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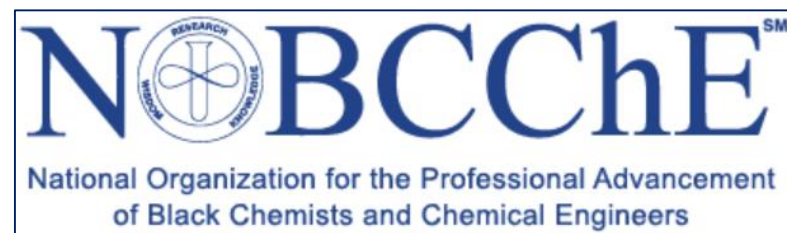
# NOBCChE

## Presenters: Kim Collins, PhD and Celia Ochoa

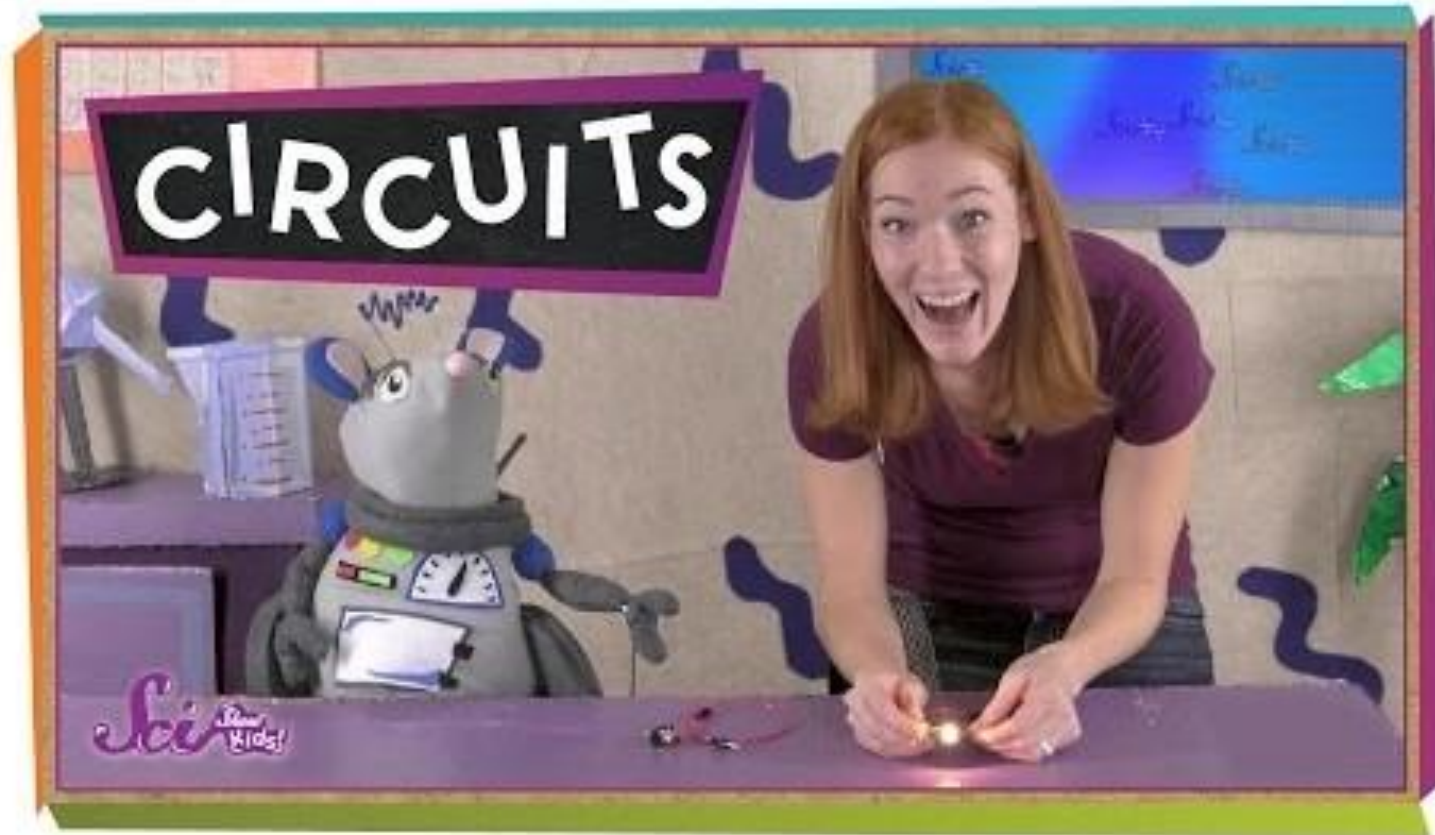
Saturday, October 3<sup>rd</sup>, 2020

1:00 PM to 1:30 PM



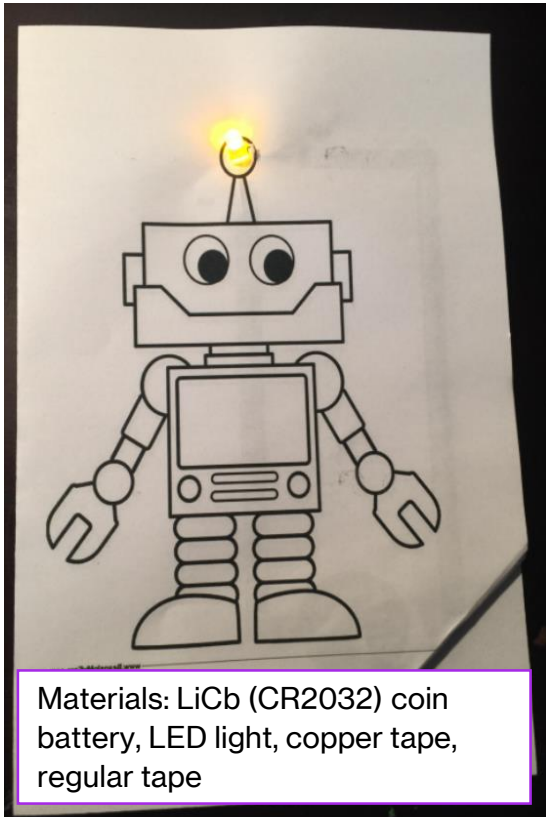


# Let's Learn about Electricity!





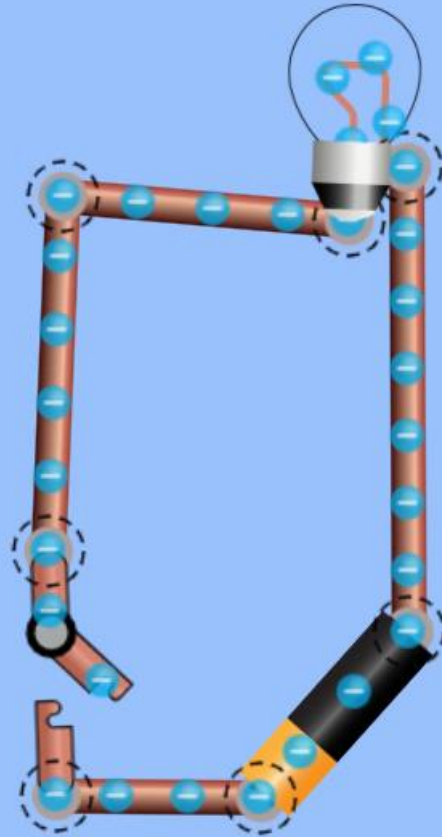
# Let's Build a Circuit!



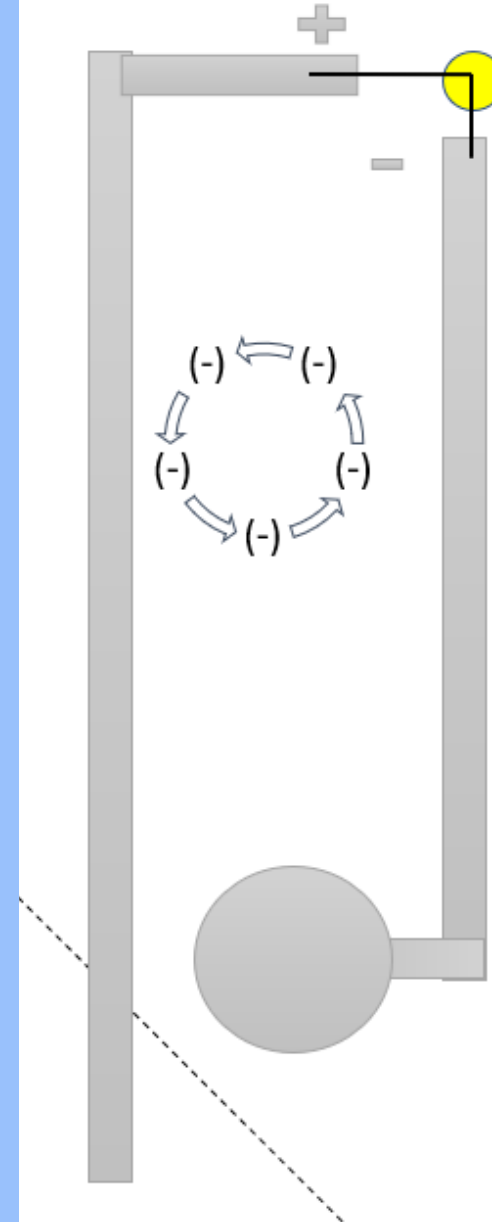
Materials: LiCb (CR2032) coin battery, LED light, copper tape, regular tape

<https://phet.colorado.edu/en/simulation/circuit-construction-kit-dc>

$$V = I \times R$$



Tap circuit element to edit.



## What is electricity?

A type of **energy** that can build up in one place (static) or flow (**current**) from one place to another.

Everything we see and touch is made up of atoms! Atoms have even smaller particles called **electrons** that act as carriers for electricity.

## Opposites attract!

Electrons are negative, so they will be attracted to the positive end of the battery as they flow through the conducting tape.

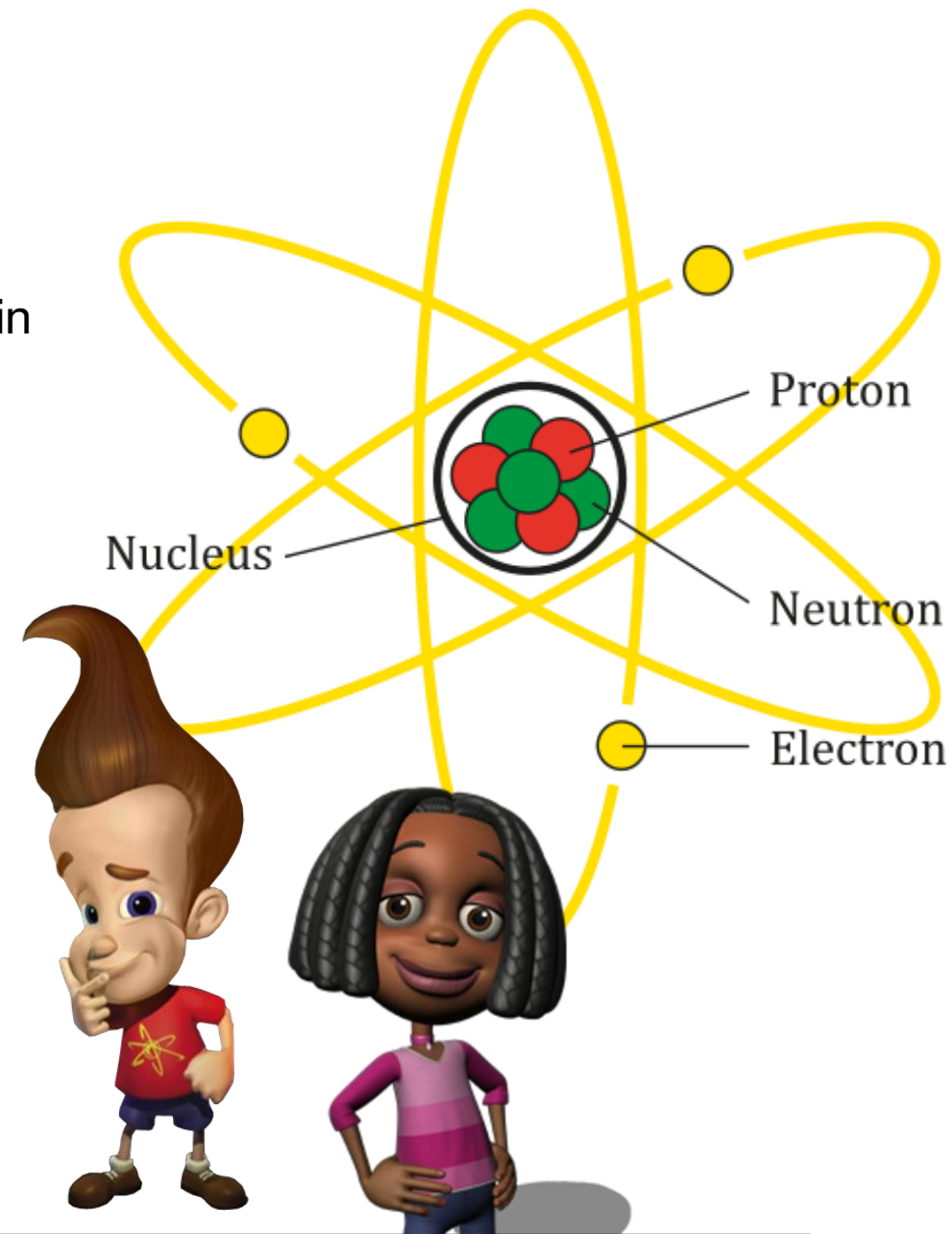
**Conductor:** a material that allows the flow of electrical current.

The conductor here is the copper tape!

To convert electrical energy to light energy, there must be a **closed path** for the electrons to travel. Fold the corner toward the battery, now YOU have closed the circuit's path and the LED light will light up!

# Review

- **Atoms:** smallest unit of matter that forms chemical elements
  - **Protons:** small particle that has positive electric charge found in the nucleus
  - **Neutrons:** small particle that has zero electric charge found in the nucleus
  - **Electrons:** small particle that has negative electric charge
  - **Electricity:** flow of tiny particles called electrons and protons
  - **Voltage/energy:** amount of energy for every charge (volt)
  - **Resistance:** measure of opposition to flow of current (ohms)
  - **Current:** flow of electrons from particle to particle (amps)
  - **Circuit:** closed path that allows electricity to flow from one point to another
  - **Switch:** anything that stops/breaks the flow of electrons in a circuit
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# Links

- <https://youtu.be/HOFp8bHTN30>
- <http://www.cr2032.co/cr2032-functions-article.html#:~:text=The%20CR2032%20battery%20uses%20a,uses%20for%20the%20negative%20end>  
**(How CR2032 batteries work)**
- <https://phet.colorado.edu/en/simulation/circuit-construction-kit-dc> **(interactive circuit)**
- Amazon circuit material list
  - **3V Lithium coin batteries:** [https://www.amazon.com/Energizer-Lithium-Battery-Original-Packaging/dp/B00FO9HQLS/ref=sr\\_1\\_16?crid=1JBUEVXDX44T7&dchild=1&keywords=lithium+coin+battery&qid=1601444020&srefix=lithium+coin+%2Caps%2C185&sr=8-16](https://www.amazon.com/Energizer-Lithium-Battery-Original-Packaging/dp/B00FO9HQLS/ref=sr_1_16?crid=1JBUEVXDX44T7&dchild=1&keywords=lithium+coin+battery&qid=1601444020&srefix=lithium+coin+%2Caps%2C185&sr=8-16)
  - **LED lights:** [https://www.amazon.com/gp/product/B082VWC211/ref=ppx\\_yo\\_dt\\_b\\_asin\\_title\\_o01\\_s00?ie=UTF8&th=1](https://www.amazon.com/gp/product/B082VWC211/ref=ppx_yo_dt_b_asin_title_o01_s00?ie=UTF8&th=1)
  - **Adhesive copper tape:** [https://www.amazon.com/Vasdoo-Conductive-Shielding-Electrical-Grounding/dp/B07RPFRFXK/ref=sr\\_1\\_14?crid=LBWO1BCZIU4Q&dchild=1&keywords=adhesive+copper+tape&qid=1601444242&srefix=adhesive+copper+%2Ctools%2C185&sr=8-14](https://www.amazon.com/Vasdoo-Conductive-Shielding-Electrical-Grounding/dp/B07RPFRFXK/ref=sr_1_14?crid=LBWO1BCZIU4Q&dchild=1&keywords=adhesive+copper+tape&qid=1601444242&srefix=adhesive+copper+%2Ctools%2C185&sr=8-14)