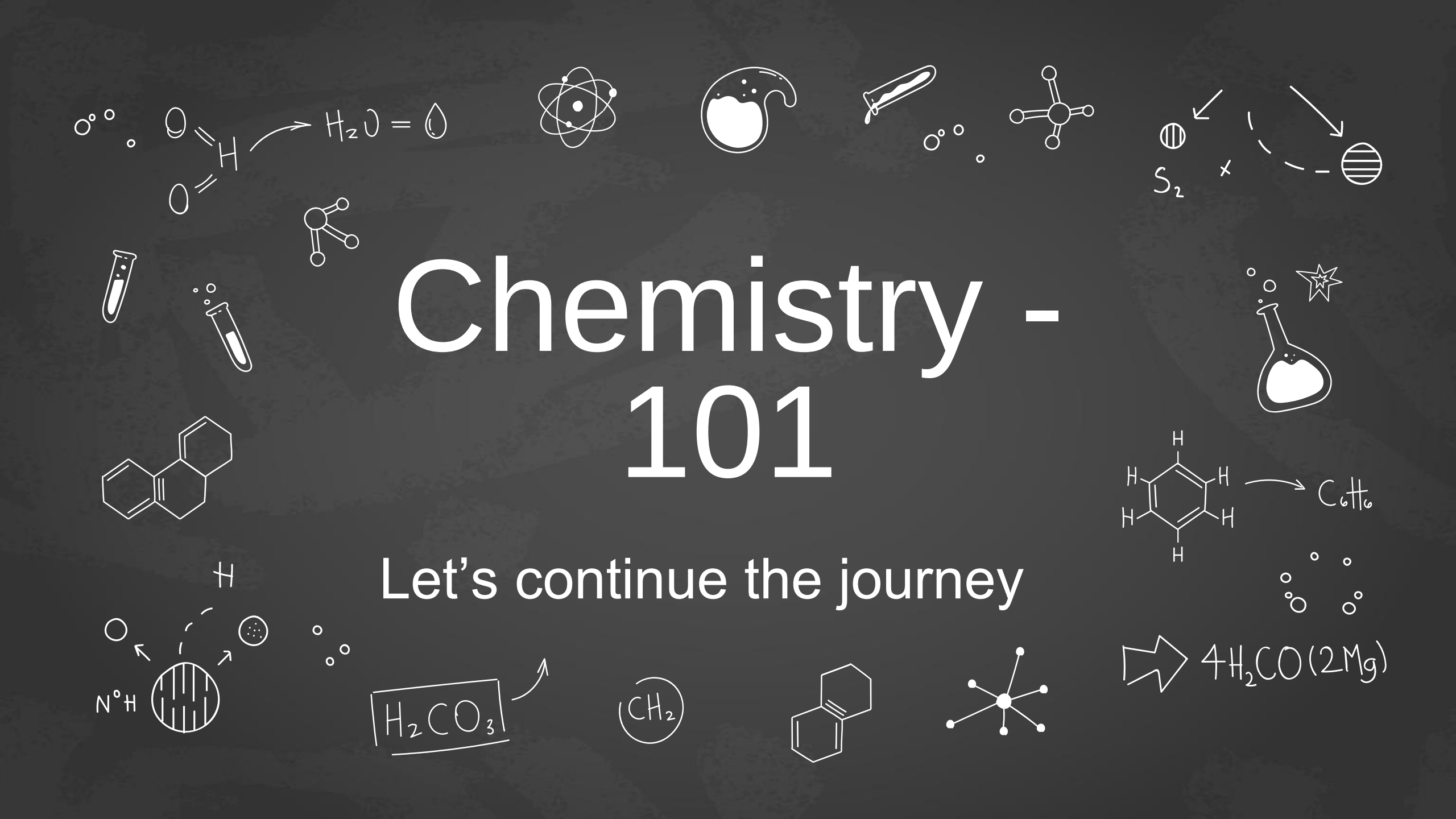
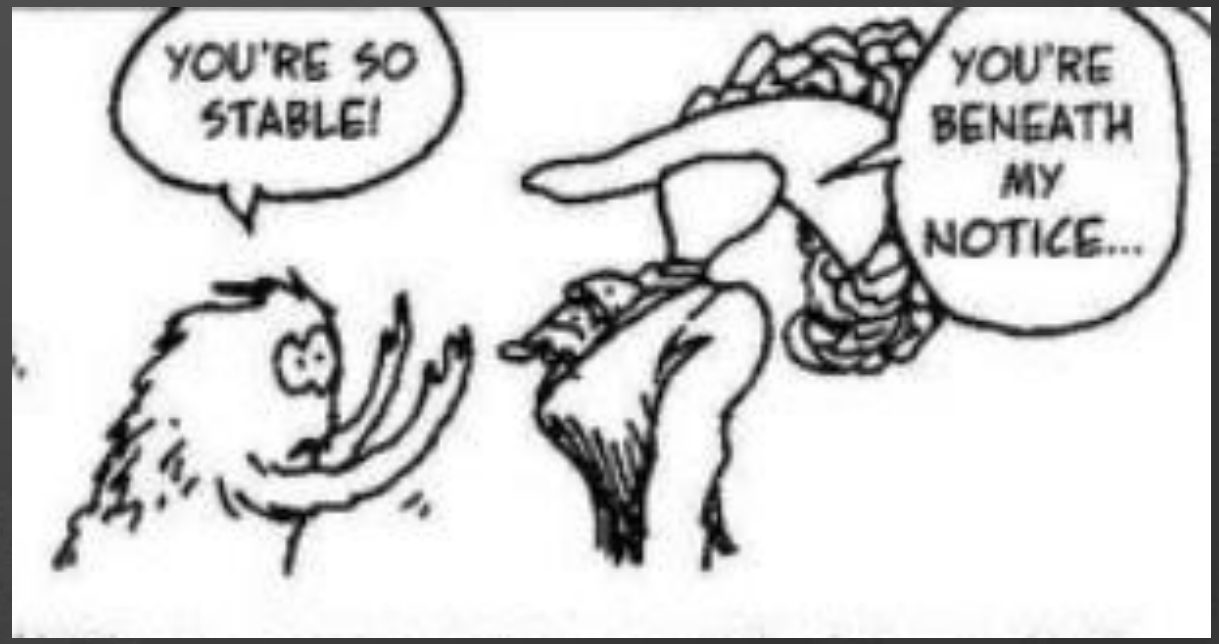

Chemistry - 101
Let’s continue the journey

A complete outer shell, ns^2np^6, is energetically more advantageous than an incomplete one.

We call it the **RULE OF EIGTH**: at atom tends to pick up or give away just enough electrons to make eight in its outer shell – AN **ELECTRON OCTET**.

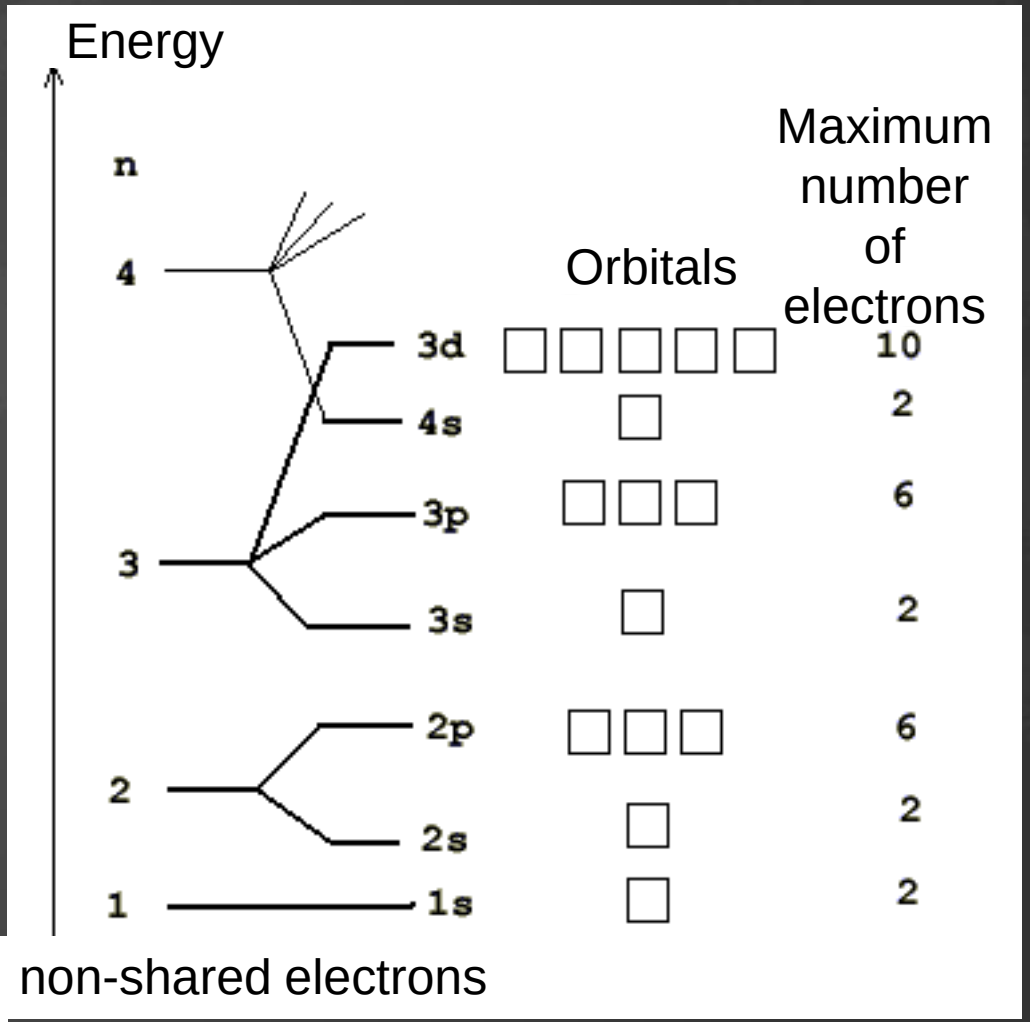


Binding of chlorine ($_{17}$Cl) atoms

- First, we will write Cl electron configuration

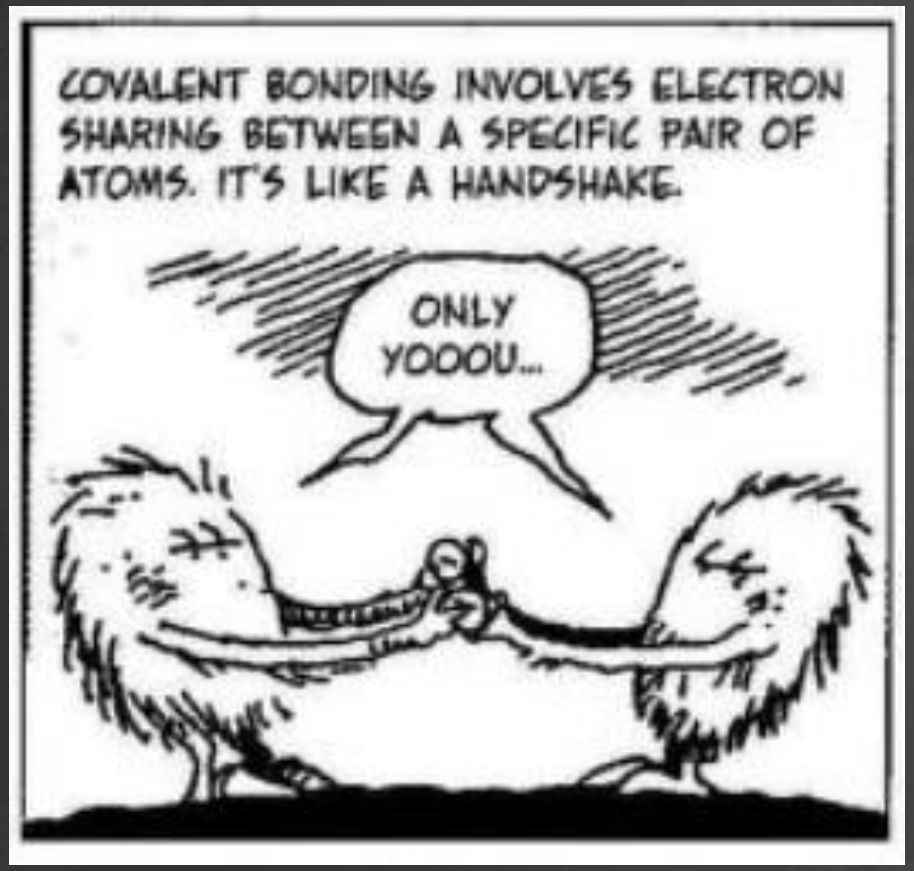
- Then let's write down Cl Lewis structure with the electrons of the outer shell

- Finally, let's write the formation of chlorine molecule from two atoms



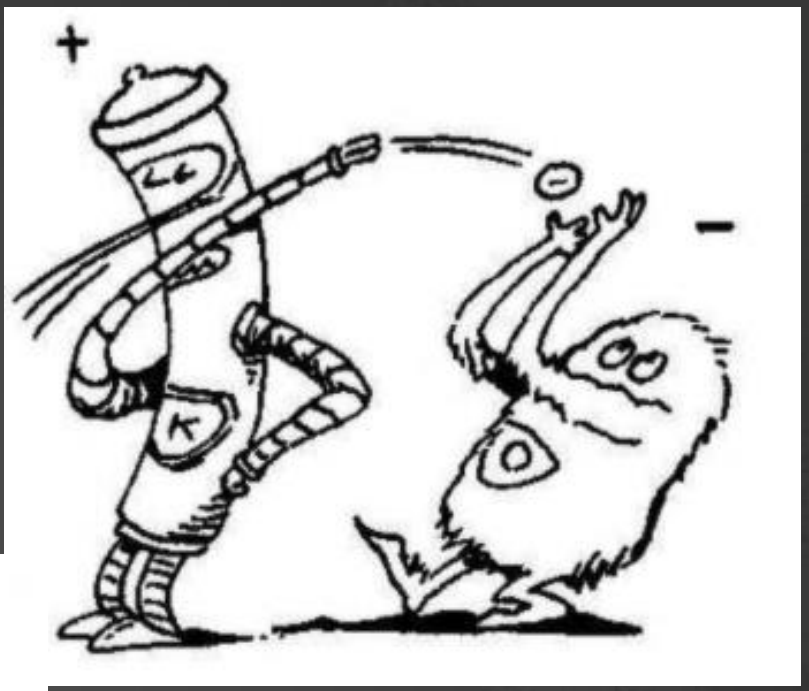
Each chlorine atom has 8 electrons

Atoms form chemical bonds by combining such number of electrons that allows them to obtain an electron configuration of noble elements



- Hydrogen binds into a molecule resulting in the electron configuration of helium ($1s^2$)
- Chlorine combines into a molecule with the electron configuration of argon ($\ldots 3s^2 3p^6$)

Ionic bonds

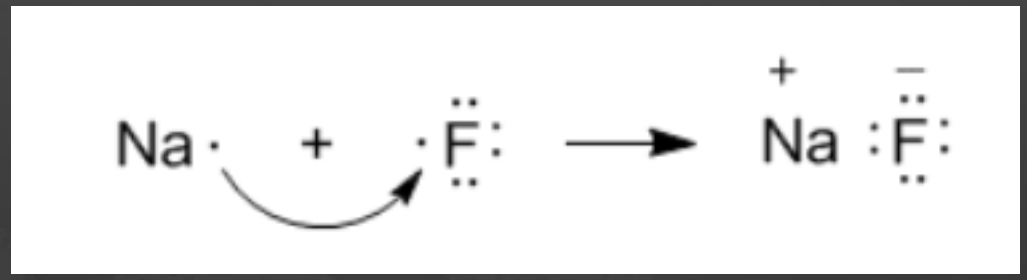


Ionic bond

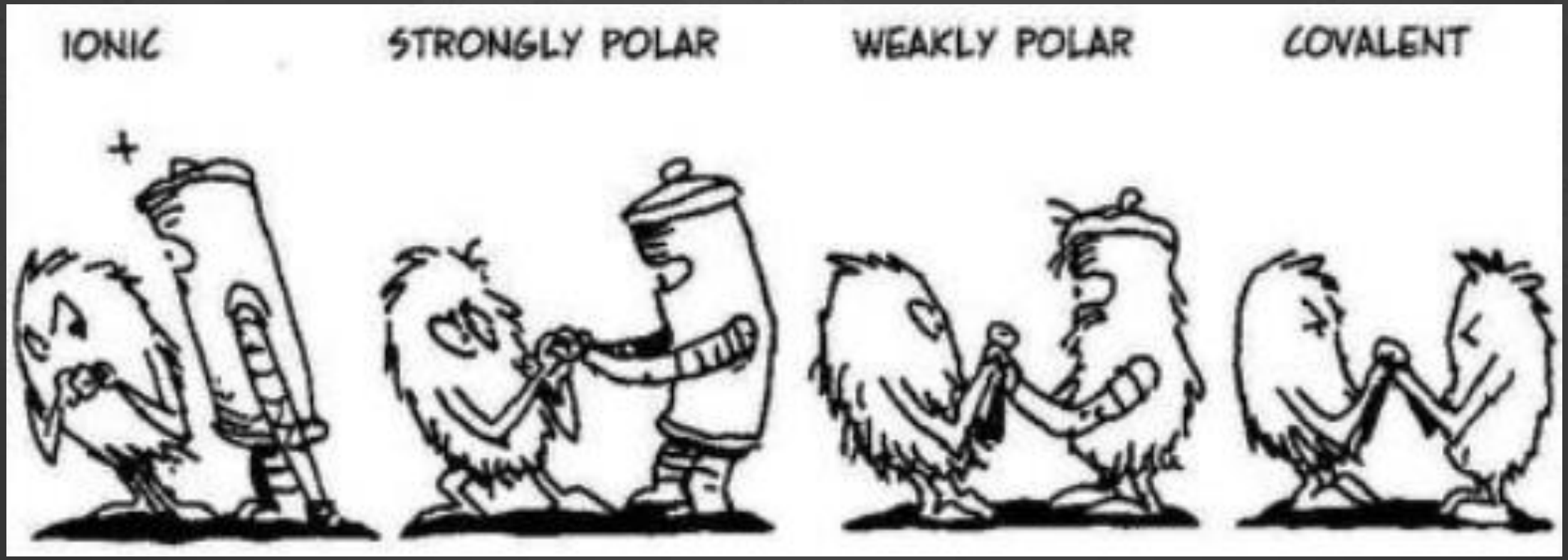
- Let’s consider interactions between $_{11}$Na and $_{9}$F
- The electron configurations of these elements are:

- Na:
- F:

- When Na and F bind, they acquire electron configuration of the noble gas Ne
- The electron configuration of the noble gas $_{10}$Ne is:
- Ne:
- In the electron formula we need to consider only the outer shells



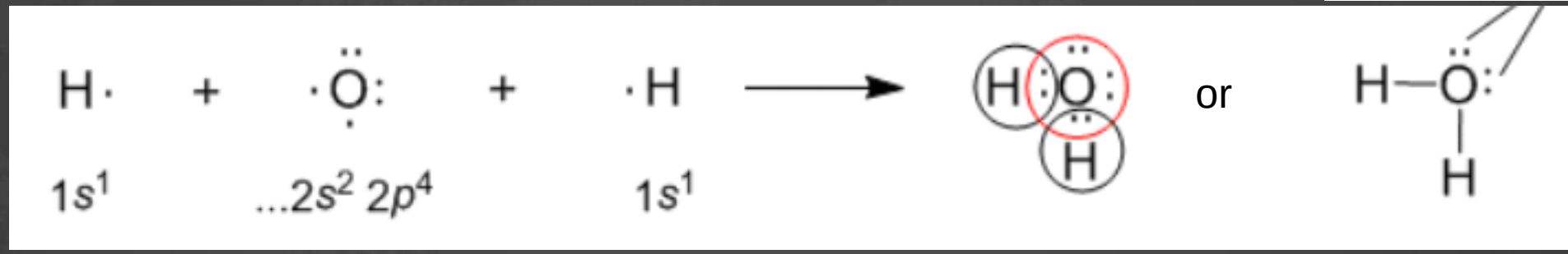
Different bond types

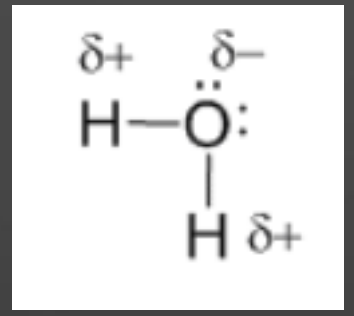


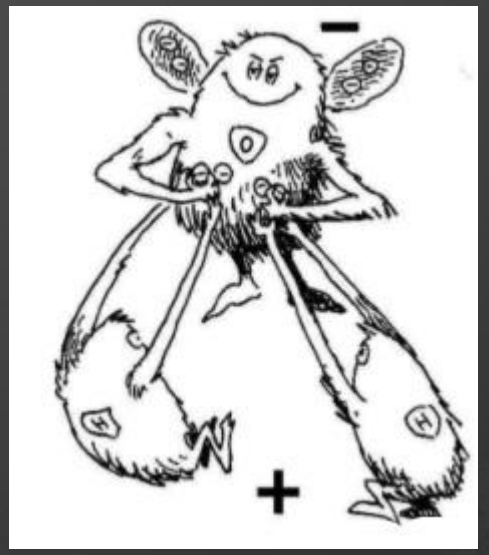
Polar covalent bond

- It is an intermediate between covalent and ionic bonds and like for ionic bond it forms between different atoms

non-shared electrons







This class uses the materials from the following books:

Larry Gonick and Graig Criddle “The cartoon guide to chemistry”

Manyuilov and Rodionov “Chemistry for children and adults”

Kuzmenko, Eremin, Popkov “Beginnings of chemistry”