

Newsletter 376 BIG Little Science Centre June 2020

BIG Science

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ISSN 1920-9932 BIG Science (Print)

ISSN 1920-9940 BIG Science (Online)



From the Archives: I like to put something pleasant on the front page. Having been ‘locked in’ The Hamlets for over a month, I have not been able to find anything genuinely cheerful for a while, so I hope this photo of a pair of swallows, taken in Pritchard many years ago, lifts your spirits.

FRONT PORCH PROJECT

FUNDRAISING THROUGH PHOTOGRAPHY

Hello Everyone,

Natalie Dollman Photography is helping raise funds for the **BIG Little Science Centre** with her **Front Porch Project**. Natalie has previously run this project for the **Kamloops Food Bank** and the **BC Wildlife Park**.

Note: Any funds that are donated through this project will be matched dollar for dollar by another BLSC Donor. Therefore, every session booked will generate \$25 for the BLSC from Natalie and \$25 from the other fund matching donor for a total of \$50 per session to the BLSC.

If you are interested in participating, you can contact Natalie directly to book a session.

How it works:

Use the “Contact me” button here <http://www.nataliedollmanphotography.com/connect>

Sessions are \$75.00 — \$25 goes towards the Big Little Science Centre and \$50 is put onto a credit to be used for additional photos or for a future session.

Natalie asks that clients pay the \$75.00 via e-transfer at the time of booking to eliminate any contact. Email is nataliedollman01@gmail.com

Also, sessions are 5-10min max.

Including 1 image via digital download! Option to purchase more or use your credit towards more.

Once received she will send a confirmation email with additional info.

Natalie will text when she is on my way, and text when she is outside. Keeping a safe distance apart.

Natalie would need the **home address, email and cell phone** to reach you when she arrives.

Have a good, healthy, and safe afternoon.

Gord

Gord Stewart

Executive Director

BIG Little Science Centre Society

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TELUS FRIENDLY FUTURE FOUNDATION GRANT

The **BIG little Science Centre** would like to thank the **TELUS Thompson Okanagan Community Board** for their recent \$10,000 Grant to the BLSC through the **TELUS Friendly Future Foundation @friendlyfuture**. The grant will go to providing some of the operational costs for our technology programs throughout the coming years.

Some highlights of the upcoming program are:

- Students 5-9: It will enable the learners to combine coding skills with literary and visual arts. These students will work with *Robot Mice*, *Scratch Jr.* and more to build characters and code them to tell stories.
- Students 8-12 will develop ownership over their learning through the use of *Lego Robotics* to build and code their own robot. This program allows the students to become innovative thinkers through using their robot to solve real world problems.
- Participants 8 and up are able to join in our *Film Making* programming. The students learn about the technology behind the creation of movies and apply this technology to creating their own short film.
- Learners 10 and older will developing mastery in their programming skills through the use of *micro:bit devices*. These handheld devices allow for a large degree of creativity in the students programming ideas. A micro:bit is a small handheld computer with an accelerometer, magnetometer sensor, Bluetooth, and USB connections. The students will write their own code on the computer and use it program the micro:bit to suit the needs of their design.

We look forward to starting this programing as soon as we have things setup up to be safe in the COVID-19 World. Thanks again to TELUS @telus for the support.

BIG Little Science Centre Summer Camps

2020 summer camp registration open NOW

We will take registrations for each camp based on when we receive the completed registration form. Register now so you don't miss out. **NOTE: Due to the COVID-19 Pandemic Camp payment is not required at this time.** Payment will be due when we are able to reopen the Centre (and notify you) or on the first day of the Camp. **Please scan and email your completed registration form** to the email address on the bottom of the last page of the form. Registration forms are available for download from the link in each camp description below.

Robotics Camp #1, July 06 to July 10, 9:00 am to 3:00 pm, Ages 9 and up:
Cost \$ 190.00: Registration Form - [Here](#)

Start exploring robotics in this hands-on summer camp. Participants will use Lego Mindstorms, Microbits and more to create their very own robot and complete awesome challenges.

Super Wow Nature Science Camp #1, July 13 to July 17, 9:00 am to 3:00 pm, Must have finished Kindergarten to Grade 3:
Cost \$ 190.00: Registration Form - [Here](#)

Enjoy hands-on science activities outside mixed with games, experiments, crafts and art with a nature focus. Active science learning allows a child's brain to discover the world around them while their body is busy. Fun STEAM (Science, Technology, Engineering, Art, and Math) science at its best.

STEM Camp, July 20 to July 24: 9:00 am to 3:00 pm. Ages 11 and up:
Cost \$ 100.00: Registration Form - [Here](#)

Want to push your understanding of science deeper? Join the BIG Little Science Centre to complete in-depth hands-on science experiments. The STEM Camp introduces science curriculum through fun, hands-on activities designed by Dr. Gordon R. Gore, the retired science teacher who started BLSC.

Super Wow Science Camp #2, July 27 to July 31, 9:00 am to 3:00 pm. Must have finished Kindergarten to Grade 3:
Cost \$ 190.00: Registration Form - [Here](#)

Enjoy hands-on science activities mixed with games, experiments, crafts and art. Active science learning allows a child's brain to discover the world around them while their body is busy. Fun STEAM (Science, Technology, Engineering, Art, and Math) science at its best.

Super Wow Nature Science Camp #3, August 10 to August 14, 9:00 am to 3:00 pm. Must have finished Kindergarten to Grade 3:

Cost \$ 190.00: Registration Form - [Here](#)

Enjoy hands-on science activities outside mixed with games, experiments, crafts and art with a nature focus. Active science learning allows a child's brain to discover the world around them while their body is busy. Fun STEAM (Science, Technology, Engineering, Art, and Math) science at its best.

BIG Little Science Centre Film School, August 17 to August 21, 9:00 am to 3:00 pm. Ages 10 and up:

Cost \$ 190.00: Registration Form - [Here](#)

Do you dream of seeing your name on the silver screen? Join us as participants become Directors, Script Writers, Actors and more all while learning the science and technology behind movie making. At the end of the week films will be screened at the Paramount Theatre.

Robotics Camp #2, August 24 to August 28, 9:00 am to 3:00 pm. Ages 9 and up: Cost \$ 190.00: Registration Form - [Here](#)

Start exploring robotics in this hands-on summer camp. Participants will use Lego Mindstorms, Microbits and more to create their very own robot and complete awesome challenges.

Bursary Awards are available. For details, please contact the Science Centre at 250-554-2572.

Member Discount: BLSCS members receive a \$10 discount per child per camp.

Consent Registration Form and payment are required on or before the registration deadline for each camp.

(NOTE: Due to the COVID-19 Pandemic Camp payment is not required at this time. Payment will be due when we are able to reopen the Centre (and notify you) or on the first day of the Camp)

NOTE:

Lunch or snacks are **not provided** at any of the camps. Campers must bring their own lunch and snacks.

Thank you, Snowbirds!

Gordon Gore



Gordon Gore Photos

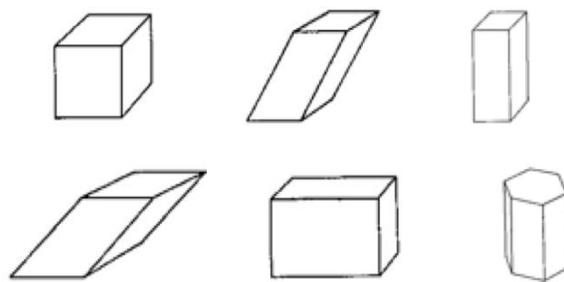
Operation Inspiration was intended to inspire and cheer up Canadians experiencing the COVID-19 pandemic. The **Snowbirds** were nearing the end of their trans-Canada tour, flying over communities from Nova Scotia to British Columbia. These photos were taken from my sundeck at The Hamlets around 2:00 PM Saturday, May 16. On Sunday they were to fly to Vernon and on, but tragedy struck when one of the planes crashed after take-off at Kamloops airport. It was carrying two crew members. Pilot **Captain Richard MacDougall** survived but passenger **Captain Jennifer Casey** sadly perished.

Like a million others, I have been a fan of the Snowbirds for decades, and have photographed them in Kamloops, Abbotsford and Prince George. When the news said they would be in Kamloops on Saturday, I was hoping they would make a pass over Westsyde before they landed at the airport. They did not disappoint. As six of the nine planes roared past my sundeck at The Hamlets, I snapped several photos of the formation. Little did I know this would be their last display before the tragic accident on the Sunday following.



These photos were taken at a Kamloops Airshow about 18 years ago. The Snowbirds were always my favourite display to watch at the airshow.





Common shapes of the building blocks from which all crystals are assembled

Figure 1 quartz crystals



Figure 2 iron pyrite crystals



Figure 3 bismuth crystals



Figure 4 fluorite crystals



Figure 5 aragonite crystals



Figure 6 sulfur crystals

All crystals shown are from Dr. Jim Hebden's collection. Photos by Gordon Gore

From the Archives

Crystals

by David McKinnon Ph.D.

If you have not already grown crystals, you should try it. It is fascinating to see a crystal increasing in size as it grows from a solution.

The most noticeable things about crystals are their regular shapes, their flat faces, and the definite angles between the faces. This is because of the underlying orderly alignment of the molecules or atoms that make up the crystal.

For a molten solid, or a material dissolved in a liquid such as water, the individual atoms or molecules are moving about randomly, but when the material cools beyond a certain point, the individual atoms or molecules begin to be attracted to each other in an orientation depending on the energy at that time. These initially joined atoms or molecules then act as a template on which others will join in a precise orderly fashion and thus eventually build up the crystal with its defined faces.

You can show this by a model. Put about 2-dozen equal-sized marbles (or ball bearings) in a small tray and roll them to one side. The marbles will all line up in nice rows. Now, instead of using all of the same-sized marbles, put a much smaller one or a larger one in with the others and move them around. What does this do to the regular array you previously had?

In winter, you can look at ice forming in a puddle, or freezing water in a container. Beautiful regular patterns are formed as the water molecules attach to each other in a precise manner. Look at a piece of broken granite rock or a polished granite floor tile. You can quite easily see several different types of minerals that have crystallized separately from the slowly cooling molten rock. The white or pink ones are feldspar, the translucent ones are quartz, the dark material is hornblende and you may see dark sparkles of mica.

There are six main types of crystal types, or systems; **cubic, tetragonal, orthorhombic, hexagonal, monoclinic and triclinic**, with sub-variants of these, making 32 in all! **Common salt (sodium chloride)** crystallizes in the cubic system. Look at some table salt under a magnifying glass. You will see tiny cubes. **Iron pyrite** ('fool's gold') is another mineral that forms cubes.

As a crystal is growing, because of the template effect, further growth onto the crystal usually favours the same kind of molecules, so that if you are growing crystals from a mixture, or an impure solution, the crystals are often much purer than the mixture they grew from.

Repeated crystallization is actually a good way to purify many solid materials. Organic chemists often rely on this method to purify solids and use the sharpness of the melting point of the material as a test of purity, as impure materials melt less sharply and at lower temperatures than pure ones. **Zone refining**, a type of repeated melting and crystallization, is used to make ultrapure materials.

Here are some experiments you can try at home. With patience and practice, you can make very big crystals.

1. Dissolve **common salt (sodium chloride)** in warm water until no more dissolves. The solution is then **saturated**. Now carefully pour off the solution from the un-dissolved salt into a dish. Cover it with a piece of cloth to keep out dust and leave it in a place where it will not be disturbed. After a week or so, some water will have evaporated and you should see bigger crystals of salt. Pull some out and look at them carefully. You should see little cubes, with hollow faces.
2. Try the same thing with **bluestone (copper sulfate)**. (Handle it with care, because it is poisonous!) You will get beautiful blue crystals. How would you describe their shape?
3. Try it with '**alum**' (**potassium aluminium sulfate**) or '**Epsom salts**' (**magnesium sulfate**) and see what shape these crystals are.
4. You might also try it with **ordinary sugar**, but as sugar is very soluble in water, you will need quite a lot. It will help here if you add one tiny crystal of sugar to the saturated solution to act as a template. You may get big chunks of '**rock candy**'.
5. If you have a microscope, put a drop of a saturated solution of any of these chemicals on a slide and watch it. You should see growing crystals racing across the image.



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This Newsletter is a publication of **BIG Little Science Centre Society**.

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Back issues of **BIGScience** can be viewed at **<<https://blscs.org/newsletters/>>**.

A family membership is \$70.00/year. An individual membership is \$45.00/year. A family membership consists of five directly related people. (This includes any combination of grandparents, parents and children).

The Main Benefits of Membership

Member ID cards for all members

Free entry to our Exploration Room, events, shows and activities

FREE or DISCOUNTED admission to MOST Canadian science centres, including Science World and the H.R. MacMillan Space Centre in Vancouver

Discounts for Science and Robotics Camps/Clubs in Kamloops

Voting privileges at the BIG Little Science Centre's Annual General Meeting

Visit our website: <https://blscs.org> for more details on the benefits of membership.