**BOP –**

**Coin cell (CR2032) assembling**

**in ØU16/Battery Lab**

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* Authorization required

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## General things to know before doing coin cell assembly

* Lithium is highly pyrophoric and toxic!
* In case of Li metal fire, use class D fire extinguisher, not CO2! It is located in the corridor
* Get yourself familiar with MSDSs of Li, LIPF6, LiClO4, EC, and DMC in addition to the ones related to your cathode

## Preparations

Before you start, you should have your cathode ready as a dried sheet or another planar form. Preparation of the sheet depends on the material and method, see specific BOPs for instructions.

## Cutting cathode

In the fume hood there is a teflon plate, punch tools, and plastic headed hammer.

1. Put your electrode sheet onto the teflon plate current collector side down
2. Punch out the desired amount of electrodes with 15 mm punch tool (blue, labeled “cathode”)
3. Clean the punch tool and the plate with paper wipe and acetone after use
4. Get your cathode(s) into the glove box (see BOP, authorization required)
5. Using the right-end gloves, take the materials inside the glove box

## Cutting anode

Lithium is stored and **always** handled inside the glove box. When lithium or electrolytes are handled, extra gloves have to be used on the glove box gloves.

1. Take the lithium ribbon out of the container and open the roll about 5 cm.
2. Put the ribbon against the Teflon plate and refresh both of the lithium surfaces by scraping with spatula or dedicated knife. Li is very soft and tears easily, do not use much force. On the other hand, the oxidized surface needs to be removed to obtain good performance in the cell.
3. Cut the anode with 16 mm tool (blue, labeled “Anode/Li”) against the same Teflon plate. Li sticks onto the tool, press it gently out with plastic tweezers.
4. Put the ribbon back to its container and close it.

## Assembly and crimping of coin cell

Collect the necessary components ready: micropipette with fresh pipet tip, electrolyte bottle opened (be careful!), CR2032 anode half, CR2032 cathode half, 2 separators, 2 spacers, spring, freshly cut Li anode, and your cathode. Take the anode side of the CR2032 coin cell case (the smaller one) and pile up the battery components into it as follows:

1. Put one spacer on the case bottom.
2. Press gently the Li anode into the case with the aid of plastic tweezers.
3. Put two separators onto the lithium.
4. Moist the separators with 50 μl of electrolyte solution with micropipette.
5. Put your cathode on top of the separator sheet.
6. Put one spacer onto the cathode and a spring on that.
7. Put the CR2032 cathode half on top of all to finalize the battery construction.
8. Transfer the cell to the crimper cathode side down which means that you need to turn the cell while transferring. Use **plastic** tweezers to avoid short-circuiting of your cell.
9. Turn on the crimper.
10. Press the cell by switching position to “Drop”. The crimper will stop automatically and it will indicate it by blinking the red light.
11. Switch to “Rising” and then Stop when it has elevated sufficiently to remove the cell.
12. Turn off the crimper and remove your coin cell with **plastic** tweezers.
13. Take a look on your cell that it is undamaged and otherwise ok.
14. You can now take your cell out from the glove box for testing.