

RESEARCH ARTICLE

Fabrication and characterization of photosensitive non-isocyanate polyurethane acrylate resin for 3D-printing of customized biocompatible orthopedic surgical guides

Supplementary File

Table S1. The primer sequences of inflammation markers

Gene name	Forward primer (5'→3')	Reversed primer (5'→3')
IL-6	ATAGTCCTTCTACCCCAATTTCC	GATGAATTGGATGGTCTTGGTCC
TGF-β1	CAGTACAGCAAGGTCCTTGC	ACGTAGTAGACGATGGGCAG
IL-1β	TGGAGAGTGTGGATCCCAAG	GGTGCTGATGTACCAGTTGG
TNF-α	CAGGCGGTGCCTATGTCTC	CGATCACCCGAAGTTCAGTAG
IL-10	GGTTGCCAAGCCTTATCGGA	ACCTGCTCCACTGCCTTGCT
GAPDH	TGTGTCCGTCGTGGATCTG	TTGCTGTTGAAGTCGCAGGA

Table S2. NIPUA parameters obtained from the DMA

Sample	T_{α} (°C)	$T_{\alpha+50}$ (°C)	$E'_{at T_{\alpha+50}}$ (MPa)	v_e (mol/m ³)
PEGDA-0	119.79	169.79	27.50	2489.44
PEGDA-4	120.43	170.43	27.24	2462.44
PEGDA-8	120.25	170.25	20.35	1840.13
PEGDA-12	113.33	163.33	38.59	3544.78
PEGDA-16	111.31	161.31	47.49	4382.10
PEGDA-20	105.29	155.29	19.13	1789.83
PEGDA-24	102.37	152.37	40.57	3823.02

Table S3. Thermal weight loss of photosensitive resin

Sample	Temperature (°C) required to produce % weight loss			
	5%	10%	25%	50%
PEGDA-0	202.26	255.00	311.52	349.65
PEGDA-4	218.62	264.22	327.28	370.21
PEGDA-8	222.55	274.59	326.88	368.34
PEGDA-12	251.95	291.43	335.87	377.74
PEGDA-16	244.00	287.43	334.32	375.48
PEGDA-20	253.92	296.47	340.64	382.60
PEGDA-24	225.80	285.57	332.24	375.59

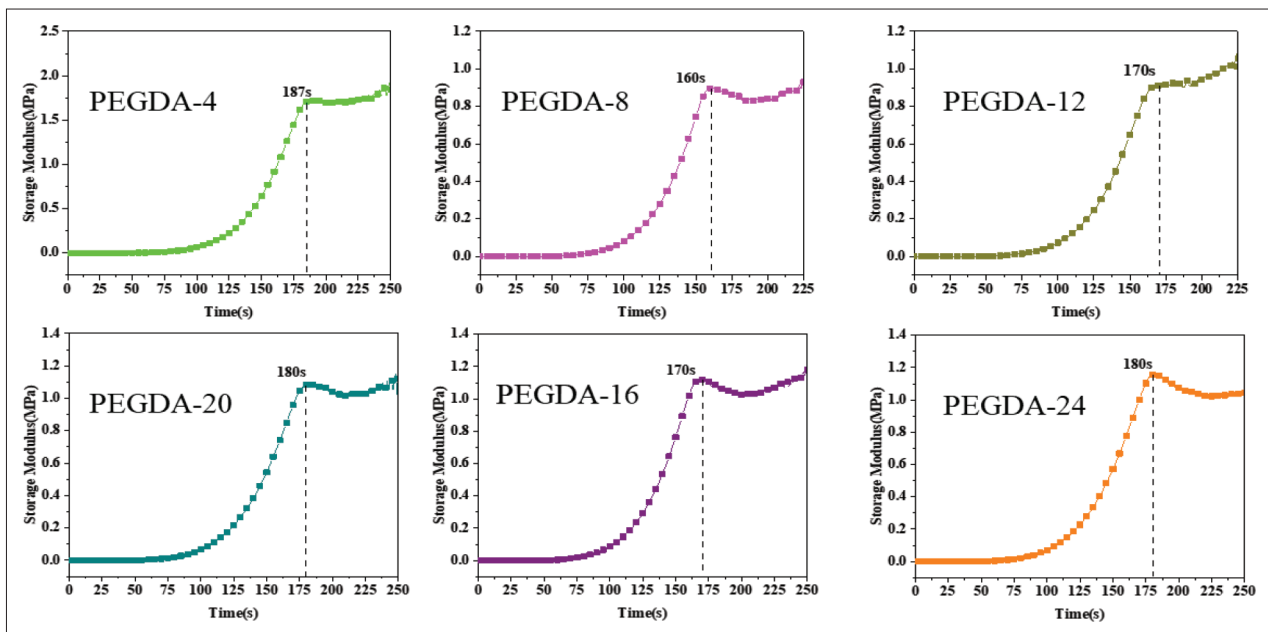


Figure S1. Light curing time of photosensitive resin under different PEGDA content.

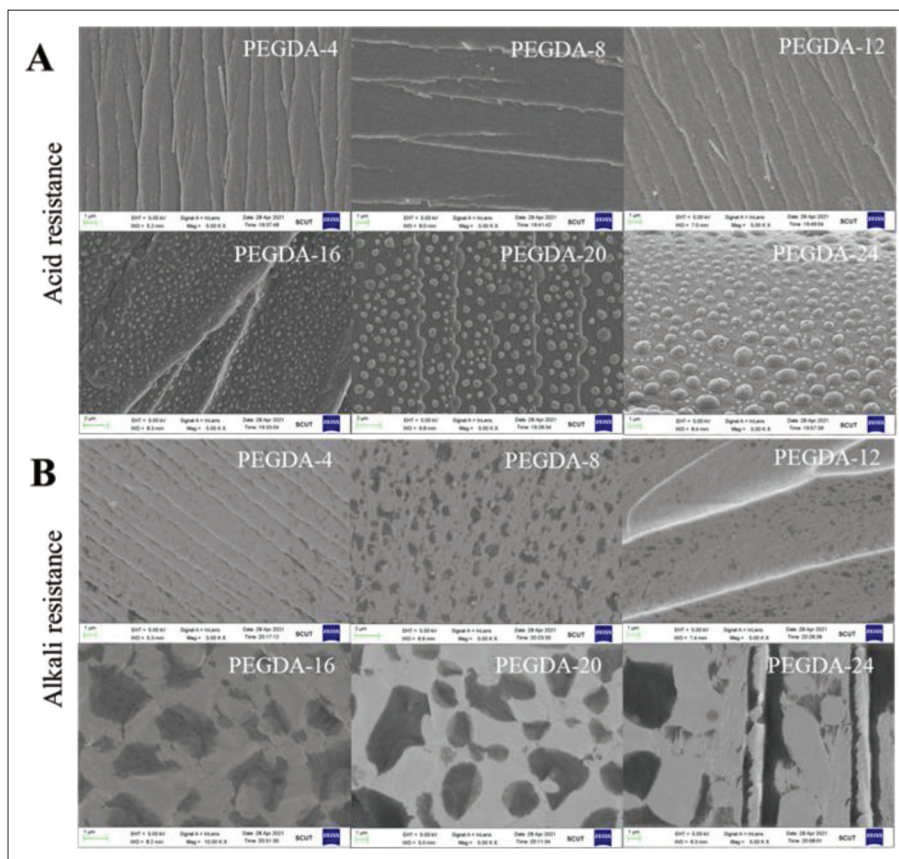


Figure S2. The corrosion resistance of NIPUA. (A) Acid resistance. (B) Alkali resistance.

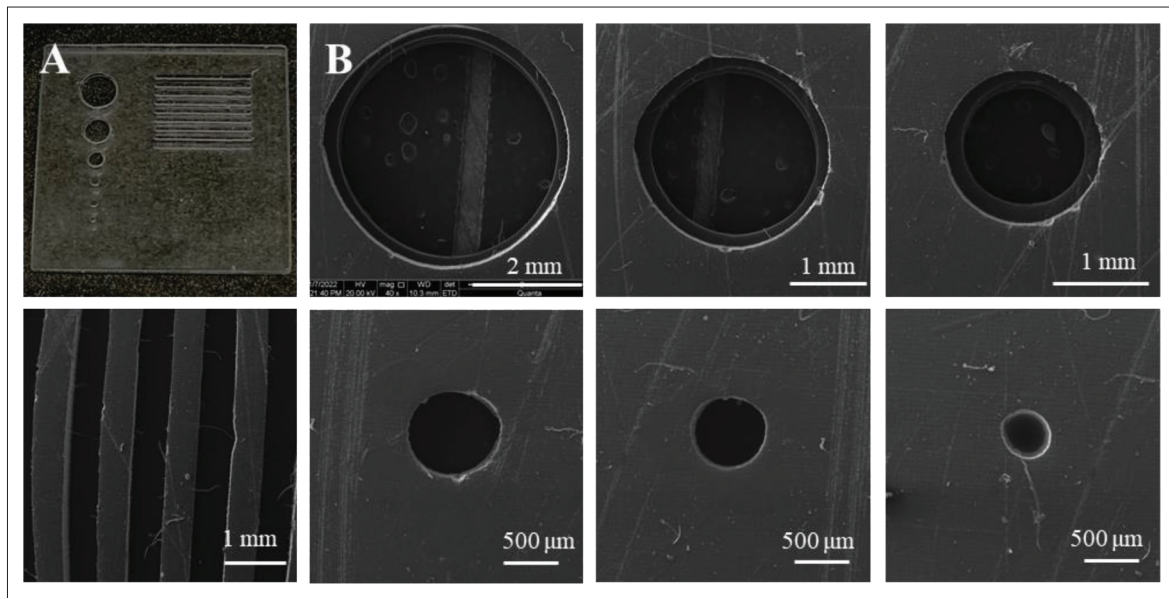


Figure S3. Forming dimension accuracy experiment of 3D printing. (A) Printed accuracy sheet, (B) SEM of accuracy sheet.

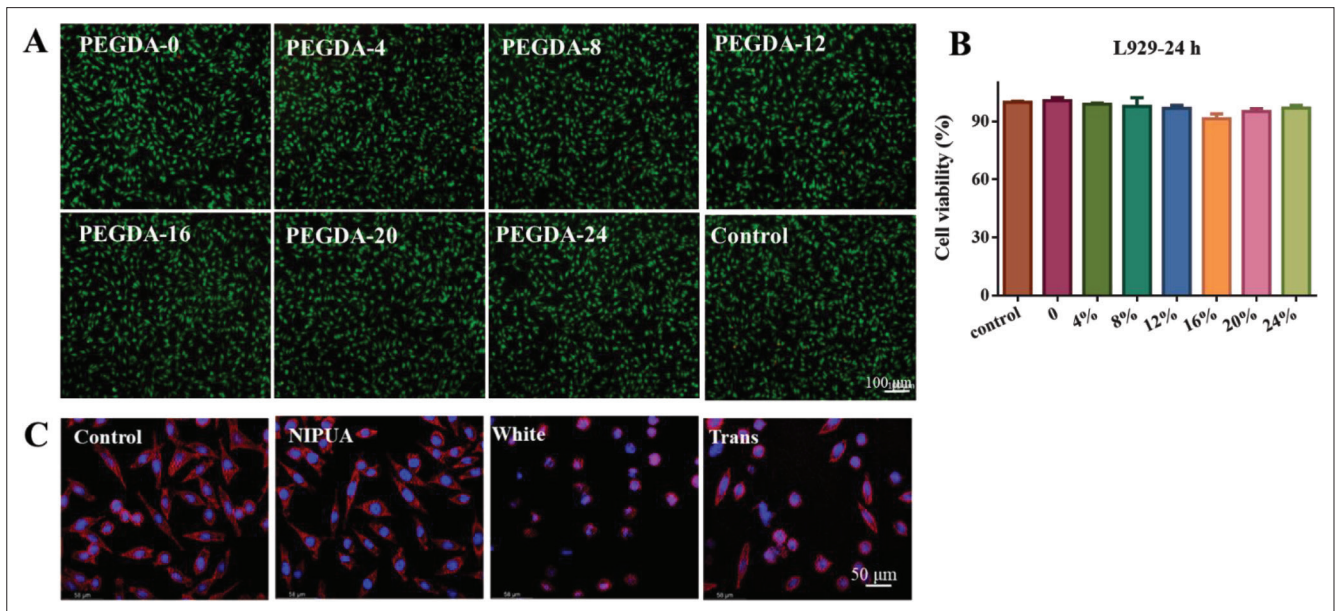


Figure S4. Cytocompatibility of different formulations of NIPUA. (A) Live-dead staining, (B) cytotoxicity, and (C) cytoskeleton staining.