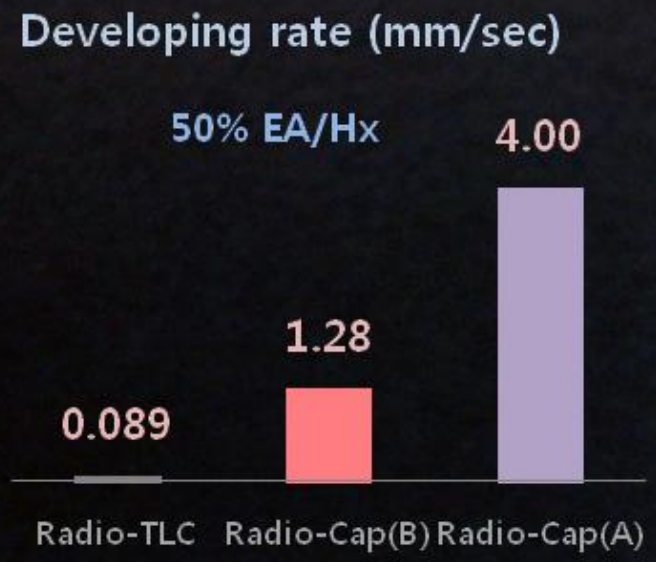
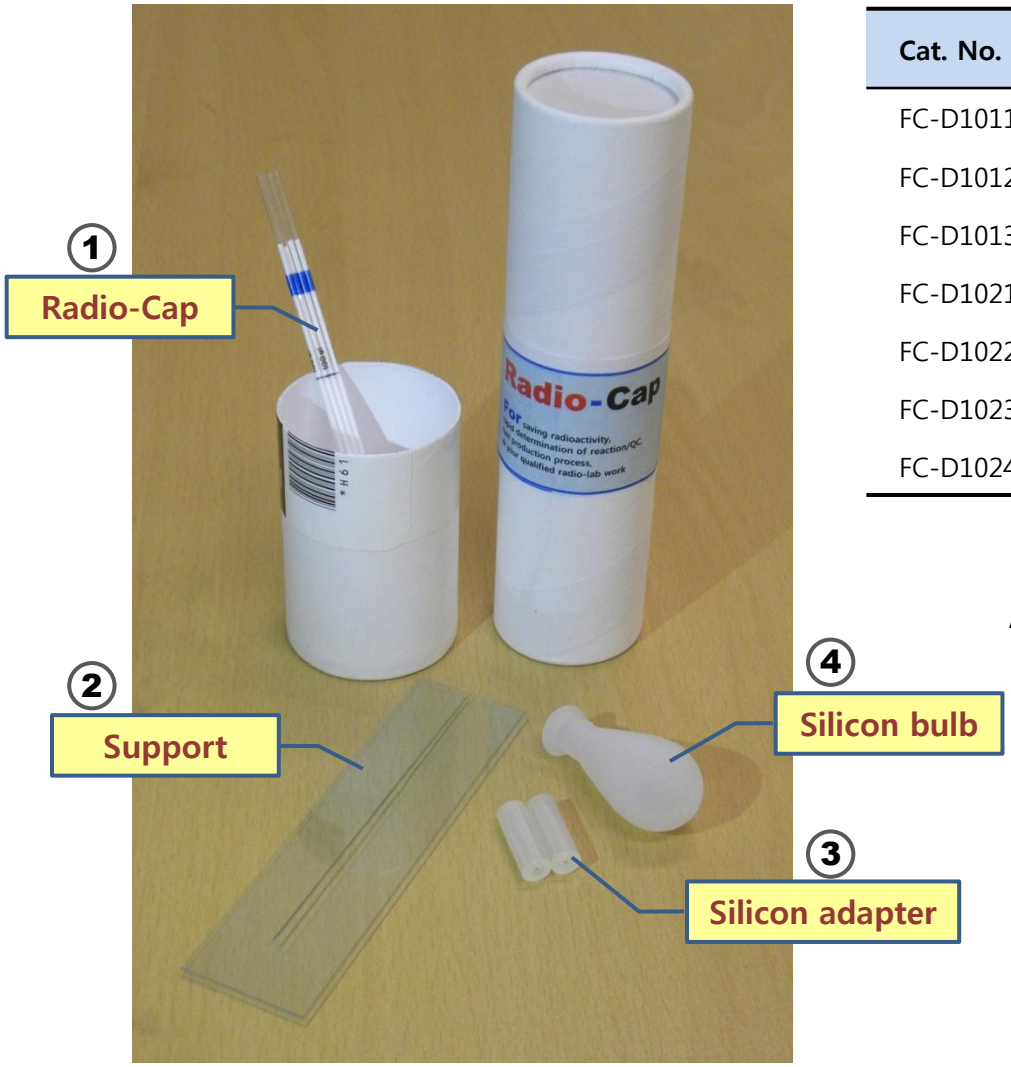
Radio-Cap



For saving radioactivity,
rapid determination of reaction/QC,
fast production process,
& your qualified radio-lab work

Contents (FC-D1000)



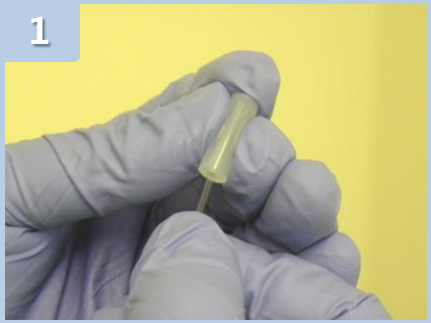
Cat. No.	Packing material	Product name
FC-D1011	Silica gel (100~200 mesh, 100~50 mm)	Radio-Cap$_A$
FC-D1012	Silica gel (200~400 mesh, 50~25 mm)	Radio-Cap$_B$
FC-D1013	Silica gel (>400 mesh, <25 mm)	Radio-Cap$_C$
FC-D1021	Silica gel (C-18)	Radio-Cap$_R$
FC-D1022	Silica gel (NH)	Radio-Cap$_{NH}$
FC-D1023	Silica gel (diol)	Radio-Cap$_{diol}$
FC-D1024	Silica gel (COOH)	Radio-Cap$_{COOH}$

To obtain the similar result to normal Radio-TLC,
***Radio-Cap$_B$** (FC-D1012) is recommended*

User Guide

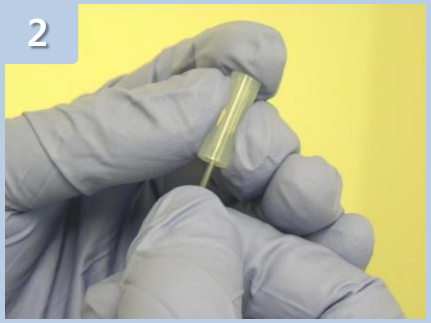
※ Step 3 (Loading Solution) can be performed first

1



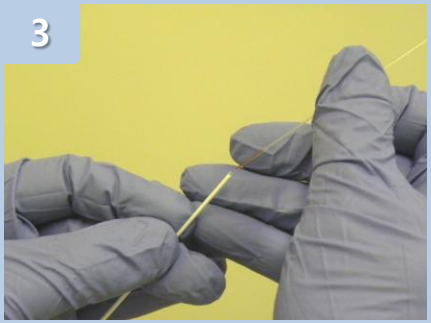
Place the blue band end of Radio-Cap (1) at the hole of silicon adapter (3) obliquely

2



Push Radio-Cap (1) into silicon adapter (3) gently

3

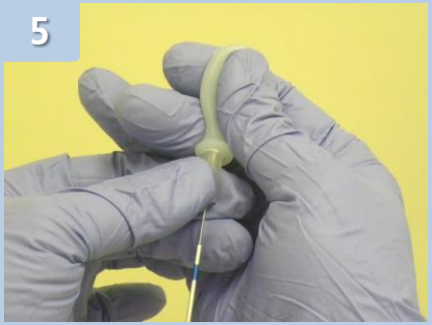


Load solution through capillary column on the opposite end of Radio-Cap (1)

4

While squeezing silicon bulb (4), place silicon adaptor (3) on the silicon bulb (4) obliquely

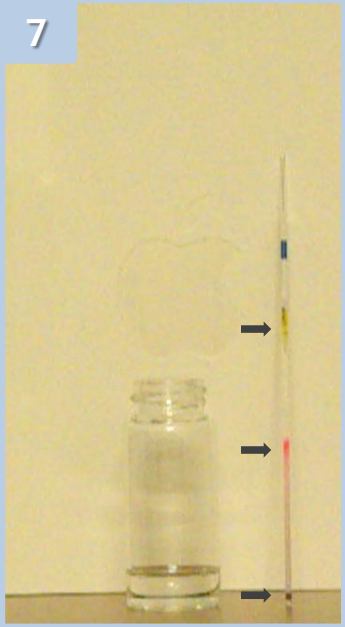
5



Push the silicon adaptor (3) into the silicon bulb (4) obliquely

6

7



8

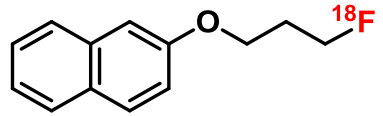
Place the support (2) on Radio scanner first and then put the Radio-Cap (1) into the slot on the support (2)

Place the solution-loaded end of Radio-Cap (1) in the elution chamber with eluent in it and wait for the eluent front to reach the proper position

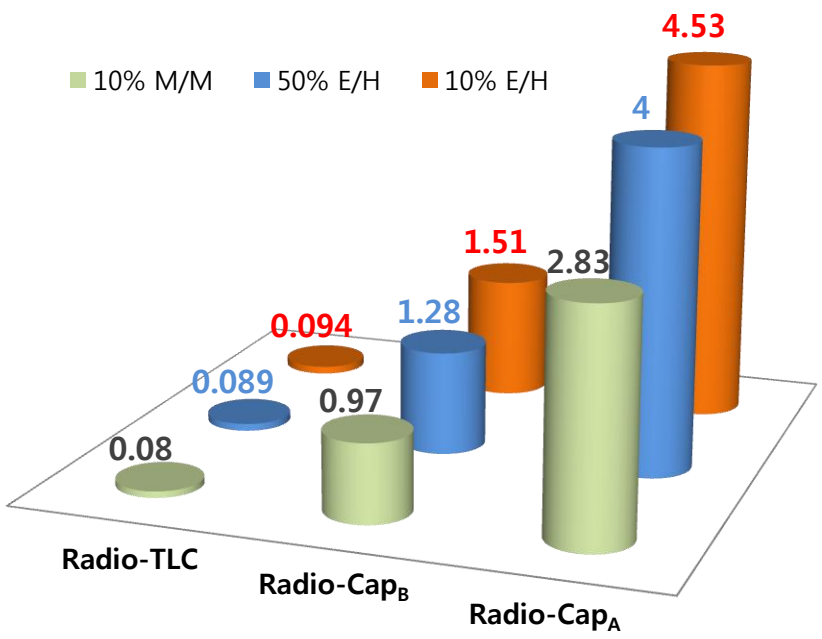
Once the development is completed, remove the Radio-Cap (1) from the eluent first and then remove the silicon bulb (4) and silicon adaptor (3)

SCAN

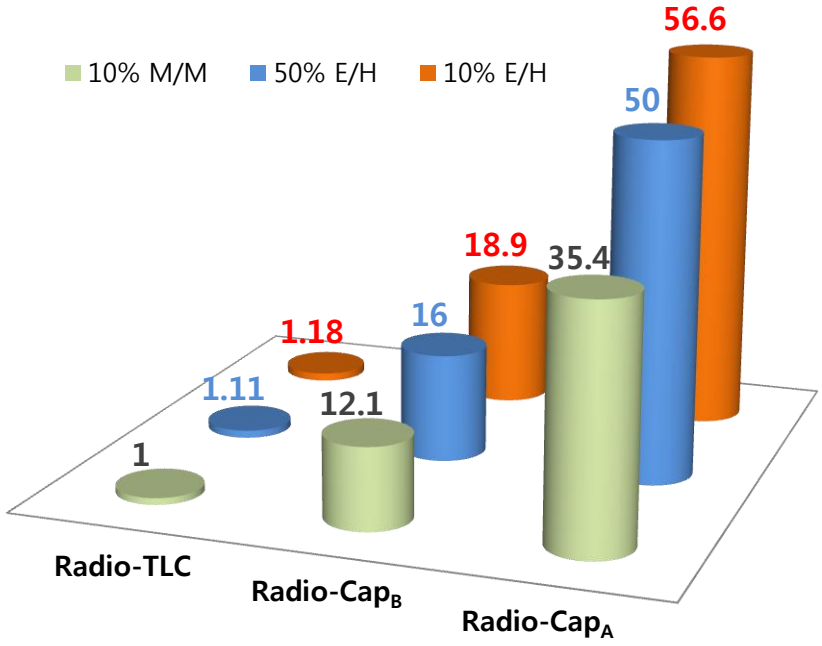
Radio-TLC vs. Radio-Cap

		Radio-TLC		Radio-Cap			
				Radio-Cap$_B$		Radio-Cap$_A$	
		Length (mm)	Time	Length (mm)	Time	Length (mm)	Time
Eluent	10% EtOAc/n-Hx	85	15 min	68	45 sec	68	15 sec
	50% EtOAc/n-Hx	80	15 min	68	53 sec	68	17 sec
	10% MeOH/CH_2Cl_2	72	15 min	68	70 sec	68	24 sec

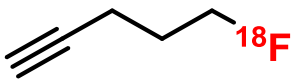
Developing rate (mm/sec)



Relative Developing Rate

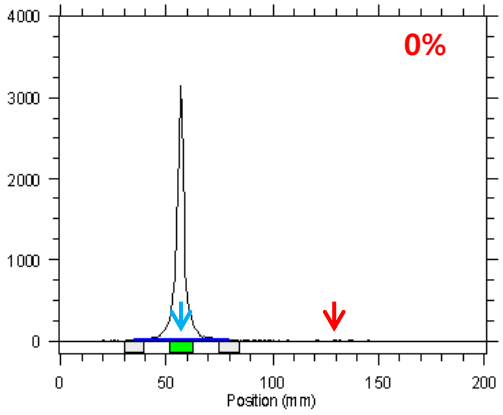


Radio-TLC vs. Radio-Cap (volatile compound)

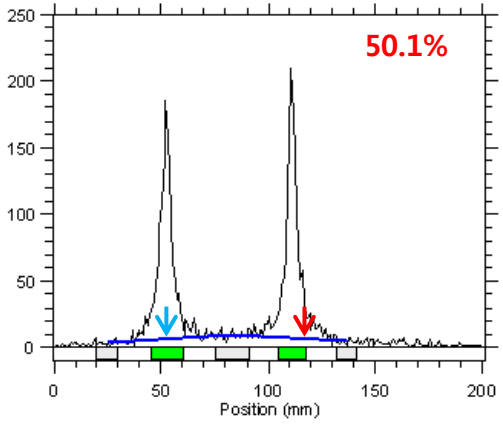
 b.p. 40 °C (lit)		Radio-TLC		Radio-Cap			
				Radio-Cap$_B$		Radio-Cap$_A$	
		Length (mm)	Time	Length (mm)	Time	Length (mm)	Time
Time	50% EtOAc/n-Hx	80	15 min	68	56 sec	68	14 sec
Developing rate (mm/sec)		0.089		1.21		4.86	
Relative developing rate		**1**		**13.6**		**54.6**	

spotting position
solvent front

Radio-TLC



Radio-Cap$_B$



Choosing eluents

When using the same eluent,
1) The Rf value of Radio-Cap tends to be lower than that of TLC
2) Peak broadening might be observed due to solubility between eluents and analytes
In order to obtain better data with Radio-Cap, it is recommended to consider the following information:

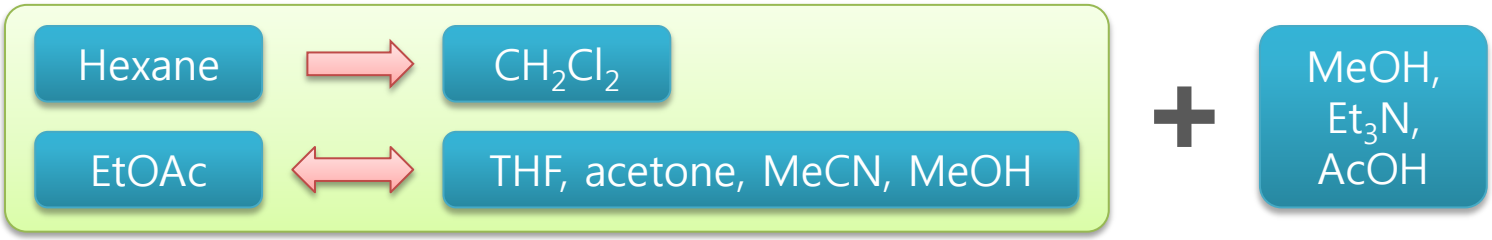
✓ In case of EtOAc/n-Hx, the Rf value on Radio-Cap will remain at 70% of Rf value on TLC when the same eluent is used. Therefore, to obtain equivalent Rf, it is recommended to use 1.5~2 times more polar eluent composition.

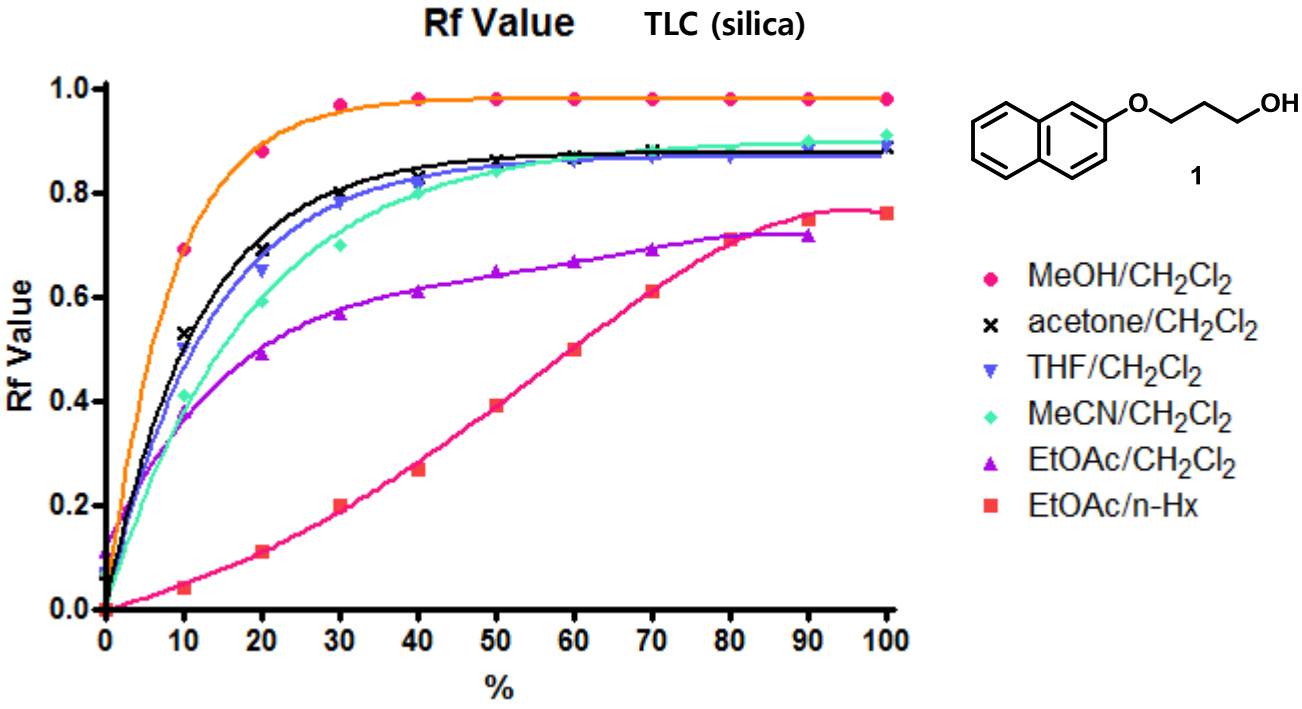
✓ To increase the solubility of compounds based on eluents, it is not recommended to use non-polar solvents such as hexanes. It is appropriate to use chlorinated solvents (e.g. CH_2Cl_2, $CHCl_3$, CCl_4, & etc), which are relatively less polar and have high solubility.

✓ Since solubility varies from compound to compound, it is recommended to consider not only EtOAc, but also solvents such as THF, acetone, MeCN and MeOH, and select solvents which have high solubility.

When selecting solvents, please refer to the next slide for the Rf value graph of compound 1 based on eluents.

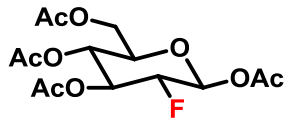
✓ Considering the polarity of compounds and property of substituents, solvent mixtures with 5~15% of MeOH, Et_3N and AcOH can be used to prevent peak broadening due to tailing effects.





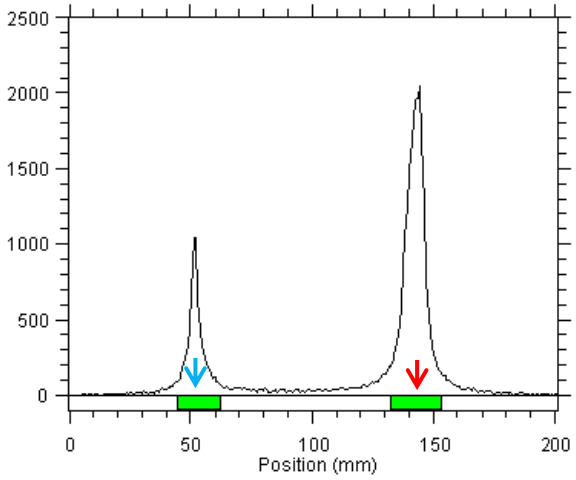
n-Hx < CH_2Cl_2 << EtOAc < MeCN < THF < acetone < MeOH

Example 1



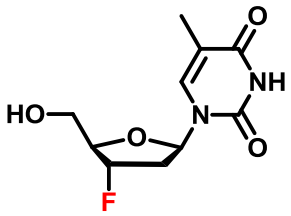
spotting position
solvent front

20% MeOH/EtOAc

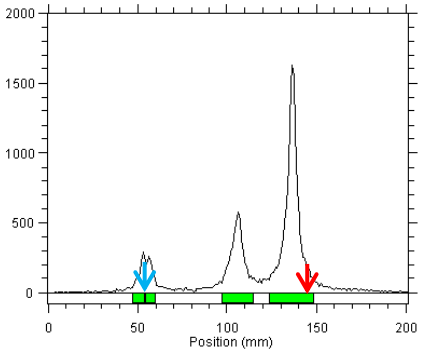


Example 2

Obtained using **Radio-Cap$_B$**

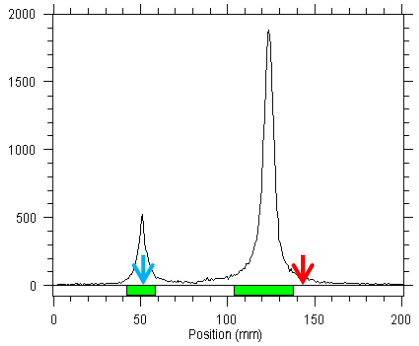


MeOH/EtOAc/CH_2Cl_2 (1/2/7)



Fluorination

20% MeOH/EtOAc

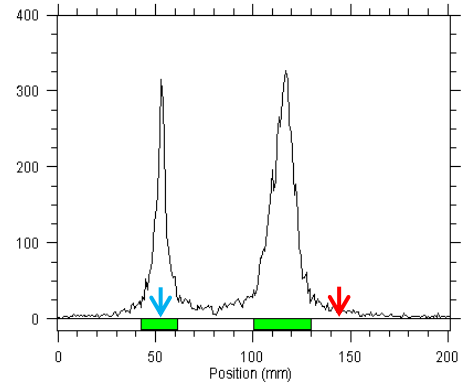


Deprotection

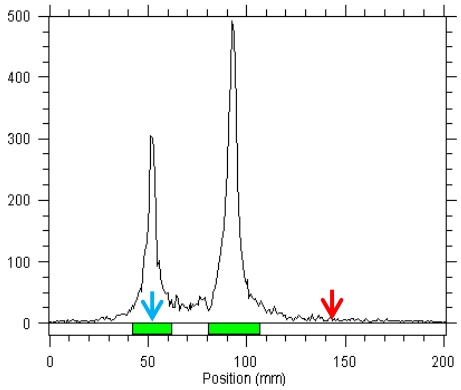
Example 3

Obtained using **Radio-Cap$_B$**

MeOH/THF/CH_2Cl_2 (0.5/1/8.5)

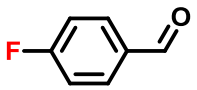


Fluorination

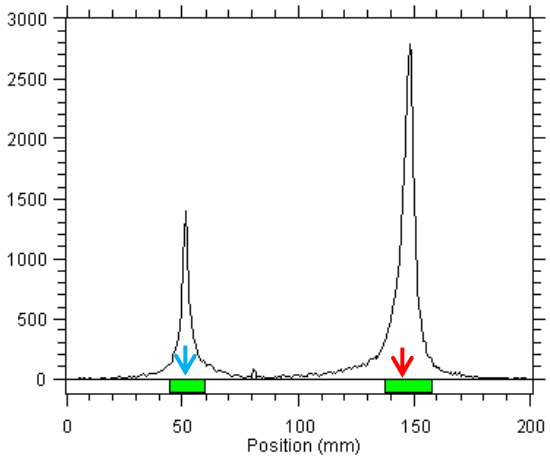


deprotection

Example 4

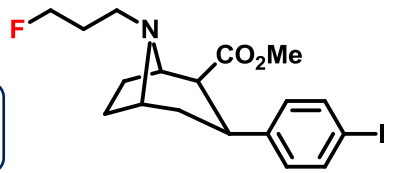


100% EtOAc



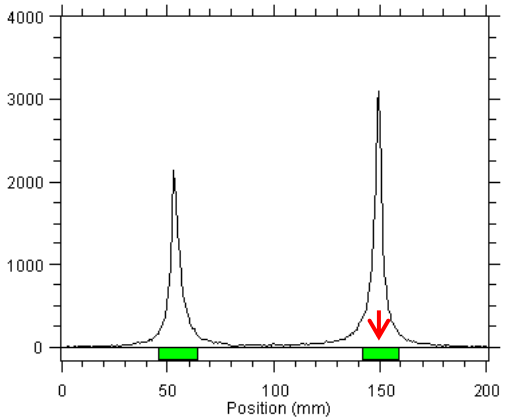
spotting position
solvent front

Example 5

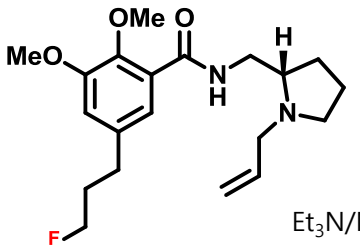


Obtained using **Radio-Cap$_B$**

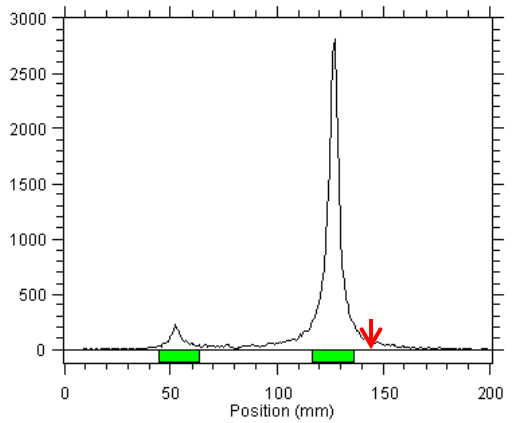
$Et_3N/MeOH/THF$ (0.5/0.5/9)



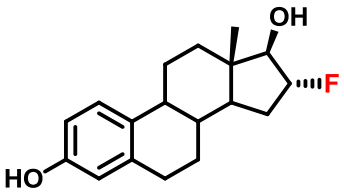
Example 6



$Et_3N/MeOH/CH_2Cl_2$ (1/2/7)

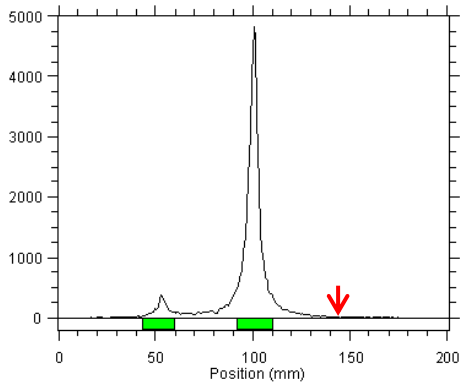


Example 7

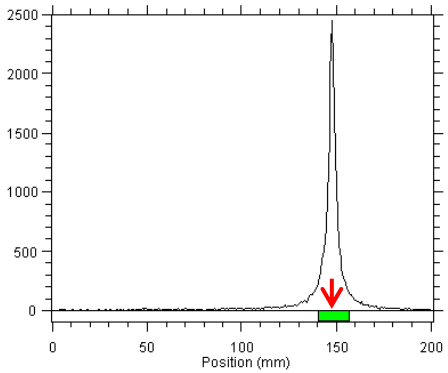


Obtained using **Radio-Cap$_B$**

10% MeOH/THF

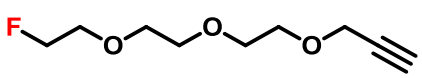


Fluorination



deprotection

Example 8



$MeOH/THF/CH_2Cl_2$ (1/3/6)