Chemical Bonding

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looking at bonding and nobel gases

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1 Compounds

DEFINITION

Compounds.

A substance made up of two or more elements chemically combined.

An example:

EXAMPLE 1.1

$$2\,H_{2(g)} + O_{2(g)} \longrightarrow 2\,H_2O_{(l)}$$

Nobel gas: Very stable and nonreactive. He and Ne never form compounds.
Uses: Helium: weather balloons and blimps, not flammable. Argon: electric light bulbs to prevent tungsten filament from evaporating or reacting with air.
We want to create stable compounds in chemistry. The way we do that is by having 8 electrons in the outer shell.

DEFINITION

Octet Rule.

When binding occurs, atoms tend to reach an electron arrangement with 8 electrons in the outermost energy level.

Exceptions: - Transition metals - can have more or fewer than 8 electron in outermost energy level - Elements near helium - tend to have 2 electron in outer energy level rather than 8 in the nobel gases.

DEFINITION

Valence Shell.

The outermost energy level is also known as the valence shell.

2 Ionic binding

DEFINITION

Ionic Bonding.

An ionic bond is the electrostatic force of attraction between oppositely charged ions in a compound.

Make sure you have 'electrostatic force' in it. That is what causes the bond

DEFINITION

Ion.

A charged atom or group of atoms.

Looks at the losing and gaining of electron to form compounds. Also known as transfer of electrons. Mainly between metals and non metals usually quite stable looking a lot at crystal structures.
Example
Aliminim. 3 electrons in outermost shell It will loose 3 because it's less energy to loose 3 than gain 5.
the rule of thumb less than four, it losses, more then four it gains, 4, it does either.

3 Valency

DEFINITION

Valency.

The number of bonds an atom of the element forms when it reacts.

Valency is the same column number as the element is in on the periodic table. if it is positive, it will loose, negative it will gain
+1,+2,+3,+-4, -3, -2, -1
table of group, electron sin outer shell, electron to be lost/gained, valency group: 1,2,3,4,5,6,7,8
Electorn in outer shell: 1 e-, 2e-, ...