

Chapter 3–Worksheet #2
Chem 100

1. UV photons break bonds BUT Infrared (IR) photons only vibrate (not break) bonds.

$$h = 6.63 \times 10^{-34} \text{ Js}$$

$$c = 3.00 \times 10^8 \text{ m/s}$$

- a. Calculate the **energy** associated with **UV light** with a wavelength of **320 nm** used to **break bonds**
- b. Calculate the **energy** associated with **IR light vibrations** with a wavelength of **5000 nm**.
- c. What is the **ratio** of **energy** that **breaks bonds** to energy that causes **bond vibrations**?
- d. Calculate the **energy** associated with **IR light vibrations** with a **wavenumber** of **2000 cm⁻¹**.