

Materials List for:

Fabrication, Operation and Flow Visualization in Surface-acoustic-wave-driven Acoustic-counterflow Microfluidics

Marco Travaglini^{1,2}, Richie Shilton¹, Fabio Beltram², Marco Cecchini²

¹NEST Center for Nanotechnology Innovation, Istituto Italiano di Tecnologia

²NEST, Scuola Normale Superiore and Istituto Nanoscienze-CNR

Correspondence to: Marco Cecchini at marco.cecchini@nano.cnr.it

URL: <https://www.jove.com/video/50524>

DOI: [doi:10.3791/50524](https://doi.org/10.3791/50524)

Materials

Name	Company	Catalog Number	Comments
Double side polished 128° YX lithium niobate wafer	Crystal Technology, LLC		
Silicon wafer	Siebert Wafers		We use <100>
IDT Optical lithography mask with alignment marks (positive)	Any vendor		
Channel Optical lithography mask (negative)	Any vendor		
Positive photoresist	Shipley	S1818	
Positive photoresist developer	Microposit	MF319	
Negative tone photoresist	Allresist	AR-N-4340	
Negative tone photoresist developer	Allresist	AR 300-475	
SU8 thick negative tone photoresist	Microchem	SU-8 2000 Series	
SU8 thick negative tone photoresist developer	Microchem	SU-8 developer	
Hexadecane	Sigma-Aldrich	H6703	
Carbon tetrachloride (CCl ₄)	Sigma-Aldrich	107344	
Octadecyltrichlorosilane (OTS)	Sigma-Aldrich	104817	
Acetone CMOS grade	Sigma-Aldrich	40289	
2-propanol CMOS grade	Sigma-Aldrich	40301	
Titanium	Any vendor	99.9% purity	
Gold	Any vendor	99.9% purity	
PDMS	Dow Corning	Sylgard 184 silicone elastomer kit with curing agent	
Petri dish	Any vendor		
5 mm ID Harris Uni-Core multi-purpose coring tool	Sigma-Aldrich	Z708895	Any diameter greater than 2 mm is suitable
Acoustic absorber	Photonic Cleaning Technologies	First Contact regular kit	
RF-PCB	Any vendor		
Spinner	Laurell technologies corporation	WS-400-6NPP	Any spinner can be used
UV Mask aligner	Karl Suss	MJB 4	Any aligner can be used
Thermal evaporator	Kurt J. Lesker	Nano 38	Any thermal, e-beam evaporator or sputtering system can be used
Oxygen plasma asher	Gambetti Kenologia Srl	Colibri	Any plasma asher or RIE machine can be used

Centrifuge	Eppendorf	5810 R	Any centrifuge can be used
Wire bonder	Kulicke Soffa	4523AD	Any wire bonder can be used if the PCB is used without pogo connectors
Contact Angle Meter	KSV	CAM 101	Any contact angle meter can be used
Spectrum analyzer	Anristu	56100A	Any spectrum or network analyzer can be used
RF signal generator	Anristu	MG3694A	Any RF signal generator can be used
RF high power amplifier	Mini Circuits	ZHL-5W-1	Any RF high power amplifier can be used
Microbeads suspension	Sigma-Aldrich	L3280	Depending on the experimental purpose different suspension of different diameter and different material properties can be used
Optical microscope	Nikon	Ti-Eclipse	Any optical microscope with spatial resolution satisfying experimental purposes can be used
Video camera	Basler	A602-f	Any video camera that has enough frame rate and sensitivity satisfying experimental purposes can be used
Camera acquisition software	Advanced technologies	Motion Box	Any software enabling high and controlled frame rate acquisition can be used