

Materials List for:

# Measurement of Tension Release During Laser Induced Axon Lesion to Evaluate Axonal Adhesion to the Substrate at Piconewton and Millisecond Resolution

Massimo Vassalli<sup>1</sup>, Michele Basso<sup>2</sup>, Francesco Difato<sup>3</sup>

<sup>1</sup>Institute of Biophysics, National Research Council of Italy

<sup>2</sup>Dipartimento di Sistemi e Informatica, Università di Firenze

<sup>3</sup>Department of Neuroscience and Brain Technologies, Istituto Italiano di Tecnologia

Correspondence to: Francesco Difato at [Francesco.Difato@iit.it](mailto:Francesco.Difato@iit.it)

URL: <https://www.jove.com/video/50477>

DOI: [doi:10.3791/50477](https://doi.org/10.3791/50477)

## Materials

Name	Company	Catalog Number	Comments
<b>REAGENTS</b>			
Polymer microspheres, 4 μm, COOH coated	Bangs laboratories	PC05N/6700	
PolyLink Protein Coupling Kit	Polyscience	19539	
<b>EQUIPMENT</b>			
IR laser	IPG Laser GmbH	YLM-5-SC-LP	ytterbium continuous wave (CW) fiber laser operating at 1064 nm, with linear polarization
Spatial light modulator	Hamamatsu	LCOS-SLM 10468-07	
Blue-tweezers software	Optics group, University of Glasgow	Free downloadable software	<a href="http://www.physics.gla.ac.uk/Optics/projects/tweezers/slmcontrol/">http://www.physics.gla.ac.uk/Optics/projects/tweezers/slmcontrol/</a>
ImageJ	Hamamatsu	Free downloadable software	<a href="http://rsbweb.nih.gov/ij/">http://rsbweb.nih.gov/ij/</a>
QPD	Thorlabs	S5980 with C5460SPL 6041 board	Four quadrant photo-diode to measure x, y trapped probe displacement
PD	Teem Photonics	PDA100A-EC	Photodiode to measure z trapped probe displacement
nano-Pulse UV laser	AA-optoelectronics	PNV-001525-040	Pulsed UVA laser, pulse length 400 ps
Acoustic Optic Modulator	Olympus	MQ110-A3-UV, 355nm fused silica	
Upright microscope	Andor	BX51	Equipped with a 60, 0.9 NA, water dipping objective
CCD	Warner Instruments	V887ECSUVB EMCCD	
Peltier device	Physic Instruments	QE1 resistive heating with TC-344B dual channel heater controller	
Microscope stage: micro+piezo stage	National Instruments	Three linear stages M-126.CG1 carrying a separate 3-axis piezoelectric nano-positioning stage P-733.3DD	
Daq		NI PCI-6229	Acquiring the x, y, z position of the trapped probe, and sending feedback loop signals to microscope stage
Linux Real Time Application Interface (RTAI) machine			Real time feedback loop system, to control stage position, developed on a dedicated PC desktop