

MATTER and MINERALS

Definition of a mineral

- naturally occurring
- inorganic
- solid
- specific chemical composition
- ordered atomic structure

Polymorph: two different minerals that have the same composition but different crystal structures

E.g. graphite and diamond

What is a crystal?

- any natural solid with an ordered, repetitive atomic structure
- a single continuous piece of crystalline solid bounded by flat surfaces that grew naturally.

Crystal growth

- Solidification of melt:* freezing of liquid; atoms attach to mineral surface; growth starts with a crystal seed.
- Precipitation from a solution:* minerals separate from water; groundwater → geode.
- Solid-state diffusion:* atoms or ions move through a solid (slow).
- Biomineralisation:* living organisms cause minerals to precipitate: clams
- Gas precipitate:* volcanic vents

Geode

a spherical hollow within a rock comprising of inward projecting crystals

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Crystal structure

- ordered chemical crystalline structure
- internal atomic arrangement determined by ionic size
- crystal lattice = 3D geometric pattern in which atoms are arranged → controls outer shape

Amorphous: A solid in which atoms are not arranged in definite crystal structure (glass)

