

Materials List for

Four-Dimensional Printing of Stimuli-Responsive Hydrogel-Based Soft Robots

Yeonjae Lee¹, Jiho Choi¹, Youngeun Choi², Sue Min Park¹, ChangKyu Yoon^{1,3}

¹Department of Mechanical Systems Engineering, Sookmyung Women's University ²Department of Biological Sciences, Sookmyung Women's University

³Institute of Advanced Materials and Systems, Sookmyung Women's University

Corresponding Author

ChangKyu Yoon

ckyoona@sookmyung.ac.kr

Citation

Lee, Y., Choi, J., Choi, Y., Park, S.M., Yoon, C. Four-Dimensional Printing of Stimuli-Responsive Hydrogel-Based Soft Robots. *J. Vis. Exp.* (191), e64870, doi:10.3791/64870 (2023).

Date Published

January 13, 2023

DOI

10.3791/64870

URL

jove.com/video/64870

Materials

Name	Company	Catalog Number	Comments
2-Hydroxy-4'-(2-hydroxyethoxy)-2-methylpropiophenone	Sigma Aldrich	410896-50G	Irgacure 2959, photoinitiator
3D WOX 2X	sindoh	n/a	3D printer for fabricating a maze
Acrylamide	Sigma-Aldrich	29-007	≥99%
Airbrush compressor	WilTec	AF18-2	
Ammonium persulfate	Sigma Aldrich	A4418	
Auto CAD	Autodesk	n/a	software for computer-aided-design file
BLX UV crosslinker	BIO-LINK	U01-133-565	
Cartridge	CELLINK	CSC010300102	
Digital stirring Hot Plates	Corning	6798-420D	
Fluorescein O-methacrylate	Sigma Aldrich	568864	dye of AAm gel
INKREDIBLE+ bioprinter	CELLINK	n/a	
Iron(III) Oxide red	DUKSAN general science	I0231	
Laponite RD	BYK	n/a	nanoclay
Microcentrifuge tube	SPL	60615	
Micro stirrer bar	Cowie	27-00360-08	
N, N, N', N'-tetramethylethylenediamine	Sigma Aldrich	T7024-100ML	
N, N'-methylenebisacrylamide	Sigma Aldrich	M7279	≥99.5%
N-isopropylacrylamide	Sigma-Aldrich	415324-50G	
Poly(N-isopropylacrylamide)	Sigma-Aldrich	535311	
Rhodamine 6G	Sigma Aldrich	R4127	dye of NIPAM gel
Slic3r software (v1.2.9)	Slic3r	n/a	open-source software to convert .stl file to gcode
Sodium hydroxide beads	Sigma Aldrich	S5881	
Sterile high-precision conical bioprinting nozzles	CELLINK	NZ3270005001	22 G, 25 G

Syringe	Korea vaccine	K07415389	10 CC 21 G (1-1/4 INCH)
Vortex mixer	DAIHAN	DH.WVM00030	