Lewis Dot Notation

tool that describes molecular (mostly) abbreviates valence e- configuration

not for transition metals

Born-Haber Cycle

Similar to Hess's Law:

Born-Haber Cycle

Why not NaCl_2?

Born-Haber Cycle

Why MgCl_2?

Born-Haber Cycle

AlCl_3
Some Lattice Types

CsCl  NaCl  MgCl₂  CaF₂

-667 kJ/mole  -788 kJ/mole  -2422 kJ/mole  -2805 kJ/mole

2+  1+  2+  2+

\(-\)  \(-\)  \(-\)  \(-\)

ZnS  AlCl₃  Al₂O₃

-3526 kJ/mole  -5458 kJ/mole  -15270 kJ/mole

\(-\)  \(-\)  \(-\)

Drawing Good Lewis Structures

1. # valence e⁻ in atoms (+ charge) must = # e⁻ in structure; always
2. determine connectivity: most metallic usually central; avoid small rings; H always terminal (1 e⁻)
3. complete octet for each atom (except H); check against #1
4. remove/add required e⁻ in pairs from/to central atom
5. if needed, move e⁻ pairs from outside atoms to bond with central atom to complete octet again
6. formal charge minimized as much as possible (# and mag.)

Formal Charge

assign e⁻ in molecule to each atom:
1. lone-pair e⁻ belong to atom
2. bonding pairs split equally
   compare with ve⁻ in atom
6. formal charge minimized as much as possible (# and mag.)