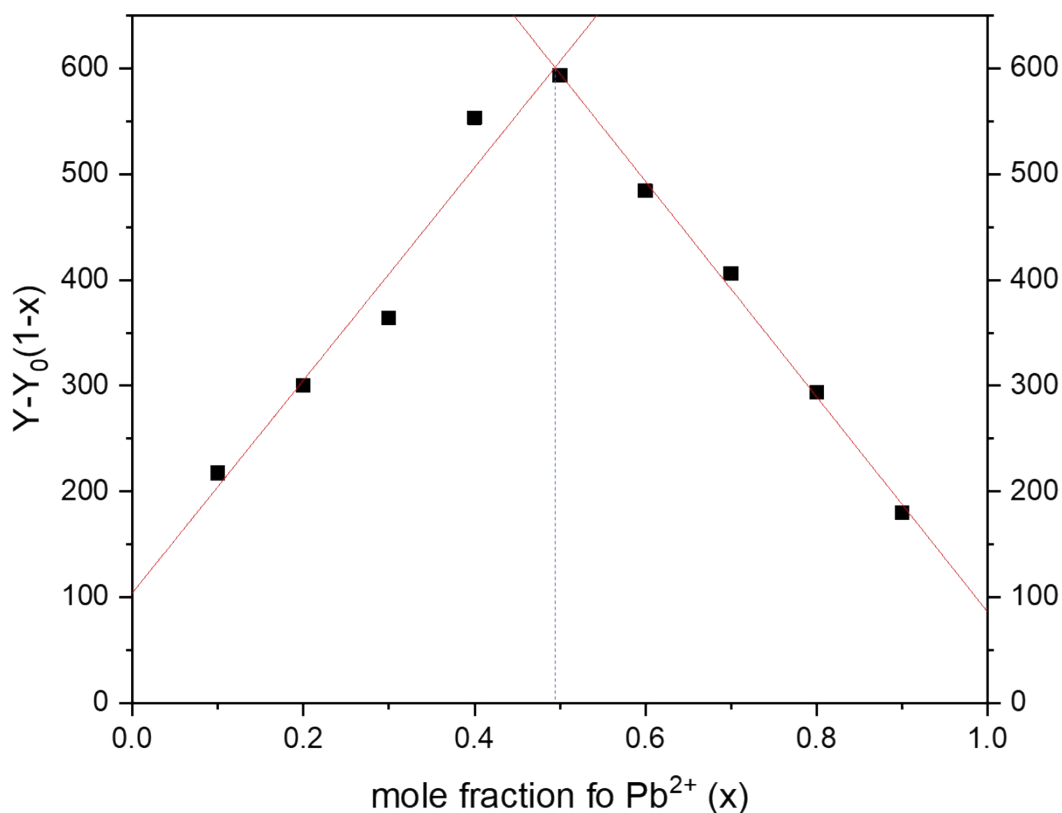


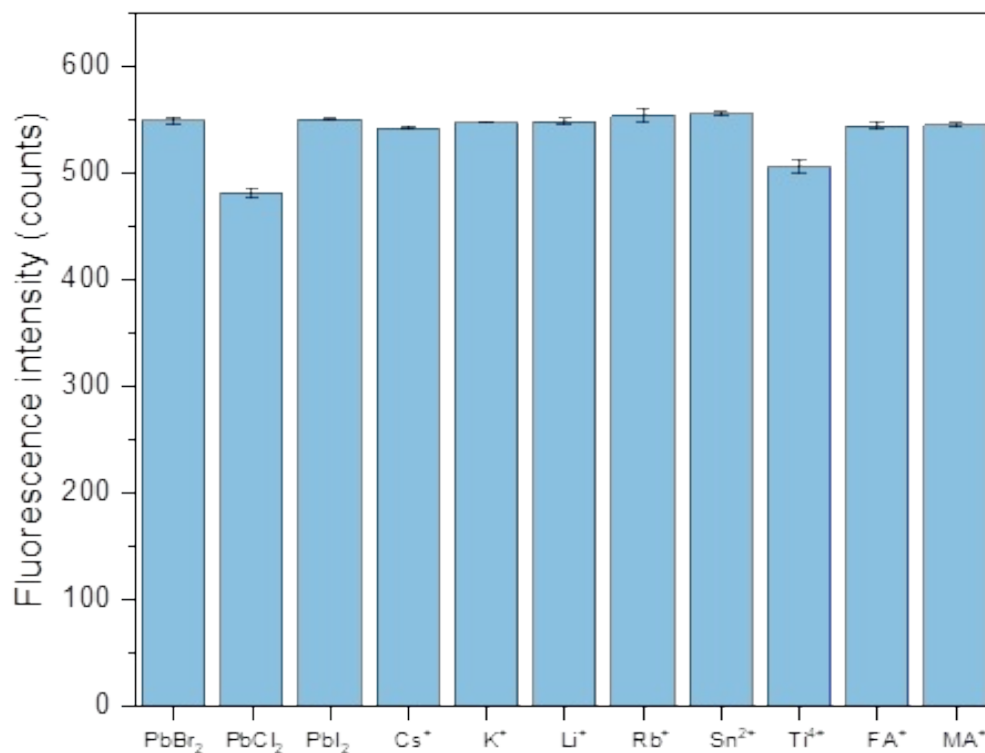
## SUPPORTING INFORMATION

$$\Phi = \frac{(\Phi_b * I_s * A_b * \lambda_{exb} * \eta_s)}{(I_b * A_s * \lambda_{exs} * \eta_b)}$$

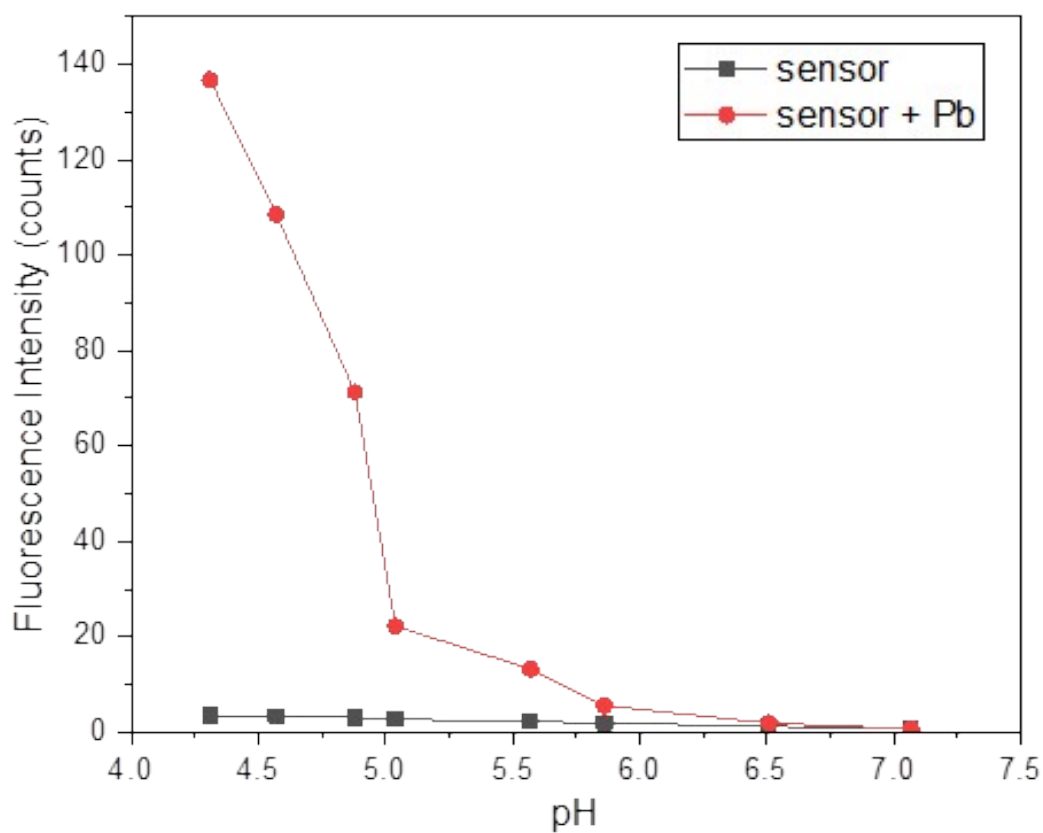
SI 1 Fluorescence quantum yield equation.  $I_s$  and  $I_b$  are, respectively, the integrated area under the emission spectra of sample and standard;  $A_s$  and  $A_b$  are the absorbance at the excitation wavelength of sample and standard;  $\lambda_{ex}$  is the excitation wavelength;  $\eta$  is the refractive index of the sample and standard solutions;  $\Phi_b$  is the fluorescence quantum yield of the standard.



SI 2 Job's plot of fluorescence intensity vs  $\text{Pb}^{2+}$  molar fraction. Total concentration of  $\text{Pb}^{2+}$  and FS is  $10^{-5}$  M, in acid aqueous solution pH4.5 in PBS 0.1M.



SI 3 Fluorescence intensity of solutions at pH 4.5 in 0.1M PBS and  $5.5 \mu\text{M}$  sensor in the presence of 2 eq of  $\text{PbI}_2$  and 15 eq of cation salts present in perovskite cells. Fluorescence intensity of solutions at pH 4.5 in 0.1M PBS and  $5.5 \mu\text{M}$  sensor in the presence of 2 equivalents of  $\text{PbI}_2$ ,  $\text{PbCl}_2$ , and  $\text{PbBr}_2$  (10% HCl).



SI 4 Fluorimetric titration ( $\lambda_{\text{ex}} = 470 \text{ nm}$ ) in PBS 0.1M at variable pH of [FS] 0.5  $\mu\text{M}$  in the absence (black line) and in the presence of 2 eq of  $\text{Pb}^{2+}$  (red line).

$y = a + b * x$	
	B
Pearson's r	0.99963
Adj. R-Square	0.99921
Intercept	$36.23407 \pm 1.76745$
Slope	$231.01897 \pm 1.6763$

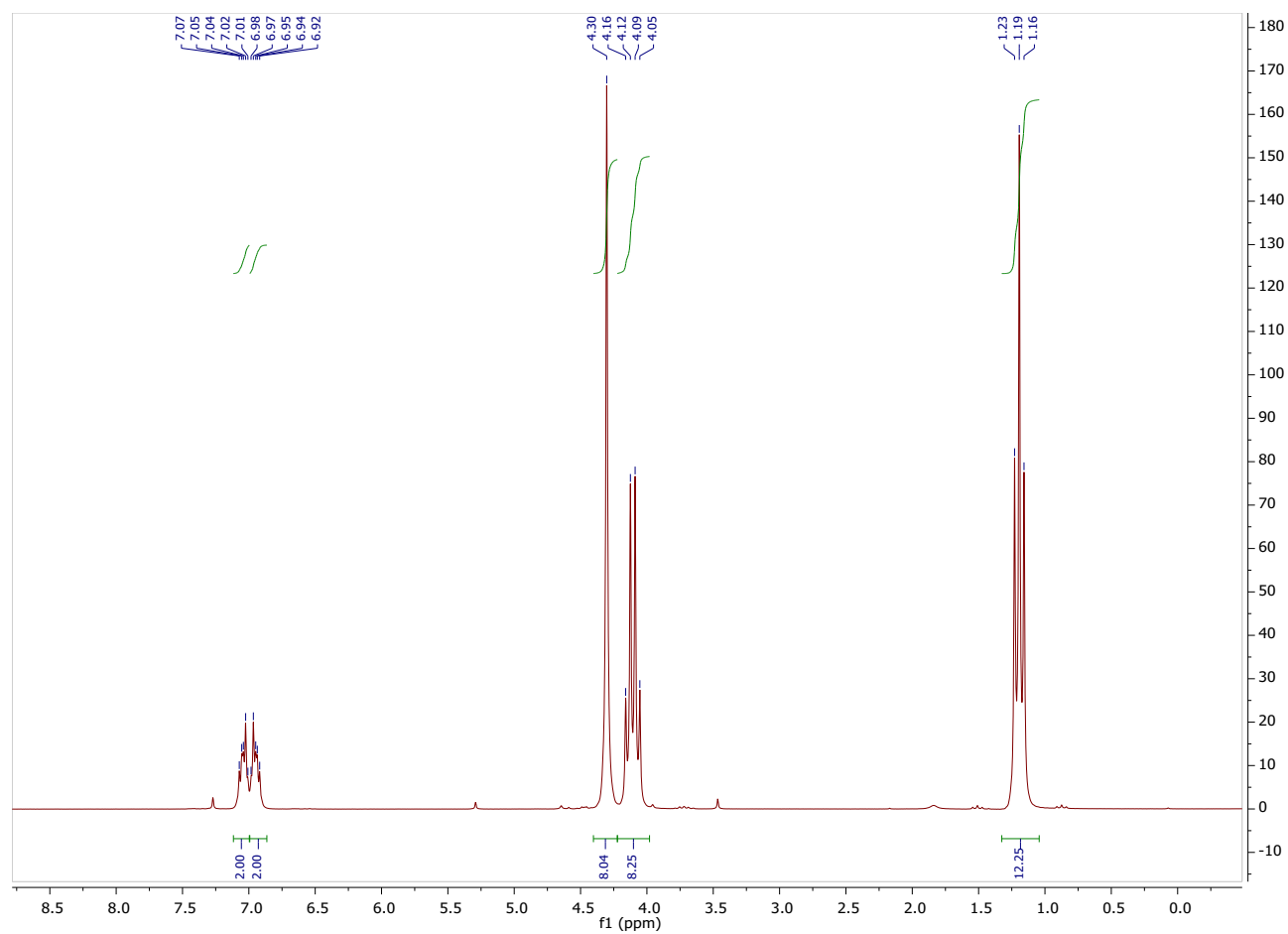
SI 5 Parameters obtained from the linear fit for the calibration line.

Time (min)	H <sub>2</sub> O-TFA %	CH <sub>3</sub> CN %	Time (min)	H <sub>2</sub> O-TFA %	CH <sub>3</sub> CN %
0	95	5	0	95	5
2	95	5	2	95	5
10	30	70	11	42	58
14	0	100	12	42	58
17	95	5	14	0	100
			16	0	100
			18	95	5
			21	95	5

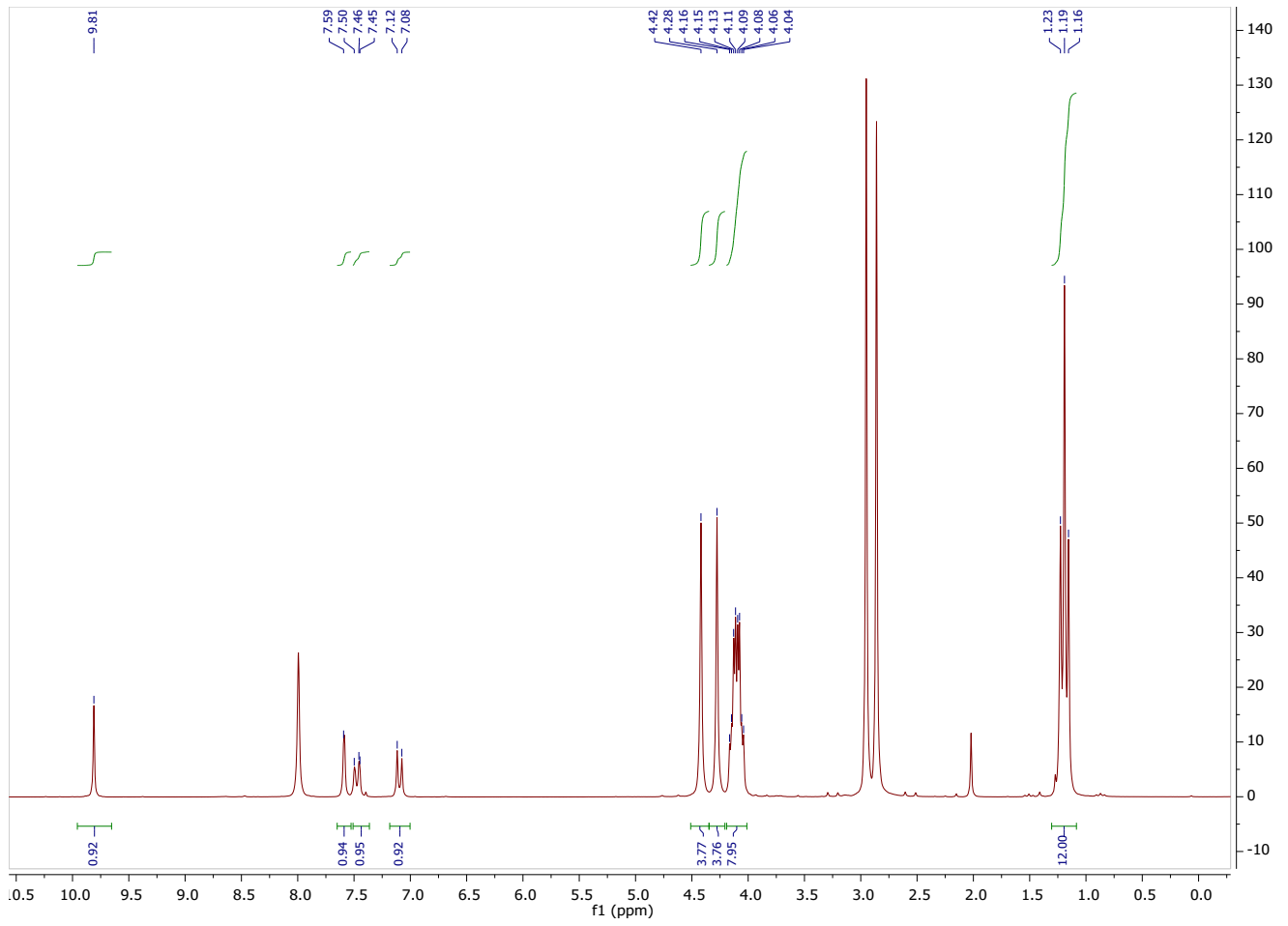
Table SI 6 gradient use for the preparative HPLC (left) and analytical HPLC (right).

# $^1\text{H}$ and $^{13}\text{C}$ -NMR Characterization

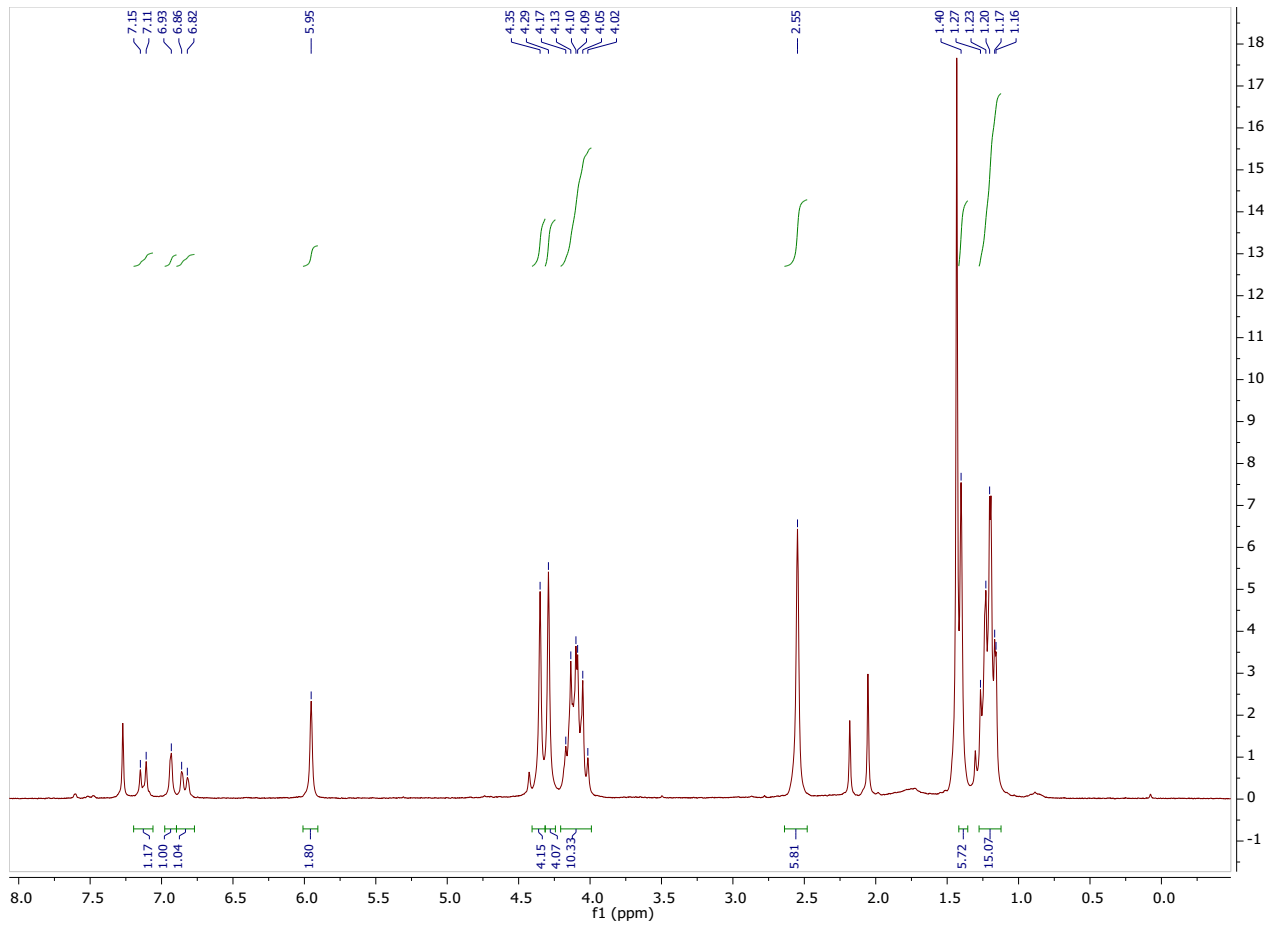
Compound 2.  $^1\text{H}$ -NMR ( $\text{CDCl}_3$ , 300 MHz)



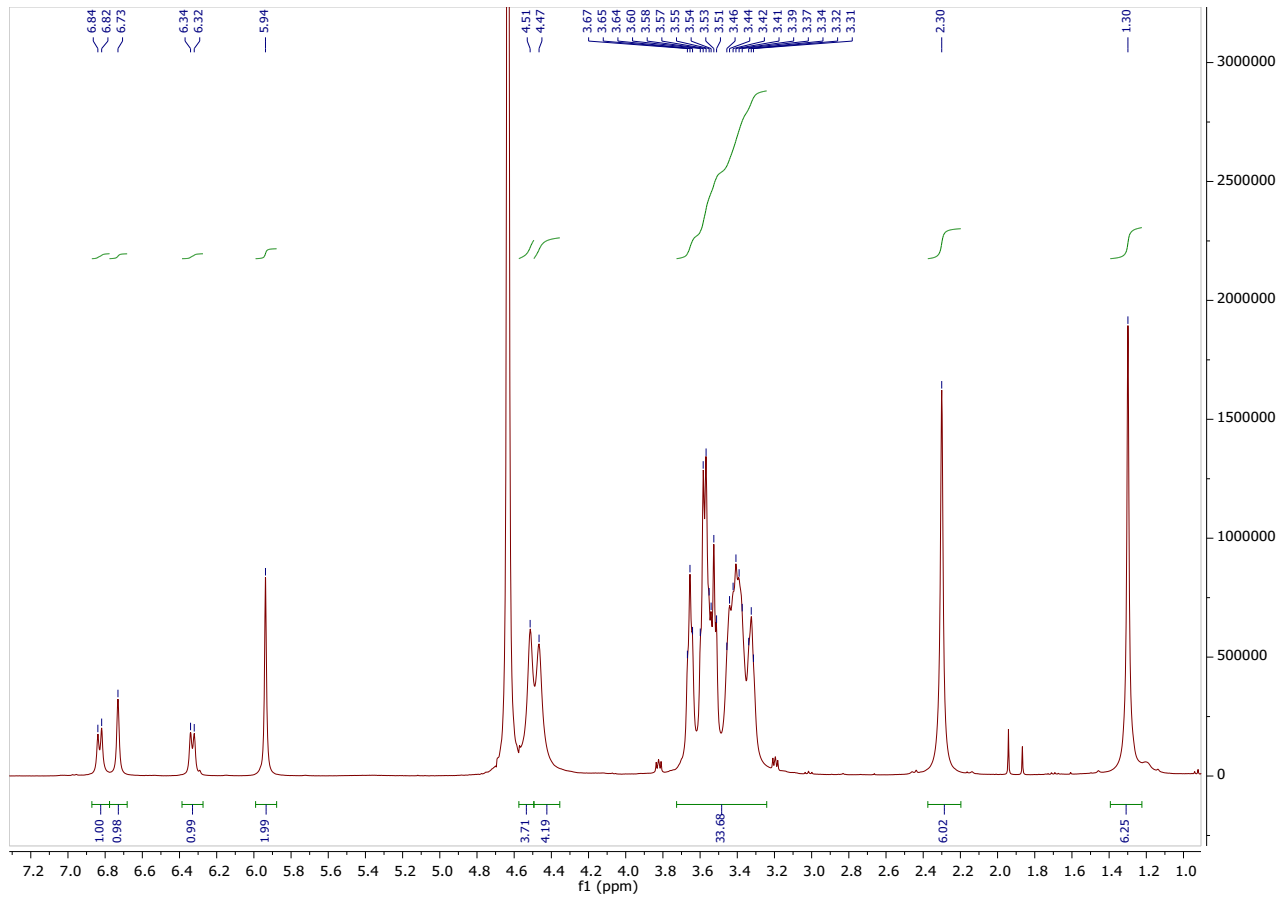
Compound 3.  $^1\text{H-NMR}$  ( $\text{CDCl}_3$ , 300 MHz)



Compound 4. <sup>1</sup>H-NMR (CDCl<sub>3</sub>, 300 MHz)

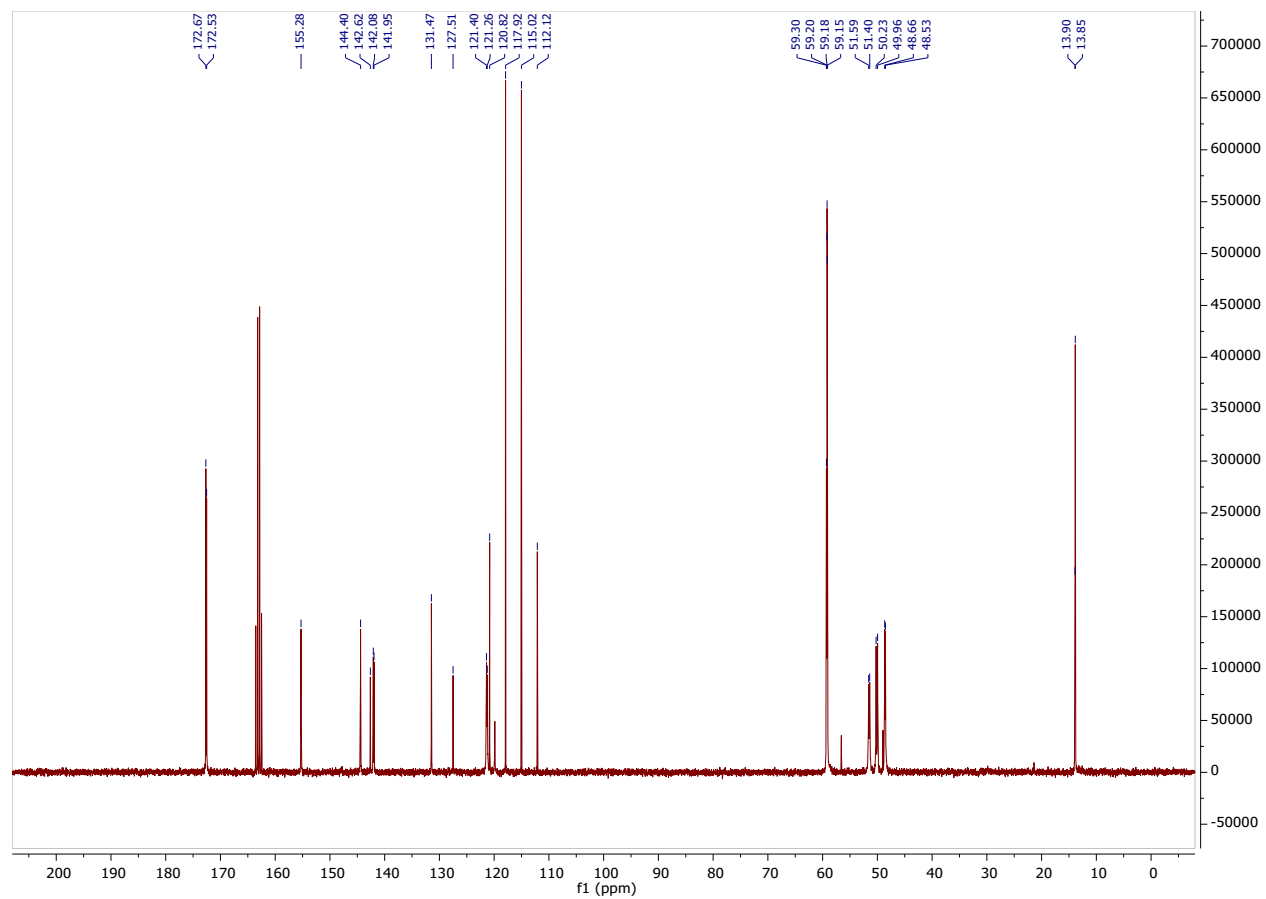


Compound 5. <sup>1</sup>H-NMR (D<sub>2</sub>O, 400 MHz)



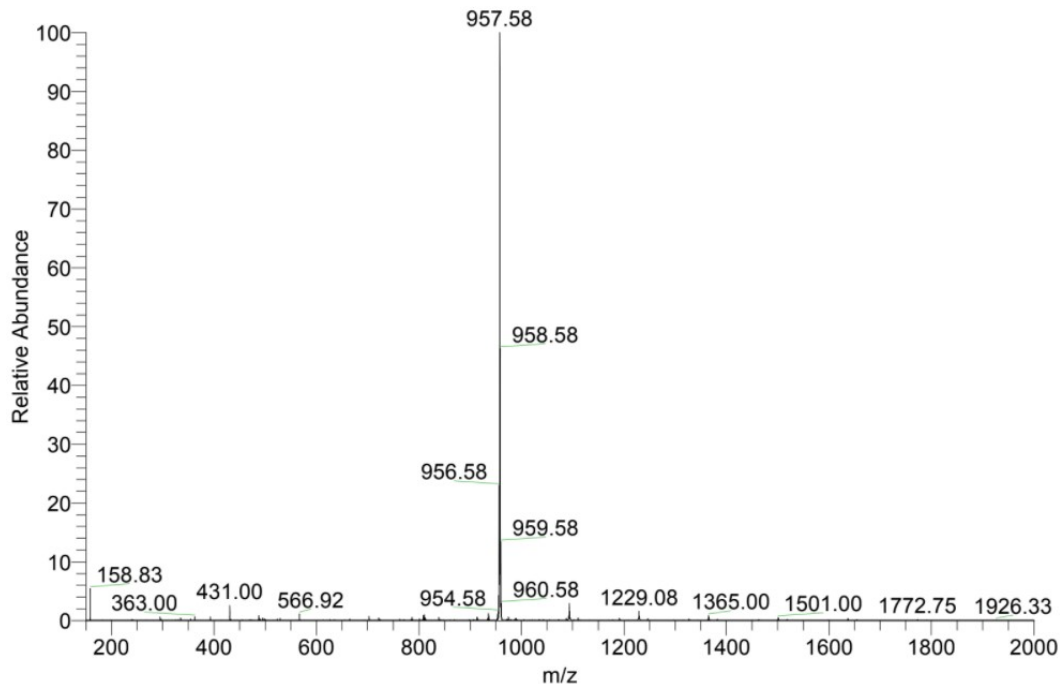


Compound 5.  $^{13}\text{C}$ -NMR ( $\text{D}_2\text{O}$ , 100 MHz)



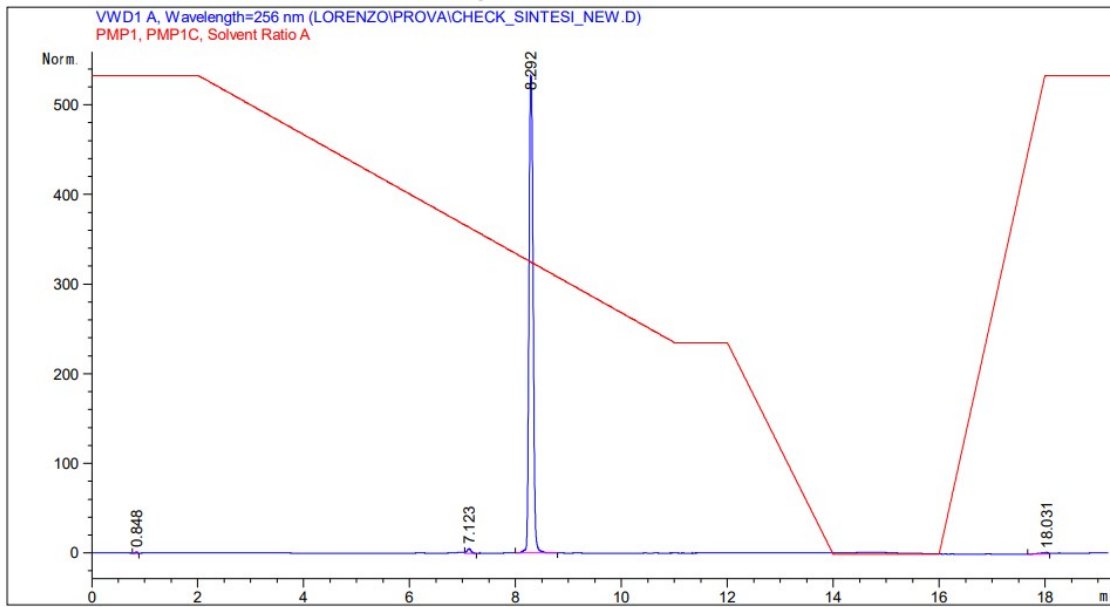
## ESI-MS Analysis.

Compound 5.(ESI-MS, Positive mode): mass calculated for 5 [M+Na]<sup>+</sup> requires  $m/z = 957.49$ , found  $m/z = 957.58$ .



## HPLC Characterization.

Compound 5. Retention time 8.292 min; purity 98.32%.



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	0.848	BB	0.0394	4.69051	1.74166	0.1597
2	7.123	VB	0.0817	25.24445	4.85179	0.8596
3	8.292	BB	0.0872	2887.42578	532.76715	98.3169
4	18.031	BV	0.1321	19.49534	1.82485	0.6638