

Theory of Oxy Acids

Sudhansh Chavan

Abstract—Compounds of oxygen bonded covalently with it and having many lone pairs on the central atom decreases the acidic nature of the compound. Therefore acidic nature is inversely proportional to lone pairs on central atoms.

Index Terms—Hybridisation , lonepairs, isotope, distinctive , acetum , isolation, spine , projections

1 INTRODUCTION

THE compounds that are having Oxygen in it bonded covalently with other atoms produces acidic nature.

Oxyacid, any oxygen-containing acid. Most covalent nonmetallic oxides react with water to form acidic oxides; that is, they react with water to form oxyacids that yield hydrogen ions (H_3O^+) in solution. There are some exceptions, such as carbon monoxide, CO, nitrous oxide, N_2O , and nitric oxide.

Generally **oxygen**, gaseous chemical element; symbol O; at. no. 8; interval in which at. wt. ranges 15.99903–15.99977; m.p. - 218.4°C; b.p. - 182.962°C; density 1.429 grams per liter at STP; valence - 2. The existence and properties of oxygen had been noted by many scientists before the announcement of its isolation by Priestley in 1774. Scheele had also succeeded in preparing oxygen from a number of substances, but publication of his findings was delayed until after that of Priestley's. As a result, Priestley and Scheele are credited with the discovery of the element independently. The fact that the gas is a component of the atmosphere was finally and definitely established by Lavoisier a few years later. In 1929, W. F. Giaque and H. L. Johnston announced the discovery of two isotopes of oxygen, of mass numbers 17 and 18.

The term **acid** was first used in the seventeenth century; it comes from the Latin root *ac-*, meaning “sharp”, as in *acetum*, vinegar. Some early writers suggested that acidic molecules might have sharp corners or spine-like projections that irritate the tongue or skin. Acids have long been recognized as a distinctive class of compounds whose aqueous solutions exhibit the following properties:

- A characteristic sour taste (think of lemon juice!);
- ability to change the color of litmus from blue to red;
- react with certain *metals* to produce gaseous H_2 ;
- react with *bases* to form a salt and water.

2 THEORY

We all know that ‘O’ when bonded to non metals gives acidic properties or produces acid.

So when we calculate the hybridization of central atom we

always get:

SP^2 and sp^3

Sp^2 has less lone pairs on central atom as compared to sp^3 hybridized atom.

sp^2 hybridized atoms contain more acidic properties than sp^3 hybridized atom and it is as follows :

sp^2 acidic nature > sp^3 acidic nature

Examples :

CO_2 has acidic nature as it has less lone pairs in fact it does not contain the lone pairs as SO_2 has lone pairs, its acidic properties decreases as compared to CO_2 .

3 CONCLUSION

So, as when we observe the above theory as lone pairs increases on the central atom then acidic nature decreases.

So, acidic nature is inversely proportional to lone pairs on central atoms.

ACKNOWLEDGMENT

The persons I wish to thank haiharaprasad(chemistry professor) and my parents for supporting me .This work was supported in part by a grant from faculty.

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