Supporting information: Protein paper from exfoliated Eri silk nano fibers

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Zeta potential measurement – buffer compositions

Microfibrillated silk samples were suspended in the following buffers to measure the effect on surface charge at different pH values.

Table S1: pH values used for zeta potential experiments, and the buffer used to achieve this pH.

pH	**Buffer details**
3	Citric acid: 0.0805 M; Na_2HPO_4: 0.0195 M
5	Citric acid: 0.0489 M; Na_2HPO_4: 0.0511 M
7	Citric acid: 0.0174 M; Na_2HPO_4: 0.0826 M
9	Na_2CO_3: 0.0105 M; $NaHCO_3$: 0.0895 M
11	Na_2CO_3: 0.087 M; $NaHCO_3$: 0.013 M

SEM images on silk solution before and after homogenising.

SEM Jeol Neoscope (Jeol, USA) at an accelerating voltage of 5 kV was used to observe the morphology of each SNF in suspension (Figure S1). It is obvious that the degummed silk fibres (groups 1, 2, and 3) tend to aggregate before homogenising (Figure S1a, c, and e), which are greatly improved after 5 times homogenisation (Figure S1b, d, and f). However, sample group 4, which was prepared with the most severe degumming condition (120 °C, 5 g/L) seems degrade the original silk fibre and there is no consecutive fibre left both before and after homogenising (Figure S1g h).

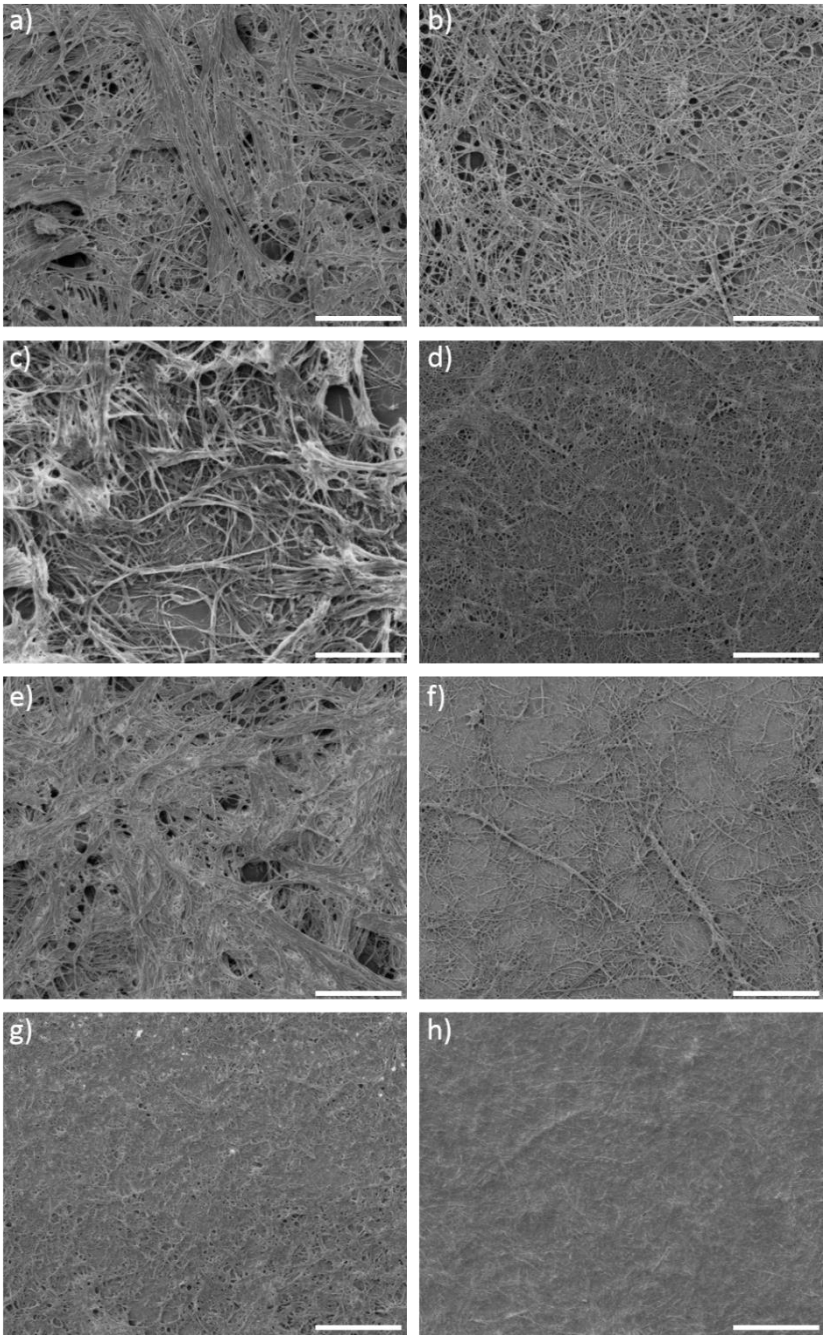

Figure S1: SEM images of the SNF after degumming under different conditions. a) 1M; b) 1M+H; c) 2M; d) 2M+H; e) 3M; f) 3M+H; g) 4M; h) 4M+H (Scale bar: 50 μm).

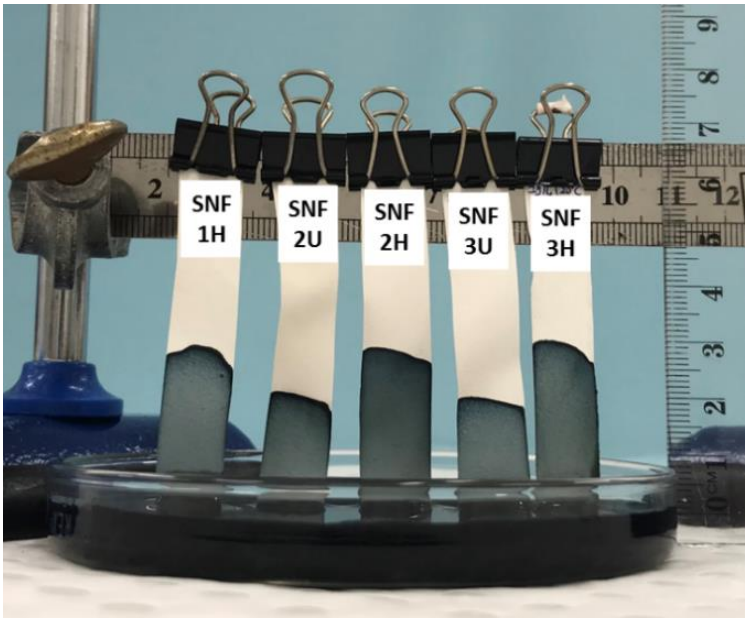

Figure S2: Wick testing on SNF papers