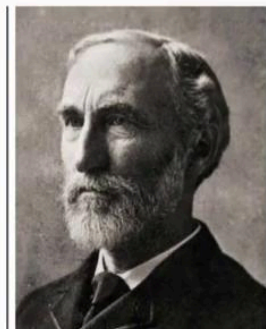


Thermodynamique



Josiah Willard Gibbs

Enthalpie standard de formation et la loi de Hess



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Video



Enthalpie standard de formation et la loi de Hess



- Enthalpie standard de formation $\Delta_f H^\circ$ et la loi de Hess
- Loi de Hess et son utilisation
- Autres enthalpies standard:
 $\Delta_{ion} H^\circ; \Delta_{att} H^\circ; \Delta_{dis} H^\circ; \Delta_{ret} H^\circ \dots$

Thermodynamique

Hello. It was a great pleasure to contribute to the coordinated thermodynamics course by the École Polytechnique Fédérale de Lausanne and BFL in Switzerland. I am a member of the IDF and I teach chemistry at the Ecole nationale supérieure Polytechnic and Espé of Yaoundé in Cameroon. We will continue our thermo chemistry course. Today. We will study the relationship between the standard enthalpy of formation and the DS law. What is the standard enthalpy of formation? What does Hess's law say? What is the use of the DS? Finally, what are the other types of standard enthalpy? Before concluding.

Notes

Summary



0m 04s

Enthalpie standard de formation et la loi de Hess



- **Enthalpie standard de formation:** $\Delta_f H^\circ$
 - C'est l'enthalpie associée à l'équation bilan de la réaction de formation d'une mole d'un corps pur composé à l'état standard à partir de ses éléments dans leurs états standards.
 - $\Delta_f H^\circ$ d'un corps pur simple dans l'état standard est égale à zéro J.mol⁻¹ quelle que soit T.
- **Utilisation de la loi de Hess**
 - Pour certains composés, il n'est pas possible de déterminer expérimentalement leurs enthalpies standard de formation.

Thermodynamique

The standard enthalpy of formation and the law is. Standard alcohol, Delta F formations at zero. And the enthalpy associated with the balance equation of the reaction of formation of a mole of a pure body composed in the standard state from the sixteen elements in their standard state. The standard enthalpy of formation delta f H0 of a simple pure body in its standard state is equal to zero. Regardless of the temperature. How to use ? For some composing. It is not possible to determine experimentally the standard enthalpy of formation. And so we are obliged to use the DS law.

Notes

Summary



1m 01s

Loi de HESS et son utilisation



Loi de HESS

Lorsqu'une équation bilan (1) apparaît comme une combinaison linéaire de plusieurs équations bilan, l'enthalpie standard de réaction $\Delta_r H_1^\circ$ de la réaction (1) correspond à la même combinaison linéaire appliquée aux enthalpies standard de réaction.

$$\Delta_r H^\circ = \sum_B \nu_B \Delta_f H_B^\circ \quad (\text{loi de Hess})$$

$\Delta_f H_B^\circ$ = enthalpie molaire standard de formation de l'espèce B notée aussi H_B° .

Thermodynamique

The DS Law. When a bilingual equation appears as a linear combination of several equations. Balance sheet. The standard enthalpy of reaction Delta Air a g0. One. Of the reaction one corresponds to the same linear combination applied to the standard enthalpy of reaction. We summarize here the valley. The standard enthalpy remains. Feedback, Delta Airlines zero and TVA the sum of an Uber. Liver delta f a. G0 of b. Apply to all species b.

Notes

Summary



1m 53s

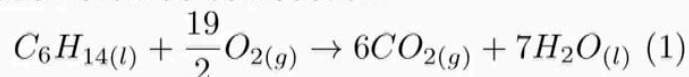
Loi de HESS et son utilisation



• Solution :

Enthalpie standard de formation de l'hexane (l) : $\Delta_f H^\circ(C_6H_{14}, l)$

Equation bilan de combustion:



$$(1) = 6.(2) + 7.(3) - (4) \text{ d'où } \Delta_f H^\circ(C_6H_{14}, l) = 6.(2) + 7.(3) - (1)$$

$$\text{AN: } \Delta_f H^\circ(C_6H_{14}, l) = -198.8 \text{ kJ/mol}$$

Thermodynamique

Let's apply now that the wizards have done it to the application. Use the address. Application tests. What do they tell us about Mac? Determine the standard enthalpy of formation of the liquid example. Knowing its standard enthalpy, the conditions and the standard enthalpy. The formations of liquid water. And carbon dioxide gas. We give the standard enthalpy of combustion of the Hexagon liquid equal to less than 4 263.1 kilo joule per mole. The standard enthalpy. The formations of carbon dioxide gas is equal to less than 393. 50 one kilo joule per mole. The standard enthalpy of formations of liquid water is equal to less than 285.84 kilos. Joule per mole. This is what we are given and we have been asked for training. The solution. What are we asked to do? We ask for the standard enthalpy. The formations of the liquid delta zero example of liquid C 6 to 14. So we will do the combination of all cases what we have. The balance equation for the conditions of the liquid test reacts with oxygen to give carbon dioxide and liquid water. This is the equation. A simple method. We are therefore to see here how to form these elements of our data.

Notes

Summary



2m 36s

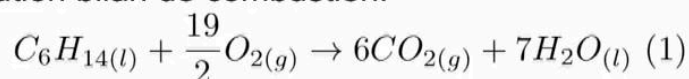
Loi de HESS et son utilisation



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Thermodynamique

But for the standard enthalpy, the formations of carbon dioxide in the gaseous state of carbon dioxide and form carbon elements oxygen elements. In the standard state, the element carbon in the solid state, the element oxygen in the gaseous state and oxygen whose solid carbon reacts with oxygen to give carbon dioxide gas. This is the equation of. The enthalpy of this reaction is the enthalpy equal to the enthalpy of formation of carbon dioxide gas. The standard enthalpy of formation of the liquid. Water is formed from hydrogen and oxygen, hydrogen and oxygen being in a gaseous state in the standard state and water in the liquid state whose gaseous dihydrogen reacts with the gaseous dioxygen to give liquid water. The reaction enthalpy is the standard enthalpy of formation of liquid water. This is the standard enthalpy equation. The formations of the hexagon is liquid. the Hexagon is formed of carbon and hydrogen. In the standard state, carbon is solid, hydrogen and in the gaseous state are led to hydrogen. The solid carbon reacts with dihydrogen to give the liquid example. This is the Typekit equation. And here we have to do some mathematics. Look at him.

Notes

Summary



4m 17s

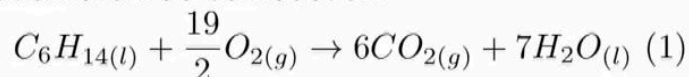
Loi de HESS et son utilisation



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Equation bilan de combustion:



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Thermodynamique

We see that the combustion equation and the combination is equal to six times the equation of two plus this time the weight equation, minus the equation for the whole year is the same for the standard enthalpy. Training. The standard enthalpy of reaction one is equal to six times the standard enthalpy. The reaction can no longer this time the standard enthalpy, the weight reaction, minus the standard enthalpy of the water reaction. It only gives here. The standard enthalpy of combustion is equal to six times the standard enthalpy of formation of carbon dioxide. Plus this time the standard enthalpy of formation of liquid water, minus the standard enthalpy of formation of water liquids. The standard enthalpy of formation liquid is equal to six times the standard enthalpy of formation of the dioxide of gaseous carbon, plus this time the standard enthalpy of formation of liquid water, minus the standard enthalpy of combustion is the example shown in a numerical application. The standard enthalpy of formation of the liquid Hexagon is equal to -198.8 kilo joule per mole.

Notes

Summary



5m 44s

Autres enthalpies standard



1° Enthalpie standard de changement d'état

Il s'agit d'une transformation physique qui est un changement de l'état d'agrégation du composé B.

Symbole en indice

- 1.1. *fus* = fusion = passage de l'état solide à l'état liquide.
- 1.2. *vap* = vaporisation = passage de l'état liquide à l'état gazeux.
- 1.3. *sub* = sublimation = passage de l'état solide à l'état gazeux.
- 1.4. *changement de structure cristalline*

2° Enthalpie standard d'ionisation : $\Delta_{ion}H^\circ$

3° Enthalpie standard d'attachement électronique: $\Delta_{att}H^\circ$

4° Enthalpie standard de dissociation ou de liaison : $\Delta_{dis}H^\circ$

5° Enthalpie standard réticulaire : $\Delta_{ret}H^\circ$

Thermodynamique

What are the other types of standard enthalpy? First we have the standard enthalpy of the change of state. It is a physical transformation that is a change of. the state of aggregation of the compound grows and the symbols will emit a hint for the merge. We will put the points PML be seen for vaporization or a standard index. As we put a small F in index for sublimation, the first three letters for changes, crystal structures. If there is an odds, there is also the standard enthalpy of ionization delta and we add zero and the standard enthalpy of electronic attachment delta to zero. The standard enthalpy of dissociation Delta ten has G0 and the standard bonding enthalpy delta. It acts zero. The standard reticular enthalpy delta h zero.

Notes

Summary



7m 05s

CONCLUSION



- **Enthalpie standard de formation $\Delta_f H^\circ$** est l'enthalpie associée à l'équation bilan de la réaction de formation d'une mole d'un corps pur composé à l'état standard à partir de ses éléments dans leurs états standards.

$\Delta_f H^\circ$ d'un corps pur simple dans l'état standard est égale à zéro $J.mol^{-1}$ quelle que soit T .

- **Loi de HESS:** $\Delta_r H^\circ = \sum_B \nu_B \Delta_f H_B^\circ$

$\Delta_f H_B^\circ$ = enthalpie molaire standard de formation de B notée aussi H_B° .

$\Delta_r H^\circ$ = enthalpie standard de réaction.

Thermodynamique

That's the end of that one. Or is unique the standard enthalpy of formation Delta FH zero. And the enthalpy associated with the balance equation of the reaction of formation of a mole of a pure body composed in the standard state from the sixteen elements. In their standard state. Someone has g0 of a pure body, thus the standard enthalpy of formation delta zero of a corpus. In the standard state is equal to zero joules per mole. Regardless of the temperature. The DS law tells us that the enthalpy Delta Air I zero reaction standard is equal to the sum of the numbers. Faith. Standard enthalpy of formation. The species B delta f with eight zeros. Applied to all reaction species. The species B in reaction. Thank you and goodbye.

Notes

Summary



8m 07s