Supporting Information

Microbial Biosurfactant Hydrogels with Tunable Rheology for Precision 3D Printing of Soft Scaffolds

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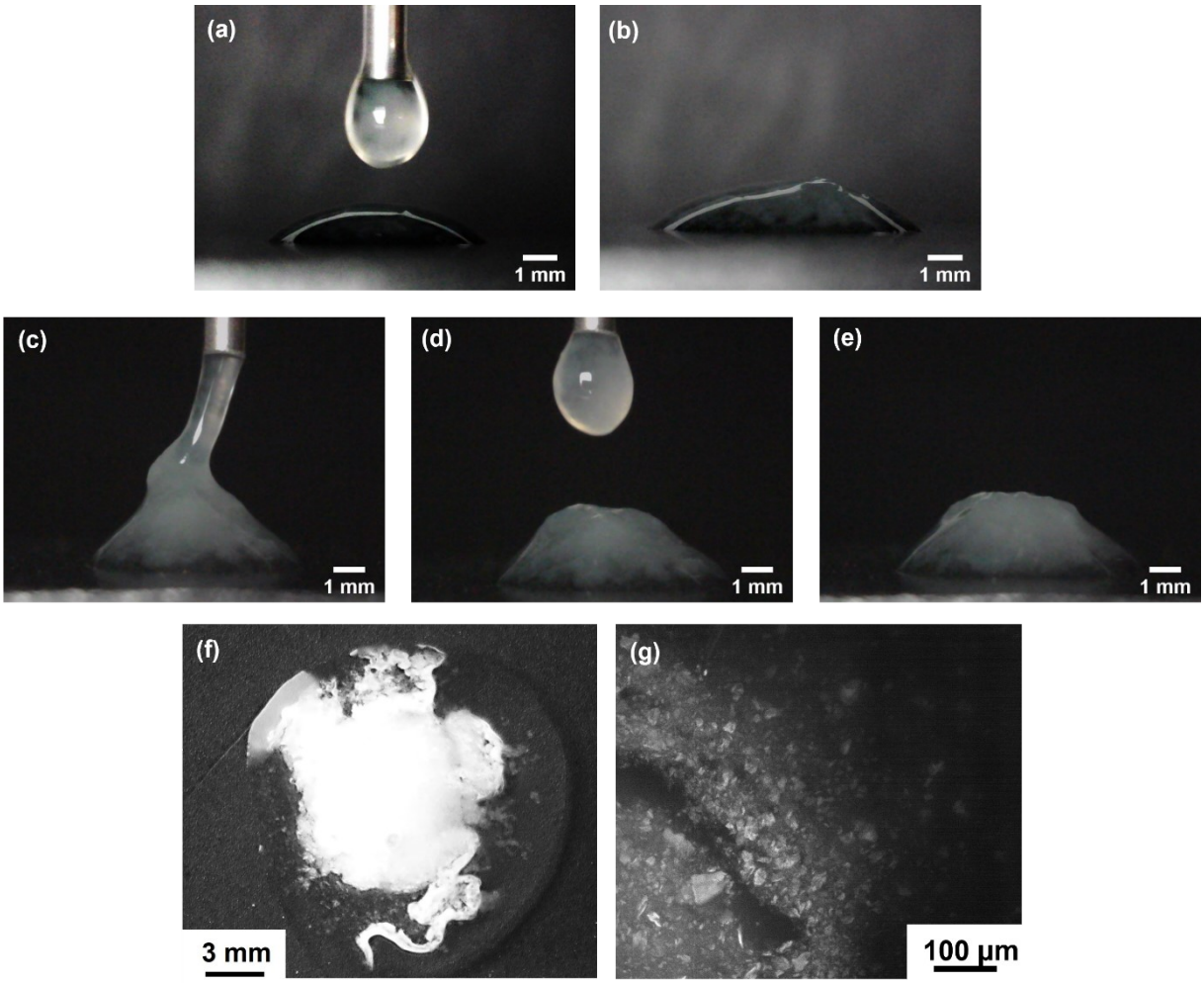

Figure S1. 3D-printed structures using hydrogels prepared from G-C18:1 (10 wt%) with a calcium ratio (Ca^{2+}/G-C18:1) of α = 0.30; with a needle 3.8 cm long (a) during the process and (b) at the end; and with a needle 0.5 cm long (c, d) during the process and (e) at the end. Printing was performed using a needle with a 0.84 mm diameter at a flow rate of 0.55 mm^3/s. (f) Image of (Ca^{2+}/G-C18:1) of α = 0.3 showing the exhibit phase separation (g) Confocal image (brightfield) of (Ca^{2+}/G-C18:1) of α = 0.3 showing the hydrogel microstructure inhomogeneity.

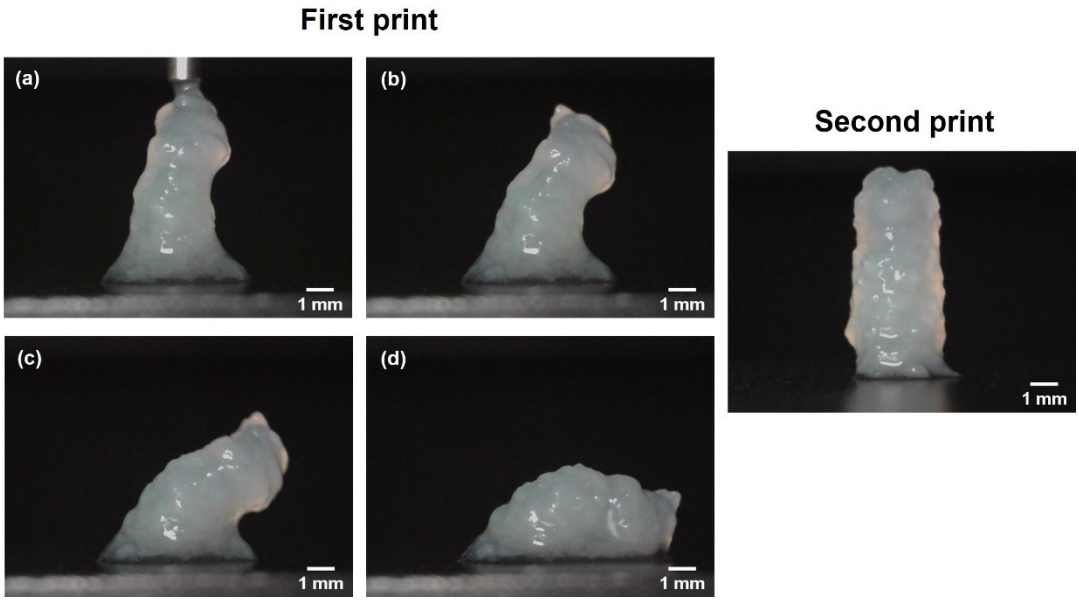

Figure S2. 3D-printed structures using hydrogels prepared from G-C18:1 (10 wt%) with a calcium ratio (Ca^{2+}/G-C18:1) of α = 0.60 in the first print (a-d) and second printing attempt. Printing was performed using a needle with a 0.84 mm diameter and 0.5 cm length at a flow rate of 0.55 mm^3/s.

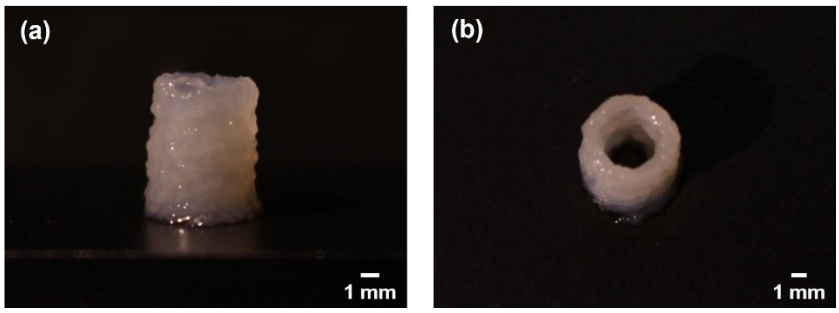

Figure S3. 3D-printed of a hollow cylinder using hydrogels prepared from G-C18:1 (10 wt%) with a calcium ratio (Ca^{2+}/G-C18:1) of α = 0.60 (a) Top view (b) Top view. Printing was performed using a needle with a 0.84 mm diameter and 0.5 cm length at a flow rate of 0.55 mm^3/s.

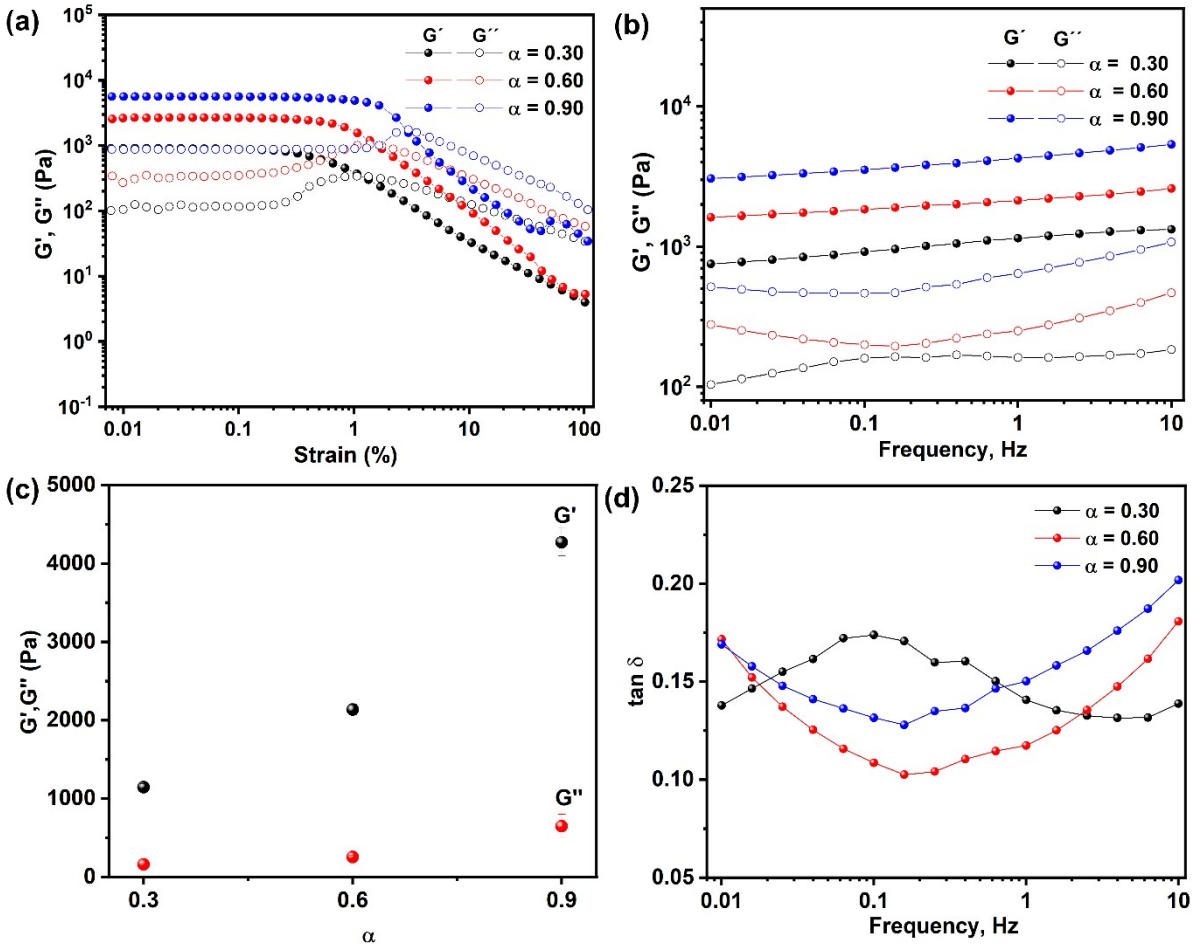

Figure S4. Rheological analysis of hydrogels prepared from G-C18:1 (10 wt%) with different calcium ratios (Ca^{2+}/G-C18:1) of α = 0.3, 0.6, and 0.9 (a) Storage (G') and loss (G") moduli was measured in the oscillatory strain at 1 Hz; (b) Storage (G') and loss (G") moduli was measured in the oscillatory frequency at 0.1%; (c) Storage (G') and loss (G") moduli as a function of α; (d) tanδ was measured in the oscillatory frequency at 0.1%.