



## Fernbank Science Center

**Title:** ANYTHING THE MATTER WITH 8<sup>TH</sup> GRADE (4841)

**Type:** Outreach

**Level:** 8<sup>th</sup> Grade Physical Science

**Length:** 1 class period

**Location:** Local School

**Limit:** Single class

### Program Description

Through a series of engaging demonstrations and hands-on examples, students explore the properties of matter, and how those properties relate to their classification and placement on the Periodic Table of Elements. Students complete a flow chart of matter classifications as the instructor progresses through each demonstration and example.

### Standards

S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.

- Develop and use a model to compare and contrast pure substances (elements and compounds) and mixtures. (Clarification statement: Include heterogeneous and homogeneous mixtures. Types of bonds and compounds will be addressed in high school physical science.)
- Develop and use models to describe the movement of particles in solids, liquids, gases, and plasma states when thermal energy is added or removed.
- Plan and carry out investigations to compare and contrast chemical (i.e., reactivity, combustibility) and physical (i.e., density, melting point, boiling point) properties of matter.
- Construct an argument based on observational evidence to support the claim that when a change in a substance occurs, it can be classified as either chemical or physical. (Clarification statement: Evidence could include ability to separate mixtures, development of a gas, formation of a precipitate, change in energy, color, and/or form.)
- Develop models (e.g., atomic-level models, including drawings, and computer representations) by analyzing patterns within the periodic table that illustrate the structure, composition, and characteristics of atoms (protons, neutrons, and electrons) and simple molecules.

### Vocabulary

solid  
pure substance  
homogeneous  
density

liquid  
deposition  
heterogeneous  
conduction

gas  
element  
compound  
radiation

matter  
diatomic  
freeze

mixture  
molecule  
atom

### **Pre-Visit Activities**

The PhET site contains interactive simulations that you can use to demonstrate key concepts to the full class or have students access individually: <https://phet.colorado.edu>

Building an Atom (nuclear structure and subatomic particles)

States of Matter: Basics (nice introduction to the influence of molecular motion in a gas)

### **Post-Visit Activity**

Using examples from the classroom or from home, have students show and discuss additional examples of elements, compounds, heterogeneous mixtures, and homogeneous mixtures.

An excellent way to show student trends and patterns in the Periodic Table of the Elements can be found at this site: <https://www.ptable.com> , be sure to select different tabs along the top to compare and contrast additional physical and chemical properties.

Ask students to research and plot on a map of the world sources of the various elements presented in the program.

### **Notes**

It is best if the Fernbank instructor for this program can use a table or bench in your classroom to set up equipment and materials.