

Materials List for:

Scalable Stamp Printing and Fabrication of Hemiwicking Surfaces

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Materials

Name	Company	Catalog Number	Comments
NI-DAQ 9403	National Instruments	370466AE-01	The communication interface between the camera and the control switch for the laser.
Control Switch	Crouzet	GN84134750	A controller to use for the laser that activates the laser based on the voltage sent by the DAQ.
Flea Camera	FLIR	FL3-U3-120S3C-C	A flea camera used for imaging the drill bit on the plastic mold.
Flea Imaging Camera	Point Grey	FL3-U3-20E4M-C	A flea camera used for obtaining the side images of the pillars.
200 Steps/rev, 12V-350mA Stepper Motor (x2)	AdaFruit	324	The stepper motors are used to control the depth and angle of the end mill.
10x Infinity Corrected Long Working Distance Objective	Mitutoyo	#46-144	The objective used to get the image of the side of the pillars.
15x Infinite Conjugate, UV Coated, ReflX Objective	TechSpec	#58-417	The objective used to get the image of the top of the pillars.
72002 0.002D X 0.006 LOC Carbide SQ 2FL Miniature End Mill	Harvey Tools	72002	The drill bit that was used to create holes in the plastic mold.
DC Power Delivery at 1 kW	Advanced Energy	MDX-1K	Used to power the deposition sputterer.
Turbo-V 70LP Nacro Torr Pump	Varian	9699336	Turbo Pump used to reduce pressure inside deposition chamber.
2000mw, 405nm High-Power Blue Light Focus Laser	WDLasers	KREE	Sample Heating Laser
5.875" I.D. Dessicator w/ 0.25" Tube Connections	McMaster-Carr	2204K5	PDMS Dessicator
SYLGARD 184 Silicone Elastomer, 0.5kg Kit	Dow-Corning	4019862	The PDMS Kit used to make the base.
Diaphragm Air Compressor / Vacuum Pump	Gast	DOL-701-AA	Dessicator Vacuum Pump
Motorized Linear Stages (2x)	Standa	8MT175	The stepper motors used to control the sample plate in the x- and y-direction.
2" Diameter Unmounted Poistive Achromatic Doublets, AR Coated: 400-700 nm	ThorLabs	AC508-150-A	The achromat was ued in order to obtain the images of the side of the pillars.
Flea 3 Mono Camera, 2448 X 2048 Pixels	Point Grey	FL3-GE-50S5M-C	A flea camera used for imiaging the top of the pillars.
Digital Vacuum Transducer	Thyrcont Vacuum Instruments	4940-CF-212734	Used for monitoring pressure inside deposition chamber.
Pressurized Argon Tank Resovoir	Airgas	AR RP300	Gas used in deposition process.

1-D Translation Stage	Newport Corporation	TSX-1D	A translation stage used to move the camera to focus on the end mill.
Cylindrical Laser Mount (x2)	Newport Corporation	ULM-TILT-M	The laser mount was used to move the camera to focus on the end mill.
Benchtop Chiller with Centrifugal Pump, 120V, 60Hz	Polyscience	LS51MX1A110C	A chiller used for the deposition assembly.
Alcatel Adixen 2010SD XP, Explosion Proof Motor, Rotary Vane Vacuum Pump, 1-Phase	Ideal Vacuum Products	210SDMLAM-XP	A vacuum pump used for the deposition assembly.
Fan, 105 CFM, 115 V (x2)	Comair Rotron	MU2A1	A fan used for cooling certain aspects of the deposition assembly.