Name: Key
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Chemistry 11
SOLUTION CHEMISTRY
DISSOCATION OF SALTS

The formation of a SOLUTION depends on the ability for the SOLVENT to dissolve the SOLUTE.

Recall: SOLVATION is defined as "like dissolves like"

IONIC SOLID - a series of ionic compounds joined together by ionic bonds -> an ionic bond is formed when a metals's electron is **transferred** to a non-metal.

MOLECULAR SOLID- a series of molecular compounds joined together by covalent bonds -> a covalent bond is formed when two (or more) non-metals **share** electrons.

NOTE: IONIC SOLIDS are classified as "POLAR" because there is a SEPERATION OF CHARGES. That is why a substance like $CuCl_2$ will dissolve in water (ionic solid (POLAR) in a POLAR solvent (water) => solvation)

Whereas MOLECULAR SOLIDS are classified as "NON-POLAR" because there is little SEPERATION OF CHARGE. That is why a substance like I_2 will not dissolve as well in water (molecular solid(NON-POLAR) in a POLAR solvent (water)=> less solvation)

demo of this.

There are TWO TERMS for the reaction between any IONIC COMPOUND and water: either DISSOCIATION **or** IONIZATION.

Example 1. Write the dissocation/ionization equations for the following ionic compounds in water:

a. $FeBr_3$ (s) $\longrightarrow$ $Fe^{3+}(aq) + 3Br^-(aq)$

b. CuCl (s) $\longrightarrow$ $Cu^+(aq) + Cl^-(aq)$

c. HCN (s) $\longrightarrow$ $H^+(aq) + CN^-(aq)$

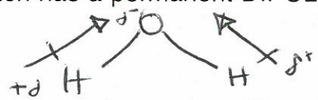
d. $(NH_4)_3PO_4$ (s) $\longrightarrow$ $3NH_4^+(aq) + PO_4^{3-}(aq)$

e. H_2SO_4 (s) $\longrightarrow$ $2H^+(aq) + SO_4^{2-}(aq)$

The ability to CONDUCT an ELECTRIC CURRENT has to do with the sepeartion of CHARGES.

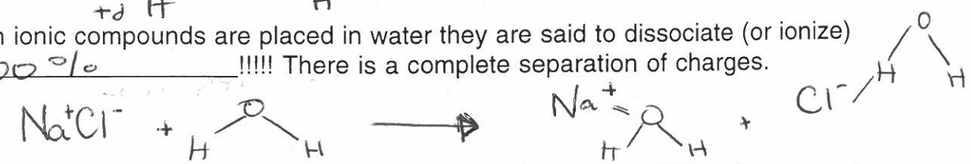
Water is a good conductor of electric current because water is a POLAR molecule which has a permanent DIPOLE (separation of charge)

ex.



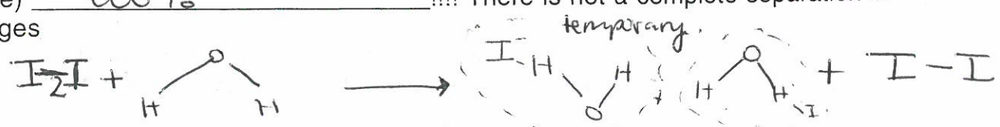
When ionic compounds are placed in water they are said to dissociate (or ionize) 100% !!!!! There is a complete separation of charges.

ex.



Whereas when molecular compounds are placed in water they do not dissociate (or ionize) 100% !!!! There is not a complete separation of charges

ex.



THEREFORE, it can be concluded that IONIC SOLUTIONS are GOOD CONDUCTORS of ELECTRIC CURRENT, whereas MOLECULAR SOLUTIONS are POOR CONDUCTORS of ELECTRIC CURRENT.