

Afin que les sujets de l'épreuve orale de DNL physique-chimie anglais soient cohérents entre eux, il a été décidé qu'ils devaient comprendre :

- du texte avec un maximum de 250 mots ;
- des documents d'illustration variés : graphe, diagramme, données physico-chimiques, images, histogrammes, spectres, représentations de molécules....
- une question finale d'ouverture ne faisant pas appel à des notions scientifiques et permettant d'ouvrir le débat.

Le contenu doit rester dans les compétences exigibles du programme de physique-chimie de Terminale S ou de première L/ES. La notion abordée par les documents doit être facilement et rapidement identifiée par l'élève.

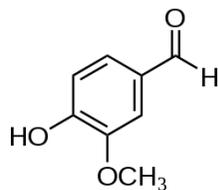
Voici pour exemple un sujet de chimie et un sujet de physique.

Chemistry of a perfume bottle

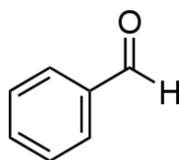
Document 1: Natural occurrence of Aldehydes and Ketones

[<http://chemwiki.ucdavis.edu/>]

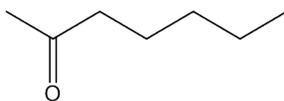
Aldehydes and ketones are widespread in nature and are often combined with other functional groups. Aldehydes and ketones are known for their sweet and sometimes pungent odors. The odor from vanilla extract comes from the molecule vanillin. Likewise, benzaldehyde provides a strong scent. However, not all of the fragrances are pleasing. In particular, heptan-2-one provides part of the sharp scent from blue cheese.



Vanillin



Benzaldehyde

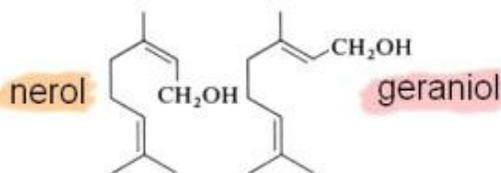


heptan-2-one

Document 2: Nerol and Geraniol

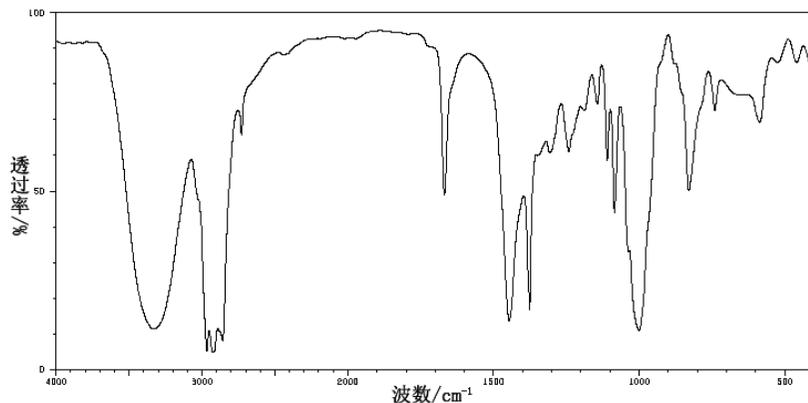
Nerol and geraniol are two chemicals with the formulae of $C_{10}H_{18}O$. To be even more precise, nerol and geraniol are almost the same substance. Chemist would say that they're isomeric forms for each other. This slight difference changes their smell. Nerol scent reminds of fresh sweet roses. Geraniol is often used to imitate taste of many fruits.

[chemistinthebottle.wordpress.com/]



Document 3:

IR Spectrum of geraniol

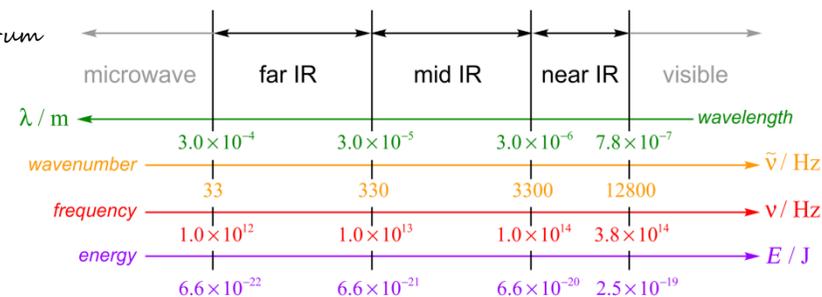


Present and comment on these documents. Focus on at least one chemistry topic. To what extent does Chemistry take part of everyday life?

Infrared Radiation - Applications

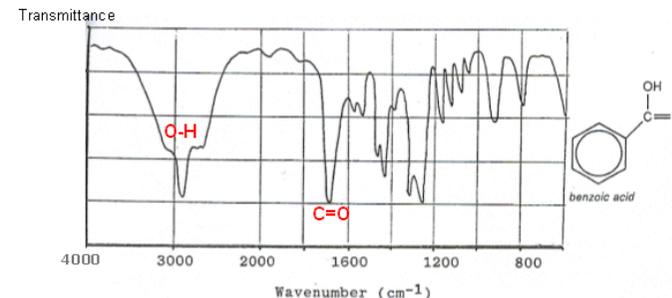
Document 1:

Electromagnetic spectrum



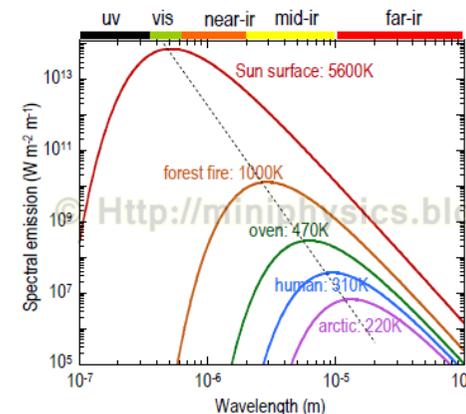
Document 2: Infrared Spectroscopy

Infrared vibrational spectroscopy is a technique that can be used to identify molecules by analysis of their constituent bonds. Each chemical bond in a molecule vibrates at a frequency characteristic of that bond.



Document 3:

Researchers began using infrared cameras to diagnose thermal envelope defects in the late 1970s.



Document 4: IR Astronomy

Infrared astronomy is the branch of astronomy and astrophysics that studies astronomical objects visible in infrared (IR) radiation. The wavelength of infrared light ranges from 0.75 to 300 micrometers. Infrared light is absorbed at many wavelengths by water vapor in the Earth's atmosphere, so most infrared telescopes are at high elevations in dry places, above as much of the atmosphere as possible. Cold, dark molecular clouds of gas and dust in our galaxy will glow with radiated heat as they are irradiated by imbedded stars. Infrared can also be used to detect protostars before they begin to emit visible light. Stars emit a smaller portion of their energy in the infrared spectrum, so nearby cool objects such as planets can be more readily detected.

Present and comment on these documents. Do not forget to focus on one physics topic. IR allow us to see the world differently. Why is it important to be able for a scientist to take time to observe his Universe?