

Quiz 10

1)

Arrange the following types of electromagnetic radiation in order of increasing energy.

UV

X-ray

Radio waves

IR

Visible

Microwave

Radio wave < microwave < IR < visible < UV < x-ray

2) What type of spectroscopy uses radiowaves for excitation?

NMR

3) What types of molecular motions are probed using FT-IR?

Vibrational and rotation motion of molecules

4) Why is NMR a relatively insensitive technique?

In NMR we are excited nuclei in the ground spin state to an excited spin state. The energy difference between the two states is so small the two states are almost equally populated prior to excitation. Therefore only a small percentage of the nuclei can be excited before a saturation point is reached.

5) A Fourier Transform is a mathematical function. In the simplest terms, what does this function do (in terms of frequency/time domain)?

FT converts from the time domain to the frequency to domain.