S1)

where L is the length of the clamped fiber, I_o is the moment of inertia of the section, F is the applied constant force, U the measured displacement and K_p is the stiffness of the tip. When the stiffness of the tip is very high (as in this case) this equation reduces to (Equation 1) in the main text.