

Lab Report for Carboxylic Acid Unknown: Pandemic-Modified

Summary of all of the key data, with links to the H-NMR data

| Student Last Name Starts with Letters: | Titration Data: Grams of Acid | Titration Data: mL of 0.1002 mol/L NaOH | Starting Material Melting Range | Derivative Melting Range | Acid NMR: |
|--|-------------------------------|---|---------------------------------|--------------------------|---|
| A | 0.2003 g | 13.3 mL | 179-184 | 165-170 | http://web.mnstate.edu/jasperse/Chem365/NMR-Acid-A.pdf |
| B-C | 0.2007 g | 16.5 mL | 119-122 | 155-161 | http://web.mnstate.edu/jasperse/Chem365/NMR-Acid-B-C.pdf |
| D-G | 0.2004 g | 24.0 mL | 68-73 | 111-117 | http://web.mnstate.edu/jasperse/Chem365/NMR-Acid-D-G.pdf |
| H-K | 0.1996 g | 13.6 mL | 131-134 | 146-151 | http://web.mnstate.edu/jasperse/Chem365/NMR-Acid-H-K.pdf |
| L-N | 0.2002 g | 12.9 mL | 136-141 | 113-117 | http://web.mnstate.edu/jasperse/Chem365/NMR-Acid-L-N.pdf |
| O-S | 0.2011 g | 14.9 mL | 104-109 | 120-124 | http://web.mnstate.edu/jasperse/Chem365/NMR-Acid-O-S.pdf |
| T-Z | 0.1998 g | 14.8 mL | 178-183 | 138-144 | http://web.mnstate.edu/jasperse/Chem365/NMR-Acid-T-Z.pdf |

Summary:

1. See the lab-report fill-in sheet, page 77.
2. You will analyze and identify one unknown carboxylic acid
3. Which acid to analyze is determined by the starting letter of your last name, see table above.
4. There will be four pieces of data from which to determine your structure:
 - The molecular weight of your carboxylic acid, which can be calculated based on the titration information.
 - The data is taken from actual student work, and may not be perfect.
 - Assume that you can trust that the titration data will enable a molecular weight calculation that will be within ≤ 5 g/mol of the actual molecular weight.
 - But it might not be more accurate than that.
 - The melting range for the starting carboxylic acid
 - The melting range for the anilide derivative
 - The H-NMR for the starting carboxylic acid.
 - Remember that the carboxylic acid hydrogen will NOT show up in your NMR.
 - It's so far downfield, >10 ppm, that it's off scale.
5. There is a fill-in sheet page 77 where you can enter your data.
6. In addition, you'll print and attach your NMR data, and you'll need to write in a standard H-NMR summary (and interpretation) table
7. The actual experiment video is only 26 minutes!
8. No procedure writeup is required! ☺
9. Page 76 lists molecular weights and melting information for acids and derivatives.