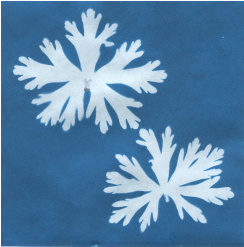


# Heliography Resources

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For COSMOS  
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## Sun Printing

Sunprint Kits produced by Lawrence Hall of Science.

<http://shop.store.yahoo.com/lawrencehallofscience/sunprintkits.html> Two sizes of paper are available. These products may be available in your local museum, science or education stores. There are many on-line sources as well.

Solargraphics GeoSafari kit from Wonderbrains. <http://www.wonderbrains.com/> . This kit has an approximately 5 x 7 inch paper and more sheets per kit.

Premixed cyanotype solutions and bulk chemicals can be purchased online from Photographer's Formulary.

<http://www.photoformulary.com/DesktopDefault.aspx?tabindex=2&tabid=9&CategoryID=59&langID=0>

## FYI

- Paper is light sensitive so keep it in its protective wrapper until your students have assembled all their materials and are ready to make the exposure.
- While the paper is sensitive it can be handled for short periods of time in dim light.
- One quarter sheet is usually large enough for students to get the hang of using the paper.
- You can either rinse the paper under running water or dip it in dishes or trays of water. Do not mix those trays with ones used for food.
- Follow all precautions listed by the manufacturer or chemical safety sheets if making your own cyanotyping papers.
- Cyanotype chemicals can be used on fabric. (Follow manufacturer's instructions.)
- Negatives can be made using a wide variety of photographic or painting programs. In general you will convert your color photo to grayscale then make a negative. Adjust the brightness and contrast to optimize your negative. Print on transparency paper.

## Content areas

- Seasons
- Ultraviolet light
- Controls and variables
- Sunscreen
- Chemistry
- Light and optics

## On-line Resources

[http://www-ed.fnal.gov/trc/sciencelines\\_online/sp\\_smr97/activities.html](http://www-ed.fnal.gov/trc/sciencelines_online/sp_smr97/activities.html) Detecting Things We Cannot See: Learning the Concepts of Control and Variable in an Experiment. Submitted by Anita Brook-Dupree, 1996 TRAC teacher at Fermilab, Teacher, Alternative Middle Years School, Philadelphia, PA

[http://www.diynetwork.com/diy/ph\\_photo\\_crafts/article/0,2025,DIY\\_14182\\_2276038,0.html](http://www.diynetwork.com/diy/ph_photo_crafts/article/0,2025,DIY_14182_2276038,0.html) Sunprint Pictures From "[Handmade Gifts](#)" episode HGM-104 This is from an episode on DIY and has a few pictures and clear instructions that might be useful for the beginner.

[http://reviews.ebay.com/Guide-to-Sunprint-Art-aka-Heliography\\_W0QQugidZ1000000000044797](http://reviews.ebay.com/Guide-to-Sunprint-Art-aka-Heliography_W0QQugidZ1000000000044797) This is a guide from ebay.com written by one of the artists who sells work there. It provides some interesting history and describes this artist's process. It does not include any information about the chemicals used.

<http://www.sciencecompany.com/photo/cyanoformulas.htm>  
[http://www.alternativephotography.com/process\\_cyanotype.html](http://www.alternativephotography.com/process_cyanotype.html)

Two sources that provide recipes and some of the chemistry behind cyanotyping.



## Sunpainting

Pebeo Setacolor Soleil Fabric <http://www.pebeo.com/us/index.htm> paints can be purchased at Michaels or from numerous on-line sources.

Klutz books

([http://www.klutz.com/??source=gaw01&kw=klutz+books& s\\_ksid=CghJ58Z0fQQK CgcD](http://www.klutz.com/??source=gaw01&kw=klutz+books& s_ksid=CghJ58Z0fQQK CgcD)) has also produced a sunpaint kit that can be purchased through various on-line book outlets. This may or may not still be available through some sources.

## FYI

- Any transparent fabric paint can be used. Available at most craft stores.
- 100% cotton or cotton blend fabrics work best.
- Fabric needs to be clean and damp.
- Cover your work area (and your sidewalk) with plastic garbage bags, baggies or drop cloths. Vinyl tablecloths and plastic shower curtains work well.
- Paint will stain clothing.
- A spray bottle can be used to wet the fabric and move the paint around.

- Paint needs to be diluted with water before using. (I usually estimate about 2 parts water to 1 part paint.)
- Waterproof or water resistant materials (leaves, shells, foam cutouts, confetti, plastic, aluminum foil) work better than absorbent materials (paper, wood).
- Salt can be used to make some funky effects.
- Discuss the proper way to choose plant material. Do not let students pick flowers or toxic plants. ASK ABOUT ALLERGIES!!!
- Material can dry anywhere. Sunlight is not required.
- Small rocks or glass decorator beads can be used to hold the materials down if there is a breeze.
- Fabric paints need to be heat set before washing. Follow the paint manufacturers instructions.

## Content Areas

- Leaf structure and identification
- Controls and variables
- Invasive species identification
- Light and color

## On-line Resources

[http://www.dharmatrading.com/info/sun\\_paint.html](http://www.dharmatrading.com/info/sun_paint.html) A commercial site that has good descriptions and pictures of how to use the setacolor paints.

<http://www.pburch.net/dyeing/fabricpaints.shtml> A good discussion of fabric paints, how they work and some other techniques to try. (The sunpaint section describes the evaporation process.)

## Letter to an elementary school teacher,

Here are a few things I would keep in mind when working with smaller children. Whatever paint you use will stain. Pull out the paint shirts, collect some old t-shirts for them to cover up with or have lots of adults to help manage the paint.

While it is cool to let the whole school see what you are doing, you probably want to work on the back parking lot or sidewalk. The paint will spill and some principals are not too impressed with paint splotches on the walkway to the front door.

Be extra careful with choosing plant material to use. As you know, some kids have terrible allergies and you don't want to expose them needlessly. If you know you have a problem, just go with the foamies or have them cut their own shapes out of foam, aluminum foil, old shower curtains or any waterproof material they can handle. I would not have kindergartner's collect their own plants. There is just too much temptation in the ornamental flower beds.

I have been getting the scraps that my local florist normally throws away. I ask them to save them in a bag for a day before I need them. Since they would otherwise go in the trash they are usually quite happy to give them to me. If you can get them daisies (head down petals spread out) and ferns (weighted with rocks or beads) are fantastic. Clover leaves, mulberry leaves and many other 'soft' leaves also work very well. Materials that do not lay flat are generally less distinct than things that conform to the surface.

While I don't take the Mylar confetti with me to festivals, I do use it in smaller groups and for my own creations. It works very well and the shapes it leaves behind are very clear. I really like the stars and flower shapes, but kids love the dinosaurs and the writing can come out very distinct. You just need to be careful that you collect as much of it up as you can so it doesn't make a mess in the environment. It is fairly easy to do if you can get the kids to pick up their cloth or shirt by the corners keeping the 'stuff' inside and then have them shake it out over a bin to collect it. Unfortunately, they are usually so enthralled with picking up the objects to see what it looks like that they tend to put the 'stuff' on the nearest surface and forget about it. Again, adult help is useful.

If you are making shirts to be worn by the kids you want to add fabric medium to the acrylic paint (available in the same rack as the paint and the cheapest option). Make sure you provide the instructions for heat setting it when you send it home. One teacher I know collects the shirts and irons them herself to make sure it is done properly. You can also use the Pebeo paint (info in the paper). That works the best and is very washable. But it is more expensive.

I usually suggest 2 colors although the rebels who dump the whole rainbow on their cloth can come up with some pretty cool stuff.

You need to have plastic underneath the fabric. If you don't the sidewalk or ground or table will draw the water out of it and the paint won't move around the way you want it too. I cut up garbage bags for shirts, and shopping bags or produce bags for the fabric squares. Saran wrap would work for a one time use, but I wouldn't go there with the little ones. It tangles up too much for me!

I do not put plastic or cardboard between the layers when doing t-shirts. I let the paint bleed through and have a muted back. Some people don't like that, so you can put the plastic in. Just remember the paint will bleed around the edges.

I use muslin for the squares because it is easy. You can also use old white cotton sheets. White t-shirts work best, but any light colored shirt will do.

We use squeeze bottles at the festivals because, believe it or not, it helps control the paint more. In smaller groups I mix the paint in cups and use foam sponges to apply it. The squeeze bottles minimize the amount of paint that gets spilled when they get tipped over. You can use a spray bottle of water to keep the fabric moist while applying the paint. This is particularly important on very hot sunny days. Once it is dry it doesn't move around in the same way and you lose the effect.

With small children you may want to emphasize the random nature of the activity. It NEVER looks exactly like you imagine it will when you set it up.

I hope this helps. I will be happy to answer any questions you might have. Let me know when you are trying it and if it fits in to my schedule, I will try to come and help out. Good luck and let me know how it goes. --cmw