

Puspa Shrestha

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Puspa Shrestha

EXPERIMENT NO. 14

NAME OF EXPERIMENT: TO IDENTIFY ACIDIC AND BASIC RADICAL PRESENT IN GIVEN SAMPLE SALT.

APPARATUS REQUIRED

1. Test tube
2. Test tube holder.

CHEMICALS REQUIRED

- | | | | |
|-------------|--------------|---------------|-------------|
| 1. HCl | 2. H_2SO_4 | 3. HNO_3 | 4. $AgNO_3$ |
| 5. $BaCl_2$ | 6. $FeSO_4$ | 7. H_2S gas | 8. NH_4OH |
| 9. NH_4Cl | 10. $NaOH$ | 11. $CONO_2$ | |

THEORY

The electronegative radical which comes from an acid is called acidic radical. In other word, the radical of acid other than H^+ ion is called acidic radical. For eg: Cl^- , Br^- , I^- , etc.

The electropositive radical which comes from base is called basic radical. In other word, the radical of base other than OH^- ion is called basic radical. For eg: Na^+ , Ag^{++} , Zn^{++} , Cu^{++} , etc.

OBSERVATION (For acidic radical)

Dry Test

Experiment	Observation	Inference
1. A pinch of salt was taken in the test tube and few drops of HCl was added.	1. No gas was seen.	1. Absence of SO_3^{--} , CO_3^{--}
2. A pinch of salt was taken and few drops of H_2SO_4 was added.	2. No gas was seen.	2. Absence of halogen.
3. In exp-2, Cu-turning was added.	3. No brown fume was seen.	3. Absence of NO_3^{--}

Wet Test

Experiment	Observation	Inference
1. 2ml of salt sol ⁿ was taken and added HNO_3 , boiled & cooled and again AgNO_3 was added.	1. ppt was not seen.	1. Absence of halogen.
2. 2ml of salt sol ⁿ was taken & few drops of BaCl_2 was added. (If ppt seen add HCl)	2. ppt was seen.	2. Presence of SO_4^{--}
3. 2ml of salt sol ⁿ was taken and few drops of FeSO_4 was added & conc. H_2SO_4 too.	3. No ring was seen.	3. Absence of NO_3^{--}

Reactions:

1. $\text{ZnSO}_4 + \text{Na}_2\text{CO}_3 \longrightarrow \text{ZnCO}_3 + \text{Na}_2\text{SO}_4$
2. $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \longrightarrow \text{BaSO}_4 \downarrow + 2\text{NaCl}$
(white ppt)
3. $\text{BaSO}_4 + \text{HCl} \longrightarrow$ No reaction.

For Basic radical Dry Test

Experiment	Observation	Inference
A pinch of salt was taken in test tube and heated.	Salt was original but infusible.	May be presence of Al, Mg, Ba, Ca, etc.

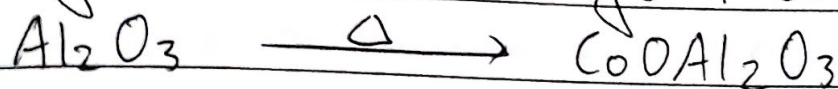
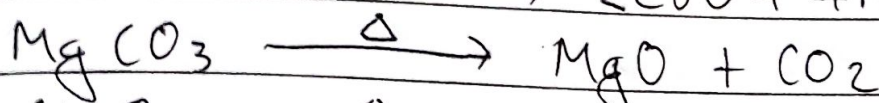
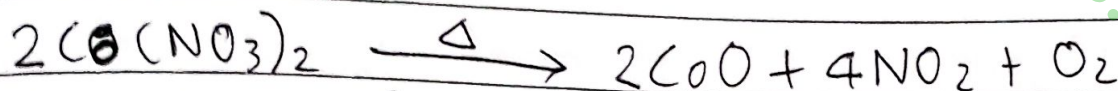
Filter Ash Test

When ~~car~~ charcoal reduction test is not performed then this test can be done. This test is also based on the fact that on heating cobalt nitrate is converted to cobalt oxide.

Salt solution was taken and added few drops of cobalt nitrate solution. The solution was shaken. Piece of filter paper was dipped in the solution and ignited the paper completely.

Experiment	Observation	Inference
Filter Ash Test was performed.	Colour of ash was blue.	Presence of Al^{+++}

Reactions:



(Blue cobalt aluminates)

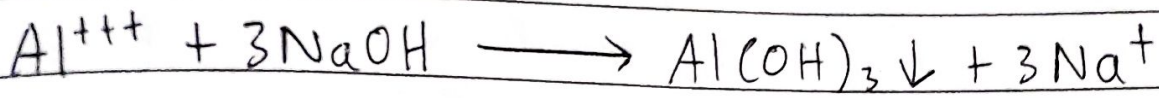
Wet Test

Experiment	Observation	Inference
1. Few ml of salt sol ⁿ was taken and added few drop of dil. HCl.	1. No ppt was seen.	1. Absence of Pb^{++} , Ag^+ , Hg^+ , etc.
2. Warmmed exp-1 and passed H_2S gas for few seconds.	2. No ppt was seen.	2. Absence of Cu^{++} , Pb^{++} , Ag^+ .
3. Few ml of salt sol ⁿ was taken and added NH_4OH and NH_4Cl .	3. ppt was seen.	3. Presence of group IIIA.

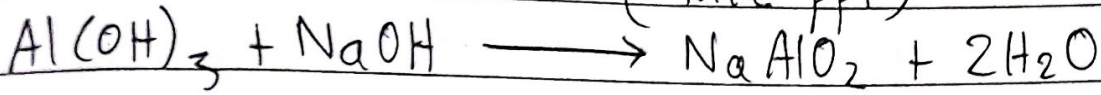
Confirm Test

Experiment	Observation	Inference
1. Salt sol ⁿ was taken and few drops of NaOH was added.	1. White gelatinous ppt was seen (soluble in excess NaOH .)	1. Presence of Al^{+++} .
2. Salt sol ⁿ was taken and few drop of NH_4OH was added.	2. White gelatinous ppt was seen.	2. Presence of Al^{+++} .

Reactions:

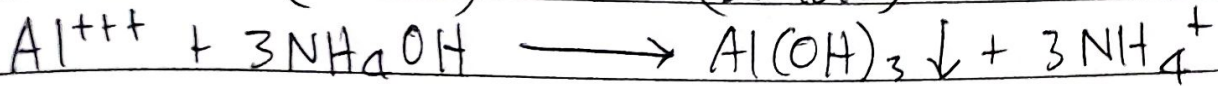


(white ppt)



(excess)

(soluble)



RESULT

Hence, the acidic radical in the given sample salt is SO_4^{--} and in basic radical is Al^{+++} .

PRECAUTION

1. All the glasswares should be handled carefully.
2. The process of drying test tube should be done properly.

[Signature]
12/06