

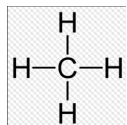
Name: _____

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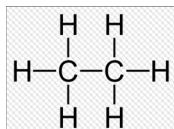
NGSS: applications of spectroscopy - IR spectra - questions

1. Comparing the IR spectra for

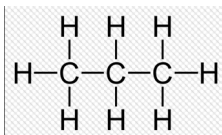
Methane



ethane



propane

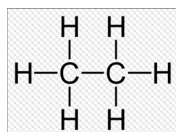


a. identify the C – C signal; basis of your answer.

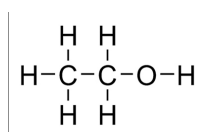
b. identify the C – H signal; basis of your answer.

2. Comparing the IR spectra for

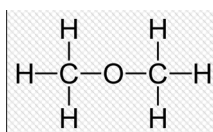
ethane



ethanol

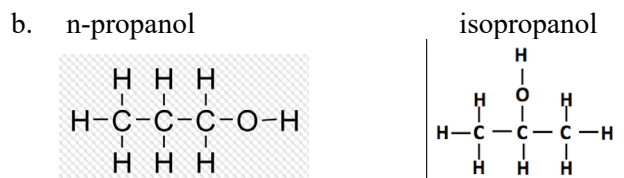
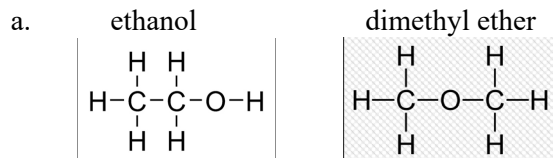


dimethyl ether



a. Identify the C – O and O – H signals; basis of your answer.

3. Isomers are chemicals with identical chemical formulas, but different chemical structures. Can IR spectroscopy be used to differentiate between isomers? justify your answer by referring to the below isomers.



4. A chemical's IR spectrum could be used as a "fingerprint" to identify a chemical. Support / refute this statement based on your preceding answers.

Source of images:

- IR spectra: http://chem-is-try.us/class/chem/ngss/NGSS_IR%20spectra.docx
- methane: <http://www.burkeoil.com/eds-blog/methane-consumers-giving-nat-gas-headaches>
- ethane: <http://fr.academic.ru/dic.nsf/frwiki/598365>
- propane: <https://commons.wikimedia.org/wiki/File:Propane-2D-flat.png>
- ethanol: <http://www.power-technology.com/projects/shoalhaven-ethanol/shoalhaven-ethanol3.html>
- dimethyl ether: <https://commons.wikimedia.org/wiki/File:Dimethyl-ether-2D-flat.png>
- n-propanol: https://commons.wikimedia.org/wiki/File:Propanol_flat_structure.png
- 2-propanol: <http://study.com/academy/lesson/what-is-isopropyl-alcohol-uses-structure-formula.html>