

Materials List for

Evaluating Regional Pulmonary Deposition using Patient-Specific 3D Printed Lung Models

Emma L. Peterman¹, Emily L. Kolewe¹, Catherine A. Fromen¹

¹Department of Chemical and Biomolecular Engineering, University of Delaware

Corresponding Author

Catherine A. Fromen
cfromen@udel.edu

Citation

Peterman, E.L., Kolewe, E.L., Fromen, C.A. Evaluating Regional Pulmonary Deposition using Patient-Specific 3D Printed Lung Models. *J. Vis. Exp.* (), e61706, doi:10.3791/61706 (2020).

Date Published

November 11, 2020

DOI

10.3791/61706

URL

jove.com/video/61706

Materials

Name	Company	Catalog Number	Comments
1/4" Plastic Barbed Tube Fitting	McMaster Carr	5372K111	
10 um Filter Paper	Fisher	1093-110	
1um Fluorescent Polystyrene Particles	Polysciences	15702-10	
1um Non-Fluorescent Polystyrene Particles	Polysciences	8226	
2-Propanol	Fisher	A516-4	Referred to in protocol as "IPA"
3/8" Plastic Barbed Tube Fitting	McMaster Carr	5372K117	
Air Flow Meter (1 - 280 mL/min)	McMaster Carr	41695K32	Referred to in protocol as "flow meter"
Carbon M1 3D Printer	Carbon 3D		https://www.carbon3d.com/ , Associated software referred to in protocol as "slicing software"
Collison Jet Nebulizer	CH Technologies	ARGCNB0008 (CN-25)	6 Jet MRE style horizontal collision with glass jar, Referred to in protocol as "nebulizer", http://chtechusa.com/Manuals/MRE_Collison_Manual.pdf
Convection Oven	Yamato	DKN602	
Copley Critical Flow Controller TPK2000 Reve 120V	MSP Corp	0001-01-9810	Referred to in protocol as "flow controller"
Copley High Capacity Pump Model HCP5	MSP Corp	0001-01-9982	Referred to in protocol as "vacuum pump"
Cytation	BioTek	CYT5MPV	Multifunctional Spectrophotometer/ Fluorescent imager equipped with 4x/20x/40x objectives and DAPI/ GFP/TexasRed laser/filter cubes
EPU40 Resin	Carbon 3D		https://www.carbon3d.com/materials/epu-elastomeric-polyurethane/ , Referred to in protocol as "soft resin"
Filter for vacuum pump	Whatman	6722-5000	
Flow Meter Model DFM 2000	MSP Corp	0001-01-8764	Referred to in protocol as "electronic flow meter"

ImageJ Software	ImageJ		https://imagej.nih.gov/ij/download.html
Inline Air Flow Control Valve (Push-to-Connect)	McMaster Carr	62005K333	Referred to in protocol as "valve"
Inline Filter Devices	Whatman	WHA67225000	
Marine-Grade Plywood Sheet	McMaster Carr	62005K333	Referred to in protocol as "wooden board"
Materialise Mimics Software	Materialise		https://www.materialise.com/en/medical/mimics-innovation-suite , Referred to in protocol as "CT scan software"
Meshmixer Software	Autodesk		http://www.meshmixer.com/ , Referred to in protocol as "mesh editing software"
Methanol	Fisher	A454-4	
Opticure LED Cube	APM Technica	102843	Referred to in protocol as "UV oven"
PR25 Resin	Carbon 3D		https://www.carbon3d.com/materials/uma-urethanemethacrylate/ , Referred to in protocol as "hard resin"
PVC Tube for Chemicals	McMaster Carr	5231K161	1/4" ID
Screws			
SolidWorks Software	Dassault Systèmes SolidWorks Corporation		https://www.solidworks.com/ , Referred to in protocol as "3D modeling software"
Straight Flow Rectangular Manifold	McMaster Carr	1125T31	
Tubing to Flow Controller	McMaster Carr	5233K65	3/8" ID
Wire			