

# Science Learning Progression

FOSS, *Chemical Interactions* Inv.7    Grade level: 8

**Prerequisite skill/knowledge:** Substances can exist in different physical states—solid, liquid, and gas. Many substances can be changed from one state to another by heating or cooling. 4-5PS2A

Cite evidence to describe the differences between *dissolving* and *melting*.  
Inv. 7 Part 1

Explain that increased kinetic energy causes particles to move faster changing a *solid* into a *liquid* (*melting*).  
Inv. 7 Part 2

Draw the conclusion that during a phase change particles do not change, the relationship between particles changes – *melting*.

**\*\*Will need to make this explicit—not directly in text.**

Inv. 7 Part 3

Draw the conclusion that during a phase change particles do not change, the relationship between particles changes – *freezing*.

**\*\*Will need to make this explicit—not directly in text.**

Inv. 7 Part 4

**Phases (states) of matter (solid, liquid, & gas) describe the energy of particles. The more energy the more the particles move.**  
6-8PS2

I can cite evidence that proves the action in a given scenario is either:  
*Dissolving*: an interaction that occurs when a *soluble* substance breaks apart and goes into another substance.

OR

*Melting*: a change of state that occurs when a substance is heated to its *melting point*.

6-8PS2A

I can explain the cause of melting.

**Formative Assessment:**  
Class discussion based on results and observations. Revisit exit ticket from part 1.

I can describe the relationship between particles in a phase change from solid to liquid (*melting*).

**Formative Assessment:**  
Discussion and Lab Notebook p. 67: "Response Sheet -- Phase Change" (Randy, wax and water).

I can describe the relationship between particles in a phase change from liquid to a solid (*freezing*).

**Formative Assessment:**  
Add questions about particle movement during the phase change to class discussion and to Lab Notebook p. 71: "Freeze Water."

**Later big ideas that build on this big idea include:**

Atomic structure  
Molecules, ions, compounds, solutions, chemical reactions, nuclear reactions, fusion, fission

9-12PS2

**Formative Assessment:**  
Show video clip of the witch "melting" in the Wizard of Oz.  
**Exit ticket:** *Did the wicked witch melt? Explain.*

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