

Materials List for

Fragmenting Bulk Hydrogels and Processing into Granular Hydrogels for Biomedical Applications

Victoria G. Muir¹, Margaret E. Prendergast¹, Jason A. Burdick^{1,2,3}

¹Department of Bioengineering, School of Engineering and Applied Sciences, University of Pennsylvania ²BioFrontiers Institute, University of Colorado Boulder ³Department of Chemical and Biological Engineering, College of Engineering and Applied Science, University of Colorado Boulder

Corresponding Author

Jason A. Burdick
jason.burdick@colorado.edu

Citation

Muir, V.G., Prendergast, M.E., Burdick, J.A. Fragmenting Bulk Hydrogels and Processing into Granular Hydrogels for Biomedical Applications. *J. Vis. Exp.* (183), e63867, doi:10.3791/63867 (2022).

Date Published

May 17, 2022

DOI

10.3791/63867

URL

jove.com/video/63867

Materials

Name	Company	Catalog Number	Comments
15 mL Plastic Conical Centrifuge Tube	Corning	430766	
30 G NT Premium Series Dispensing Tip	Jensen Global	JG30-0.5HPX	Catalog Number listed here is for 30 G, 0.5" needle. Various sizes are available.
BD Disposable Syringes with Luer-Lok Tips (3 mL)	Fisher Scientific	14-823-435	Catalog Number listed here is for 3 mL syringe. Various sizes are available (14-823-XXX).
Black folders	Various Vendors		
Disposable Probe Needle For Use With Syringes and Dispensing Machines (18 G, 0.5")	Grainger	5FVH5	Catalog Number listed here is for 18 G, 0.5" needle. Various sizes are available.
Disposable Probe Needle For Use With Syringes and Dispensing Machines (23 G, 0.5")	Grainger	5FVJ3	
Disposable Probe Needle For Use With Syringes and Dispensing Machines (27 G, 1.5")	Grainger	5FVL0	
Dulbecco's Phosphate Buffered Saline	Fisher Scientific	14190-250	Catalog Number listed here is for a case of 10 x 500 mL bottles.
Durapore Membrane Filter, 0.22 µm	Millipore	GVWP04700	
Epifluorescent or confocal microscope	Various Vendors		To visualize microgels and granular hydrogels
Eppendorf Snap-Cap Microcentrifuge Safe-Lock Tubes	Fisher Scientific	05-402-25	
Extrusion printer	Custom-built		Other extrusion printers can be use,d such as commercially available BIOX.
Filter Adapters	Fisher Scientific	05-888-107	Catalog Number listed here is for a set of multiple sizes. Various sizes are available (05-888-XXX).
Filter Flask	Various Vendors		

Fluorescein isothiocyanate-dextran (2 MDa)	Sigma-Aldrich	52471	
Glass microscope slide	Various Vendors		
ImageJ	National Institutes of Health		"Analyze Particles" information link: https://imagej.nih.gov/ij/docs/menus/analyze.html
Laptop	Various Vendors		
Luer-Lock Tip Caps	Integrated Dispensing Solutions	9991329	
Metal spatula for scooping	Various Vendors		
Microcentrifuge	Various Vendors		Capable of speed up to 18,000 x g
Microsoft Excel	Microsoft		Other programs can be used, such as Google Slides.
OmniCure S2000 Spot UV Curing System	Excelitas Technologies	S2000	Different light systems may be used to fabricate bulk hydrogels if desired.
Porcelain Buchner Funnel with Fixed Perforated Plate	Fisher Scientific	FB966C	Catalog Number listed here is for 56mm diameter plate. Various sizes are available.
Radiometer	Various Vendors		
Repetier Host	Hot-World GmbH & Co. KG		3D printing software
Screw-based extrusion printer	Various Vendors		This study used a custom-modified 3D FDM printer (Velleman K8200). Many alternatives are available.
Solidworks/CAD software	Dassault Systèmes SolidWorks Corporation		Other programs can be used, such as Blender or TinkerCAD.
Tubing to Connect Filter Flask to Vacuum Line	Various Vendors		
UV Eye Protection (i.e., safety glasses)	Various Vendors		