Materials List for:

Fast Enzymatic Processing of Proteins for MS Detection with a Flow-through Microreactor

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Materials

Name	Company	Catalog Number	Comments
Ion trap ESI-MS	Thermo Electron	LTQ	The LTQ mass spectrometer is used for acquiring tandem MS data
XYZ stage	Newport	Multiple parts	The home-built XYZ stage is used to adapt the commercial LTQ nano-ESI source to receive input from various sample delivery systems
Stereo microscope	Edmund optics	G81-278	The microscope is used to observe the microreactor packing process
Analytical balance/Metler	VWR	46600-204	The balance is used to weigh the protein samples
Ultrasonic bath/Branson	VWR	33995-540	The sonic bath is used for mixing/ homogenizing the samples and dispersing the C18 particle slurry
Syringe pump 22	Harvard Apparatus	552222	The micropump is used for loading, rinsing and eluting the sample and the enzyme on and from the packed capillary microreactor
Milli-Q ultrapure water system	EMD Millipore	ZD5311595	The MilliQ water system is used to prepare purified DI water
Pipettor/Eppendorf (1,000 µl)	VWR	53513-410	The pipettor is used to measure small volumes of sample solutions
Pipettor/Eppendorf (100 µl)	VWR	53513-406	The pipettor is used to measure small volumes of sample solutions
Pipettor/Eppendorf (10 µl)	VWR	53513-402	The pipettor is used to measure small volumes of sample solutions
Fused silica capillary (100 µm ID x 360 µm OD)	Polymicro Technologies	TSP100375	This capillary is used for the fabrication of the microreactor
Fused silica capillary (20 µm ID x 100 µm OD)	Polymicro Technologies	TSP020090	This capillary is used for the fabrication of the ESI emitter
Fused silica capillary (50 µm ID x 360 µm OD)	Polymicro Technologies	TSP050375	This capillary is used to transfer the samples and the eluent from the syringe pump to the capillary microreactor
Glass capillary cleaver	Supelco	23740-U	This is a tool for cutting fused silica capillaries at the desired length
Glue	Eclectic Products	E6000 Craft	This glue is used for securing the ESI emitter into the capillary microreactor or the microfluidic chip
Epoxy glue	Epo-Tek	353NDT	This glue is used to seal the microfluidic inlet hole through which the C18 particles are loaded

Reversed phase C18 particles (5 µm)	Agilent Technologies	Zorbax 300SB-C18	These are C18 particles on which the proteins are adsorbed; the particles were extracted from a 4 mm x 20 cm C18 LC column from Agilent
Syringe/glass (250 µl)	Hamilton	81130-1725RN	The glass syringes are used to load the C18 particle slurry in the capillary microreactor and to deliver the sample and eluents to the microreactor
Internal reducing PEEK Union (1/16” to 1/32”)	Valco	ZRU1.5FPK	This union is used to connect the 250 µl syringe to the microreactor for loading the 5 µm particle slurry
Stainless steel union (1/16”)	Valco	ZU1XC	The stainless steel union is used to connect the glass syringe needle to the infusion capillary
Microvolume PEEK Tee connector (1/32”)	Valco	MT.5XCPK	The Peek tee is used to connect the sample transfer capillary to the capillary microreactor; on its side arm, it enables the insertion of the Pt wire
Tee connector (light weight)	Valco	C-NTXFPK	This Tee connector is used to apply ESI voltage to the microfluidic chip through the sample transfer line
Pt wire (0.404 mm)	VWR	66260-126	The Pt wire provides electrical connection for ESI generation and is connected to the mass spectrometer ESI power supply
PTFE tubing (1/16” OD)	Valco	TTF115-10FT	The Teflon tubing is used to enable an air-tight connection between the syringe needle and the stainless steel union
PEEK tubing (0.015” ID x 1/16” OD)	Upchurch Scientific	1565	The Peek tubing is used as a sleeve to enable an air-tight connection between the stainless steel union and the 50 µm ID transfer capillary
PEEK tubing (0.015” ID x 1/32” OD)	Valco	TPK.515-25	The Peek tubing is used as a sleeve to enable a leak-free connection between the fused silica capillaries and the Peek Tee
Clean-cut polymer tubing cutter	Valco	JR-797	This cutter is used to pre-cut the 1/16” and 1/32’ Peek polymer tubing that is used as sleeve for leak-free connections in pieces of ~4-5 cm in length
Amber vial (2 ml)	Agilent	HP-5183-2069	The vials are used to prepare sample solutions and the C18 particle slurry
Amber vial (4 ml)	VWR	66011-948	The vials are used to prepare sample solutions
Polypropylene tube (15 ml)	Fisher	12-565-286D	The vials are used to prepare buffer solutions
Cylinder (100 ml)	VWR	24710-463	The cylinder is used to measure volumes of solvent
Cylinder (10 ml)	VWR	24710-441	The cylinder is used to measure volumes of solvent
Pipette tips (1,000 µl)	VWR	83007-386	The pipette tips are used to measure small volumes of sample solutions

Pipette tips (100 µl)	VWR	53503-781	The pipette tips are used to measure small volumes of sample solutions
Pipette tips (10 µl)	VWR	53511-681	The pipette tips are used to measure small volumes of sample solutions
Glass substrates	Nanofilm	B270 white crown, 3” x 3”	These are glass substrates for microchip fabrication
Male nut fitting (1/16”)	Upchurch	P203X	This fitting is used for connecting transfer capillaries to the microfluidic chip
Nanoport assembly	Upchurch	N-122H	This fitting is used for connecting transfer capillaries to the microfluidic chip
Protein standards	Sigma	Multiple #	
Acetonitrile, HPLC grade	Fisher	A955	
Methanol, HPLC grade	Fisher	A452	
Isopropanol, HPLC grade	Sigma	650447	
Trifluoroacetic acid	Sigma	302031	
Ammonium bicarbonate	Aldrich	A6141	
Trypsin, sequencing grade	Promega	V5111	