

This experiment will be done as a partnership.

• **Pre-lab:**

Skim: Technique 26 (pp. 868 – 898), especially the bit on cleaning the NMR tube.

The purpose of this lab is to become familiar with running the NMR spectrometer and analyzing the NMR spectrum of an unknown compound.

The materials and apparatus are the unknown compound and the NMR tube.

Figure out a way to reversibly attach (tape) an 8.5 by 11 inch sheet of paper (the output from the NMR spectrometer) into the next lab notebook page.

• **During lab:**

Each partnership will take an NMR spectrum of an unknown sample.

At the beginning of lab, your instructor will demonstrate how to operate the NMR spectrometer and after that your groups will get about 5-10 minutes on the NMR spectrometer to acquire and print out an NMR spectrum of the unknown (there will be instructions for running the NMR spectrometer available). If time is short or if you want to practice some more, you will be able to do so during the next lab session.

When obtaining your NMR spectrum, be sure to note that your spectrum has the TMS signal placed at 0 ppm, and that you acquired integration values for the peaks.

• **Post-lab:**

Once you have printed out the spectrum you will interpret the NMR and identify the unknown compound. The molecular formula of the unknown compounds is $C_9H_{11}O_2N$.

In the “Results” section, generate a table that shows your NMR interpretation:

Chemical shift (δ)	Functional group (identity of protons)	Splitting (singlet, doublet, etc.)	Integration value

Justify your peak assignments, based on chemical shift, splitting and integration.

In the “Conclusions” section, draw the structure and give the name of the unknown.