j. Could any of the above wavelength values be the λ_{max} for the phosphorescence spectrum? Explain briefly.

5

Both 330 nm and 450 nm because the both are lower in energy than the absorption.

One is fluorescence, one phos.

k. When a TV or a fluorescent bulb are turned off, either may emit a glow that persists for a few seconds. Is this "glow" likely to be fluorescence or phosphorescence? Explain briefly.

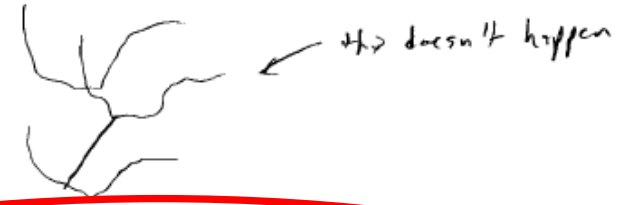
5

The glow is likely linked to phosphorescence as the decay time is generally milliseconds to minutes as opposed to μs as in fluorescence.

l. Can any transition occur between v=0 of the ground state and the triplet state? Explain why/why not.

5

No. "Slanted" transitions do not occur why?



this doesn't happen

Preview questions

1. Consider CO_2. How many vibrational modes does it have and which mode(s) are IR-Active?

2. Explain why IR and Raman spectroscopy are often said to be "complementary" (not complimentary!)