

Lab Report: Identification of Organic Compounds: Functional Group Effects in Organic Spectroscopy

NAME:_____

PARTNER'S NAME:_____

LAB SECTION:_____

DATE:_____

% SCORE:

	Possible points	
A. Spectrum		
B. Tables		
C. Hyperchem		
D. Questions		
E. Discussion		
Prelab quiz	10	
Total		

D. Questions:

IR spectroscopy general

1. Why do the C-X stretches of C-Br and C-I appear at lower frequencies than C-Cl?
2. Which compound in Table 2 pages **14-15**, has a broad peak in IR spectrum around 3300 cm⁻¹ and 3 equivalent carbons? Use the IR correlation table in the appendix.
3. Compare the 2 esters methyl butyrate and n-propyl acetate from the spectra you observed. Is IR spectroscopy a good way to differentiate between these two molecules? Explain.
4. Could you use IR to determine if the compound 2-butanone (used to prevent engine knock) has been added to a sample of gasoline? Cite specific peaks you would look for. The IR for hexane would be very similar to gasoline.

D. DISCUSSION & CONCLUSIONS:

Discuss advantages and limitations IR spectroscopy has in identifying molecules. Address the questions below in your discussion. Make sure you use data from lab in your discussion.

Could you use IR spectroscopy to determine the identity of a pure substance without any other evidence? For instance could you use IR spectra to confirm that you synthesized 1-octanol? Can the spectra provide conclusive evidence for this compound as opposed to 2-octanol or 1-heptanol? What information can you gain from IR spectra?

Could you use IR to identify a compound in a mixture? Does the usefulness of IR depend upon what compounds are in the mixture?