



2010 Fun with Chemistry Spring Break Camp

March 29 - April 2

Grades 2-5: 9 am - noon

Grades 6-8: 1 - 4 PM

\$227 per student per camp; \$210/student per camp with early registration by March 5

Location: Grades 2-5, Skyline Elementary School

Grades 6-8, Westborough Middle School

All workshops are taught by scientists

Schmah Science Workshops' summer camps EXPLODE the myth that science is dull. Our instructors are talented scientists and engineers who engage students' curiosity, imagination and creativity using a fun, hand-on approach. Students learn to apply the scientific process as well as core scientific principles, all while making exciting new discoveries.

Workshop Descriptions

Day 1:

Physical Properties of Matter - Density: Students discover that density is a mathematical concept. They determine the mass and volume of 48 industrially important materials and graph the results. This graph is linear and its slope - the density - is characteristic of the material used. Students also develop and test their measuring skills.

Liquid Nitrogen: Liquid Nitrogen is an extremely cold, liquefied gas. It can be used to demonstrate interesting effects such as superconductivity and the properties of gases and liquids. Students use liquid nitrogen to investigate how temperature affects materials. Students also discuss the phases of matter and the Kinetic Theory of Gases.

Fun with Chemistry: The Periodic Table of the elements is the grand, unifying theory of chemistry. Hands-on activities introduce students to the Periodic Table. Students learn to think of the Periodic Table as a landscape, with fields of metals, pools of mercury and bromine, clouds of gases, and an offshore island of rare earths.

Day 2:

Ideal Gas Law and Molar Mass: The ideal gas law can be represented by the equation $PV = nRT$. In this lab, students use a butane gas sample to experimentally determine the value of the universal gas constant R. Because the gas is collected over water, students use Dalton's Law to account for water vapor in the collection flask.

Percent Water in a Hydrate - Identification of an Unknown: When some substances dissolve, they combine with a fixed amount of water. When these substances crystallize, they retain this water called a "hydrate." If the hydrated crystal is heated, the hydrate can be driven off. In this workshop, students drive-off the hydrate to determine the percentage of water. This is an example of "quantitative analysis," an experimental procedure used to determine the percentage by mass of one substance in another

Electrolysis: Students build a simple device enabling them to split water into its two parts: oxygen and hydrogen.

For more information contact Belinda Lowe-Schmah at (408) 281-7595 or bel@schmahscience.org

Visit our website at www.schmahscience.org

Schmah Science Workshops • 171 Branham Ln Ste 10-223 • San Jose, CA 95136

About Schmahl Science Workshops

Schmahl Science Workshops is a non-profit partnership of students, parents, teachers, scientists and engineers who come together to foster the innate curiosity and love of science that exists among children.

Founded in 1996 by a group of four children and their parents, Schmahl Science Workshops provides pre-K through 12th grade children an unmatched breadth of hands-on science workshops spanning biology, chemistry, earth science, forensics, math and physics. Our mission is to prepare children of all backgrounds for a future in which science and technology will drive every industry and vocation.

We believe that children are motivated to learn when their ideas are cultivated through the joy of designing and carrying out an experiment. Through these authentic research experiences, our workshops enable students to explore and invent what inspires them, and to develop the skills needed to achieve success in all areas of their lives.

Day 3

Acids and Bases: Students observe the effects of acids and bases on indicator dyes, measure the concentration of acids by titrating an "unknown," and perform a neutralization experiment.

Determination of Vitamin C: Vitamin C is in orange juice, broccoli, and chewable vitamins. Students use titration methodology to determine if there is more Vitamin C in a strawberry or a tomato.

The Tin Man: Students learn what happens in an electrolytic cell when one of the atoms or ions in a compound is both oxidized and reduced. The electrolysis of tin (II) chloride provides a stunning example and the tin crystals that result are beautiful to behold.

Day 4:

Canned Foods and Corrosion: Materials that have highly desirable thermal properties also tend to be highly reactive (and visa versa). Highly reactive materials are materials that tend to have chemical reactions with substances around them. A good example is iron, which reacts with oxygen to form iron oxide (commonly known as rust.) Using fresh fruits and vegetables, students extract pigments that are sensitive to iron and tin. Color changes in the presence of metals offer insight into the chemistry of oxidation-reduction reactions and its application to the shelf life of preserved foods.

Electroplating: Electroplating is the art of producing metallic coatings using electric currents. Students learn the bonding behavior of the elements by performing electroplating experiments.

More Liquid Investigations- Slime and Gloop:

Students make a cornstarch-based goop that strangely acts like both a solid and a liquid. They compare this weird goop to rubber made from white glue and Borax (GAK).

Day 5:

Ion Exchange Chromatography: This workshop demonstrates ion-exchange chromatography, a method of purifying water used in homes and industries throughout the US.

Food Dye Chromatography: Students isolate components in recalled baby food products: a spaghetti and tomato sauce dinner laced with "toxic" dye "Red Death #2" and a spinach side dish with "Green Spleen #9."

T-Shirt Chromatography- Chromatography is a technique used to separate mixtures. Many different types of labs use chromatography. For example crime laboratories use it to analyze blood, ink, or other substances found at crime scenes. In this workshop, students learn about chromatography by separating permanent colored marker inks to create a rainbow of colors on T-shirts they can take home.

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Registration Form

Child's Name _____

Grade 2009-10 _____

Child's Name _____

Grade 2009-10 _____

Child's Name _____

Grade 2009-10 _____

Parent Name _____

Email _____

(For registration confirmation)

Address _____

City _____

Zip _____

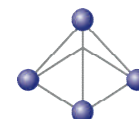
Home Phone _____

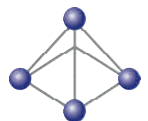
Emergency Phone _____

Any Medical issues for child(ren) _____

Summer Camp Session	Students' Names	# of Students	Amount Due
Fun With Chemistry Gr. 2-5 \$227/student			
Fun With Chemistry Gr. 6-8 \$227/student			
Early registration discount:\$17 per student per camp			
Total due			

- **Mail registration to:** Schmahl Science Workshops, 171 Branham Ln Ste 10-223, San Jose, 95136.
- **Payment is due with registration. No refunds. No substitutions.** Send check or money order made out to Schmahl Science Workshops. Credit Card Payments: MasterCard, Visa, American Express (Circle One)
Card Number _____ Exp. Date _____ CID _____
Signature _____ Date _____
- Check here to be added to our mailing list of future workshops _____.
- Check here for information via email _____.
- SSW may take workshop photos for use in SSW's publicity. Names and locations will not be published. Check here if we have your permission to take photos of your children during our workshop(s)_____.
- How did you hear about us? _____





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