



Concept Map Prompts

Fundamentals of Crystallography with Ansys Granta EduPack Software

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Ansys Software Used

This resource uses Ansys Granta EduPack™ teaching software for materials education.

Instructions

The goal of this activity is to help build connections between key terminology and figures related to crystallography and crystal defects.

Three topic sets are included, each containing a list of terms, schematics/equations, and associated Ansys Granta EduPack plots.

For each set, draw connections between the items on the list, based on your personal understanding of the subject from class and textbook knowledge. Definitions or descriptions of how the terms connect, along with arrows showing the flow of logic between each list item, are encouraged. Below is a generic example to showcase the instructions above.

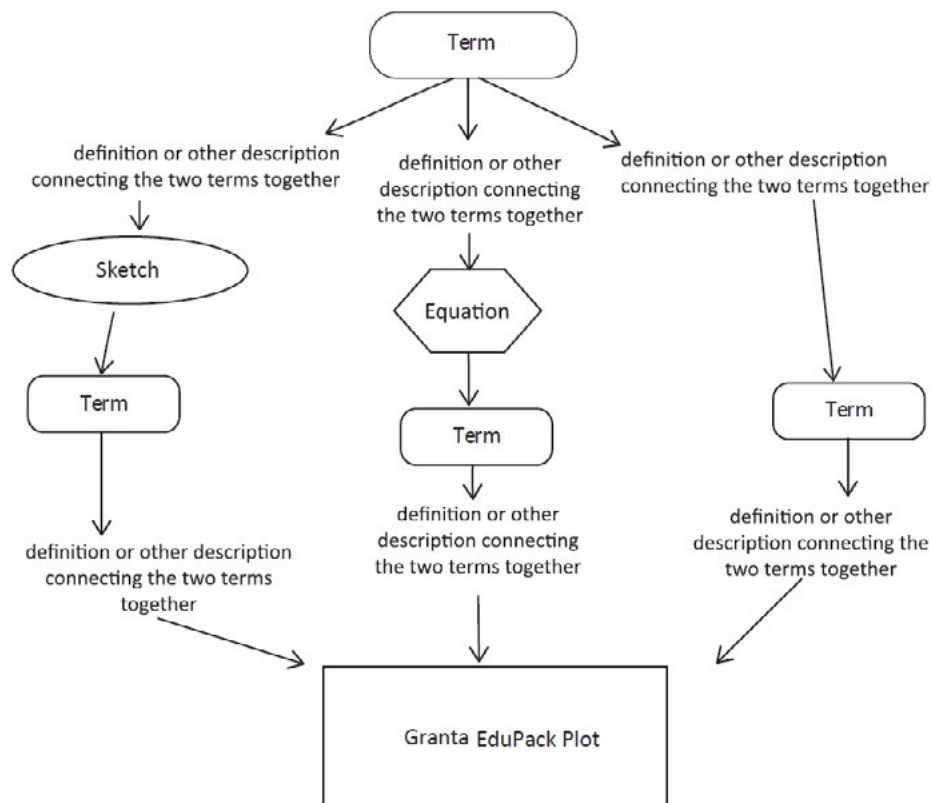


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Topic: Crystallography and Unit Cells

Terms:

- Crystal Structure
- Face Centered Cubic
- Body Centered Cubic
- Hexagonal Close Packed
- Crystallographic Direction
- Crystallographic Plane

Sketches:

- Face Centered Cubic unit cell with closest packed plane and direction
- Body Centered Cubic unit cell with closest packed plane and closest packed direction
- Hexagonal Close Packed unit cell with closest packed plane and direction

Granta EduPack Plot:

- Atomic radius vs. Lattice Parameter

Topic: Point Defects

Terms:

- Point Defect
- Self-Interstitial
- Interstitial
- Vacancy
- Substitutional

Sketches:

- Self-Interstitial
- Interstitial
- Vacancy
- Substitutional

Topic: Non-Point Defects

Terms:

- Dislocations
 - » Edge
 - » Screw
- Interfacial/Planar Defects
 - » Twin Boundaries
 - » Grain Boundaries
 - » Stacking Faults
 - ◊ Intrinsic
 - ◊ Extrinsic

Sketches:

- Dislocations
 - » Edge
 - » Screw
- Interfacial/Planar Defects
 - » Twin Boundaries
 - » Grain Boundaries
 - » Stacking Faults
 - ◊ Intrinsic
 - ◊ Extrinsic

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Document Information

This case study is part of a set of teaching resources to help introduce students to topics related to fluids.

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