

## Answer on Question #74806 – Chemistry – Organic Chemistry

### Task:

Fill in the following blanks:

- 1). In the UV spectrum, the ethylenic chromophore shows an absorption band below----- nm.
- 2). In the IR spectrum, the cis isomer of internal alkenes gives band at-----cm<sup>-1</sup>.

### Solution:

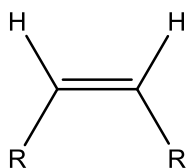
1)

Chromophore	Example	Excitation	$\lambda_{max}, nm$	$\epsilon$
<b>C=C</b>	CH <sub>2</sub> =CH <sub>2</sub>	$\pi \rightarrow \pi^*$	<b>171</b>	15,000

**C=C: 175 nm**

2) Internal alkene: An alkene which is not terminal, i.e., the carbon-carbon pi bond is not at the end of the carbon chain.

For example:



cis-isomer of internal alkene

Stretching (valence) vibrations of C = C bonds in alkenes	
HRC=CR'H cis-isomer	1665-1635 cm <sup>-1</sup>
Stretching (valence) vibrations of C - H bonds in alkenes	
HRC=CR'H cis-isomer	ν <sub>CH</sub> , 3040-3010 cm <sup>-1</sup>
deformation vibrations of C - H bonds in alkenes	
HRC=CR'H cis-isomer	planar, δ <sub>CH</sub> , 1420-1400 cm <sup>-1</sup> non-planar, δ <sub>CH</sub> , 730-665 cm <sup>-1</sup>