Question #82983, Chemistry / General Chemistry | for completion

1.on what basis is carbon placed in 2nd and 4th group of the periodic table
2.on what basis is argon given its position in the periodic table
3.what causes the change in ionic radius from left to right across period 2 of the periodic table
4. what causes the changes in ionisation energy across period 2 elements
5. explain the solublity trend of NaF, NaCL , NaBr , NaI in water

1. Carbon alone forms negative ions, in the form of carbide ($C^{4-}$) ions. Silicon and germanium, both metalloids, each can form +4 ions. Tin and lead both are metals while flerovium is a synthetic, radioactive (its half life is very short), element that may have a few noble gas-like properties, though it is still most likely a post-transition metal. Tin and lead are both capable of forming +2 ions.

2. It is in group XIII A, because it has 8 valent electrons.

3. The effect of increasing proton number is greater than that of the increasing electron number; therefore, there is a greater nuclear attraction. This means that the nucleus attracts the electrons more strongly, pulling the atom's shell closer to the nucleus. The valence electrons are held closer towards the nucleus of the atom. As a result, the atomic radius decreases.

4. Elements on the left side of the periodic table have low ionization energies because of their willingness to lose electrons and become cations. Thus, ionization energy increases from left to right on the periodic table.

5. The solubility trend of the sodium halide salts (NaF, NaCl, NaBr, NaI) is that the solubility increases with increasing ionic radius of the halide. This means the solubility increases down the halogen group when they are bonded to sodium ions. In other words, NaI is more soluble than NaBr. NaBr is more soluble than NaCl and NaCl is more soluble than NaF. Fluorine is at the top of the halogen group and iodine is the at the bottom of the halogen group just above astatine. This means that fluorine has the smallest ionic radius of all of the halogens. Smaller ions are closer together in solution. This means the intermolecular forces between them are greater and more effort is required to separate them in the dissolution process.