

Lab Report: Identification of Organic Compounds: Functional Group Effects

NAME: _____
PARTNER'S NAME: _____
LAB SECTION: _____
DATE: _____

% SCORE:

	Possible points	
PreLab quiz	10	
A. Lab Data		
B. Tables		
C. Questions		
D. Discussion		
Total		

C. Questions:

1. Compare the observed solubility of liquid alcohols propanol, butanol, pentanol and hexanol. How does the number of carbons affect the solubility of the alcohol? Can you make any generalizations with respect to the number of carbons and alcohol solubility?
2. Assuming they were similar in size, would you expect a ketone or an alcohol to be more soluble in water? Explain
3. Compounds that are insoluble in water but soluble in dilute acid or base have reacted with the dilute acid or base. Using structures, write the acid/base reaction of benzoic acid and NaOH. Circle the organic compound that is soluble in water.
4. Draw the structure of the conjugate acid of benzocaine. Offer an explanation for why its conjugate acid is soluble in water and benzocaine is not. Which intermolecular forces are involved?
5. If a compound is contaminated by a small amount of another impurity the melting point is lower even if the impurity melts at the same or a higher temperature. Why do you think this is so?

Use Table 2 pages 14-15 to answer questions 6, 7 and 8

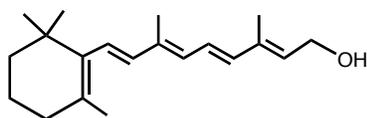
6. Comparing compounds with similar molecular weight and different functional groups which functional groups increase the boiling points? Why?

7. Comparing compounds with the same functional group, what effect does increasing molecular weight have on melting and boiling points? Why?

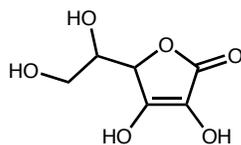
8. Are most organic compounds more _____ or less _____ dense than water? How would you explain the exceptions observed in Table 2?

D. Discussion

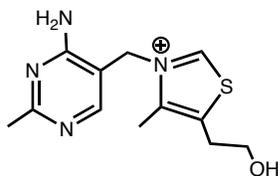
Solubility can play a large role in absorption of compounds by the body. Below are structures of 4 vitamins; two are soluble in water. Predict which vitamins will be soluble in water and justify your prediction using your knowledge of structure and solubility. What kind of liquid would you predict the remaining 2 vitamins to be soluble in? Choose a compound from Table 2 and explain your choice.



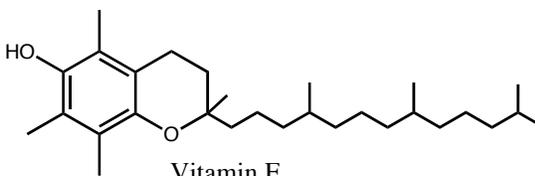
Vitamin A



Vitamin C



Thiamine
Vitamin B1



Vitamin E