

Observe what happens on an atomic level when you rub two objects together, and explore how friction causes a material to heat up.

Accessibility Features



Description



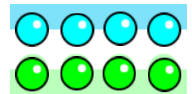
Alternative Input



Sound

Model Simplifications

- The position of the Physics book is fixed, and will not move in response to the motion of the Chemistry book.
- The Physics book is made of a harder material than the Chemistry book, and therefore will not lose any of its molecules.
- The layer of molecules at the edge of the book are tightly bound. No amount of heat will remove them.



Sound Features

- Extra attention can be drawn to the cooling process by enabling the Enhanced Sound feature in the PhET menu. A cooling “hiss” is heard as molecules begin to lose energy to the environment and the thermometer level drops.
- Molecules “jingle” with increasing volume as they gain energy. With enough rubbing, the molecules “ping” as they leave the surface of the Chemistry book.
- See the Sound Features Video for more useful tips on how concepts and sound are integrated in this sim. For additional details on all sounds used in this simulation, see the published [Sound Design Documentation](#).

Suggestions for Use

- **Lecture Demo:** Have students rub their hands together and sketch what they think is happening on a molecular level. Compare to the simulation.
- **Challenge Prompt:** Use Kinetic Molecular Theory to explain what happens to the molecules in the books when the temperature increases.

See all published activities for Friction [here](#).

For more tips on using PhET sims with your students, see [Tips for Using PhET](#).