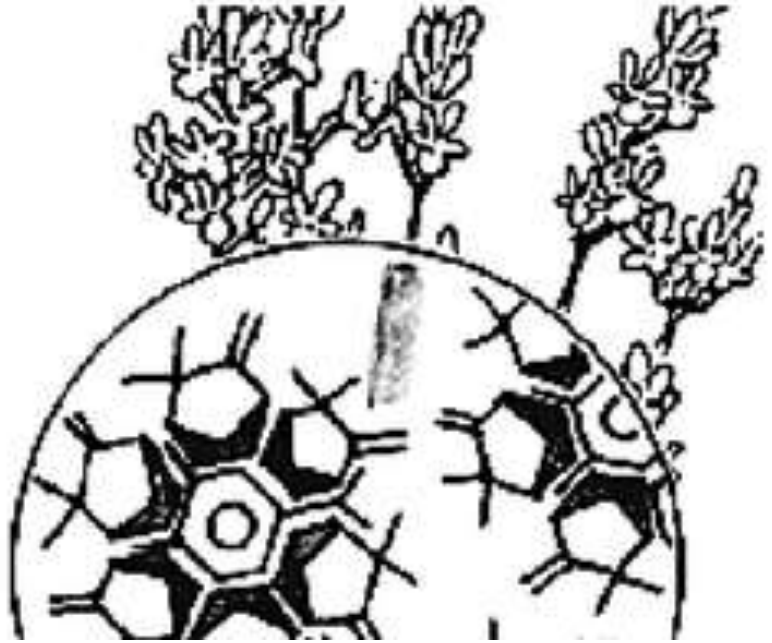
DR JOY'S WEBINARS

REFRESHING CHEMISTRY!

SET 1



FOUNDATIONAL CHEMISTRY CONCEPTS WEEK 3

Dr E. Joy Bowles,
PhD, BSc Hons.

COURSE OVERVIEW

- Foundational Chemistry Concepts – 5 x 60 minute modules (5 hours)
- Essential Oil Chemical Families – 12 x 60 minute modules (12 hours) – Starts Wed 28 Feb
- Clinical evidence for common useful EO constituents – 10 x 60 minute modules (10 hours) – Starts Tues 13 March

- Zoom link for Foundational Chemistry Concepts is https://zoom.us/j/254177951
- Recordings will be available for each session for 120 days after the last module

LEARNING OUTCOMES FROM WEEK 2

Students will be able to:

- Describe generic atomic structure
- Distinguish between protons, neutrons and electrons in terms of charge and location in the atom
- Explain why we can detect Matter by our sense of touch

BASIC CHEMISTRY.3 – CARBON, HYDROGEN, OXYGEN

Activities

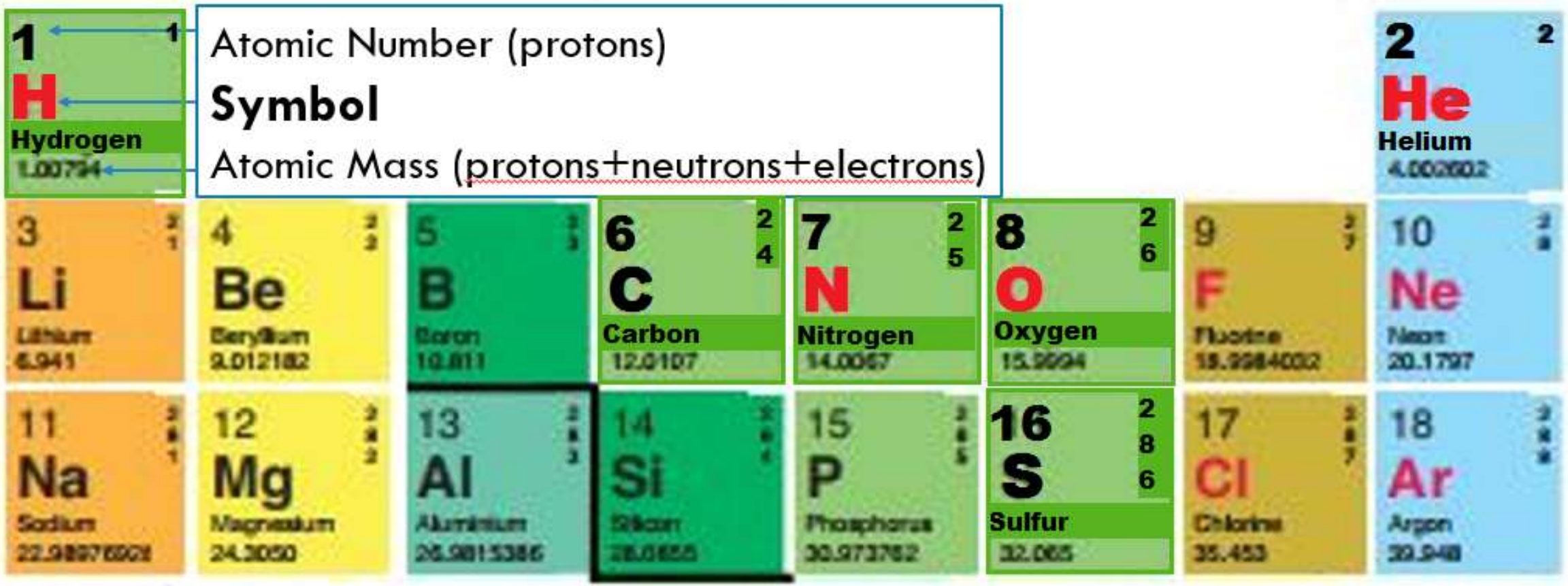
- Lecture – Types of atoms found in essential oils
- Lecture – Balance of charge and full and partially full electron shells
- Noble gases
- Self-assessment Quiz

Learning Outcomes

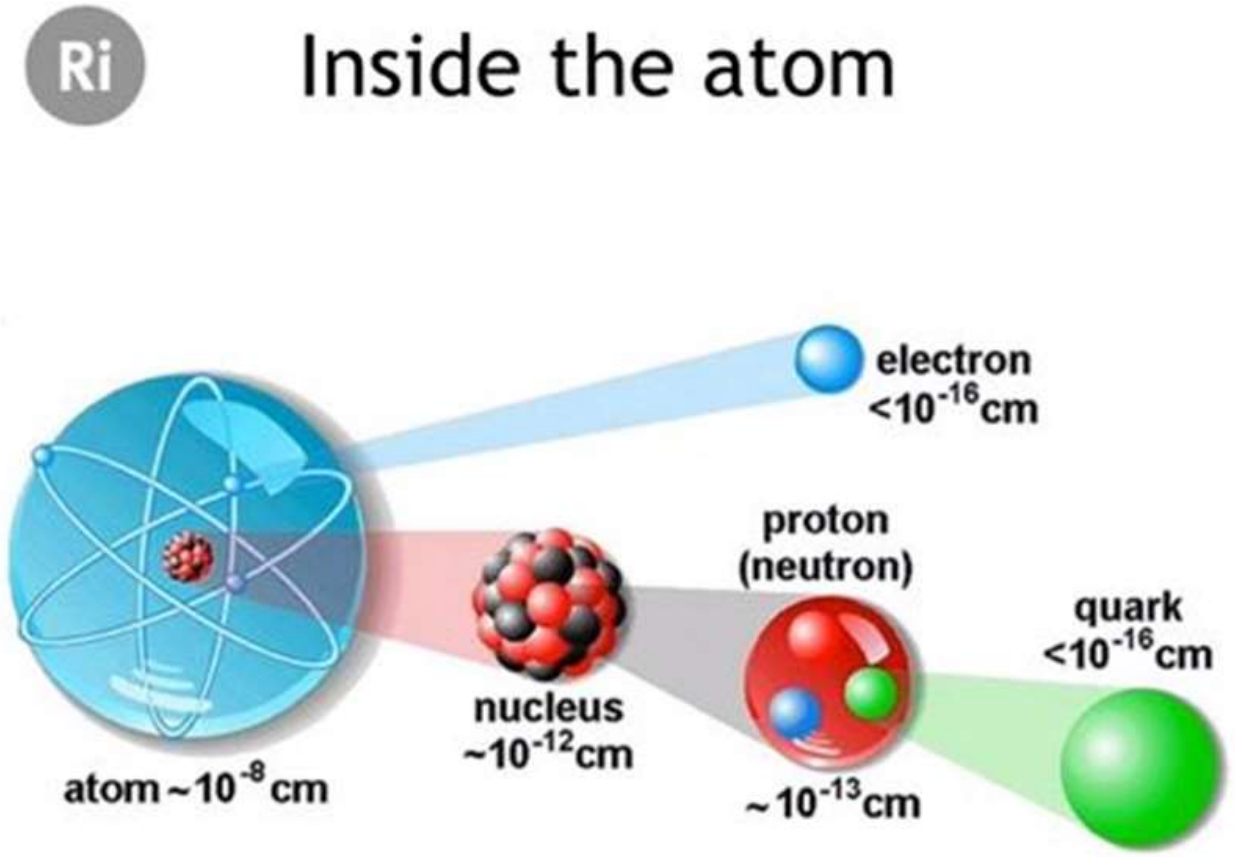
Students will be able to:

- Describe the atomic structure of Hydrogen, Carbon and Oxygen atoms
- Represent atoms with chemistry symbols
- Explain why Helium can't explode (and why Hydrogen can)

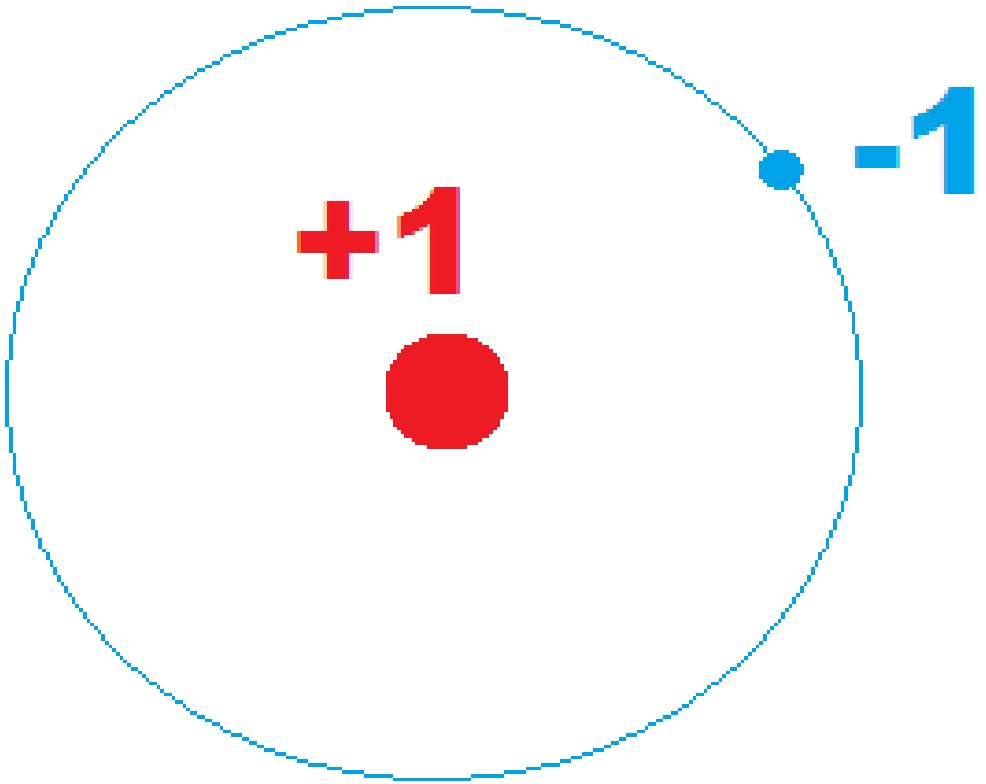
ELEMENTS HAVE DIFFERENT ATOMIC NUMBERS…

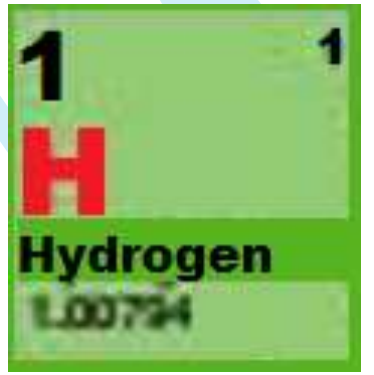


SIZES OF SUBATOMIC PARTICLES



HYDROGEN – ATOMIC NUMBER = 1





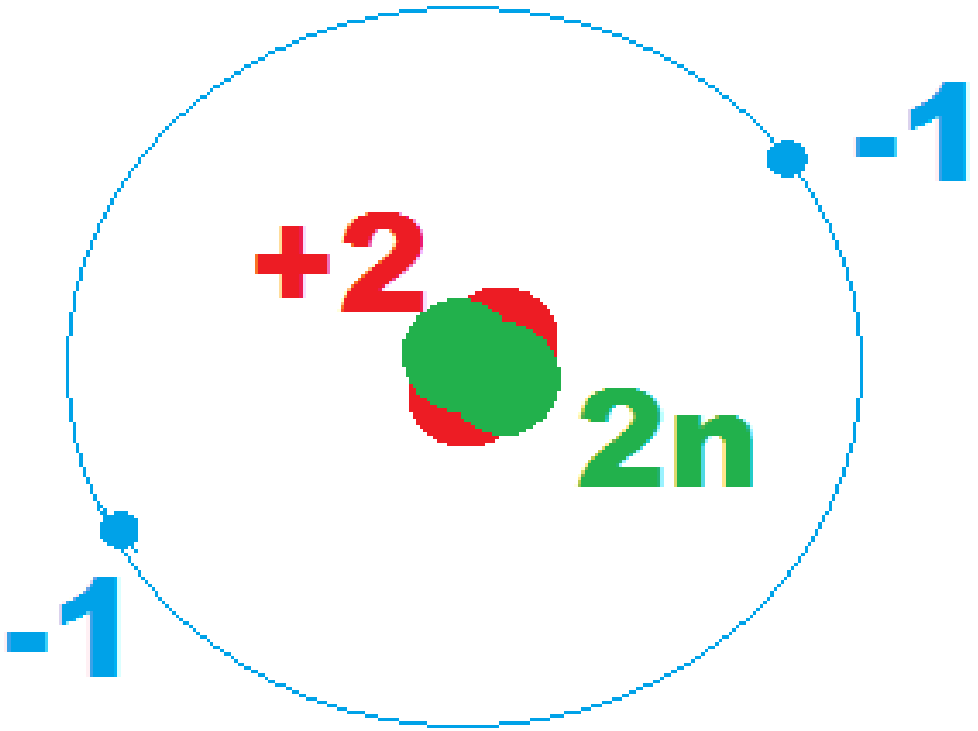
Number of protons = number of electrons

1 proton

1 electron

Symbol: H

HELIUM ATOMS – ATOMIC NUMBER = 2



Number of protons = number of neutrons = number of electrons

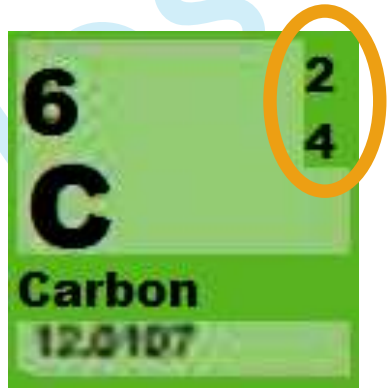
2 protons

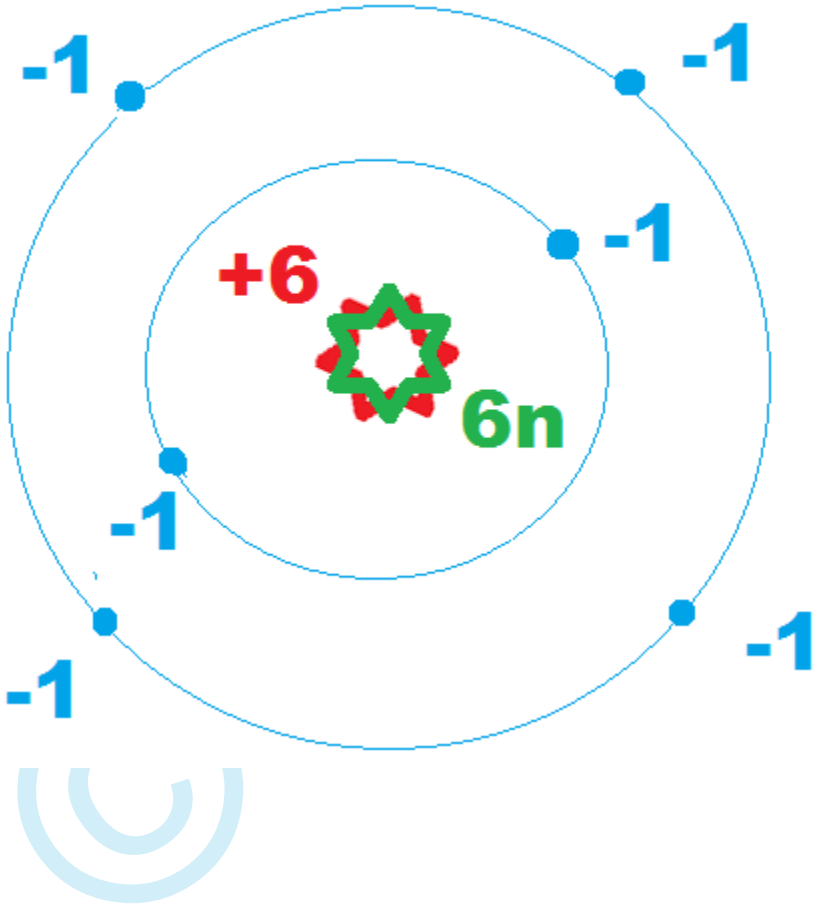
2 neutrons

2 electrons (full electron shell)

Symbol: He

CARBON ATOMS – ATOMIC MASS = 6





Number of protons = number of neutrons = number of electrons

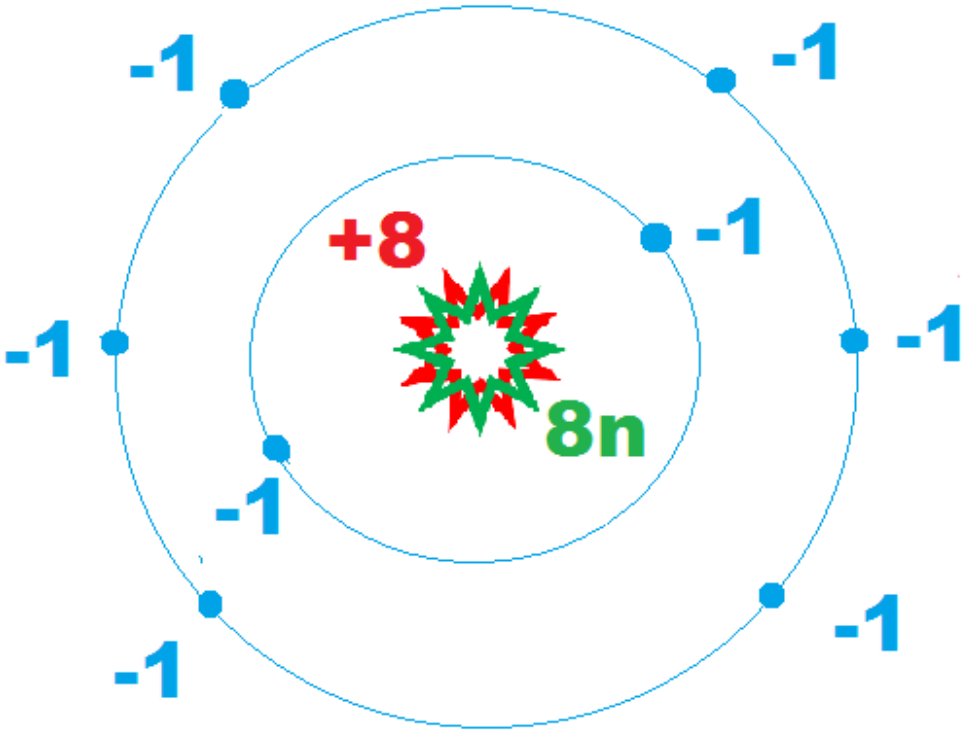
6 protons

6 neutrons

6 electrons (2 electrons filling the inner electron shell, 4 electrons in second electron shell – space for four more)

Symbol: C

OXYGEN ATOMS – ATOMIC NUMBER = 8



Number of protons = number of neutrons = number of electrons

8 protons

8 neutrons

8 electrons (2 electrons filling the inner electron shell, 6 electrons in second electron shell – space for two more)

Symbol: O

REPRESENTING CHEMICALS WITH SYMBOLS

All chemicals (elements and compounds) can be described by the number and type of atoms they contain, and the way those atoms are bonded together.

As a short-hand, chemists use symbols for the different atoms, and numbers to indicate the number of each type of atom in a molecule.

If there is only 1 atom of an element present in the molecule, it will just have the symbol, not a number 1 after it.

H_2O **Water**

CO_2 **Carbon Dioxide**

CH_4 **Methane**

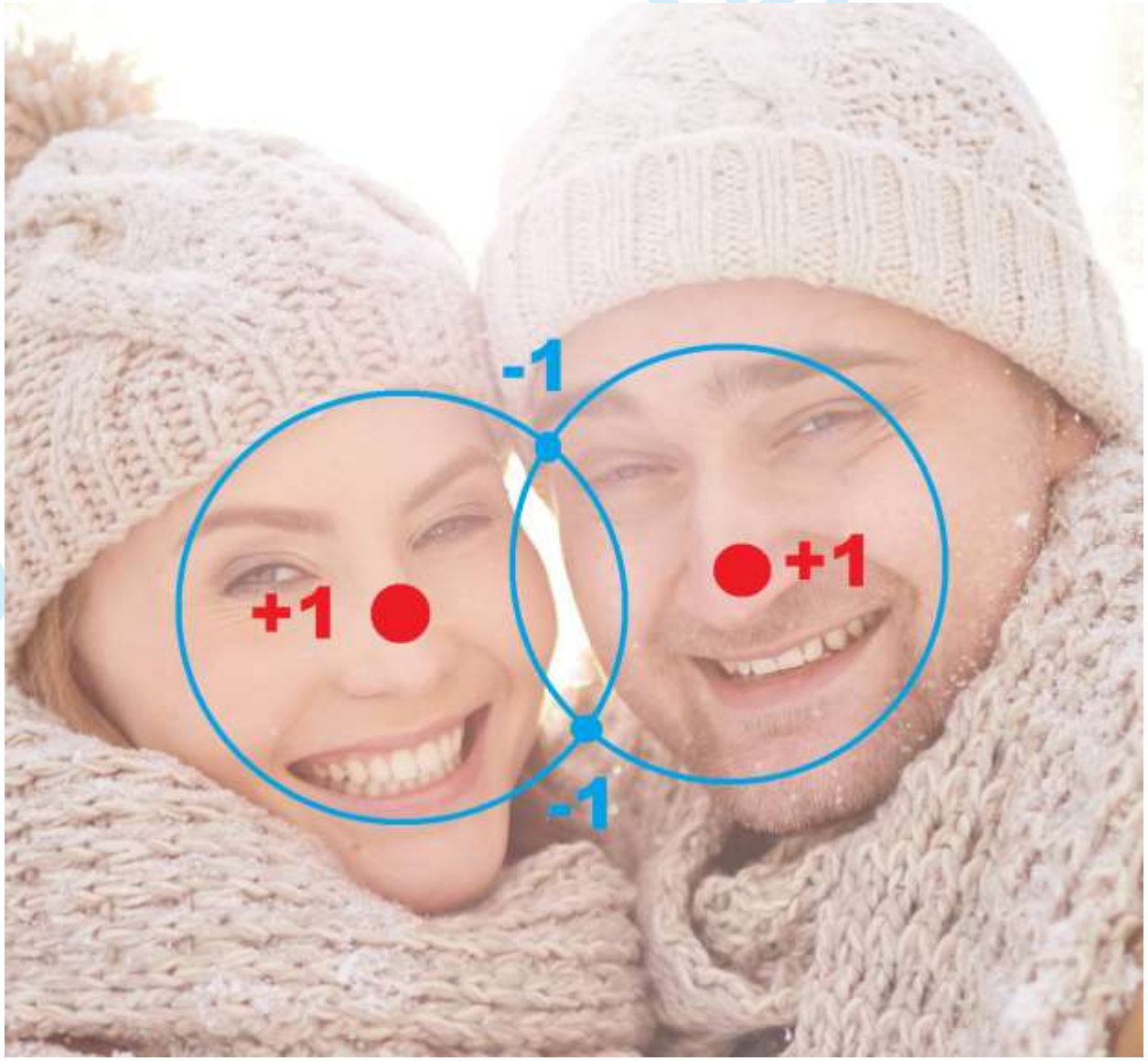
C_2H_6 **Ethane**

C_2H_5OH **Ethanol**

ATOMIC BLISS…

Although atoms are overall neutrally charged because they have equal numbers of protons and electrons, all of them, apart from the noble gases have incomplete outer electron shells.

This incompleteness is what drives them all to form bonds with other atoms, enabling all atoms in neutrally charged molecules to have the ‘experience’ of having a full outer shell, and therefore atomic bliss. They SHARE their electrons or GIVE-TAKE them.



WHY?

H atoms have incomplete electron shells.

He atoms have complete electron shells.

FURTHER INFO

Molymod kits “Molecular Model Set for Organic Chemistry”

Get one with at least 15 C atoms.