Electronic Supplementary Information (ESI†)

Preparation and characterization of biodegradable polyurethane hydrogel and the hybrid gel with soy protein for 3D cell-laden bioprinting

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Table S1. Radii of PCL100 nanoparticles at 25°C, 37°C, and 60°C determined by DLS.

PU NPs	Hydrodynamic radius (R_h, nm)		
	25°C	37°C	60°C
PCL100	18.6±0.2	19.3±0.7	19.1±0.1

Table S2. Rheological properties of PU 25% dispersion (without electrolytes) after placing at 37°C.

PUs	Gelation time (s)	Gel strength (G', Pa) after				
		1 min	5 min	10 min	20 min	30 min
PCL80LL20	510	0.45	0.44	32	1040	2438
PCL80DL20	771	0.05	0.03	0.12	684	1846

Table S3. Fraction of the hydrogen bound C=O before and after medium immersion.

PUs	C=O bound/total fraction	
	before	after
PCL100	0.2162	0.1824
PCL80LL20	0.2066	0.2166
PCL80DL20	0.2014	0.2148

Table S4. Adsorption of calcium on the surface of PU cast films.

PUs	Ca^{2+} adsorption (g/cm^2)
PCL100	10.09×10^{-5}
PCL80LL20	4.36×10^{-5}
PCL80DL20	4.10×10^{-5}

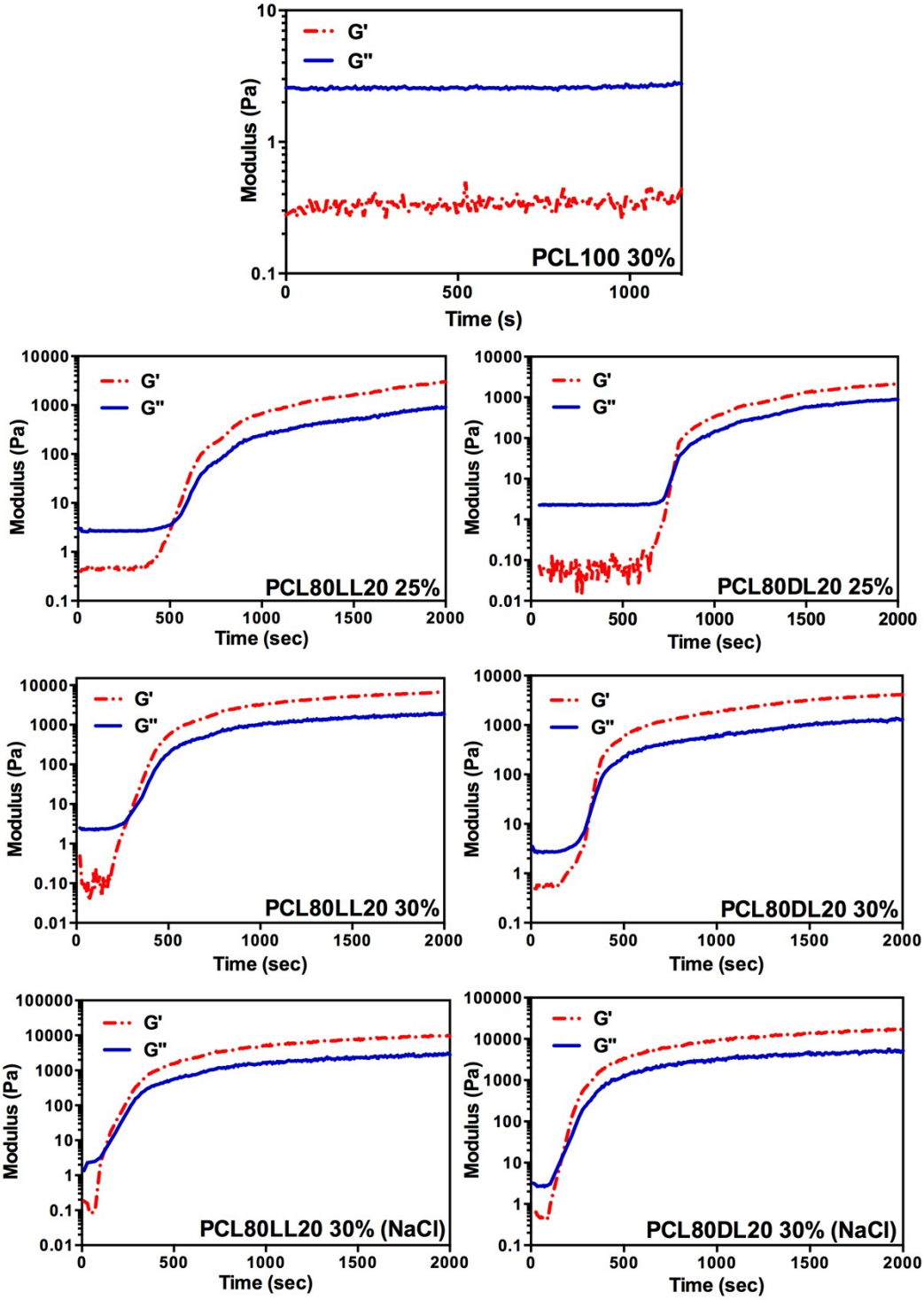

Fig. S1 Rheological properties of 25% and 30% PU dispersions in water and 30% PU dispersions in the presence of electrolytes (NaCl 0.9%).

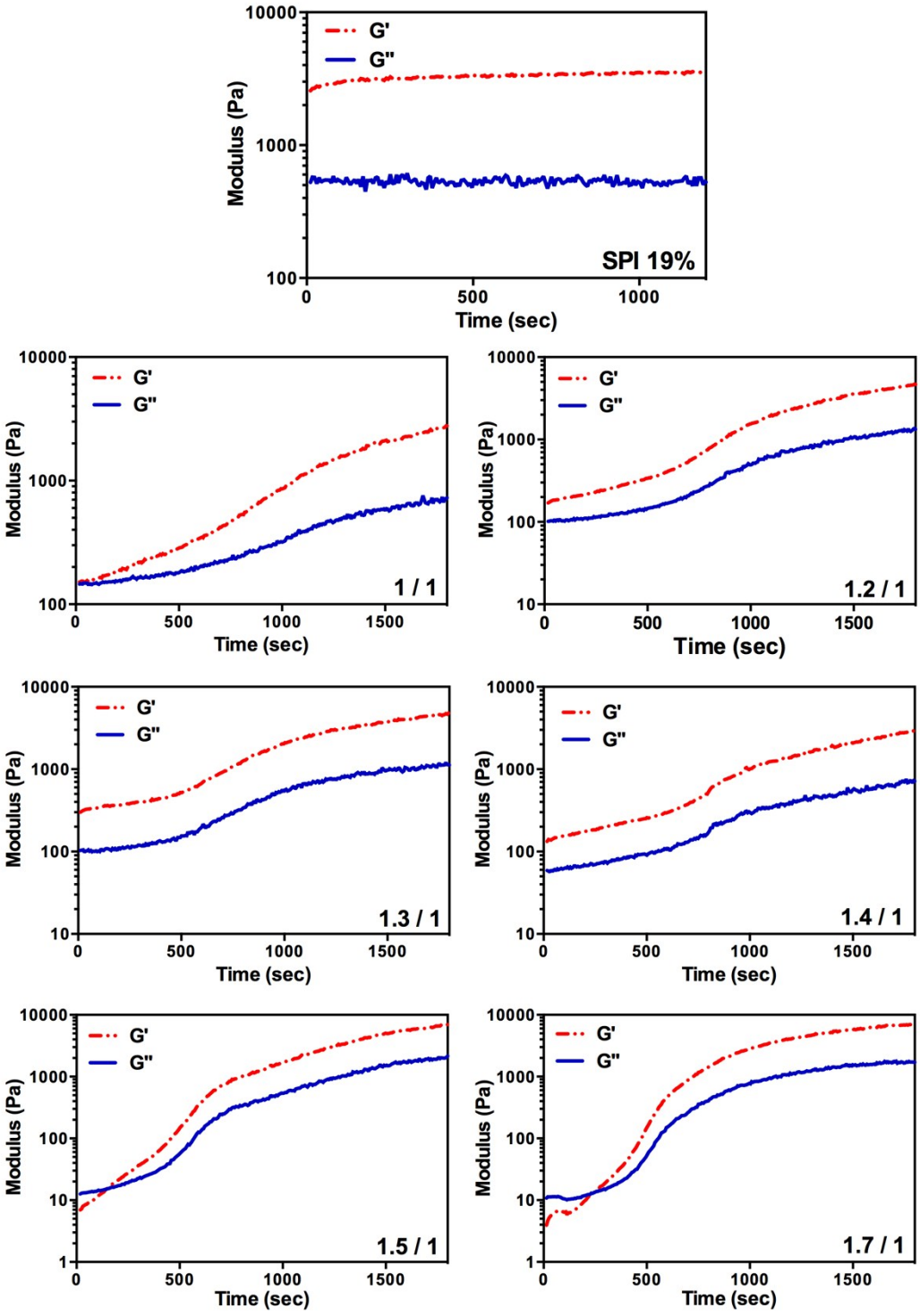

Fig. S2 Rheological properties of SPI and PU/SPI hybrids with SPI in different weight ratios (PU/SPI in 1/1, 1.2/1, 1.3/1, 1.4/1, 1.5/1, and 1.7/1). The total solid content of the hybrids was 24.5%, 25%, 25.22%, 25.42%, 25.6%, and 25.88%, respectively.

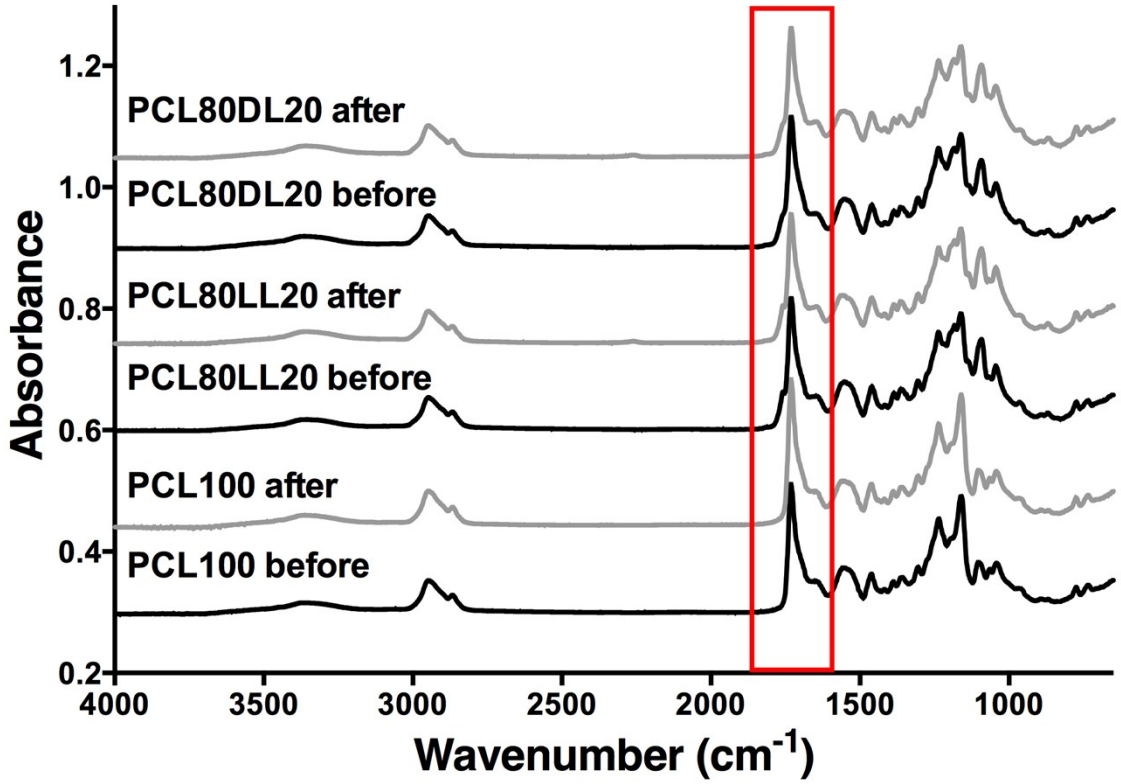

Fig. S3 ATR-FTIR spectra of PU films before and after immersion in the medium. The proportion of bound C=O (1670 cm^{-1}) in total C=O is summarized in Table S3.

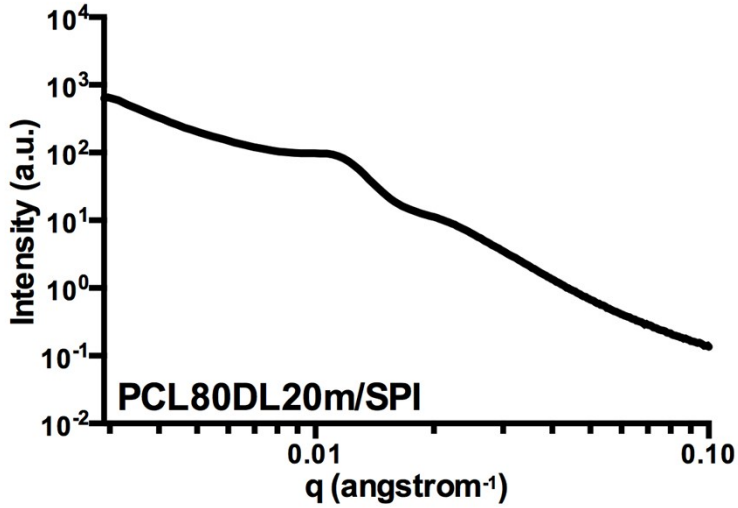

Fig. S4 SAXS profile of the PU/SPI hybrid gel. The curve did not show a constant slope, i.e. no fractal structure was clearly observed.

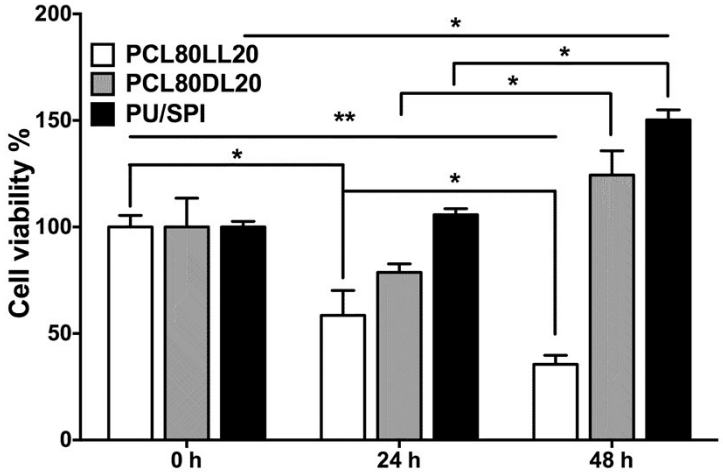

Fig. S5 The viability of L929 cells in each hydrogel scaffold evaluated by the MTT assay at various time points. The value (percentage) was normalized to the O.D. value at 0 h.