

## Supplementary Information

# Superabsorbent and fully bio-based protein foams with a natural crosslinker and cellulose nanofibers

Antonio J. Capezza<sup>a,b</sup>, Qiong Wu<sup>a</sup>, William R. Newson<sup>b</sup>, Richard T. Olsson<sup>a</sup>, Eliane Espuche<sup>c</sup>, Eva Johansson<sup>b</sup>, Mikael S. Hedenqvist<sup>a\*</sup>

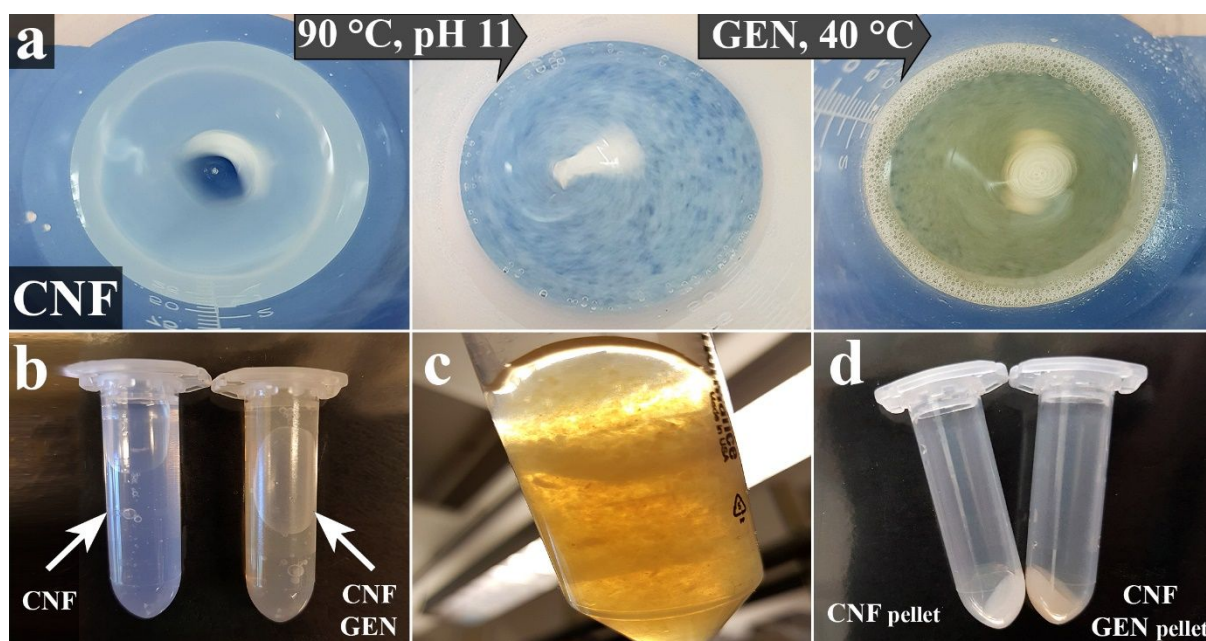
<sup>a</sup>*KTH Royal Institute of Technology, Teknikringen 56, School of Engineering Sciences in Chemistry, Biotechnology and Health, Fibre and Polymer Technology, SE-100 44 Stockholm, Sweden*

<sup>b</sup>*SLU Swedish University of Agricultural Sciences, Sundsvägen 10 BOX 101, Department of Plant Breeding, SE-230 53, Alnarp, Sweden.*

<sup>c</sup>*Univ Lyon, Université Lyon1, UMR CNRS 5223, Ingénierie des Matériaux Polymères, 15, Bd. André Latarjet, Bâtiment Polytech, 69622 Villeurbanne Cedex, France*

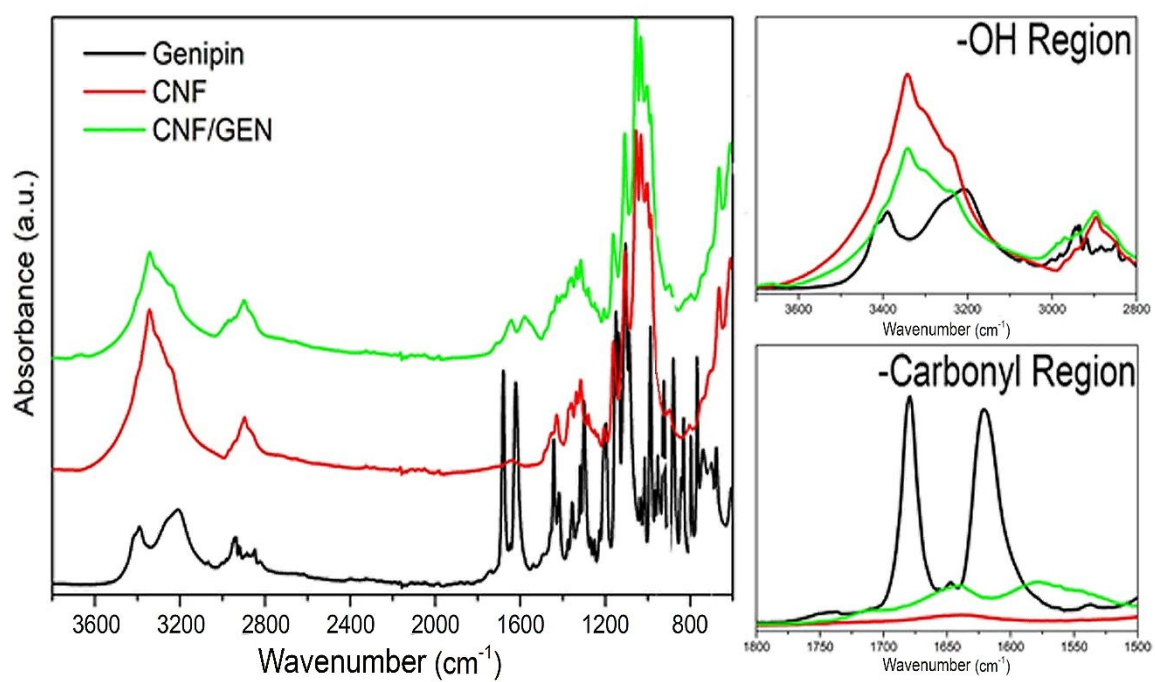
Number of pages: 4

Number of figures: 3

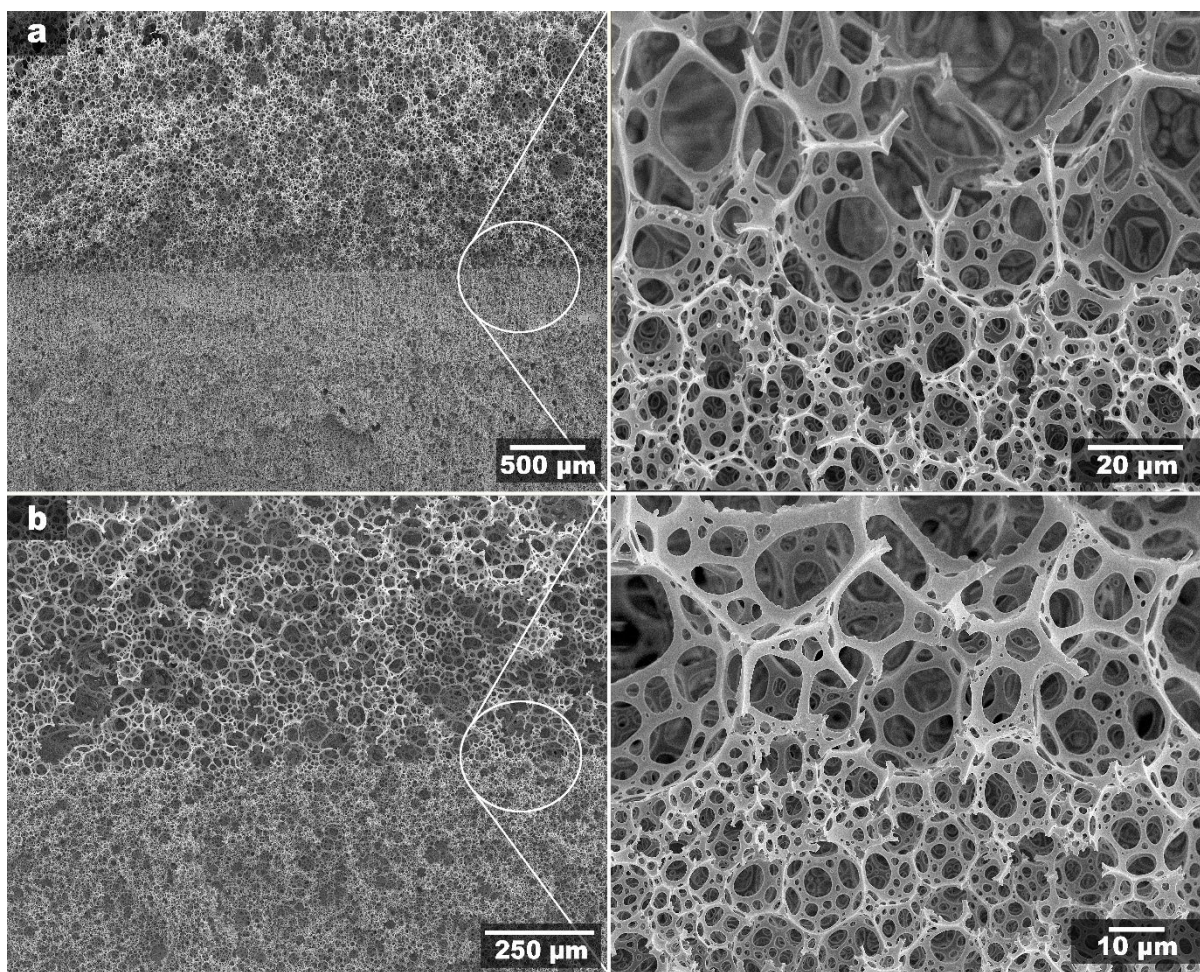


**Figure S1:** CNF suspensions treated with genipin following the standard protocol but without wheat gluten (a). 50 mg of CNF were dispersed in MQw, thereafter the pH was adjusted to 11 and the temperature raised to 90 °C, followed by an addition of 50 mg GEN at 40 °C and stirring during 2 h. The original CNF suspension and the final

CNF/GEN suspension, the phase separation of the CNF/GEN suspension and the pellet of CNF and CNF/GEN are shown in b, c and d, respectively.



**Figure S2:** FT IR of the neat CNF, GEN and CNF reacted with GEN (CNF/GEN).



**Figure S3:** SEM micrographs of (a) commercial foam taken from a sanitary pad and (b) the freeze-dried structure of the foam after 24 h immersion in water.

**Video S1:** swelling behaviour of the WG/CNF/GEN foam after 10 min swelling in sheep blood compared to a commercial foam taken from a sanitary pad.

**Video S2:** elastic recovery of the W/CNF/GEN foams after 24 h swelling.

**Conflicts of interest.**

No conflicts of interest to declare.