

Chemical Bonding FRQ Practice

- 1) (a) The b.p. of Ar is greater than Ne because Ar has more e^- and therefore has a greater polarizability, creating stronger LDF.
- (b) $\text{Na}_{(s)}$ has a greater m.p. than $\text{K}_{(s)}$ because the atomic radius of Na is less and the valence (delocalized) e^- are closer to the nucleus, therefore creating a stronger metallic bond.
- (c) The lattice energy of CaO is greater than KF because the magnitude of charges of Ca^{+2} and O^{-2} is greater than the magnitude of the K^+ and F^- ions.
- (d) In order to conduct electricity, charged particles must be able to flow. In a solid, the ions are in fixed positions, but as a molten liquid the K^+ and F^- ions can flow.
- 2) (a) N_2 forms a triple bond whereas O_2 forms a double bond. Triple bonds take more energy to break than double bonds.
- (b) The atomic radius of H is smaller than that of Cl. Therefore H atoms can bond with a shorter distance between nuclei.
- (c) Boiling O_2 and Cl_2 both require breaking LDF between molecules, however Cl_2 has more e^- and greater polarizability, \therefore creating stronger LDF.