Synthesis of Aspirin – predict integration, splitting, and chemical shifts for each proton. Use the simplified NMR tables posted online.





Acetylsalicylic Acid (Aspirin)

Signal	Int (#H's)	Splitting (m)	Exp δ (ppm)	Obs δ (ppm)	Signal	Int (#H's)	Splitting (m)	Exp δ (ppm)	Obs δ (ppm)
Α					A'				
В					B'				
С					C'				
D					D'				
E					E'				
F					F'				
Only the spectrum of aspirin will be analyzed on the exam, chemical shift tables provided.									
Exp δ = Expected chemical shift – range or calculated value OK									
No calculation necessary / possible for O- H signals									
Obs δ = Observed chemical shift (see spectrum on reverse, given on exam)									



¹H NMR Spectrum of Salicylic Acid

* 5.0ppm broad singlet expected but not observed in this particular spectrum of salicylic acid.



*11.5 ppm broad singlet expected but not observed in this particular spectrum of aspirin.

¹³C NMR of Aspirin

Chemical Shift (Observed ppm)	Assignment(s) (A' – J')	Expected Chemical Shift Range (ppm)
169 & 170		
152		
125 – 135 (4 peaks)		
122		
20		

 $\begin{array}{c} O\\ B'\\ G'\\ O\\ H'\\ D'\\ F'\\ F'\\ E' \end{array} OH$

Acetylsalicylic Acid (Aspirin)



Figure 14.13 125.7-MHz ¹³C-NMR spectrum of aspirin in CDCl₃.

