

S. B. Arts & K.C.P. Science College, VIJAYAPUR- 586 103.



ASSIGNMENT

For B.A./~~B~~.Sc.^{D&K} Semester
2017 - 2018

Name of the Student Geetha P. Tippad

Roll No. 05 R.C.U. Seat No. CH17 2006

Subject Inorganic chemistry

Assignment No.	Date	Marks Assigned	Marks Obtained	Name and Signature of Teacher	Remarks
1	21/11/18	05	05		
2					
3					
4					

11

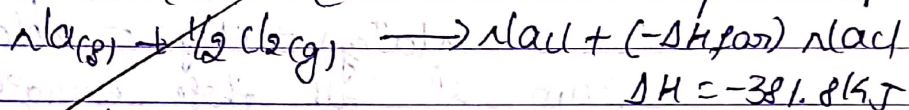
Outline the Born-Haber cycle for the formation of NaCl and explain how it is used to calculate lattice energy.

Born-Haber cycle for the formation of NaCl. This method is based on the assumption that the formation of one mole of crystalline NaCl can occur either by 1) the direct combination of NaCl of $\frac{1}{2} \text{Cl}_2(\text{g})$ or by an alternative process in which consists of 5 steps.

1) Direct combination of Na(s) & $\frac{1}{2} \text{Cl}_2(\text{g})$:

It is a single step reaction of energy equal to the heat of formation of NaCl (ΔH_{form}) NaCl is released in it.

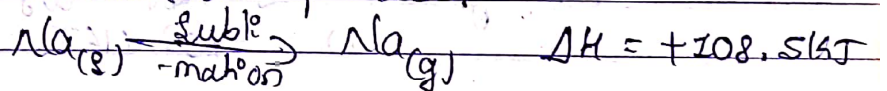
Thus it is an exothermic process.



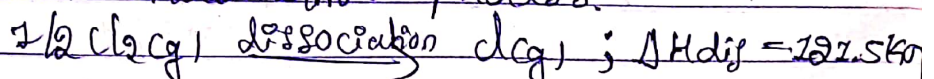
2) Alternate process:

This process involves 5 steps.

Step: -1 Sublimation of metallic sodium atom to form gaseous sodium atom it is an endothermic process.

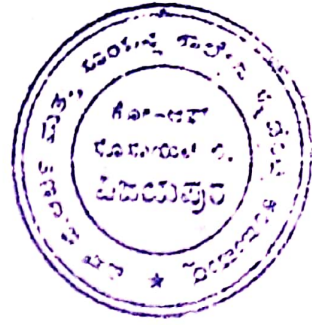


Step: -2 Dissociation of chlorine molecule into chlorine atom in this step half a mole of $\text{Cl}_2(\text{g})$ absorbs energy equal to half of the dissociation energy of $\text{Cl}_2(\text{g})$. i.e. $\frac{1}{2} (\Delta H_{\text{dis}})$ Cl_2 & is converted into $\text{Cl}(\text{g})$. It is thus an endothermic process.



Step: -3 :- Ionisation of sodium atom into sodium ion each $\text{Na}(\text{g})$ atom absorbs energy equals to its I.E & loses outer most electron to form $\text{Na}^+(\text{g})$. It is an endothermic process.

**S. B. Arts & K.C.P. Science College,
VIJAYAPUR- 586 103.**



ASSIGNMENT

For B.A./ ^MB.Sc. ^{Bst}..... Semester
2017 - 2018

Name of the Student Pooja. D. Pujari

Roll No. 16 R.C.U. Seat No. CH/172015

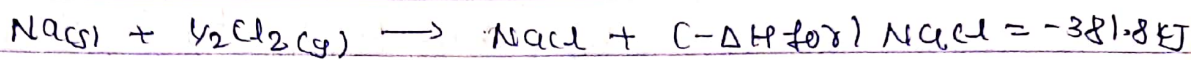
Subject Inorganic chemistry.

Assignment No.	Date	Marks Assigned	Marks Obtained	Name and Signature of Teacher	Remarks
1	2/9/18	05	05		
2					
3					
4					

1) outline the Born-Haber cycle for the formation of NaCl and explain how it is used calculate lattice energy.
 Born-Haber cycle for the formation of sodium chloride
 this method is based on the assumption that the formation of one mole of crystalline NaCl can occur either by one of the direct combination of NaCl & $\frac{1}{2} \text{Cl}_2(\text{g})$ or by an alternative process which consists of 5-steps.

i) Direct combination of Na(s) & $\text{Cl}_2(\text{g})$:-

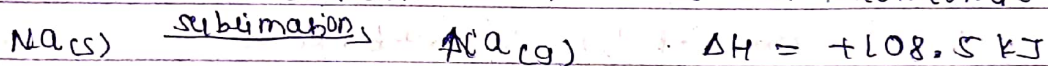
It is a single step reaction energy equal to the heat of formation of NaCl ($\Delta H_{\text{f}}^\circ$) NaCl is released in it. Thus it is an exothermic process.



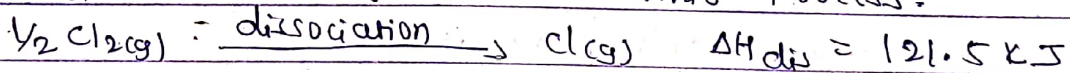
ii) Alternative process:

The process involved 5-steps

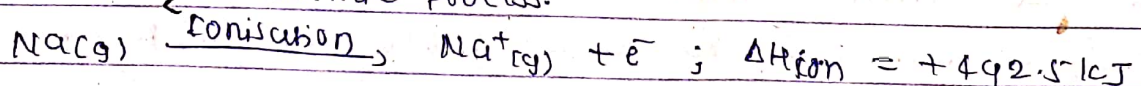
Step: 1) sublimation of metallic sodium atom to form gaseous sodium atom it is an endothermic process



Step: 2) Dissociation of chlorine molecule into chloride atom in this step half a mole of $\text{Cl}_2(\text{g})$ absorbs energy equal to half of the dissociation energy of $\text{Cl}_2(\text{g})$ i.e. $\frac{1}{2} (\Delta H_{\text{dissociation}}) \text{Cl}_2$ and is converted into $\text{Cl}(\text{g})$ it is thus an endothermic process.



Step: 3) Ionisation of sodium atom into sodium ion each Na(g) atom absorbs energy equal to its I.E and loses outermost electron to form $\text{Na}^+(\text{g})$ it is an endothermic process.



Step: 4) Addition of electron to chloride to form chloride ion. In this step $\text{Cl}(\text{g})$ releases energy equal to its process

