

Materials List for:

Flash NanoPrecipitation for the Encapsulation of Hydrophobic and Hydrophilic Compounds in Polymeric Nanoparticles

Chester E. Markwalter¹, Robert F. Pagels¹, Brian K. Wilson¹, Kurt D. Ristoph¹, Robert K. Prud'homme¹

¹Department of Chemical and Biological Engineering, Princeton University

Correspondence to: Robert K. Prud'homme at prudhomm@princeton.edu

URL: <https://www.jove.com/video/58757>

DOI: [doi:10.3791/58757](https://doi.org/10.3791/58757)

Materials

Name	Company	Catalog Number	Comments
Confined Impinging Jets Mixer	NA	NA	See supplemental information for engineering drawings. Review text for new mixer validation
Luer fitting	Idex Health & Science	P-604	Assemble on CIJ or MIVM mixer inlet with corresponding threads
Plug fitting	Idex Health & Science	P-309	Assemble on CIJ mixer sides (seal access point from drilling)
Outlet fitting - CIJ	Idex Health & Science	P-205	Assemble with ferrule and tubing on CIJ chamber outlet
Outlet ferrule - CIJ	Idex Health & Science	P-200	Assemble with outlet fitting (large end flush with tubing)
Outlet tubing - CIJ	Idex Health & Science	1517	Use tubing cutter for clean ends. Ensure extra tubing doesn't protrude into mixing chamber
Tetrahydrofuran (THF)	Fisher Scientific	T425-4	Use stabilizer-free THF to avoid solubility limits of BHT. Peroxides may interfere in some applications.
Norm-ject syringe (3 ml)	VWR	53548-017	
Vitamin E (α -tocopherol)	Sigma-Aldrich	90669-50G-F	Store cold
poly(styrene-b-ethylene glycol), PS _{1.6k} -b-PEG _{5k}	Polymer Source	P13141-SEO	Other block sizes acceptable depending on application
poly(styrene) _{1.8k}	Polymer Source	P2275-S	Example hydrophobic core material
Scintillation vial	DWK Lifesciences	74504-20	
Luer-slip plastic syringes, 1ml (100 pk)	National	S7510-1	
Maltodextrin DE 4-7	Sigma-Aldrich	419672-100G	
poly(styrene-b-acrylic acid), PS _{5k} -b-PAA _{4.8k}	Polymer Source	P5917-SAA	Other block sizes acceptable depending on application
Dimethyl Sulfoxide (DMSO)	Fisher Scientific	D159-4	
Calcium chloride dihydrate	Sigma-Aldrich	223506-25G	Hygroscopic.
Methanol	Fisher Scientific	A452-4	
Ammonium Hydroxide	Fisher Scientific	AC423300250	
Albumin from chicken egg white (Ovalbumin, OVA)	Sigma-Aldrich	A5503-1G	
Multi-Inlet Vortex Mixer	NA	NA	See supplemental information for engineering drawings. Review text for new mixer validation
Outlet fitting - MIVM	Idex Health & Science	P-942	Combination with ferrule
Outlet tubing - MIVM	NA	NA	Fit to ferrule ID.

O-ring (MIVM)	C.E. Conover	MM1.5 35.50 V75	Order bulk - consumable part. Ensure solvent compatibility if using an alternative source.
Mixer stand	NA	NA	See Markwalter & Prud'homme for design. ¹⁷