Chemistry Demonstration

Lesson Source(s)	▪ *Fun with Chemistry*, Volume 2 – Institute for Chemical Education
Grade Level	Suggested grades 3-6
Abstract	During this W.O.W! demonstration, you and your students will discover the fun, the relevance, and the challenge of chemistry through a discovery approach. The students will experience real chemistry with your classroom being the laboratory. The wizard will help the students understand that chemistry happens everywhere, every day.
Objectives	▪ Students will observe physical properties of materials. ▪ Students will observe chemical changes. ▪ Students will observe the effect of a catalyst on a chemical reaction. ▪ Students will compare and contrast endothermic and exothermic reactions. ▪ Students will make and study the properties of a polymer gel.
Pre-Visit	_____ Complete the *W.O.W! Photo Release* Form _____ Wizard will require a demonstration table and a nearby water source
Photo/Video	**Kit Photo(s):**
Post-Visit	_____ Complete the brief post-visit survey http://www.surveymonkey.com/s/WOWDemoSurvey
Best Teaching Practices	▪ Learning Cycle ▪ Hands-on/Minds-on Learning ▪ Inquiry Approaches ▪ Real-life Applications ▪ Probing Questions
Standard Alignment	As a result of the demonstration, students should develop an understanding of ▪ Physical Science (Matter, Energy Change, and Chemical Change) ▪ Scientific Inquiry ▪ Scientific Ways of Knowing ▪ Science and Technology
Content Knowledge	

	Chemical and physical changes which produce heat are called exothermic processes. When an exothermic process occurs, an increase in temperature is observed. Chemical and physical changes which absorb heat are called endothermic processes. When this type of process occurs, a decrease in temperature is observed. Commercial cold packs take advantage of the endothermic nature of the dissolution of ammonium nitrate. The packs contain two bags: an inner bag full of water and an outer bag containing ammonium nitrate. When the inner pouch is broken, the solid dissolves in the water, and the solution cools. A catalyst is a material that speeds up a chemical reaction without being consumed or permanently changed. Catalysts are usually quite specific, and often catalyze only one type of reaction. Polymers (poly- means many; - mers means units) are made by combining many individual units called monomers (mono-means one) into a single polymer unit. Polymers are an interesting group of chemicals found in many forms, including plastics and biochemical molecules that make up our bodies. The polyvinyl alcohol solution contains long polymer chains of polyvinyl alcohol that are dissolved in water. Because these chains are very long, they interfere with each others' movement, causing this solution to be rather thick or viscous and to pour more slowly than water. Viscosity is one of the physical properties of a liquid that describes resistance to flow. For example, water and alcohol are described as having low viscosity because they flow quickly; honey and syrup have high viscosities because they flow much more slowly. The slime is complete when the solution of crosslinker is added to the polyvinyl alcohol solution. The crosslinker bonds the different polyvinyl alcohol chains together. The resulting product is even more viscous than the beginning polymer, making it very gooey, bouncy, and slimy!
Safety	Wizard will model appropriate safety precautions. At the conclusion of the demonstration hands must be washed and desks/tabletops wiped down. Please remind students that the bagged slime is not to be ingested.
Applications	Hot and cold packs Plastics Setting of concrete and cement
Assessment	Observe student participation in the activity Student's participation in discussion
Other Considerations	**Extend the lesson:** learn more at the Akron Global Polymer Academy www.apga.uakron.edu for lessons, video, and more polymer fun! www.chem4kids.com – lesson ideas, chemistry activities, and content knowledge
Skillsheet(s)	n/a