

Materials List for:

Reconfigurable Microfluidic Channel with Pin-discretized Sidewalls

Nobuyuki Futai¹, Kenji Fujita¹, Wataru Ikuta¹

¹Department of Mechanical Engineering, Shibaura Institute of Technology

Correspondence to: Nobuyuki Futai at futai@shibaura-it.ac.jp

URL: <https://www.jove.com/video/57230>

DOI: [doi:10.3791/57230](https://doi.org/10.3791/57230)

Materials

Name	Company	Catalog Number	Comments
Oven	Yonezawa	MI-100	
10% Nitric Acid	Wako Chemicals	149-06845	
Stainless steel pins	Micro Giken	N/A	0.3 mm crosssection, Grade 316L stainless steel, wire-cut EDM
Mold release agent	Fluoro Technology	FG-5093SH	
Polydimethylsiloxane (PDMS)	Shin-Etsu Chemicals	KE-106	
Negative epoxy photoresist	Nippon Kayaku	SU-8 3050	
Coverglasses (Rectangular)	Matsunami Glass	26 x 60mm No.4	
Acetone	Kanto Chemicals	01060-79	
Glass slides (Large)	Matsunami Glass	76 x 52mm No.1	
Silicone adhesive	Shin-Etsu Chemicals	KE-41	
White petrolatum	Nikko Rica	Sun White P-1	
Polytetrafluoroethylene (PTFE) powder	Power House Accele	Microflon II	
Clear acrylic plate (3 mm-thick)	Various	N/A	
Pneumatic dispenser	Musashi Engineering	ML-5000XII	
Hydrochloric acid	Kanto Chemicals	180768-00	
Computer numerical control (CNC) mill	Pro Spec Tools	PSF240-CNC	
End mill (4 mm diameter)	Mitsubishi Materials	MS2MSD0400	
End mill (1 mm diameter)	Mitsubishi Materials	MS2MSD0100	
Adhesive (chemical-resistant and low viscosity)	Cotronics	Duralco 4460	
Borisilicate glass vials	Various		To prepare HNO ₃ +HCl solution (Aqua regia). Always select borosilicate glass.
Sodium bicarbonate	Kanto Chemicals	37116-00	
Ultrasonic cleaner	AS ONE	AS12GTU	
Ultrasonic drill	Shinoda Tools	SOM-121	Used as a ultrasonic homogenizer.
Spin coater	Active	ACT-220DII	
Hotplate	AS ONE	ND-1	
Photoplotted film (12,700 dpi)	Unno Giken	N/A	Negative image of the recess at the bottom of a PDMS slab are plotted.
2-methoxy-1-methylethyl acetate	Wako Chemicals	130-10505	
UV spot light source	Hamamatsu	L8327	Ultraviolet source
Nitrogen	Various	N/A	
Vacuum desiccator and pump	AS ONE	MVD-100, GM-20S	

Scalpels	Various	No.11	
Biopsy punches (1.0mm and 2.0mm)	Kai Medical	BP-10F(1.0m), BP-20F(2.0mm)	
Glass engraving pen	Various	N/A	
Cleaning solution	Tama Chemicals	TMSC	Dilute 1:100 with deionized water
Sputter coater	San-yu Electron	SC-708	For plasma bonding.
Dispenser syringe (5 ml)	Musashi Engineering	PSY-5E	
Plunger	Musashi Engineering	FLP-5E	
Blunt needle (21G)	Musashi Engineering	PN-21G-B	
Adapter tube	Musashi Engineering	AT-5E	
Fermenter	Japan Kneader	PF100	
Green fluorescent dye (Alexa Fluor 488 carboxylic acid)	Thermo Fisher	A33077	
Large plastic dish	Greiner bio-one	688161	
Absorbent paper	Asahi Kasei	BEMCOT M-1	
Inverted microscope	Leica	DMi8	
Microscope camera	Qimaging	Retiga 2000R	
Dulbecco modified Eagle medium (DMEM)	GE Health Care	SH30021.01	
Antibiotic-antimycotic solution	Thermo Fisher	15240-062	
Trypsin/EDTA solution	Thermo Fisher	25200-056	
Phosphate buffered saline (PBS)	GE Health Care	SH30256.01	
Fetal bovine serum (FBS)	Biowest	S1820	
Cell counter	FPI	OC-C-S02	
Cell culture vessel	VIOLAMO	VTC-D100	
15 ml conical tube	Corning	352095	
Shop microscope	PEAK	2034-20	
Hand sprayer	FURUPLA	No.3530	
Coverglasses (Rectangular)	Matsunami Glass	10 x 20mm No.4	
CAD/CAM software	Autodesk	Inventor HSM	
Nitrogen gas pressure regulator	AS ONE	GF1-2506-RN-V	Set to 0.1 MPa