

Materials List for:

Characterization of Anisotropic Leaky Mode Modulators for Holographic Video

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URL: <https://www.jove.com/video/53889>

DOI: [doi:10.3791/53889](https://doi.org/10.3791/53889)

Materials

Name	Company	Catalog Number	Comments
X-Cut Lithium Niobate	Gooch and Housego	99-00630-01	Lithium Niobate 3" Diameter X-CUT Wafer 1 mm Polish/Polish
Positive Photo Resist 1	EMD Performance Materials	AZ 3330 F Photoresist	Used in the creation of the proton exchange mask
Photoresist Developer	EMD Performance Materials	AZ MIF 300	Develops AZ3330 and LOR 3A
Aluminium	International Advanced Materials	AL13	99.999% pure
Aluminium Etch	Transene	Type A Aluminum Etchant	
Benzoic Acid	Sigma Aldrich	109479-500G	99% pure
Acetone	Fisher Chemical	UN1009	
IPA	Fisher Chemical	UN1219	99.5% pure isopropyl alcohol
Acidic Piranha etch	Cyantek Corporation	NanoStrip	
Under Layer Resist	Micro Chem	LOR 3A	Bottom layer used for liftoff
Positive Photo Resist	Micro Chem	950 PMMA A9	Top layer used for liftoff
Anisole	Micro Chem	A Thinner	
Conductive polymer aqueous solution	Mitsubishi Rayon Company	AquaSAVE	
MIBK (4-methyl-2-pentanone)	Sigma Aldrich	360511	Develops PMMA
NMP (1-methyl-2-pyrrolidone)	Sigma Aldrich	328634	Used for liftoff
E-beam Evaporator	Denton Vacuum	Integrity 20	Any equivalent equipment would suffice.
Thin Film Spinner	Laurell Technologies Corporation	WS-400A-6NPP-LITE	Any equivalent equipment would suffice.
Mask Aligner	Karl Suss America Inc.	MA 150 CC	Any equivalent equipment would suffice.
Automatic Dicing Saw	Disco Corporation	Disco Dad 320	Any equivalent equipment would suffice.
Muffle Furnace	Thermo Scientific	FB1415M	Any equivalent equipment would suffice.
Electron Microscope	FEI	XL30 ESEM	Any equivalent equipment would suffice.
Dehydration Oven	Lab-Line Instruments	Ultra-Clean 100 (3497M-3)	Any equivalent equipment would suffice.
Hot Plate	Thermo Scientific	SP131325	Any equivalent equipment would suffice.
Polisher	Ultra Tec Mfg., Inc.	Ultrapol End & Edge Polisher	Any equivalent equipment would suffice.
Class IIIb 12 V RGB Lasers: Wavelengths (nm): 638, 532, and 445			Bought second-hand. Probably pulled from a laser projector. Any equivalent equipment would suffice.

Signal Generator	Agilent	8648D	Now found at Keysight. Obsolete. Any equivalent equipment would suffice. Needed Frequency sweep 9 kHz-1,000 MHz.
Signal Amplifier	Mini-Circuits	TB-17	Necessary only to overcome the limitations of the signal generator.
Power Meter Controller	ThorLabs	PM100D	With power meter model S130C. Any equivalent equipment would suffice. Needed sensitivity 500 pW.
Linear Actuator Controller	Newport	ESP7000	With linear actuator model MFN25PP. Any equivalent equipment would suffice. Needs 0.1 mm accuracy.
AutomatedDeviceCharacterization.v	LabView	Experimental Control Software by BYU	Found in the appendix
CompareWDMmodes.m	MATLab	Analytical Software by BYU	Found in the appendix