

Puspa Shrestha

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EXPERIMENT NO. 3

NAME OF EXPERIMENT: TO DETECT THE FOREIGN ELEMENT PRESENT IN THE GIVEN ORGANIC COMPOUND.

APPARATUS REQUIRED

1. Beaker
2. Funnel
3. Test tube
4. Test tube holder
5. Fusion tube
6. Tong
7. Mortar and Pestle

CHEMICALS REQUIRED

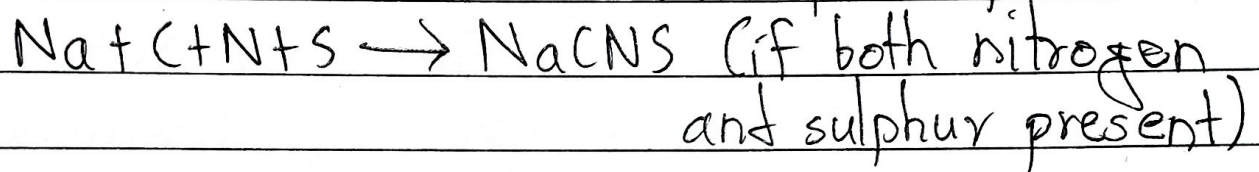
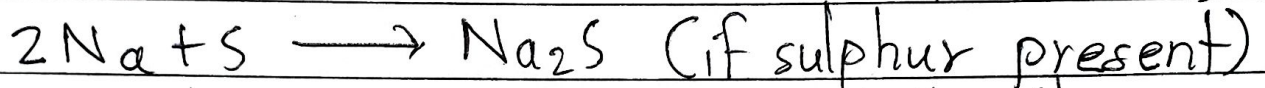
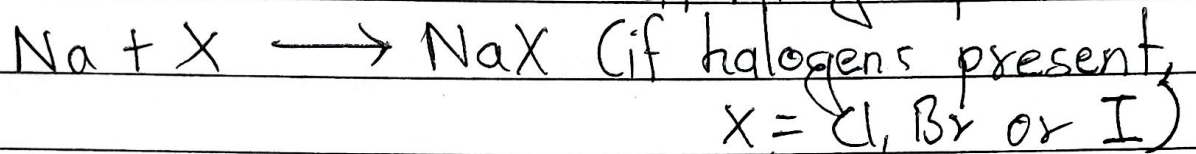
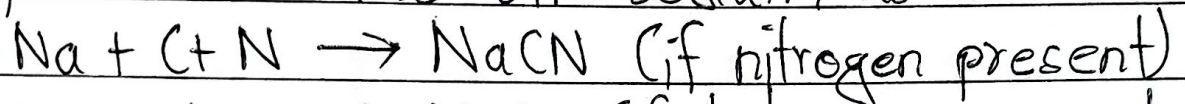
1. Sodium extract solution.
2. Dil. NaOH
3. Conc. HNO_3
4. AgNO_3
5. NH_4OH
6. FeCl_3
7. Conc. HCl or conc. H_2SO_4

THEORY

Organic compounds are covalent in nature. Foreign elements present in organic compounds are also bonded covalently. Therefore, the laboratory reagents cannot be used for detection. Hence, first these elements are converted from covalent to ionic compounds. These compounds undergo ionic reactions with laboratory reagents. This conversion can be done easily and effectively by fusing

the organic compounds with sodium metal.

When an organic compound is fused with sodium metal, the different elements present in the compound combine with sodium as:



PROCEDURE

Small pea size piece of sodium metal was taken. The kerosene oil was soaked by passing the sodium metal between the folds of filter paper and was put into the clean and dry ignition tube. The ignition tube was held with the help of tong and it was heated gently just to melt the sodium piece. It was cooled and then small amount of organic compound was added. After that, the tube was heated first slowly and then strongly until the entire lower end of the tube became dull red hot. The hot tube was plunged into a mortar containing 10 cc of distilled water. The tube was broken into

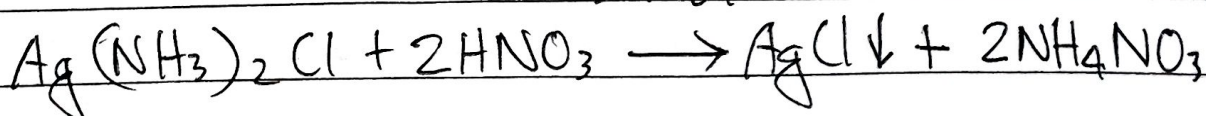
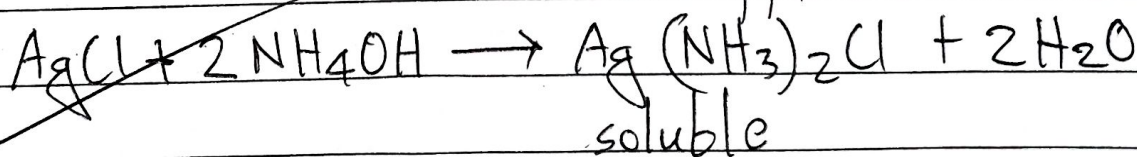
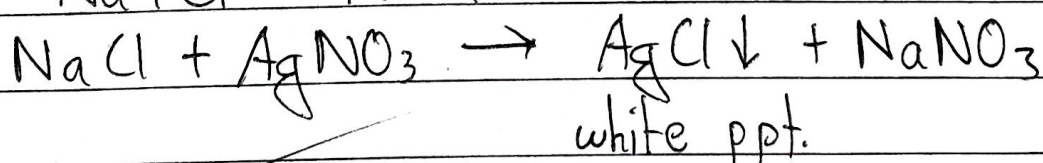
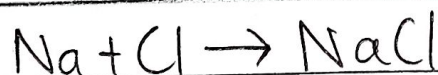
small pieces in the mortar with the help of the pestle. In the same way two or three ignition tube was plunged and was grinded with pestle. It was warmed and filtered. The filtrate was called Lassaigne's solution or sodium extract or test solution. This solution was ~~φ~~ taken and the tests as follows were performed:

OBSERVATION TABLE

Experiment	Observation	Inference
1. Detection of nitrogen: 2ml of extract was taken and few drops of NaOH was added and then 1 cc of FeSO_4 solution. It was boiled and 2-3 drops of FeCl_3 solution was added along with conc. HCl.	1. No bluish bluish green colour was seen.	1. Absence of nitrogen.
2. Detection of sulphur: i) A few drops of sodium nitroprusside solution was added to about 1cc of	i) No violet colouration was seen.	i) Absence of sulphur.

Experiment	Observation	Inference
sodium extract.		
ii) A few drops of each acetic acid and lead acetate sol ⁿ were added to about 1cc sodium extract.	ii) No black ppt was seen.	ii) Absence of sulphur.
3. Detection of Halogens: Few drops of conc. HNO ₃ was added to about 1cc of sodium extract in a test tube and boiled. The solution was cooled and few drops of AgNO ₃ was added.	3. Curdy white ppt was seen which was soluble on adding NH ₄ OH and reappeared on adding HNO ₃	3. Presence of Cl.

REACTIONS INVOLVED



RESULT

Hence, the presence of halogen (Cl) was detected.

PRECAUTIONS

1. We need to be careful while heating sodium metal.
2. Attention should be given while handling conc. acids.
3. Freshly prepared solutions should only be used.

8/05