



A SCIENCE CLUB 4 SCHOOL PROGRAM BROUGHT TO YOU BY MAD SCIENCE®

This action-packed 8-week program explores the chemistry of everyday life. Students will learn and apply the concepts, tools and techniques of real chemists with 8 exciting classes made up of hands-on activities, visual demonstrations, inquiry-based discussions and relevant take-home products. Crazy Chemworks is the perfect introduction to elementary chemistry.

SUMMARY AND EDUCATIONAL VALUES OF THE 8 LESSONS:

LAB WORKS: *Use your hands as a real Mad Scientist in this whirlwind class on how a lab works. Learn to manipulate laboratory equipment at your personal lab bench and take home your very own Graduated Gear to continue your research.*

This class focuses on the basic tools and techniques that scientists use in the laboratory. Students will develop their scientific vocabulary and fine-motor skills as they learn to manipulate instruments scientists have created for lab work including the transfer of liquid using pipettes, stirring rods and Erlenmeyer flasks. In a final more complex experiment, students will learn to make a hypothesis based on their observations and techniques learned during the class. *Take Home: Graduated Cylinder and Pipette.*

JUNIOR REACTORS: *Create a tiny world of atoms with your very own set of Atomic Coins. Learn to recognize chemical reactions and mix up a few reactive ingredients for some sensational results.*

This class provides a lesson on the atomic make-up of matter. Students will perform experiments and analyze their results to differentiate between chemical and physical reactions. The relative size of an atom will be introduced in a fun race as students are asked to try to reduce a strip of paper down to its atomic size. Students will learn how to create model molecules and use them to follow the atomic rearrangements that occur in a chemical reaction. *Take Home: Atomic Coins.*

pH PHACTOR: *Slide down the colorful pH scale and dip into the world of acids and bases. Explore the pH extremes with your Reaction Tube Kit in what is sure to be a popping experience. Discover whether liquids found in your home are acids or bases using your personal pH paper.*

This class explores the chemistry of acids and bases and looks at the pH scale. The pH factors hydrogen and hydroxide are used to give a colorful introduction and several pH tests will be given on common household liquids. Students will be challenged to bring a mystery liquid to a neutral pH and will learn how to safely handle household chemicals. *Take Home: Reaction Tube and pH strips.*

SLIME TIME: *Ooze into a gooey time of sliming around. Create slime using the Mad Science recipe and then enter the Slime Olympics. Take home your own concoction of Mad Science Slime.*

This class provides an entertaining lesson on polymers and their properties. Polymer paper clips and cross-linking magnetic marbles are used in tactile and visually engaging experiments and will help to examine the

key components of polymers and cross-linking agents. Varied concoctions of slime will be made and then tested. *Take Home: Mad Science Slime.*

CHEM IN A FLASH: *Hop on board the chemistry express for a high-speed science experience. Perform instantaneous experiments in this fast-paced class on split-second reactions that go like mad. Pick up an Action Flask kit and have some fun at home.*

This class looks at the factors which determine the chemical rates of reaction. Students will perform an oxidative experiment with salt as the catalyst. Quick-acting reactions such as precipitation and acid-base reactions are demonstrated and a balloon-expanding experiment will test limiting reagents. Students will get to explore crystallization and witness a color-changing electrolysis demonstration that further enforces the concepts of class. *Take Home: Action Flask.*

THE GLOW SHOW: *Discover amazing things that glow bright in the dark and come to light! Probe the properties of light and explore some unusual applications of glow-in-the-dark technology. Use your Glow Show Card to learn about the essence of phosphorescence and experiment with the power of light to illuminate scientific shapes.*

This class concentrates on how we perceive light and its effect on objects. The concept of how colors are perceived in white light is presented using a hands-on tricolor experiment. The nature of fluorescence and phosphorescence are unveiled in a black light demonstration. A discussion on the commercial applications of glow-in-the-dark products is followed by a challenge to find fluorescing materials among common house hold & paper products and earth minerals. Students will be given a brief history of fluorescence followed by a demonstration on the chemical aspect of luminescence, chemiluminescence. *Take Home: Glow Show Card.*

SUPER STICKY STUFF: *Push the power of adhesives to the limits in this fun class on things that cling. Students will get stuck on science while learning what sticks and what slips! Take home your own Professor Beakerdude and build your own character while experimenting with adhesion.*

Students will be given the opportunity to perform hands-on and inquiry-based experiments to test the properties of adhesive objects such as Velcro Hook & Loop fasteners, different types of tape adhesives and wet glues. Students will learn how to perform a ranking test and determine the optimal glue to use on various materials. Further activities using labware and everyday items explore the concepts of suction, hydrogen bonds, static cling and the nature of natural and synthetic adhesive materials. *Take Home: Professor Beakerdude.*

DRY ICE CAPADES: *Manipulate matter in all of its three states! Watch metal melt in boiling water and freeze water with just a breath of dry ice. Use your Thermocolor Cup to test the temperature of different liquid matter at home!*

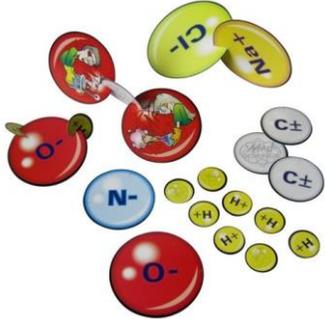
Students will understand the concept of matter in its three states through visual and tactile experiments. They will learn both how and why matter changes between the different states, develop a good understanding of matter's elementary physical properties and be able to relate the concept of matter to the world around them. The shifting states of matter is taught through a molecular movement exercise. Students will then observe a metal solid change to a liquid and explore the properties of matter at extreme temperatures with Dry Ice. Students will use balloons to help visualize volumetric difference between matter in solid and gaseous states. *Take Home: Thermocolor Cup.*

Mad Science Clubs 4 Schools are offered 3 times per year: October, January and April.

Can run during your lunch break or after school.

School-appointed scholarships are available (one for each 10 paying students).

Take Home Product Images:

 <p>Graduated Gear A measuring tool essential in any lab for safe liquid transfer.</p>	 <p>Atomic Coins Demonstrates how atoms connect and teaches the rules for making molecules.</p>	 <p>Mad Science Slime Made during a hands-on experiment that illustrates polymer production.</p>	 <p>Professor Beakerdude Shows the secrets of adhesion while children try to affix different parts.</p>
 <p>Reaction Tube Allows children to safely examine pH values.</p>	 <p>Action Flask The perfect tool for concocting chemical reactions and volcanic eruptions.</p>	 <p>Glow Show Card Demonstrates phosphorescence while children try to illuminate different objects.</p>	 <p>Thermocolor Cup This reusable container colorfully displays temperature changes.</p>

*Mad Science of Southern Alberta has been Sparking Imaginative Learning in Calgary for 19 years.
We have making science fun down to a science!*

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8 STEM ENGINEERING CLASSES
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