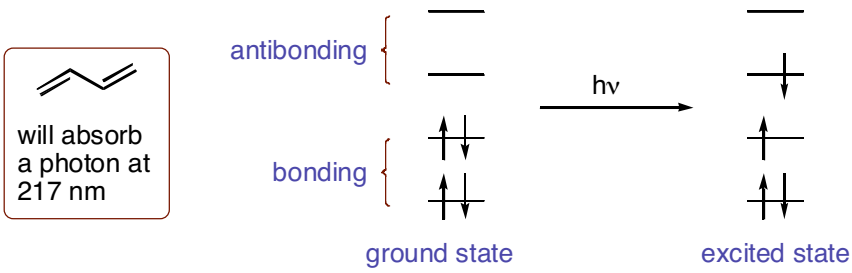
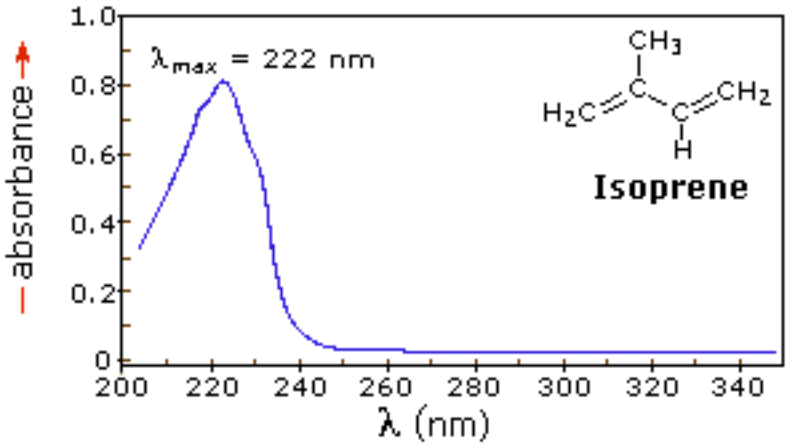
These notes can be obtained at: http://www.ndsu.nodak.edu/instruct/grcook/chem342/notes.shtml

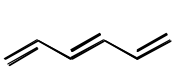
Chapter 14: Conjugated Dienes and UV Spectroscopy

Ultraviolet Spectroscopy

The energy required to push an electron from a bonding orbital in the ground state to an antibonding orbital (excited state) lies in the range of UV-visible light. The most easily excited photons are those in pi bonds. The more conjugated the pi-system is, the lower the energy required to excite the electron. Thus, UV-vis spectroscopy can give us information about the extent of conjugation.

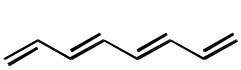




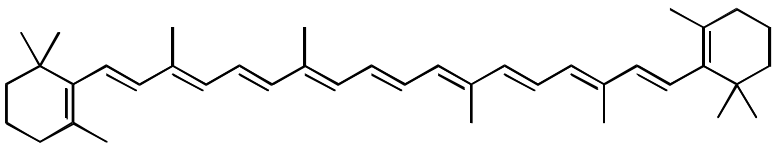


λ_{max} = 258

λ_{max} = 254



λ_{max} = 290



β-carotene (orange color of tomatoes) λ_{max} = 455 (absorbs blue light)