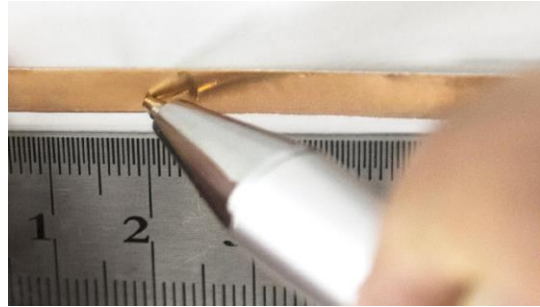


# Test electrical conductivity of aqueous solutions

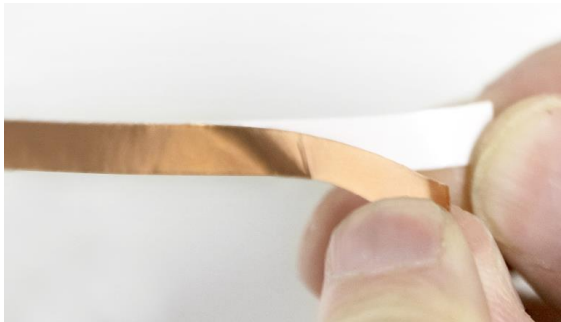
1 | Measure and cut two 10 cm strips of copper tape. Use a pen to make a mark 2 cm from one end on both strips of copper tape.



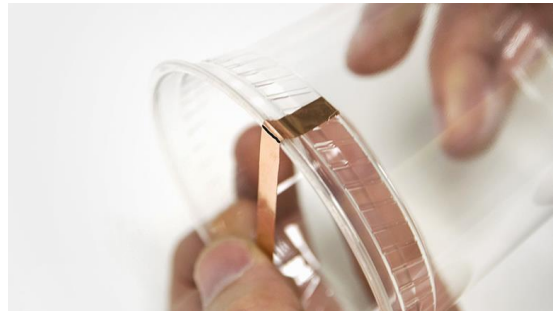
2 | Use a pen to make a mark 2 cm from one end on both strips of copper tape.



3 | Peel the copper tape from the entire backing.



4 | Make sure the cup is clean and dry. Take one of the strips and align the 2 cm mark to the lip of the cup with the longer end entering the inside of the cup.



5 | Secure the copper tape to the cup.



6 | Use your stir stick to align and secure the other strip so that it is centered directly across from the other copper strip and repeat steps 4 & 5 with the second strip.



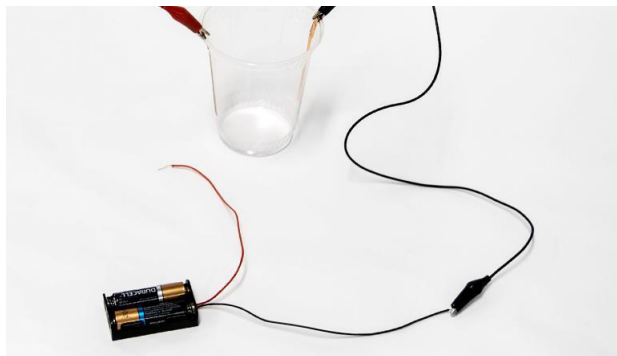
**7** | Your cup should now look like the photo below.



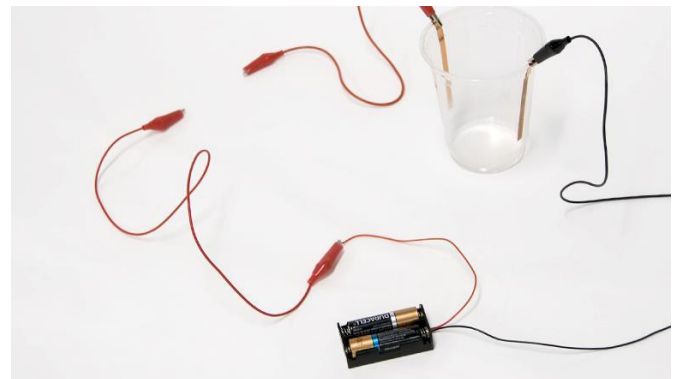
**8** | Attach the positive and negative alligator clips of the analog EC sensor to the copper tape terminals on the cup.



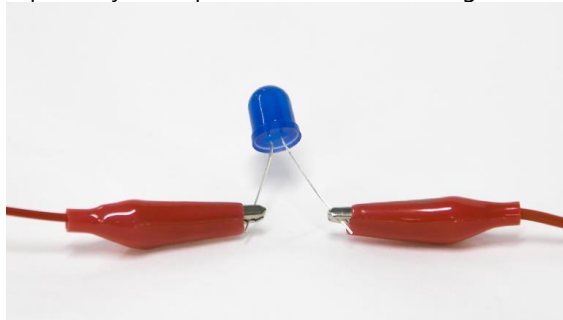
**9** | Attach your ground alligator clip to the black (ground) wire of your battery pack.



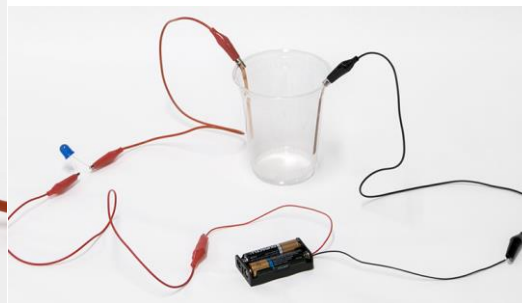
**10** | Attach another alligator clip to the red (power) wire from your battery pack.



**11** | Attach the loose alligator clip from the battery holder to the longer leg of the LED and the other loose alligator clip from your cup to the other shorter leg of the LED.



**12** | Your setup should now look similar to this photo.



13 | Attach the loose alligator clip from the battery holder to the longer leg of the LED and the other loose alligator clip from your cup to the other shorter leg of the LED.



14 | Make a mark 1 cm in on the stir stick.



15 | Obtain a cup and some baking soda. Pour some baking soda into the cup.



16 | Wet the stir stick at the 1 cm mark you just made.



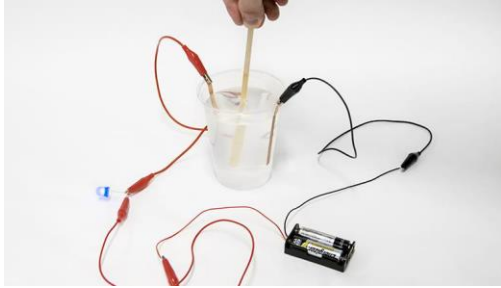
17 | Tip the baking soda cup and insert the stick until the line you made in step 14 is submerged.



18 | Place the stir stick in the water and stir.



**19** | Repeat steps 17 & 18 until your LED starts to glow. Be patient, this may take a while.



**Great work!** You've successfully created an analog electrical conductivity sensor and have been able to pass an electrical current through a solution. You're now ready to make a digital EC sensor!



#### **CONCEPT IN ACTION**

##### **Why is the solution able to pass an electrical current?**

An electrical current can only flow when there are charges free to move. Charged ions are made when some solids are dissolved into a liquid. Those ions carry current which lights the LED.