Electronic Supplementary Material (ESI) for Nanoscale.

Supporting information

Stabilizing gelatin-based bioinks under physiological conditions by incorporation of ethylene-glycol-conjugated Fmoc-FF peptides

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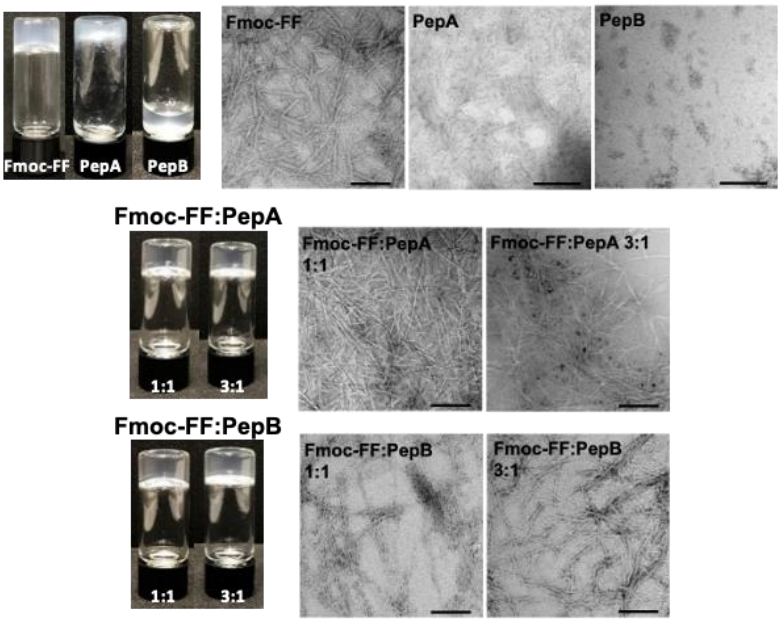

Figure S1. Hydrogel characterization. Inverted tube images of the pristine hydrogels and co-assembled hydrogels after overnight gelation, transmission electron microscope images of the matrix of the hydrogels. Scale bar 200 nm.

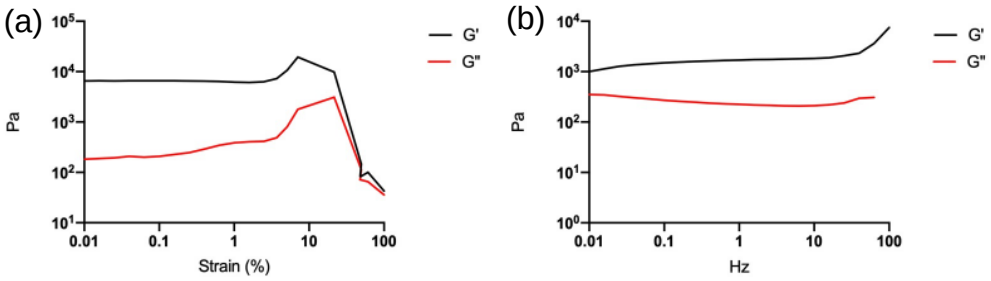

Figure S2. **Rheological analysis of Fmoc-FF hydrogel.** (a) Dynamic strain sweep performed at 5 Hz frequency and (b) dynamic frequency sweep oscillatory test performed at 0.5 strain.

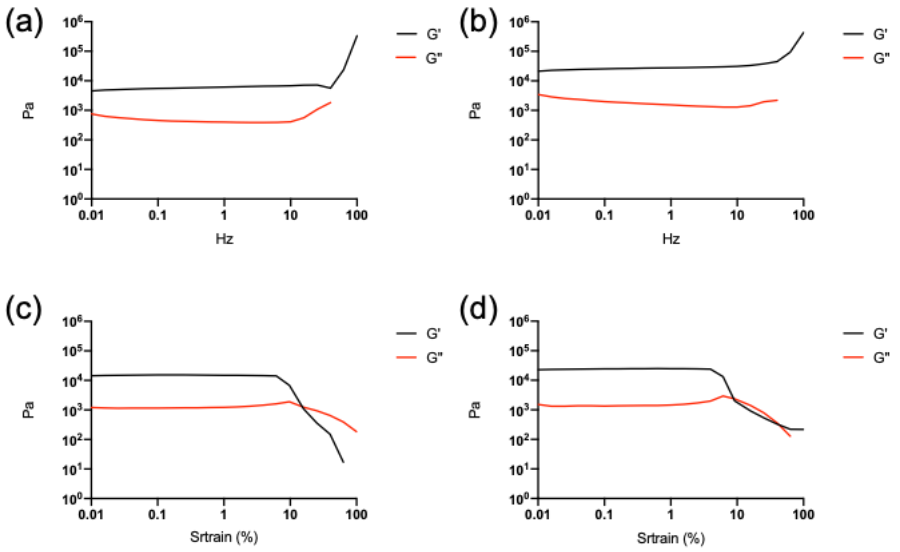

Figure S3. **Rheological analysis of Fmoc-FF:PepA hydrogel hybrids.** Dynamic frequency sweep performed at 5 Hz frequency of (a) 1:1, and (b) 3:1. Dynamic strain sweep oscillatory test performed at 0.5% strain of (c) 1:1, and (d) 3:1.

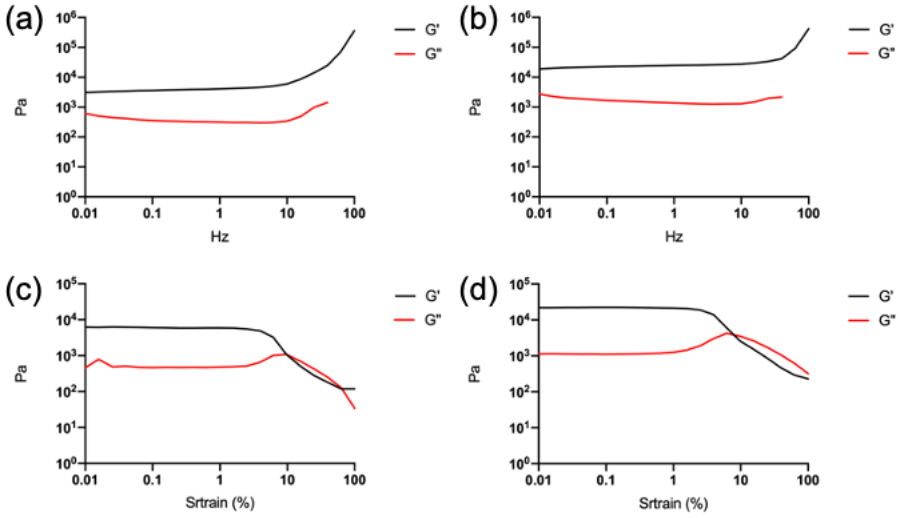

Figure S4. **Rheological analysis of Fmoc-FF:PepB hybrid hydrogel.** Dynamic frequency sweep performed at 5 Hz frequency of (a) 1:1, and (b) 3:1. Dynamic strain sweep oscillatory test performed at 0.5% strain of (c) 1:1, and (d) 3:1.

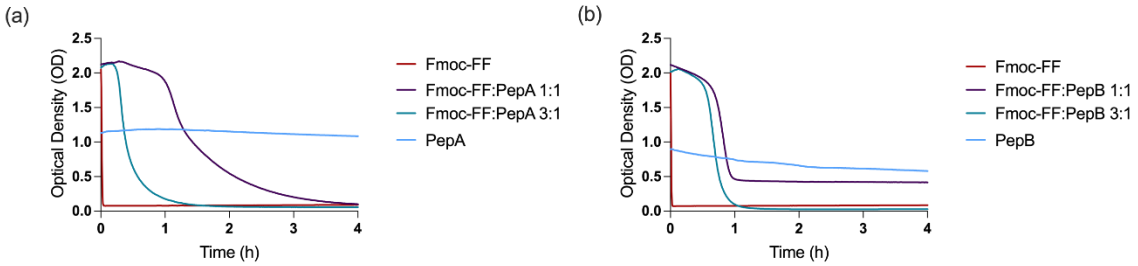

Figure S5. **Assembly kinetics by hydrogels absorbance characterization.** Turbidity changes in the hydrogels over time (absorbance at 400 nm) of (a) Fmoc-FF:PepA hydrogel hybrids and (b) Fmoc-FF:PepB hydrogel hybrids.

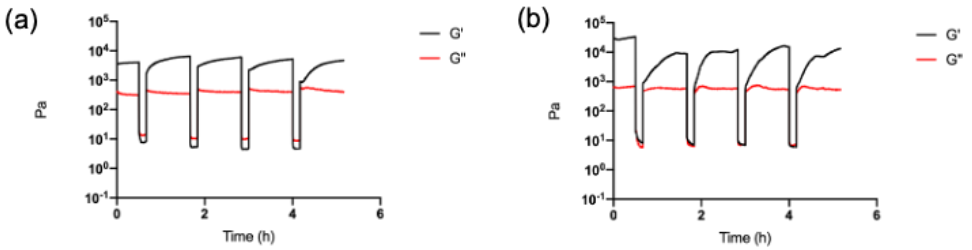

Figure S6. **Thixotropic analysis** of (a) 3:1 Fmoc-FF:PepA hybrid and, (b) 3:1 Fmoc-FF:PepB hybrid, after 6h gelation.

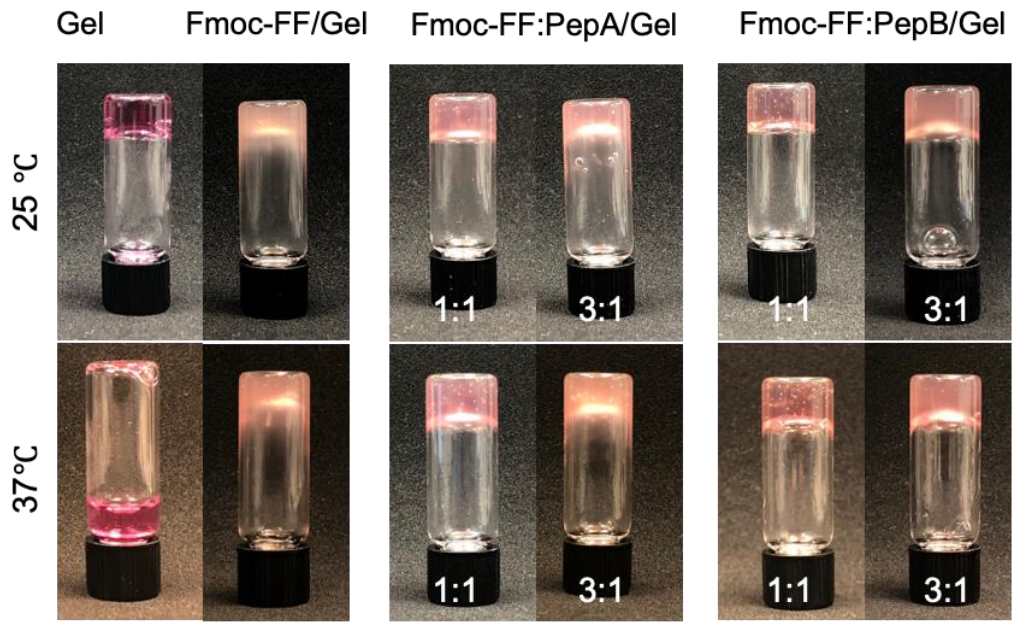

Figure S7. Inverted tube images of the hydrogels. Hydrogel at 5 g L^{-1} peptide concentration in a solution of 50 g L^{-1} gelatin dissolved in DMEM, after overnight gelation at 25°C and after incubation at 37°C for 20 minutes.

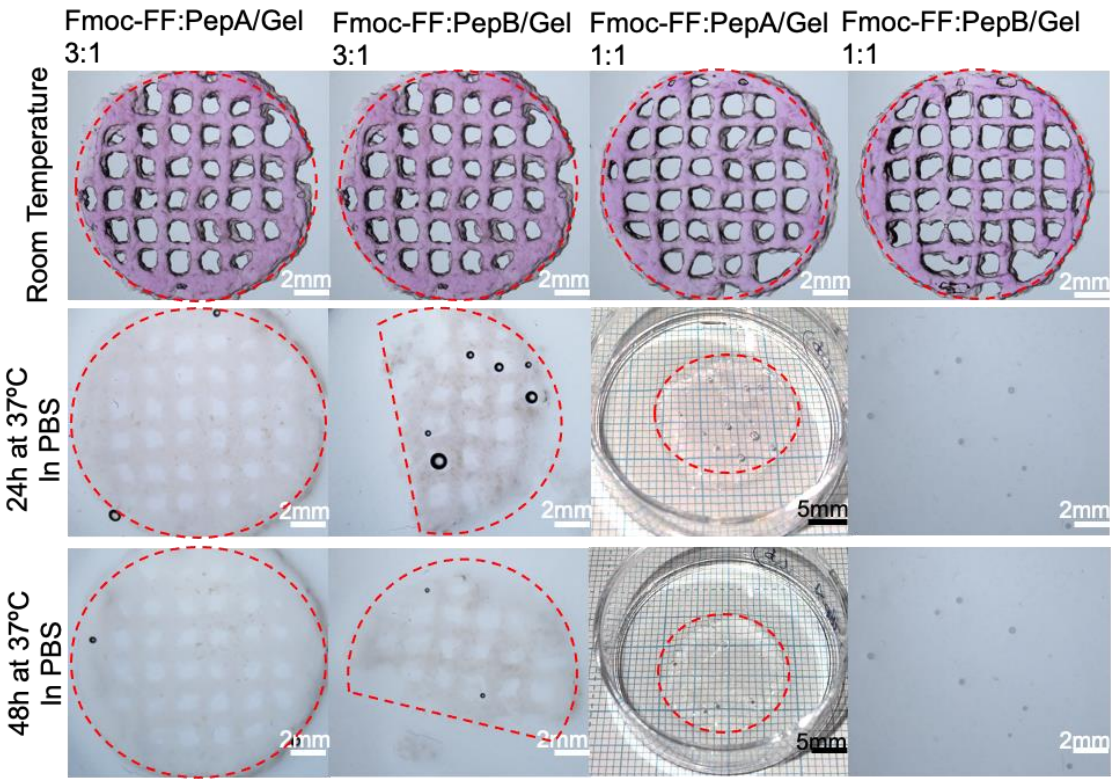

Figure S8. Images of the 3D-printed composite hydrogels degradability. Images were acquired before and after incubation at 37°C in PBS for 24h and 48h.

Table S1. Rheological profile of the ethylene glycol conjugated Fmoc-FF hydrogels

Peptides	G′ [Pa]	G″ [Pa]	G′/G″
Fmoc-FF	9552	251	37
PepA	157	42	3
PepB	1	1	0
1:1 Fmoc-FF:PepA	3788	286	13
1:1 Fmpc-FF:PepB	10408	573	18
3:1 Fmoc-FF:PepA	12301	240	51
3:1 Fmpc-FF:PepB	9198	216	42

Table S2. Rheological profile of the ethylene glycol conjugated Fmoc-FF/Gelatin hydrogels at 25°C and 37°C.

Peptides	G’	G”	G’/G”
Fmoc-FF	1416.5	241.102	5.875
1:1 Fmoc-FF:PepA	1032.73	240.157	4.3
1:1 Fmpc-FF:PepB	1107.95	306.985	3.609
3:1 Fmoc-FF:PepA	3573.46	695.53	5.137
3:1 Fmpc-FF:PepB	2291.29	501.308	4.57