

Materials List for:

# A Guide to Structured Illumination TIRF Microscopy at High Speed with Multiple Colors

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## Materials

Name	Company	Catalog Number	Comments
488 nm laser	Toptica	iBeam SMART	with digital modulation
561 nm laser	Coherent	OBIS LS	with digital modulation
640 nm laser	Cobolt	MLD	with digital modulation
Long-pass dichroic mirrors	Thorlabs		for combining excitation beams
Quad band dichroic mirror	Chroma	ZT405/488/561/640rpc	3 mm thick, TIRF imaging flat, mounted in Olympus BX filter cube
Quad band dichroic mirror	Chroma	ZT405/488/561/640rpc	From same batch as above, 25 x 25 mm
1" square kinematic mount	Edmund Optics	58-860	
Glan-Taylor calcite polarizers	Thorlabs	GT5-A	For alignment of LCVR
Glan-Taylor mount	Thorlabs	SM05PM5	
Achromatic half wave plate	Thorlabs	AHWP05M-600	400-800 nm
Rotation cage mount	Thorlabs	CRM1/M	For HWP
Liquid Crystal Variable Retarder	Meadowlark Optics	SWIFT	Custom built to provide full wave retardance over the range 488 to 640 nm.
LCVR controller	Meadowlark Optics	D3060HV	Two channel high voltage controller for liquid crystal retarders
Achromatic quarter wave plate	Meadowlark Optics	AQM-100-0545	
Rotation cage mount	Thorlabs	CRM1P/M	For QWP
10 mm achromatic doublet	Thorlabs	AC080-010-A-ML	For beam expander
200 mm achromatic doublet	Thorlabs	AC254-200-A-ML	For beam expander
Cage XY Translators	Thorlabs	CXY1	
Ferroelectric spatial light modulator	Forth Dimension Displays	M0787-00249	SXGA-3DM (IFF) Microdisplay Type M249, 1,280 x 1,024 pixels, with driver board
SLM mounting frame	Forth Dimension Displays	M0787-10014	Fixed to custom built aluminium mount
Ø50.8 mm Gimbal Mirror Mount	Thorlabs	GM200/M	For SLM mounting
Two-Axis Linear Translation Stage with Rotating Platform	Thorlabs	XYR1/M	For SLM mounting
Rail carrier	Newport	M-PRC-3	For SLM mounting
Precision Optical Rail	Newport	PRL-6	For SLM mounting
300 mm achromatic doublet lens	Qioptiq	G322 273 322	f = 300 mm, 31.5 mm diameter
140 mm achromatic doublet lens	Qioptiq	G322 239 322	f = 140 mm, 31.5 mm diameter
Precision XY Translation Mounts	Thorlabs	LM2XY	

Lens Mounting Adapters	Thorlabs	SM2AD32	For mounting 31.5 mm lenses in 2" mounts
Translation stages	Comar	12XT65	Dovetail, side drive
XY Translator with Differential Drives	Thorlabs	ST1XY-D/M	for spatial filter
Rotation cage mount	Thorlabs	CRM1/M	for spatial filter
300 mm achromatic doublet	Thorlabs	AC508-300-A-ML	Excitation tube lens
Automated XY stage with Z-piezo top plate	ASI	PZ-2150-XYFT-PZ-IX71	with MS-2000 controller
Inverted microscope frame	Olympus	IX-71	
Objective lens	Olympus	UAPON100XOTIRF	100X/1.49NA
High speed filter wheel	Prior Scientific	HF110A	with Prior ProScan III controller
Bandpass emission filters	Semrock	FF01-525/30, FF01-676/29	
sCMOS camera	Hamamatsu	ORCA Flash v4.0	
Stage top incubator	OKO Lab	H301-K-FRAME	For live cell imaging, with Bold Line temperature and CO <sub>2</sub> controllers
Stainless steel optical posts	Thorlabs	TR series	for mounting optical components
Post holders	Thorlabs	PH series	for mounting optical components
Kinematic mirror mounts	Thorlabs	KM100	for mounting 1" mirrors
Shearing interferometer	Thorlabs	SI100	
100 nm fluorescent microspheres	Life Technologies	T-7279	Tetraspeck
Rhodamine 6G	Sigma Aldrich	83697-250MG	
8 well glass bottom dishes	ibidi	80827	with #1.5 coverglass
Nunc Lab-Tek II Chambered Coverglass	Thermo Fisher Scientific	155409	with #1.5 coverglass
0.01 mm microscope reticle slide	EMS	68039-22	
CellLight Tubulin-GFP, BacMam 2.0	Thermo Fisher Scientific	C10613	