

Chemistry 51

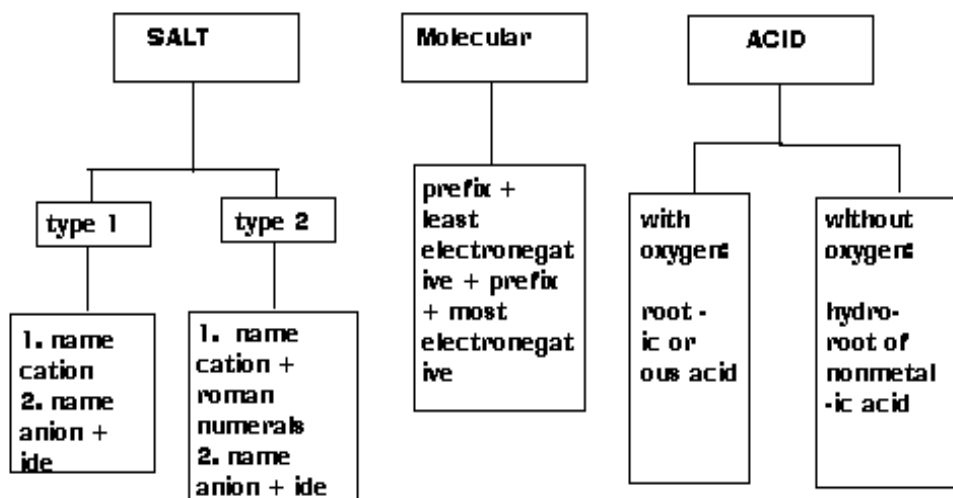
Experiment 6

Nomenclature

RULES FOR CONSTRUCTING LEWIS DOT FORMULAS

Introduction:

The ability to *write* chemical formulas and correctly *name* chemical compounds is vital to the study of



chemistry. This section will provide you with practice to help you acquire this ability. Remember to determine the type of compound before attempting to name the compound.

When naming chemical compounds, first determine the type of compound. Is it IONIC (a metal & nonmetal), MOLECULAR (nonmetals only) or an ACID (hydrogen salt in water)? Remember, an ionic species is composed of a metal + a nonmetal. A molecular species is composed of two or more nonmetals. An acid generally begins with "H".

If the compound is an ionic species, determine if the cation is of type 1 (has only one possible oxidation state or charge) or type 2 (has multiple oxidations states or charges). Follow the rules pertaining to each type. The IUPAC rules are given here. Remember to keep the roman numerals in parenthesis. Also remember that the -ide ending is only used with monatomic anions. The polyatomic anions will have the -ate or -ite ending. Consult your textbook for the listing of polyatomic anions.



Cesium is found in Group I so it can only have a positive (+) one charge, calcium is found in Group II so it can only have a positive (+) two charge, and lastly cerium is a lanthanide and can have different oxidation states (charges). The roman numerals must be used when naming cerium compounds in order to differentiate between the different possible oxidation states.

If the compound is molecular then use the following greek prefixes.

1 = mono	3 = tri	5 = penta	7 = hepta	9 = nona
2 = di	4 = tetra	6 = hexa	8 = octa	10 = deca

Do not use the prefix mono for the first component. **CO is called carbon monoxide. N₂O₅ is called dinitrogen pentoxide**

If the compound is in water and it contains hydrogen (in front) then this species is an acid. First check to see if the acid contains oxygen or not. There are two different rules to follow depending on the presence of oxygen. If the species is an oxyacid and has the relatively higher oxidation state, it is named as "*root of nonmetal* - ic acid". If the nonmetal of the oxyacid has the lower oxidation state then it is named by "*root of nonmetal* - ous acid".

HI = hydroiodic acid

HIO₃ = iodic acid

HIO₂ = iodous acid

Introduction to Molecular Modeling

A. Write chemical formulas for the following compounds:

1. Potassium chloride _____
2. Barium sulfate _____
3. Aluminum nitrate _____
4. Copper (II) carbonate _____
5. Iron (III) chloride _____
6. Magnesium Hydroxide _____
7. Lead (II) oxide _____
8. Nickel (II) hydroxide _____
9. Mercury (II) bromide _____
10. Ammonium sulfide _____
11. Magnesium chlorate _____
12. Sodium hydroxide _____
13. Manganese (II) phosphate _____
14. Silver acetate _____
15. Platinum(IV) fluoride _____
16. Chromium (III) hydroxide _____
17. Calcium carbonate _____
18. Antimony trichloride _____
19. Ammonia _____
20. Silicon dioxide _____
21. Carbon monoxide _____
22. Hydrobromic acid _____

23. Nitrous acid

24. Acetic acid

25. Sulfuric acid

B. Give a correct chemical name for each of the following compounds:

1. MgO

2. PbI₂

3. FeS

4. ZnSO₄

5. Li₂CO₃

6. Ba(NO₃)₂

7. NH₄NO₂

8. K₂SO₄

9. CrCl₃

10. Ca(C₂H₃O₂)₂

11. MgO

12. Ca₃(PO₄)₂

13. PbO₂

14. KMnO₄

15. BaCl₂

16. NaHCO₃

17. CCl₄

18. NO₂

19. N₂O₄

20. PBr₃

21. HCl(aq) _____

22. HNO₃(aq) _____

23. H₂SO₃(aq) _____

24. H₃PO₄(aq) _____

25. H₂O _____

