

† Electronic supplementary information (ESI)

Filler size effect in an attractive fibrillated network: a structural and rheological perspective

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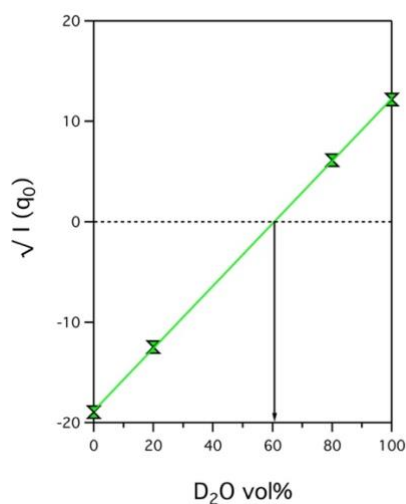


Fig. S1 Contrast match experiment performed for 2.5 wt% SiNp₁₅₈ at different H₂O/D₂O ratios. The scattering Intensity at low-q ($I(q_0)$) for samples at different concentration of D₂O vol% is plotted as the $\sqrt{I(q_0)}$ vs %D₂O. A linear fit, indicated by the green line, was used to determine the point where $\sqrt{I(q_0)} = 0$.

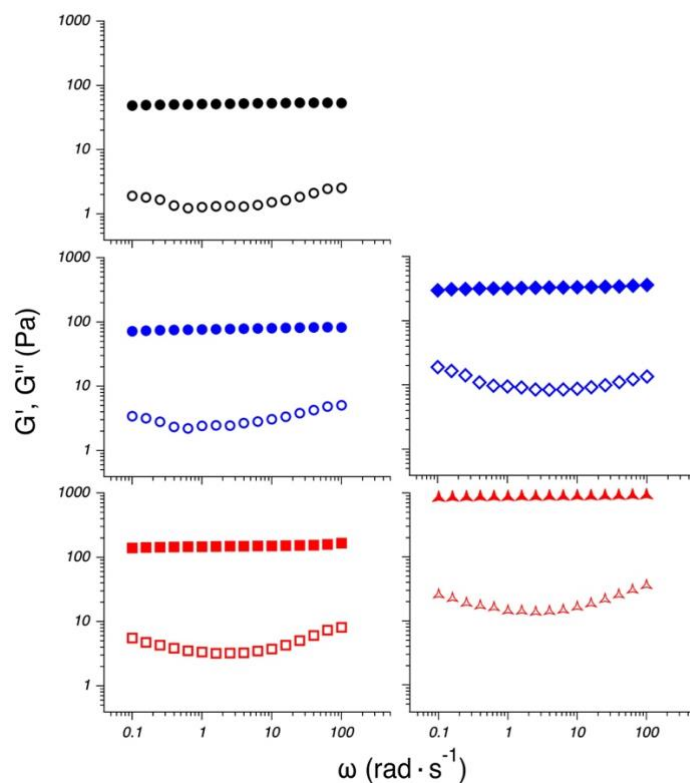


Fig. S2 Frequency sweep performed at constant $\gamma = 0.1\%$, after the time sweep described in the main manuscript, for (top) 1 wt% OCNF, (centre-left) 1 wt% OCNF containing 2.5 wt% SiNp₅, (centre-right) 1 wt% OCNF containing 5 wt% SiNp₅, (bottom-left) 1 wt% OCNF containing 2.5 wt% SiNp₁₅₈, (bottom-right) 1 wt% OCNF containing 5 wt% SiNp₁₅₈. Filled and empty symbols correspond to G' and G'' , respectively. All samples contain 100 mM NaCl.

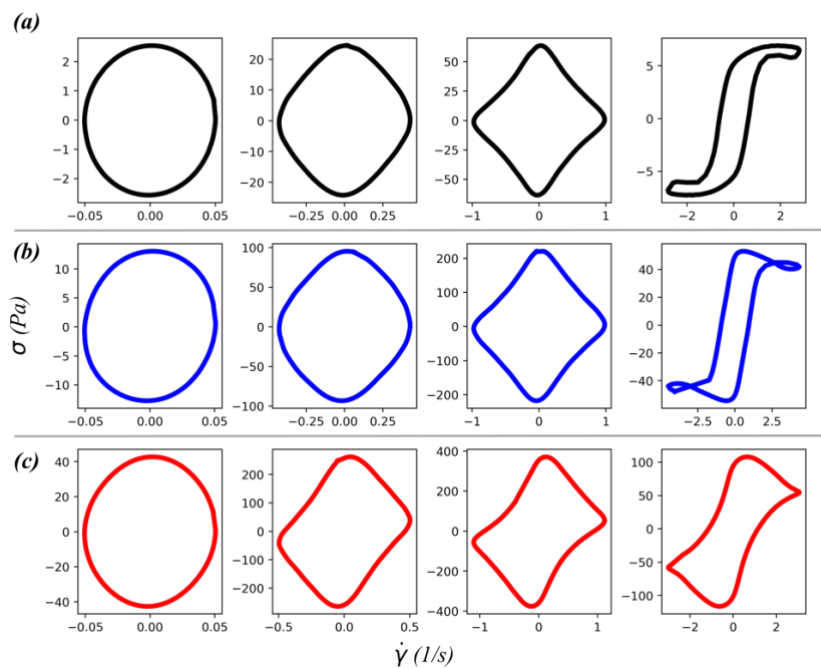


Fig. S3 Viscous projection of Lissajous-plots. (a) 1 wt% OCNF gel, (b) 1 wt% OCNF containing 5 wt% SiNp₅ and (c) 1 wt% OCNF containing 5 wt% SiNp₁₅₈ gels.

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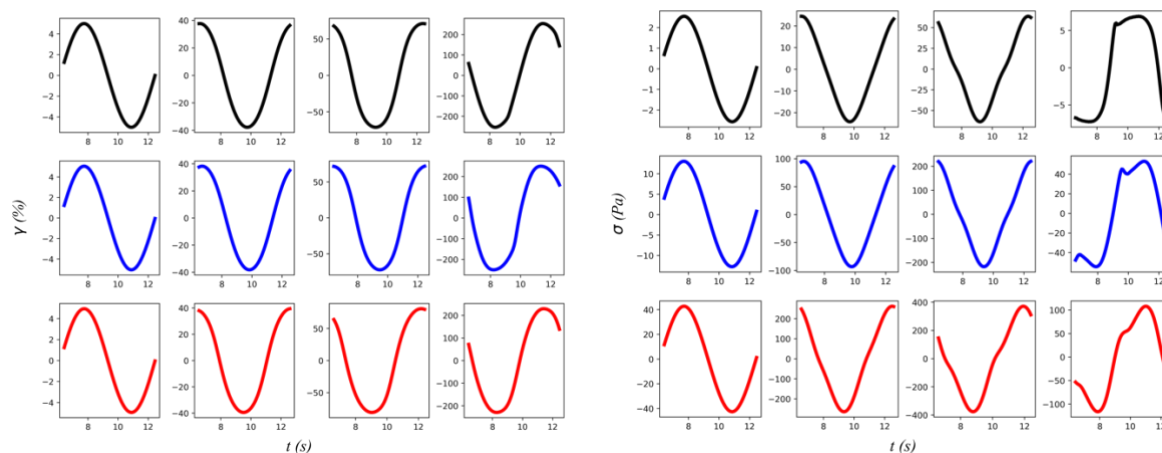


Fig. S4 Sinusoidal deformation shown as γ (%) vs time (s) (left-panel) and the corresponding stress response shown as σ (Pa) vs time (s) (right-panel). The top, central and bottom rows identify the 1wt% OCNF, 1 wt% OCNF containing 5 wt% SiNp₅ and 1 wt% OCNF containing 5 wt% SiNp₁₅₈ gels, respectively.

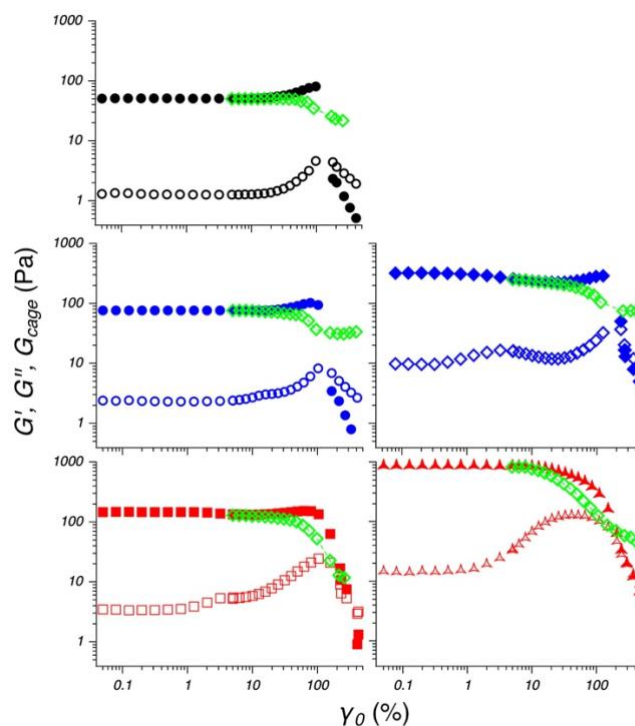


Fig. S5 Strain sweep performed at constant $\omega = 1$ rad s⁻¹ for (top) 1 wt% OCNF, (centre-left) 1 wt% OCNF containing 2.5 wt% SiNp₅, (centre-right) 1 wt% OCNF containing 5 wt% SiNp₅, (bottom-left) 1 wt% OCNF containing 2.5 wt% SiNp₁₅₈, (bottom-right) 1 wt% OCNF containing 5 wt% SiNp₁₅₈. Filled and empty symbols correspond to G' and G'' , respectively. The green symbols (\diamond) indicates the G_{cage} . All samples contain 100 mM NaCl.