Compare 2 ionic compounds
"Which has the larger lattice energy?"
" " " stronger bond?"

$F = k\frac{Q_1 Q_2}{r^2}$ → size of charges
→ size of ions, I⁻

evidence: mp's ↑mp, stronger the bond

Why do ions combine in the ratios they do?

→ maximize the E lowering
* not just isoelectronic w/ noble gas ns²np⁶

① E input needed to ionize
ex IE_1, IE_2, IE_3 etc ΔH(+)

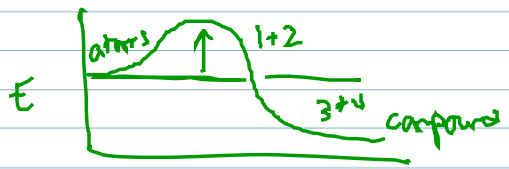
② E input needed to add # e⁻'s > 1

$O + e^- \rightarrow O^-$ ΔH(-)
$O^- + e^- \rightarrow O^{2-}$ ΔH(+) ✓

③ E released by EA I

④ E released by bond formation ΔH(-)

if (3+4) > (1+2) the bond forms



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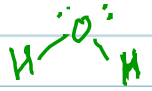
COVALENT BONDING

2 e⁻ shared by 2 atoms

⟶ results in covalent (molecular) compounds

MOLECULE 

nonmetals & representative elements

C – C C = C C ≡ C

weakest, longest

strongest, shortest

IONIC

- electrostatic attractions

→ nondirectional

- SOLIDS

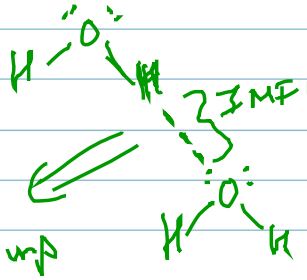
↑ mp

- often H_2O soluble

→ electrolytes

COVALENT

- directional bonding
- MOLECULES

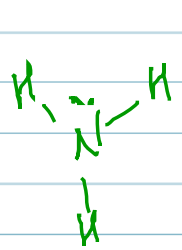


often ↓ mp

often nonsoluble in H_2O

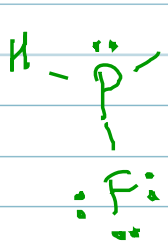
* NONELECTROLYTES

NH_3



5
3
8e⁻
−6
2e⁻
−2
0

PH_2F



5
2
7
14e⁻
−6
8e⁻
−6
2e⁻