Chemistry 14CL **Spring 2016**

Experiment #15: Nuclear Magnetic Resonance Spectroscopy

Pre-lab Report MUST be written inside the lab notebook

Online Resources and Tutorials

What Nuclear Magnetic Resonance Can Measure

Principles of Nuclear Magnetic Resonance

Applications of ^{13}C-NMR Spectroscopy

Pre-lab Report Guidelines

1. Title of the experiment & introduction
2. Procedure in Flowchart Format & Reference
3. Pre-lab study questions

Complete **ALL** the study questions on page 139 of your lab manual **(MUST SHOW ALL YOUR REASONINGS IN ORDER TO RECEIVE FULL CREDIT)**

Note:

There are TWO signals around 130 ppm in spectrum 1 on page 137 of the lab manual. Also, ignore any signal that appears at 0 ppm (=TMS) and 77 ppm ($CDCl_3$).

Use the DEPT table on page 137 (or the one provide in the lecture slides) when answering question #3 of the study question. Remember that in DEPT spectroscopy, carbons with no hydrogen attached give no signals on the DEPT spectra.

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Post-lab (This post-lab is due at the END of the NMR Spectroscopy Workshop)

Turn in ONE Post-lab per Group

Your Post-lab is the COMPLETED NMR WORKSHEETS (bring a copy with you to the lab).

1. Write the names of your group members on **EACH** page of the worksheet.

2. Answer questions (1) - (3) in lab (see page 139) **Note: for question #3, your group needs to PREDICT the ^{13}C, DEPT 135 & DEPT 90 spectra for EACH of the isomer.**

3. Answer questions (4) - (6) in the computer lab (see page 139 & 140)

Note: for question #6, your group need to COMPARE your predicted ^{13}C-NMR, DEPT 135 & DEPT 90 spectra with the computer generated spectra for EACH of the isomer.

Staple all the worksheets (if you take them apart during the lab period) and turn them in to your TA at the end of the lab period. Make sure that the names of all group members are listed.