



Supporting Information

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4D-Printable Photocrosslinkable Polyurethane-Based Inks for Tissue Scaffold and Actuator Applications

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Table S1. GPC results for fabricated inks.

Polymer	Rt (min)	$\overline{M}_n$ (g/mol)	$\overline{M}_w$ (g/mol)	PDI
PEG-PU-DA	15	37849	86247	2.3
	40	40309	164326	4.0
	60	43049	165114	3.8

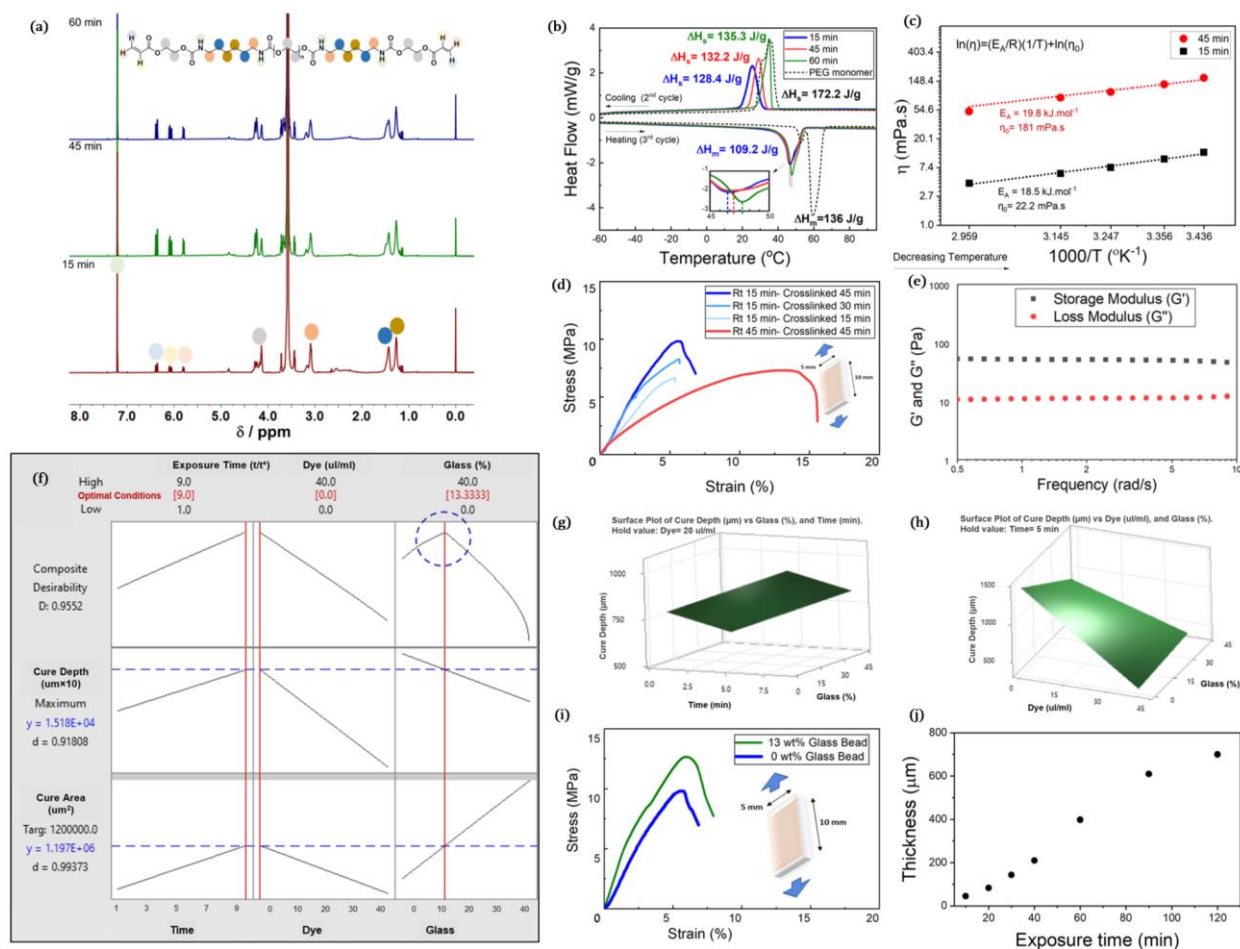


Figure S1. a) NMR characterization of synthesized inks at different reaction times; b) thermal analysis of synthesized monomers reveals increasing nucleation rate and solidification temperature with increasing reaction time; c) zero shear viscosity versus temperature obtained from data in **Figure 2c**; the viscosity at rest for the ink obtained by 45 min reaction time is almost 3 times more than that of the ink obtained by 15 min reaction time denoting to increasing the molecular weight with increasing the reaction time (in accordance with GPC results in **Figure 2b**); d) stress-strain response of DLP printed films reveal increasing the film elastic modulus with increasing the exposure time (*samples crosslinked with 2 mW/cm² intensity at 400 nm, $\tau=9$*); e) frequency sweep test on the photocrosslinked hydrogel (t_{exposure} : 15 min, at low intensity light) showing formation of a viscoelastic fibrillar network for the hydrogel and a wide range for the associated linear viscoelastic response (*samples crosslinked with 2 mW/cm² intensity at 400 nm, $\tau=9$*); f) statistical optimization results obtained by MiniTab software; g) statistical prediction of MiniTab over cure depth versus glass content and exposure time when dye content is fixed at 20 ul/ml, h) statistical prediction of MiniTab over cure depth vs glass content and dye content when exposure time is fixed at 5 min, i) addition of 13 wt.% glass to the ink does not significantly change the

stress-strain response of the films; j) correlation of light exposure time and thickness of the dried crosslinked films under low light intensity (2 mW/cm^2 intensity at 400 nm , $\tau=9$).

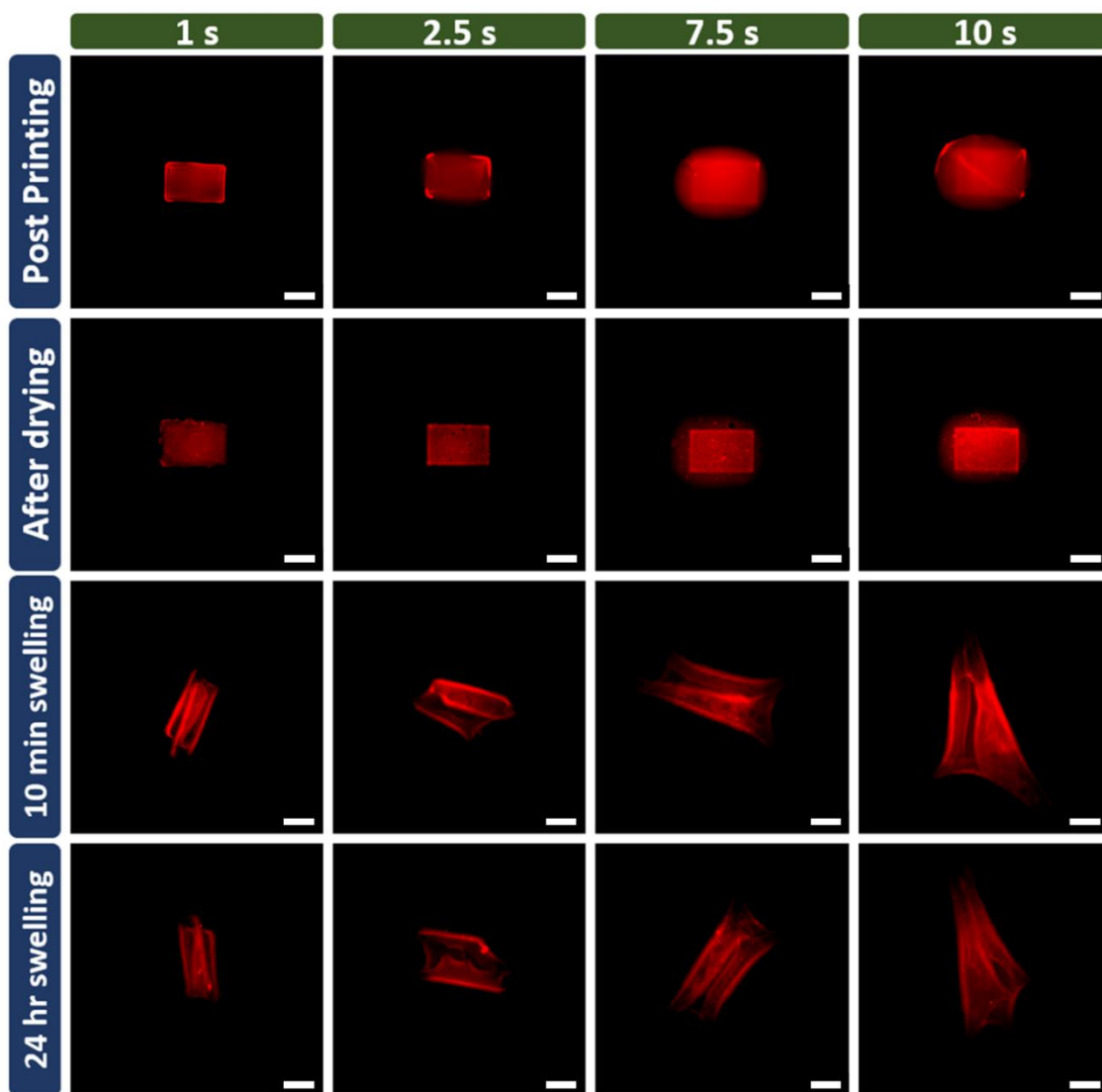


Figure S2. Stability of DLP printed tubular scaffolds at different exposure times: 1 to 10 s exposures to the high light intensity (700 mW/cm^2 at 380 nm wavelength) after 10 min/24hr of immersion (inset: 1 mm).

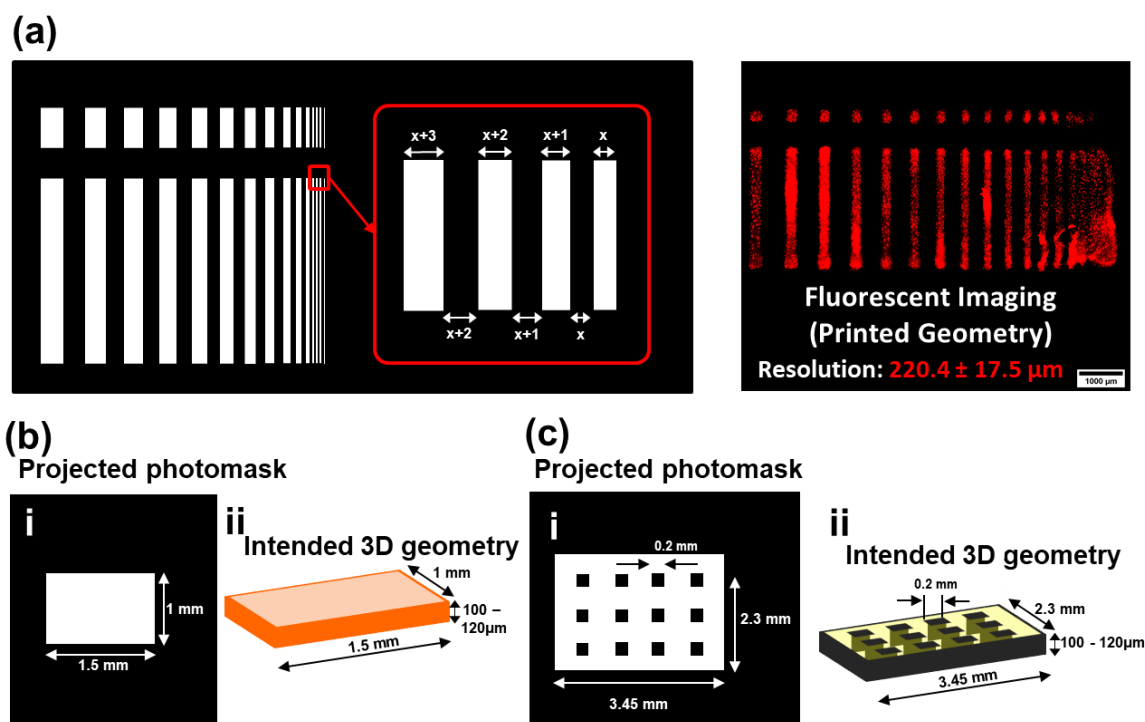


Figure S3. Photomask designs for DLP printing: a) photomask used for resolution evaluation, and the achieved resolution by fluorescent imaging when Comarin 6 particles were mixed with ink formulation, b) initial design used for fabricating tubular scaffolds: i) rectangular photomask used for DLP image projection, ii) intended 3D printed geometry; c) initial design used for fabricating a porous tubular scaffold: i) projection pattern used as a photomask, ii) intended 3D printed geometry.