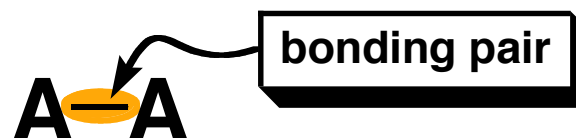


Electrons Are Usually Paired

Organic molecules that have an odd number of electrons are typically unstable (**open shell**). In contrast, stable organic molecules tend to have an even number of electrons (closed shell). Since the electron count is an even number, every electron can be paired (consistent with the Pauli Principle).

Valence-shell electron pairs come in two types: bonding and nonbonding. Bonding electrons are pairs of valence-shell electrons that are shared between two atoms. Nonbonding electrons, also called lone pairs or unshared pairs, are valence-shell electron pairs that are localized on only one atom.

Consider a generic atom, denoted by the symbol "A"



Electron Pair Domains (EPDs)

Regions around an atom having high valence-shell electron density are called electron pair domains. An **electron-pair domain** consists of either a nonbonding pair of electrons, a single pair of bonding electrons, two pairs of bonding electrons, or three pairs of bonding electrons. A single pair of bonding electrons is known as a single bond; two or more pairs of bonding electrons are called multiple bonds.

Electron Pair Domain	Number of Bonding Pairs	Representation	Total Electron Count
nonbonding domain	0	$\ddot{\text{A}}$	2
single bond domain	1	$\text{A}-\text{A}$	2
double bond domain	2	$\text{A}=\text{A}$	4
triple bond domain	3	$\text{A}\equiv\text{A}$	6