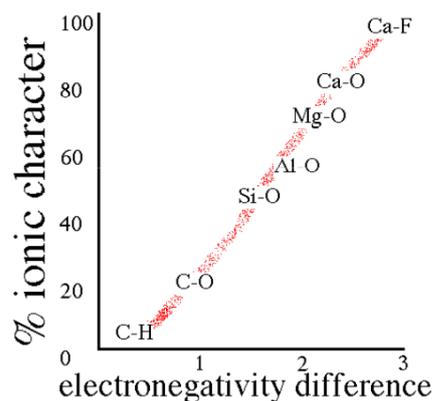


Metallic crystals are highly symmetrical and dense with same size atoms with close packing – up to 12 touching nearest neighbour.

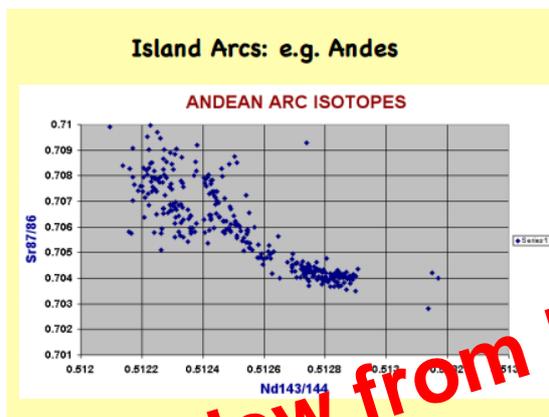
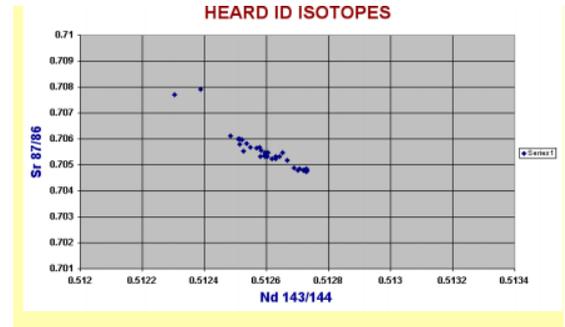
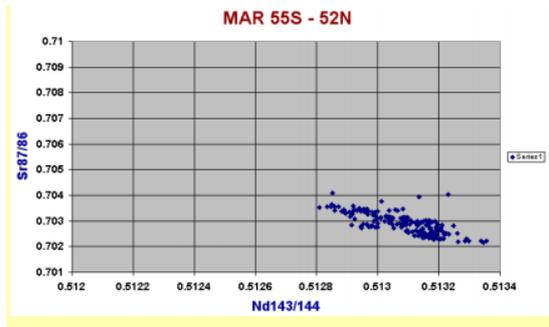
Ionic crystals are the most common. *Cations* are positively charged ions and *anions* are negatively charged. **Cations fit into interstices (gaps) between the oxygens.** Only occupy types **where they can fit and only enough to attain electric neutrality.**

The greater the electronegativity the greater the ionic character.



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ratio as the water, so we can understand old seawater composition.

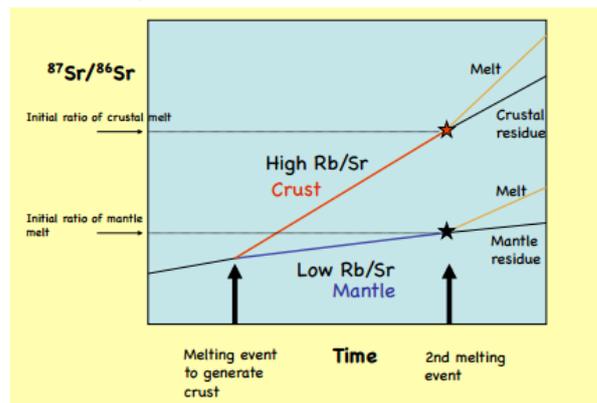


Island Arc: mixtures of old crust (enriched) and depleted MORB like mantle

Ocean Island Basalts: deep, depleted MORB like mantle with some crustal contamination

Mid Ocean Ridge Basalts: depleted mantle source

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Higher $87/86\text{Sr}$ means less mantle volcanism or increased river input

Decreased $87/86\text{Sr}$ means increased mantle volcanism or lack of river input