

Optimization of Radiochemical Reactions using Droplet Arrays

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Materials

Name	Company	Catalog Number	Comments
2,3-dimethyl-2-butanol (thexyl alcohol)	Sigma-Aldrich	594-60-5	98%
Acetone	KMG Chemicals		Cleanroom LP grade
Ammonium formate (NH ₄ HCO ₂)	Sigma-Aldrich	540-69-2	97%
Anhydrous acetonitrile (MeCN)	Sigma-Aldrich	75-05-8	99.80%
Ceramic heater	Watlow	Utramic CER-1-01-0093	25 mm x 25 mm
Cerenkov imaging chamber	Custom built		Other instruments can be used for TLC plate readout including: small animal in vivo optical imaging system, 2D radio-TLC scanner, 1D radio-TLC scanner
DI water	Sigma-Aldrich	7732-18-5	
Disposable transfer pipets, 3 mL	Falcon	13-680-50	
Dose calibrator	Capintec, Inc.	CRC-25 PET	
Fallypride	ABX Advanced Biochemical Compounds	1560.0010.000	Fallypride reference standard, >95%
[¹⁸ F]fluoride in [¹⁸ O]H ₂ O	UCLA Ahmanson Biomedical Cyclotron Facility		Due to short half-life this must be obtained from local radiochemistry lab or commercial radiopharmacy
Glass cover plates (76.2 mm x 50.8 mm x 1 mm thick)	C&A Scientific	6101	
Headway spin coater	Headway Research, Inc.	PWM50-PS-R790 Sipinner system	PWM50-control box, PS-motor, R790-bowl
High temperature oven	Carbolite	HTCR 6 28	
Hot plate	Thermo Scientific	Super-Nuova HP133425	
Isopropanol (IPA)	KMG Chemicals		Cleanroom LP grade
Mask aligner	Karl Suss	MA/BA6	
Methanol (MeOH)	Sigma-Aldrich	67-56-1	≥99.9%
Microcentrifuge tube	Eppendorf	0030 123.301	500 μL, colorless, polypropylene
Micropipette (0.5-10 μL)	Labnet	BioPette P3940-10	

Micropipette (100-1000 μ L)	Labnet	BioPette P3940-1000	
Micropipette (10-100 μ L)	Labnet	BioPette P3940-100	
Micropipette tips (0.1-10 μ L)	USA Scientific Inc Tips	11113810	
Micropipette tips (2-200 μ L)	BrandTech	13-889-143	
Micropipette tips (50-1000 μ L)	BrandTech	13-889-145	
Photoresist developer solution	MicroChem	MEGAPOSIT MF-26A	
Positive photoresist	MicroChem	MEGAPOSIT 220-7.0	
Reactive-ion etcher (RIE)	Oxford Instruments	Plasma Lab 80 Plus	
Silicon wafer cutter	Euro Tool	CSCB-431.00	
Silicon wafer; 4" diameter	Silicon Valley Microelectronics Inc.	0017227-048	P type, boron doped, thickness 525 \pm 25 μ m
Teflon AF 2400	Chemours	D14896765	1% solids
Tetrabutylammonium bicarbonate (TBAHCO ₃)	ABX Advanced Biochemical Compounds	808	Aqueous solution stabilized with ethanol, 0.075 M
Thermal conducting paste	OMEGA	OT-201-2	
TLC plates	Merck KGaA	1.05554.0001	Silica gel 60 F ₂₅₄ , 50 mm x 60 mm, aluminum back
Tosyl-fallypride	ABX Advanced Biochemical Compounds	1550.004.000	Fallypride precursor, >90%
Trimethylamine (TEA)	Sigma-Aldrich	75-50-3	\geq 99%
Tweezers	Cole-Parmer	UX-07387-08	Stainless steel, fine tip