

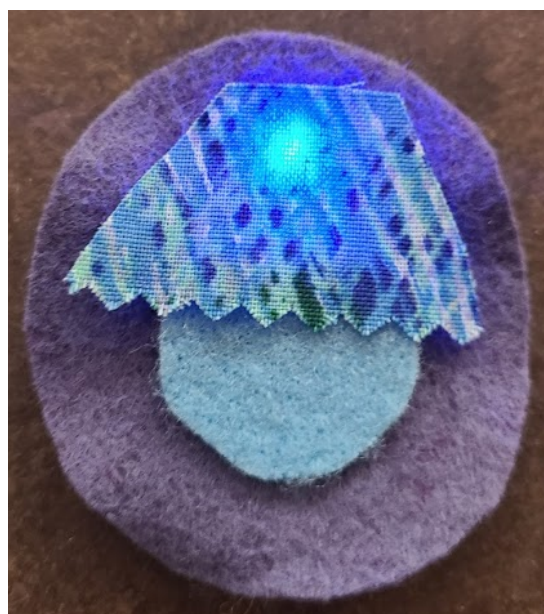


Stayton Public Library

Textile Circuits

November 2020

Light up your clothing or accessories with a customizable wearable electronic patch!



It's up to you what you want your patch to look like. Follow your inspiration and get creative. The directions here focus on getting your patch to light up.

Materials List

- Battery holder switch
- CR2032 coin cell battery
- Stainless 2-Ply Conductive thread
- needle
- LilyPad color LED light
- fabric
- thread for designs*

**Not provided in supply bag*

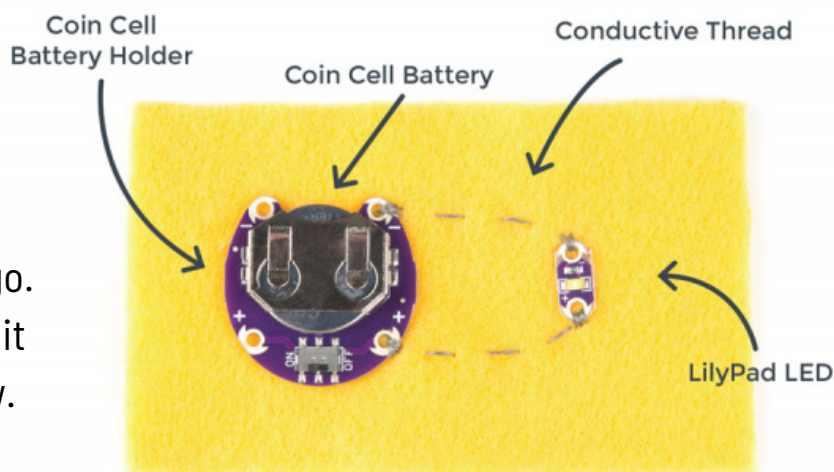
Circuit Directions

More detailed instructions and troubleshooting resources may be found on the [sparkfun.com](https://learn.sparkfun.com/tutorials/lilypad-basics-e-sewing/all#sewing-with-conductive-thread) website's LilyPad Basics: E-Sewing page

<https://learn.sparkfun.com/tutorials/lilypad-basics-e-sewing/all#sewing-with-conductive-thread>

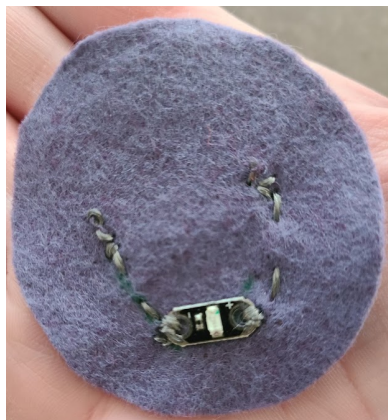
Where to start...

Decide where you'd like the different pieces of the circuit to go. It may be helpful for you to draw it out to help guide you as you sew.



Parts of a LilyPad Circuit

Note: In the pictures included on the back, the LED is on the opposite side of the fabric compared with the battery holder, but you could put them on the same side as shown in the diagram above.



Attach the positive sides:

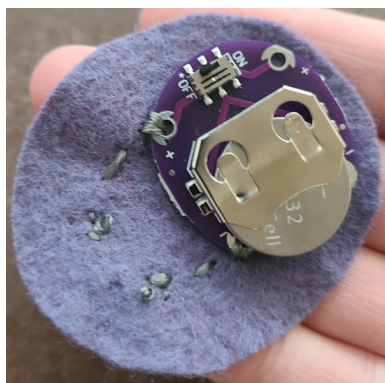
Cut a length of thread about 12 inches long, and thread it through the needle. Tie the two ends in a knot together to prevent the thread from going all the way through the fabric.

Set the battery holder on the fabric, and run your needle and thread through the hole marked with a plus sign + (the positive side) attaching the battery holder to the fabric. Loop the thread through the hole at least three times to make a solid connection with the holder.

Use a running stitch (back and forth through the fabric) to connect your battery holder to the LED. ***Be sure to connect the positive sides together; otherwise the circuit won't work.***

Run the needle and thread through the positive side of the LED at least three times to make a solid connection.

Tie a knot and trim the end of the thread, making sure no thread tails can trail and touch other parts of the circuit. This would cause a short circuit, and the LED will not light up.



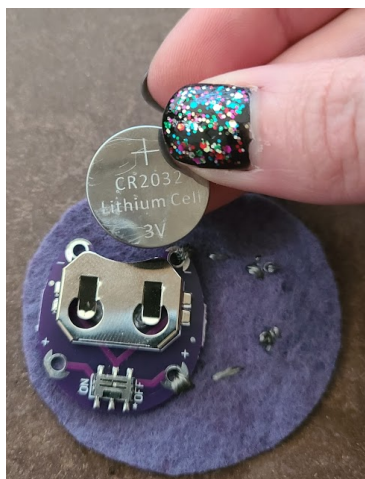
Attach the negative sides:

Repeat these steps to attach the negative sides of the battery holder to the negative side of the LED.

Light up the circuit!

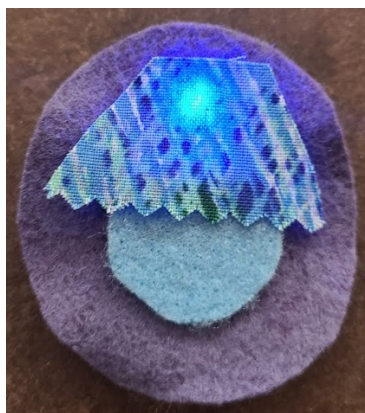
Insert the coin cell battery into the battery holder, and flip the switch to ON. If the LED does not light up, try flipping the battery over. (Note: The popsicle stick had been included to help push the battery out if needed.)

If the circuit still does not work, check out the troubleshooting page of sparkfun.com site shared above.



Finishing touches...

If you want to decorate your circuit to use it as a patch, do so once you've confirmed that your circuit works. Flip the switch to light up your creation! Design and prepare the decorative pieces of your patch, attaching them over your circuit.



CAUTION When working on your circuit in any way, making adjustments or attaching decorative pieces, please disconnect your battery

Modifications and extensions

Explore Further... For more advanced learners...



<https://www.instructables.com/Lilypad-Arduino-Light-up-Critter/>

<https://www.sciencebuddies.org/blog/red-white-and-blue-with-soft-circuits>

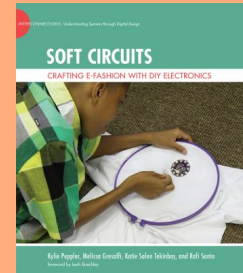


<https://colleengraves.org/2016/11/05/an-intro-to-sewing-circuits-affordably/>



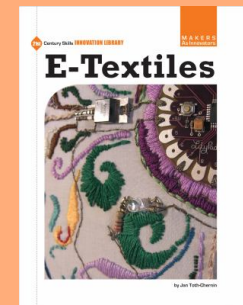
http://byov.blogspot.com/2017/05/etextiles-how-to-sew-light-up-wristband_10.html

Titles to Explore



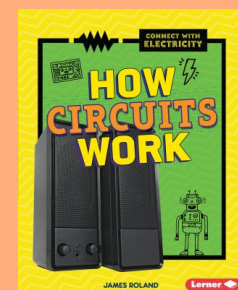
Soft circuits : crafting E-fashion with DIY electronics

by Kylie Peppler



E-textiles

by Jan Toth-Chernin



How circuits work

by James Roland



Arduino

by Terence O'Neill