



Expo Station

Light Prints

Participants shine a UV light onto a piece of treated paper covered with a stencil of their own choosing. Quickly the photosensitive paper turns from yellow to blue in the uncovered areas. Use this simple activity to talk about the use and dangers of light in old-school photography.

Ages

5-10

Activity Time

Preparation: 5 minutes

Activity: 5-8 minutes

Group Size

Number of participants:

1 person per station

Ratio of facilitators to participants:

1 facilitator for every 2 participants

Concepts to Explore

- A UV light is needed to start a chemical reaction that turns the yellow starlight paper blue.
- Photography is the practice of creating images by recording light, either electronically or on paper coated with light sensitive chemicals.

Safety Requirements & Other Considerations

- Safety glasses are appropriate for this activity.

Question to Investigate

Will a regular flashlight or UV flashlight create an image on Starlight sun sensitive paper?

Materials Required

Per participant

- 2 4- x 5-inch pieces of Starlight sun paper
- A selection of stencils of animals, insects, plants and complex geometric shapes
- 1 UV flashlight
- 1 regular flashlight

Preparation Prior to Activity

On-Site

- Arrange three or four stations across the front of a 6- or 8-foot rectangular table.
- Each station should include one regular flashlight, one UV flashlight, and two 4- x 5-inch pieces of Starlight sun paper on a tray.

Instructions & Talking Points

Facilitate the activity		
Step	Instructions	Talking Points
Introduce photography	<p>Tell participants:</p> <ul style="list-style-type: none">• Photography is the process of recording an image, either digitally, or onto light sensitive film.• Back when all cameras used film, each picture was taken on a small part of a roll of film. When all the film was used up, the roll needed to be taken somewhere with a very dark room, light sensitive paper, and special chemicals to make a photograph that people could either keep or give to friends.	<ul style="list-style-type: none">• What are some ways that people can make a photograph?

<p>Invite participants to select one stencil that they will use and take home</p>	<ul style="list-style-type: none"> • Explain that this activity uses a light-sensitive paper and a flashlight to make an image. This process is like the way images called cyanotypes and blueprints were made in the early days of photography and photocopying. 	<ul style="list-style-type: none"> • Which stencils would you like to use? You can take one of these home with you. • How can you use a stencil to make an image? • Which flashlight does a better job of making an image on this kind of light-sensitive paper?
<p>Place the stencil over the paper and try using both flashlights</p>	<p>Direct participants to:</p> <ul style="list-style-type: none"> • Place one piece of paper so that the yellow side faces up. • Arrange one stencil on a small piece of sun-sensitive paper. • Choose a flashlight, turn it on, and hold it so that the light is close to, but not touching the stencil. • Try the other flashlight. 	<ul style="list-style-type: none"> • Which flashlight do you prefer? Why? • Does it matter which side of the paper you use?
<p>Arrange stencils in different ways and use the UV flashlight to create images on both small pieces of paper</p>	<ul style="list-style-type: none"> • Explain that this sun-sensitive paper reacts the best with UV light. <p>Direct participants to:</p> <ul style="list-style-type: none"> • Be creative and explore the types of images you can make on both pieces of paper. • Allow time for participants to make design choices and explore. • Remember to take one stencil and both testing papers home. 	<ul style="list-style-type: none"> • Do you think this sun-sensitive paper would change color in sunlight? • Why or why not?

Clean Up

- Reset for more participants by placing two new pieces of Starlight paper at each station.
- At the end of the session, collect any remaining stencils and place them in the small brown cardboard box they arrived in. Place the regular flashlights in one bag and the UV flashlights in another. Use a paper and pen to indicate any flashlights that are not working well.
- Place all remaining items, including the plastic tablecloth, into the activity bin and deliver it to the location where the trunks are.

Explore the Chemistry

Starlight UV sun-sensitive paper is a photosensitive paper used to make prints quickly. The artist places objects or negatives directly onto the paper and then exposes the paper to an UV flashlight. It is ultraviolet light, just outside of the range of visible light, that reacts with a light-sensitive emulsion coating this paper.

The coating on Starlight paper is a bit different from other sun sensitive papers because the chemical reaction occurs within seconds. An inexpensive UV flashlight provides the energy needed to start the reaction that changes the yellow paper to blue.

This process is like making a photographic print, such as a cyanotype. This technique was used in the early days of photography and making copies. The characteristic blue color of sun-sensitive papers It is also the reason that architectural drawings, once copied out in the sun, are still known as “blueprints.”

Before digital photography, cameras used small exposures of light on a film to create an image. This exposed film was called a negative. To develop an image, people had to go into a darkroom. The only light they could use was a red light. Then they would project light through a negative onto light-sensitive paper to create a print. The paper used in print photography is coated with a chemical mixture called an emulsion made of silver salts.

References

- Dr. Oksana Love, member of the American Chemical Society’s Committee on Community Activities and author of the activity *Sunography* in the *Photography and Imaging: Picture Perfect Chemistry* issue of *Celebrating Chemistry*. Dr. Love is also assistant professor of chemistry at the University of North Carolina Asheville
- Dr. Jackie Trischman, member of the American Chemical Society’s Committee on Community Activities, co-chair of the NCW 2024 Theme Team, *Photography and Imaging: Picture Perfect Chemistry*, and author of the related activity, *Anthotype*

Printing with Turmeric that appears in the *Picture Perfect Chemistry* issue of *Celebrating Chemistry*. Dr. Trichman is also Dean of the College of STEM at California State University San Marcos

- *Starlight Vs Cyanotype* at <https://uvsunpaper.com/blogs/news/exploring-the-bright-side-starlight-uv-sensitive-paper-vs-cyanotype>