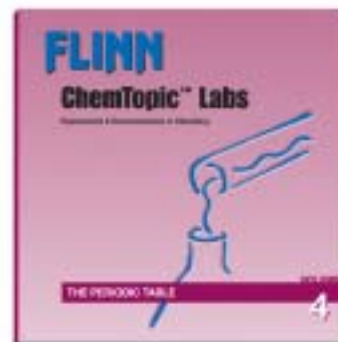


The Periodic Table— Demonstration Summaries and Concepts



Periodic Activity of Metals Chemical Demonstration

The elements are classified based on similarities, differences, and trends in their properties. The reactions of alkali and alkaline earth metals with water are some of the most dramatic of all chemical reactions. Mixtures bubble and boil, hiss and fizz, and may even smoke and burn. Use this exciting demonstration of the activity of metals to introduce the study of the periodic table and periodic trends.

Safe Swimming with Sodium Chemical Demonstration

No chemistry class is complete without the spectacular demonstration of the reaction of sodium with water. This novel variation is much safer to perform than the traditional reaction and demonstrates the reaction of sodium in slow motion. In a two-phase system composed of mineral oil and water, sodium sits at the interface between the two layers. Sodium reacts with water, picks up hydrogen gas bubbles, and floats to the oil surface. There it gradually loses the gas bubbles, then dives back down to the water layer and reacts again. Students are fascinated as the process repeats itself over and over again.

Plotting Trends—A Periodic Table Activity

Ionization energies, atomic radii, electronegativity values—what do all these numbers mean? Students cannot measure them, cannot see their relative size. In this cooperative lab activity, students use microscale reaction plates and straws of different lengths to construct three-dimensional bar charts of the physical properties of the elements. The resulting charts are visually impressive and clearly illustrate the existence, direction, and meaning of periodic trends.

The Ultimate Element Crossword—A Periodic Table Activity

What alkaline earth metal is very toxic, yet given to patients as a nice thick sulfate shake so that doctors won't have to bury them? Barium! Increase student knowledge of the elements, their uses, and their position in the periodic table with this interesting and entertaining crossword puzzle. Many of the puzzle clues contain fun "plays on words" that, while they may sound *so dumb*, will make students want to find them. Sodium!

Solubility Patterns Chemical Demonstration

The solubility of alkaline earth metal compounds varies widely, depending on the metal cation and the nature of the anion. Are there any patterns or trends in the solubility behavior of alkaline earth metal compounds? If you give your students the answer to this question, they may remember it only long enough to repeat it on an exam. Let students discover the pattern for themselves, however, and they are likely not only to remember it long after, but to explain it as well.



Concepts

- Periodic trends
- Alkali and alkaline earth metals
- Metal activity
- Physical and chemical properties

- Alkali metals
- Metal hydroxides
- Acid–base indicator
- Density

- Periodic table
- Periodic trends
- Ionization energy
- Atomic radius
- Electronegativity

- Elements
- Descriptive chemistry
- Groups or families
- Periods or series

- Alkaline earth metals
- Periodic trends
- Double replacement reactions
- Ionic compounds