

Materials List for:

A Protocol for Real-time 3D Single Particle Tracking

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Materials

Name	Company	Catalog Number	Comments
2D Electro-optic Deflector	ConOptics	M310A	2 required
Power supply for EOD	ConOptics	412	Converts FPGA output to high voltage for EOD
TAG Lens	TAG Optics	TAG 2.0	Used to deflect laser along axial direction
XY piezoelectric nanopositioner	MadCity Labs	Nano-PDQ275HS	Used for moving the sample to lock the particle in the objective focal volume in
Z piezoelectric nanopositioner	MadCity Labs	Nano-OP65HS	Used to move the objective lens to follow the diffusing particle
Micropositioner	MadCity Labs	MicroDrive	Used to coarsely position sample and evaluate
Objective Lens	Zeiss	PlanApo	High numerical aperture required for best sensitivity. 100X, 1.49 NA, M27, Zeiss
sCMOS camera	PCO	pco.edge 4.2	Used to monitor the particle's position
APD	Excelitas	SPCM-ARQH-15	Lower dark counts beneficial
Field programmable gate array	National Instruments	NI-7852r	
Software	National Instruments	LabVIEW	
Tracking excitation laser	JDSU	FCD488-30	
Lens	ThorLabs	AC254-150-A-ML	L1
Lens	ThorLabs	AC254-200-A-ML	L2
Pinhole	ThorLabs	P75S	PH
Glan-Thompson Polarizer	ThorLabs	GTH5-A	GT
Half-wave plate	ThorLabs	WPH05M-488	WP
Lens	ThorLabs	AC254-75-A-ML	L3
Lens	ThorLabs	AC254-250-A-ML	L4
Lens	ThorLabs	AC254-200-A-ML	L5
Lens	ThorLabs	AC254-200-A-ML	L6
Dichroic Mirror	Chroma	ZT405/488/561/640rpc	DC
Fluorescence Emission Filter	Chroma	D535/40m	F
10/90 beamsplitter	Chroma	21012	BS
PBS	Sigma	D8537	
190 nm fluorescent nanoparticles	Bangs laboratories	FC02F/9942	
110 nm fluorescent nanoparticles	Bangs laboratories	FC02F/10617	
Coverslip	Fisher Scientific	12-545A	
Powermeter	Thorlabs	PM100D	

CMOS	Thorlabs	DCC1545M	
Iris	Thorlabs	SM1D12D	
Microscope	Mad City Labs	RM21	