

Tools for Surface Treatment of Silicon Planar Intracortical Microelectrodes

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Materials

Name	Company	Catalog Number	Comments
1-[3-(Dimethylamino)propyl]-3-ethylcarbodiimide methiodide (EDC)	Sigma-Aldrich	165344-1G	Solid, stored desiccated at -20 °C
15 mL Conical Centrifuge Tubes	Fisher Scientific	14-959-70C	
18 Pound Solid Nylon Cable/Zip Ties	Cole-Parmer	EW-06830-66	Length 4 inches
2-(N-Morpholino)ethanesulfonic acid (MES)	Sigma-Aldrich	4432-31-9	Solid
3-aminopropyltriethoxysilane (APTES)	Sigma-Aldrich	440140-100ML	Liquid, container with Sure/Seal
50 mL Conical Centrifuge Tubes	Fisher Scientific	14-959-49A	
Aluminum foil	Fisher Scientific	01-213-103	
Aluminum weighing dishes	Fisher Scientific	08-732-102	Diameter 66 mm
Bel-Art Vacuum Desiccator	Fisher Scientific	08-594-15B	
Corning Costar TC-Treated Multiple Well Plates	Millipore Sigma	CLS3527-100EA	24-well plate, polystyrene
Cyanoacrylate Adhesive	Loctite	N/A	
Digital Microscope	Keyence	VHX-S750E	
Disco DAD3350 Dicing Saw	Disco	DAD3350	Used to cut silicon wafer into 1 cm x 1 cm samples
Double-Sided Polyimide Tape	Kapton Tape	PPTDE-1/4	1/4" x 36 yds.
EP21LVMed – low viscosity, two component epoxy compound	Masterbond	EP21LVMed	Meets USP Class VI certification, Passes ISO 10993-5 for cytotoxicity
Epilog Fusion Pro 48 Laser Machine	Epilog	N/A	CO ₂ laser
Foam tape	XFasten	N/A	1/8" Thick
Gamry Interface 1010E Potentiostat	Gamry	992-00129	
High precision 45° curved tapered very fine point tweezers/forceps	Fisher Scientific	12-000-131	
Lab tape	Fisher Scientific	15-901-10L	

Mn(III)tetrakis (4-benzoic acid) porphyrin (MnTBAP)	EMD Millipore	475870-25MG	Solid, stored at -20 °C
N-Hydroxysulfosuccinimide sodium salt, ≥98% (HPLC)	Sigma-Aldrich	56485-250MG	Solid, stored desiccated at 4°C
Platinum clad niobium mesh anode	Technic	N/A	Clad with 125µ" of platinum on one side, framed in titanium with (1) 1" x 6" titanium strap centered on one 6" dimension
Silicon Planar Microelectrode Array, 16 Channel	NeuroNexus	A1x16-3mm-100-177-CM16LP	Electrode site material is iridium, shank thickness is 15 µm
Silicon Wafer	University Wafer	1575	Diameter 100 mm, p-type, boron-doped, 100 oriented, resistivity 0.01-0.02 Ohm-cm, thickness 525 µm, single side polished, prime grade
Silver/silver Chloride reference electrode	Gamry Instruments	930-00015	
Solidworks		N/A	
Stainless Steel Phillips Flat Head Screws	McMaster Carr	96877A629	#8-32, 1 1/2", fully threaded
Type I deionized water	ChemWorld	CW-DI1-20	
Ultimaker 3 3D printer	Ultimaker	N/A	
Ultimaker Cura	Ultimaker	N/A	3D printing software
Ultimaker NFC ABS Filament	Dynamism, Inc.	1621	2.85 mm
Ultimaker NFC PLA Filament	Dynamism, Inc.	1609	2.85 mm
Vacuum Gauge Vacuum Gauge	Measureman Direct	N/A	Glycerin Filled, 2-1/2" Dial Size, 1/4"NPT, -30" Hg/-100kpa-0
Wing nuts	Everbilt	934917	#8-32, zinc plated