jove

Materials List for

An Intra-Tissue Radiometry Microprobe for Measuring Radiance *In Situ* in Living Tissue

Amanda L. Holt[1,3], **Yakir Luc Gagnon**[2,4], **Alison M. Sweeney**[1,3]

[1]Department of Physics, Yale University [2]Lund Vision Group, Department of Biology, Lund University [3]Department of Physics and Astronomy, University of Pennsylvania [4]Department of Biology, Duke University

Corresponding Author

Alison M. Sweeney
alison.sweeney@yale.edu

Citation

Holt, A.L., Gagnon, Y.L., Sweeney, A.M. An Intra-Tissue Radiometry Microprobe for Measuring Radiance *In Situ* in Living Tissue. *J. Vis. Exp.* (196), e64595, doi:10.3791/64595 (2023).

Date Published

June 2, 2023

DOI

10.3791/64595

URL

jove.com/video/64595

Materials

Name	Company	Catalog Number	Comments
1" travel ball bearing center +D11+A2:D31+A2:A2:D31	Edmond Optics	37-935	Part 2 of manipulator for lowering sample
1/4" thick acrylic sheet	McMaster-Carr	8505K754	For making Petri dish holder
3/4" mini spring clamp	Anvil	99693	Use as weight for pulling optical fiber
8 mm biopsy punch	Fisher Scientific	NC9324386	For tissue sample
Butane Torch	McMaster-Carr	MT-51	Heat source for pulling fiber and pipette
Collimating lens	Thorlabs	LLG5A1-A	To collimate light source through liquid light guide
Compressed air	McMaster-Carr	7437K35	For drying pulled fiber and pipette
Cyanoacrylate glue - liquid	McMaster-Carr	66635A31	For securing tapered fiber end at top of pulled pipette
Electrical tape	McMaster-Carr	76455A21	For securing fiber in pipette and for adding grip to clamps
Fine grade carborundum paper	McMaster-Carr	4649A24	Small triangle on exacto knife holder works well
Gelatin	Knox	10043000048679	For securing the tissue biopsy in the petri dish
Glass Pasteur Pipete	Fisher Scientific	13-678-20B	Disposable glass pipette 5.75" in length
Insulin syringes, 31G needle	BD	320440	For applying glue
Isopropanol	McMaster-Carr	54845T42	For cleaning pulled fiber and pipette
Kimwipe	Cole-Parmer	SKU 33670-04	For wiping optical fiber and glass pipette clean
LED driver	Thorlabs	LEDD1B	For powering the UV LEDs
Light source for measurements	Cole-Parmer	UX-78905-05	Low heat white light source for measurements
Linear metric X-Y-Z axis rack and pinion stage	Edmond Optics	55-023	Part 1 of manipulator for lowering sample
Liquid light guide	Thorlabs	LLG5-4T	For light source in measurements

Magnetic feet	Siskiyou	MGB 8-32	For use with magnetic strips
Magnetic strips	Siskiyou	MS-6.0	For mounting magnetically to breadboard
Manipulator #1	Siskiyou	MX10R	4-axis manipulator with pipette holder
Opaquer pen, small	WindowTint	TOP01	For opaquing side of optical fiber to prevent stray light from enter probe
Optical breadboard	Edmond Optics	03-640	For stable affixation of probe holder, sample, microscope and light source
Optical fibers	Ocean Optics	P-100-2-UV-VIS	About 4 fibers are good to have
Plasma light source	Thorlabs	HPLS345	For tissue radiometry measurements
Plastic plier clamp	McMaster-Carr	5070A11	Plier clamp used for weight in pulling pipette
Polystyrene Petri dishes	Thomas scientific	3488N10	Sample holders, enough volume to hold sample thickness plus ~10 mm of gelatin on top
Razor blades	McMaster-Carr	3962A3	For stripping jacketing from optical fiber
Silicone oil lubricant	Thomas scientific	1232E30	For reducing friction between probe and tissue
Software for analyzing data	Matlab		Chosen software for data analysis
Spectrometer + spectrometer software	Avantes	AvaSpec-2048L	Spectrometer can be any brand, this one is compatible with sma-terminated optical fibers and comes with its own software for running the spectrometer
Titanium dioxide powder	Sigma Aldrich	718467-100G	For making scattering sphere
Toolour tabletop clip	Toolour	Toolour0004	For holding pipette while pulling and for holding finished probes
Trigger-action bar clamps	mcMaster-Carr	51755A2	Good for holding optical fibers while pulling or curing
UV curable adhesive	Delo Photobond	GB368	For making scattering sphere
UV light source	Thorlabs	M365FP1	Light source for curing adhesive in scattering ball, this one is sma-fiber compatible, higher intensity = less cure time
White LED light source	Thorlabs	MCWHF2	For characterizing pulled fiber and scattering sphere