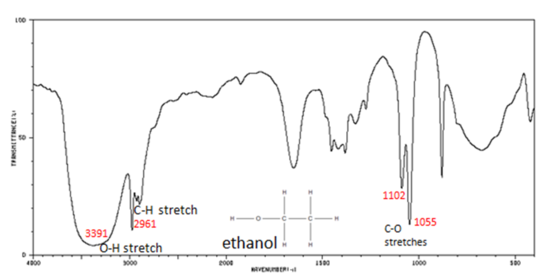
The Role of Kinetic Energy in Physical Changes

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Kinetic Energy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. There are three types of kinetic energy a molecule can possess:
   1. Rotational: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Vibrational: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Translational:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Practical Applications of Kinetic Energy
   1. Microwave Ovens
   2. Infrared Spectroscopy – infrared light is shone through a chemical sample and some of the infrared light is absorbed by the sample. The frequency of the infrared light is slowly changed and a detector plots how much energy the sample absorbs. Each chemical has a resulting “fingerprint.” The graph below shows an IR spectrum for ethanol.



1. The Role of Kinetic Energy in Phase Changes
   1. Review the graph on page 64. What do you notice about translational energy as a substance moves from solid to liquid to gas?

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1. Complete questions #64-71 on page 64.