

# Ames Public Library @HOME Activities

## Science of Glow Sticks

Glow sticks contain chemicals that, when combined, glow due to a chemical reaction called Chemiluminescence. Here, stored or potential chemical energy is transformed into light energy as part of this reaction and make the stick glow. To learn more see a related video on the Library's YouTube Channel at <http://bit.ly/APLvideos>.

### Books and Media:

Title	Author / Performer	Call Number
<i>Illustrated Elementary Math Dictionary</i>	Rogers, Kirsteen	J 510 SEN
<i>Chemistry, Getting a Big Reaction</i>	Green, Dan	J 540 GRE
<i>How Do Molecules Stay Together? A Book About Chemistry</i>	Hayes, Madeline	J 540 HAY
<i>Science Projects - Chemistry</i>	Oxlade, Chris	J 540 OXL
<i>Chemical World Science in Our Daily Lives</i>	Rae, Rowena	J 540 RAE
<i>Super Simple Chemistry</i>	(DK, Smithsonian)	J 540 SAU
<i>Science Factory - Chemical Reaction</i>	Richards, Jon	J 540.78 RIC
<i>Janice VanCleave's Wild, Wacky, and Weird Chemistry Experiments</i>	VanCleave, Janice Pratt	J 540.78 VAN
<i>A Look at Chemistry - Atoms</i>	O'Mara, Kennon	J 541 OMA
<i>Chemicals Changes</i>	Rector, Rebecca Kraft	J 541 REC
<i>Your Guide to the Periodic Table</i>	Arbuthnott, Gill	J 546 ARB
<i>How Do Molecules Stay Together? A Film About Chemistry</i>	Hayes, Madeline	J 540 (DVD) HOW

### Websites:

URL	Notes
<a href="http://acs.org/content/acs/en/education/outreach/kids-chemistry.html">acs.org/content/acs/en/education/outreach/kids-chemistry.html</a>	ACS stands for American Chemical Society, this link leads to their outreach webpage for kids.

## Take Away Kit: Glow Stick Science

### Bag Contents:

- 3 Glow sticks

Your kit contains three glow sticks. To activate or make them glow, bend the sticks slightly and shake it back and forth to mix the chemicals inside the tube.

### *Here's the science behind glow sticks:*

Glow sticks contain chemicals, these chemicals contain stored energy called potential energy. When the chemicals in the stick are mixed together by bending and shaking them, the chemicals react with each other and release energy in the form of light. This reaction is called **Chemiluminescence**. Also the brightness of the glow stick depends on the temperature of the environment. We can do a fun experiment to investigate this.

### ***For this experiment you will need the help of a grown-up.***

#### *You need:*

3 glow sticks, 2 foam cups, Water and hot water, Ice, Timer or a clock

Begin the experiment by marking the foam cups as “hot” and the other as “cold”. Fill the cup marked “hot” with hot water; ask your grown-up to help. In the cup marked “cold” place the ice and fill it with water.

Bend the stick to start the chemical reaction inside, shake the sticks to mix the chemicals together.

Next, try and predict what would happen to the glow stick when placed in the cup of hot water, will it glow brighter? How about the cold water? After you have your predictions place one glow stick in the hot water and another in the cold water, leave the third stick on the table. Set the timer for three minutes, if you have a clock make a note of the time.

After three minutes remove the sticks from the water, be careful with the hot water. Place the sticks including the room temperature stick on the table side by side. Can you see a difference in the brightness? Which stick is the brightest? Why?

*Source: Glow stick science experiment for kids. <https://www.scholastic.com/parents/school-success/learning-toolkit-blog/glow-stick-science-experiment-kids.html>*

## Vocabulary

Bond – A force that holds the atoms in a molecule together.

Chemical – A group of basic elements that form the periodic table of elements.

Chemical reaction – A process in which one or more chemicals change into one or more different chemicals.

Chemistry – A science that studies the structure and properties of substances and the changes they go through with each other.

Element – A material that cannot be broken down into anything simpler; there are 118 of these materials, which are grouped on the periodic table of elements.

Inorganic Chemistry - Is concerned with the properties and behavior of inorganic compounds which include metals, minerals, and organometallic compounds. This field covers chemical compounds that are not carbon-based.

Physical reaction – The process of combining two or more chemicals without changing them- you can still get the original chemicals back.

Organic Chemistry - Is a branch of chemistry that studies the structure, properties and reactions of organic compounds which contain carbon.

Periodic Table of Elements – A collective list of all the known chemical elements arranged according to their unique properties.

Solute – Material that dissolves in a solvent.

Solution – A liquid mixture, the combination of a solvent and a solute.

Solvent – A liquid that dissolves another substance, the material in which a solute dissolves.

*Source: Chemical changes by Rebecca Kraft Rector; J 541 REC*

