

Question #48221, Chemistry, Inorganic Chemistry

How many charge clouds are there around a central atom in molecules that have the following geometry?

- 1.tetrahedral
- 2.octahedral
- 3.bent
- 4.linear
- 5.square pyramidal
- 6.Trigonal pyramidal

Answer:

The charge of the electron cloud depends on the number of valence electrons. This amount depends on the type of hybridization of the central atom.

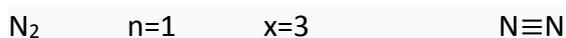
1. Tetrahedral (CH₄) n=4
2. Octahedral (SF₆) n=6
3. Bent (H₂O) n=2
4. Linear (CO₂) n=2
5. Square pyramidal (BrF₅) n=5
6. Trigonal pyramidal (NH₃) n=3

$$Q_e = 1.6 \cdot 10^{-19} \text{ C}$$

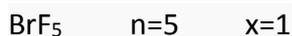
$$Q_{\text{cloud}} = Q_e \cdot Z + Q_e \cdot n \cdot x$$

Z- atomic number; n- number of bonds; x- multiplicity of communication

For example:



$$Q_{\text{cloud}} = 7 \cdot 1.6 \cdot 10^{-19} + 3 \cdot 1 \cdot 1.6 \cdot 10^{-19} = 1.6 \cdot 10^{-18}$$



$$Q_{\text{cloud}} = 35 \cdot 1.6 \cdot 10^{-19} + 5 \cdot 1 \cdot 1.6 \cdot 10^{-19} = 6.4 \cdot 10^{-18}$$