Hirbod Karimi
Islamic Azad University, Shahreza

Why are there two C-H spectra for the aldehyde proton in IR?

Question

Asked November 12, 2014

A very important doublet can be observed in the C-H stretch region for the aldehyde C-H near 2850 and 2750 cm−1. The presence of this doublet allows aldehydes to be distinguished from other carbonyl-containing compounds.

Is this because of overtones or Fermi resonance?

Answer this question

IR Spectra Infrared Spectroscopy Applied Organic Chemistry

Recommend Follow Share

Popular Answers (1)

Alcides Simão added an answer November 13, 2014

This doublet is the result of a Fermi resonance, arising from the C-H stretch vibration, It is also a very well documented phenomena.

Recommend Share 4 Recommendations

All Answers (6)

Alexander Shchegolikhin added an answer November 12, 2014

Dear Sir, could you kindly provide the community with an image of the spectrum under question? Some extra info about the nature of the sample would be of help too. Thank you.

Recommend Share 1 Recommendation

Alcides Simão added an answer November 13, 2014

This doublet is the result of a Fermi resonance, arising from the C-H stretch vibration, It is also a very well documented phenomena.

Recommend Share 4 Recommendations

Adel Amer added an answer November 19, 2014

Karimi,

I agree with Simao, however to get more information please read

http://www.umsl.edu/~orglab/documents/IR/IR2.html

... Read more

Recommend Share

Bojidarka B. Ivanova added an answer May 27, 2015

Mr. Karimi,

The 2840+/-30 cm^{-1} is n(O=)CH, while 2720+/-20 cm^{-1} is overtone of dCH. Please find as an attachment the IR-spectrum of PhCHO with he corresponding assignement of the IR-bands of aldehydes, the ranges, and reference

... Read more

Recommend Share 2 Recommendations

Bojidarka B. Ivanova added an answer May 28, 2015

The attachment to the posting above

2CH-aldehyde-gif.jpg · 227.39 KB

Recommend Share 1 Recommendation

Duaa Alotaibi added an answer November 10, 2018

The aldehyde C-H stretch appears at lower frequencies than the saturated C-H absorptions and normally consists of two weak absorptions at about 2850 and 2750 cm−1. The 2850-cm−1 band usually appears as a shoulder on the saturated C-H absorption bands. The band at 2750 cm−1 is rather weak and may be missed in an examination of the spectrum. The doublet that is observed in th ... Read more

Recommend Share 1 Recommendation

Sanu Saha
Indian Association for the Cultivation of Science

Answer

Add your answer (type @ to mention people)

Add files Add