

The type of bonding is determined by the location of an element in the periodic table.

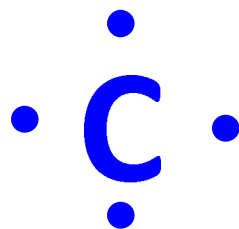
An ionic bond generally occurs when elements on the far left side of the periodic table combine with elements on the far right side, ignoring the noble gases, which form bonds only rarely.

The resulting ions are held together by extremely strong electrostatic interactions.

A positively charged cation formed from the element on the left side attracts a negatively charged anion formed from the element on the right side.

The second type of bonding, covalent bonding, occurs with elements like carbon in the middle of the periodic table, which would otherwise have to gain or lose several electrons to form an ion with a complete valence shell.

Carbon is central to the study of organic chemistry and has four electrons in its valence shell.



It can attain the electronic configurations of neon by using each of these electrons, along with four electrons from other atoms, to form covalent bonds.