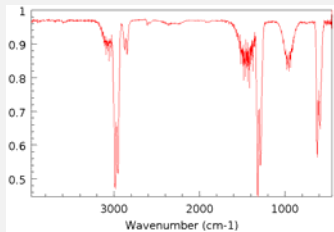


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[TP] In the IR spectrum shown of CH_3Br , the absorption near 3000 cm^{-1} is due to ...

25% 1. C–Br stretch
 25% 2. C–H stretch
 25% 3. H–C–Br symmetric stretch
 25% 4. H–C–Br antisymmetric stretch



Response Counter 10 1

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Wednesday, September 28, 2016

For today ...

- Complete: IR spectra
- Ch4: (secs 1, 3, and 4 only): How the atmosphere warms
 Think about It e4.4: Collisional heating <http://goo.gl/vQ0Nz>
 Think about It e4.5: IR windows <http://goo.gl/I8IGz>

Next lecture: Begin Ch5: Chemical equations & dynamic equilibrium

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Resonance in light-matter interaction

Demonstration: Tale of three frequencies

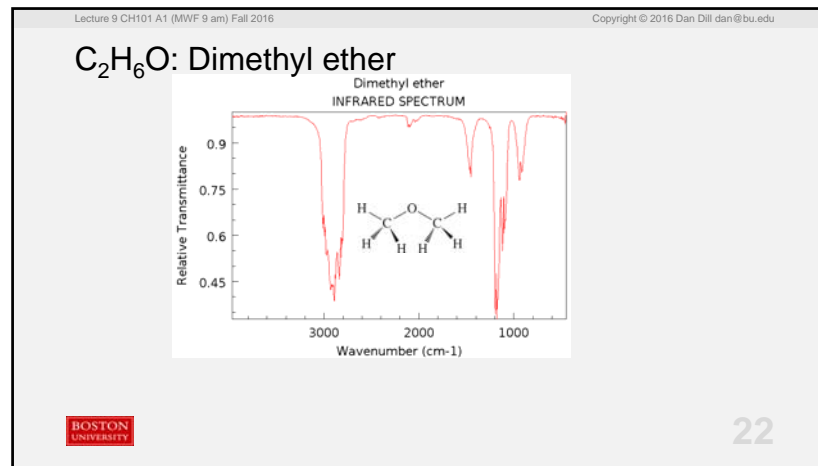
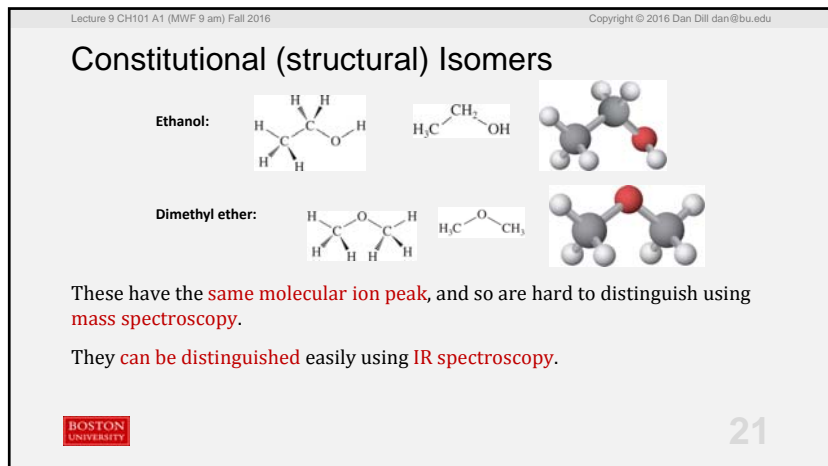
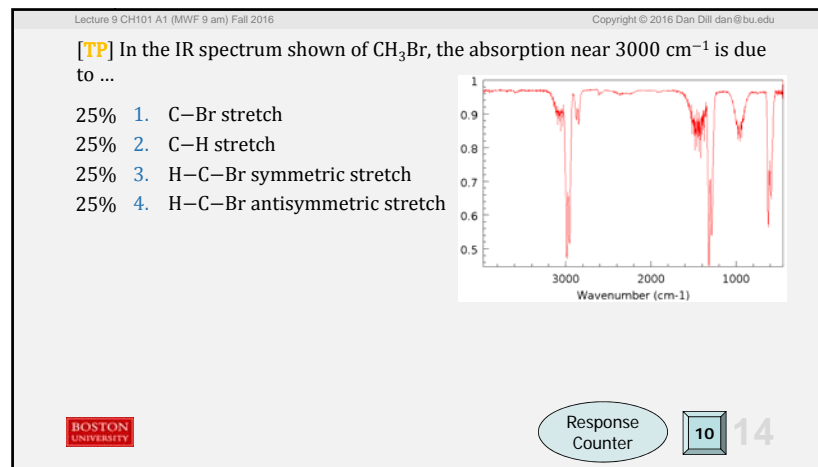
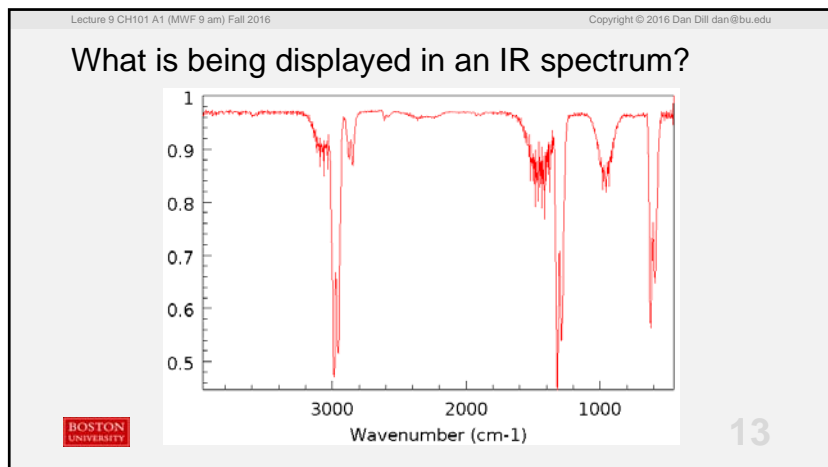
Frequencies match → response
 Frequencies do not match → “transparency”

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What is being displayed in an IR spectrum?

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C₂H₆O: Ethanol

Relative Transmittance

Wavenumber (cm-1)

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[Quiz] What motion must account for the absorption in the 3600 cm⁻¹ region?

- 20% 1. CO stretch
- 20% 2. CC stretch
- 20% 3. CH stretch
- 20% 4. OH stretch
- 20% 5. Something else

Relative Transmittance

Wavenumber (cm-1)

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Response Counter 10 25

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How the atmosphere warms

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Earth's radiation balance

Atmosphere **transparent** to **visible** light

IR light **emitted** from heated land masses

Intensity

Radiation reaching Earth from the sun (not to scale)

Radiation emitted by Earth

UV visible light Infrared light Spectral region

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e4.4: Heating due to Greenhouse Gases

Think about It e4.4: <http://goo.gl/vQ0Nz>



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