FLASHLIGHT

Material and Technology
Prof. Dr. Manuel Kretzer

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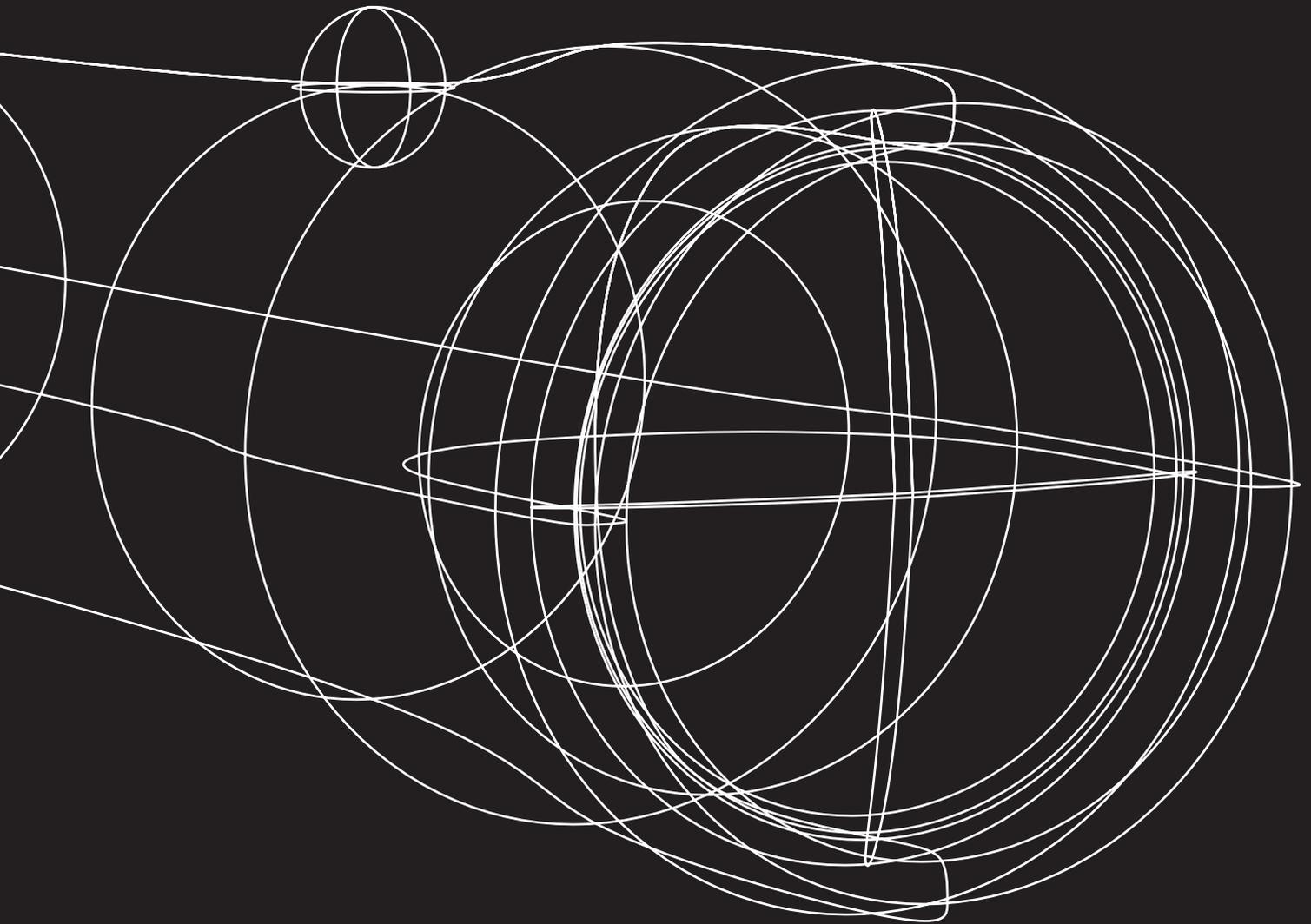
What you are about to learn:

Building a 3D model of a flashlight.

Use of the revolve function

Layer options

Change materials and colours

Rendering objects

Further info and credits

Tutorial prepared by Marek Runde. Revised by Nadia Elkady, MA.

For more tutorials visit:

https://www.rhino3d.com/learn/

https://www.rhino3dhelp.com/

Youtube is also a great source for Rhino tutorials.

1. The bounding box

Use the command prompt to draw the rectangles and type in their coordinates
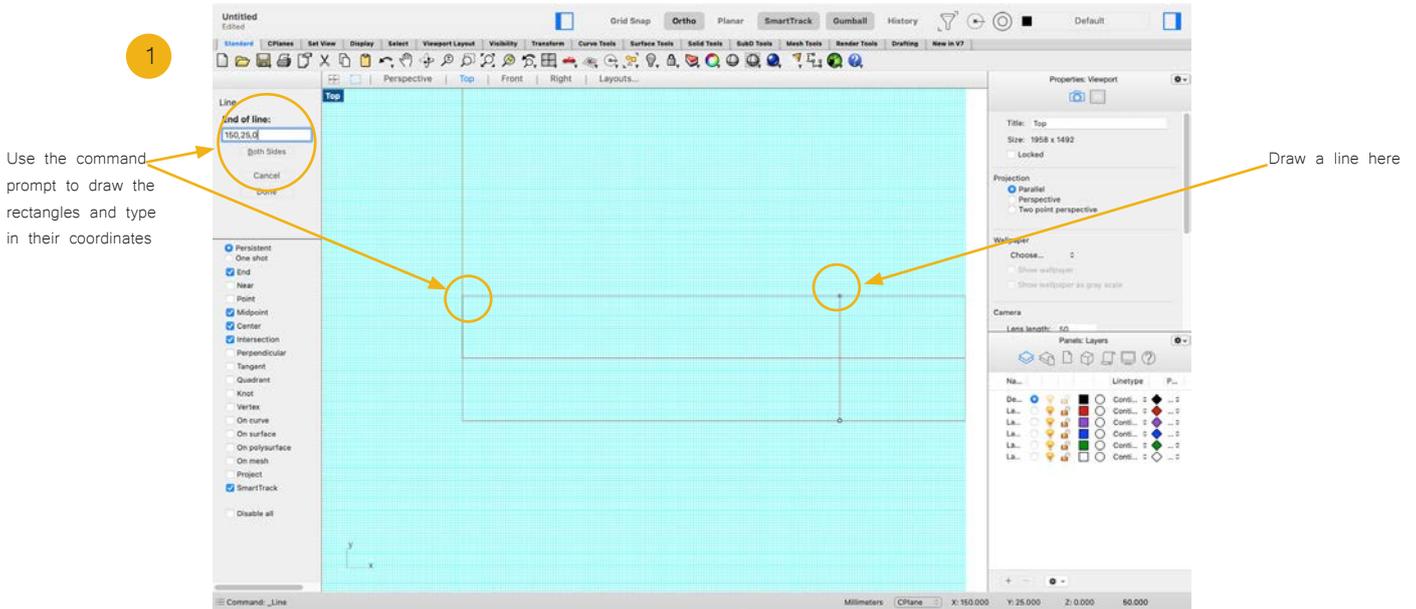
Draw a line here

Start by drawing a rectangle. The start coordinates will be (0,-25,0)

Length will be 200 And width is 50.

Now draw a line starting at (150,-25,0) going to (150,25,0).

The rectangle acts as a bounding box, and the line is a guideline for drawing curves in the coming steps.

Switch layers and lock the first by cilcking
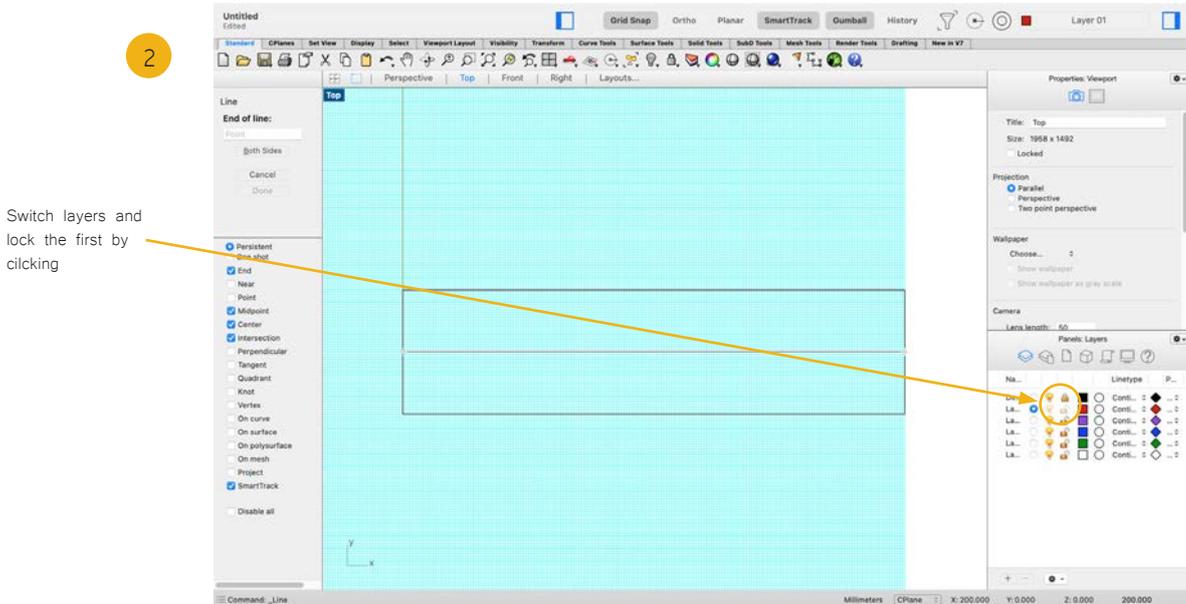
Lock the first layer that you have drawn the rectangle in. Then switch to the second layer to proceed.

Tip:
Use the panels tab to access the layers options like locking or visibility.

2. The Body

1

Create the outline of the flashlight's body using control point curve
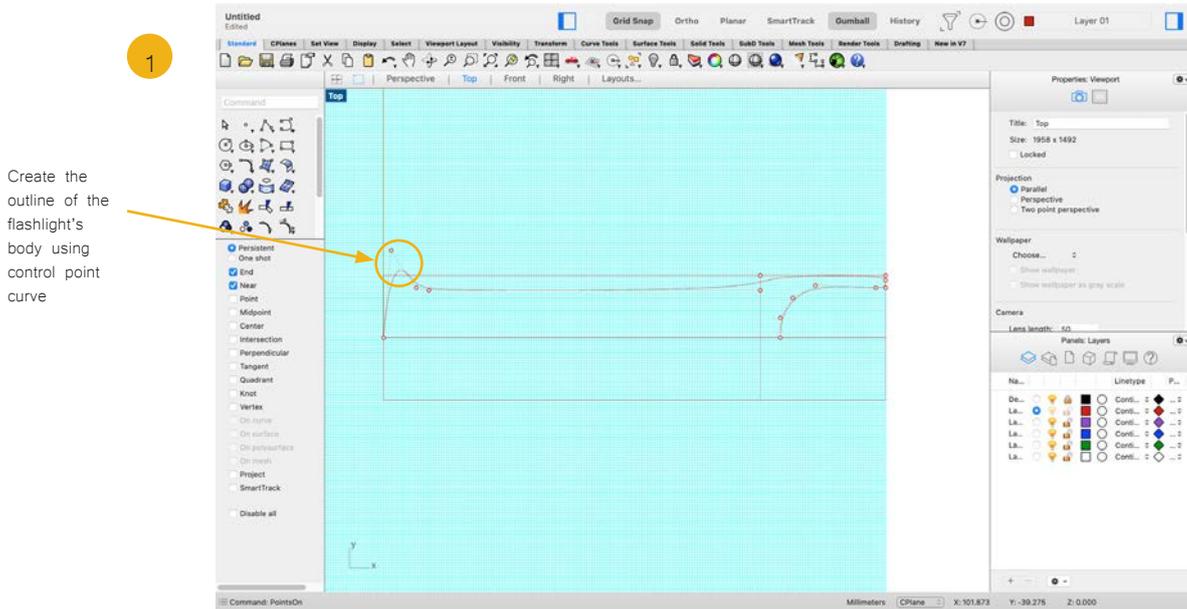
With the aid of your guidelines, use the control point curve to draw the outline of the flashlight body.
Make sure that the start and end point of your curve is on the guideline you drew through your bounding box.

The shape you draw does not have to be identical to the one above.

> **Tip:**
> Activate and deactivate the snaps as you create the curve. Near, End and grid snap will help you a lot.

2

To create the lens we also use control point curve.
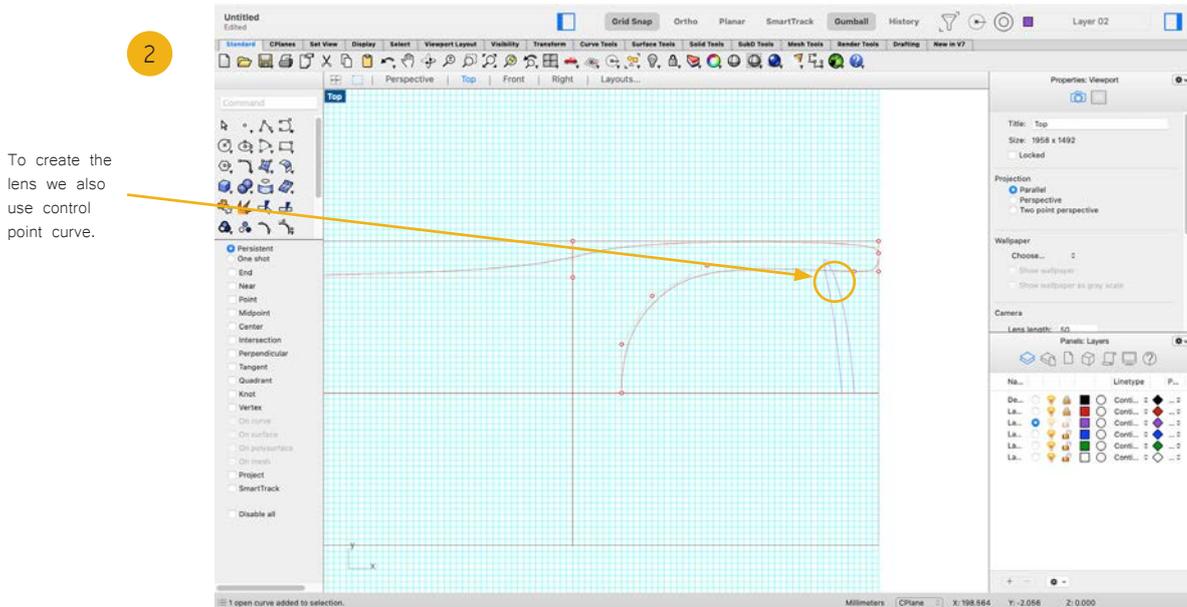
Switch to another layer to create the lens. Use the control point curve command to draw the shape of the lens. The start and end of the lens curve should also snap to the mid-line you drew earlier.
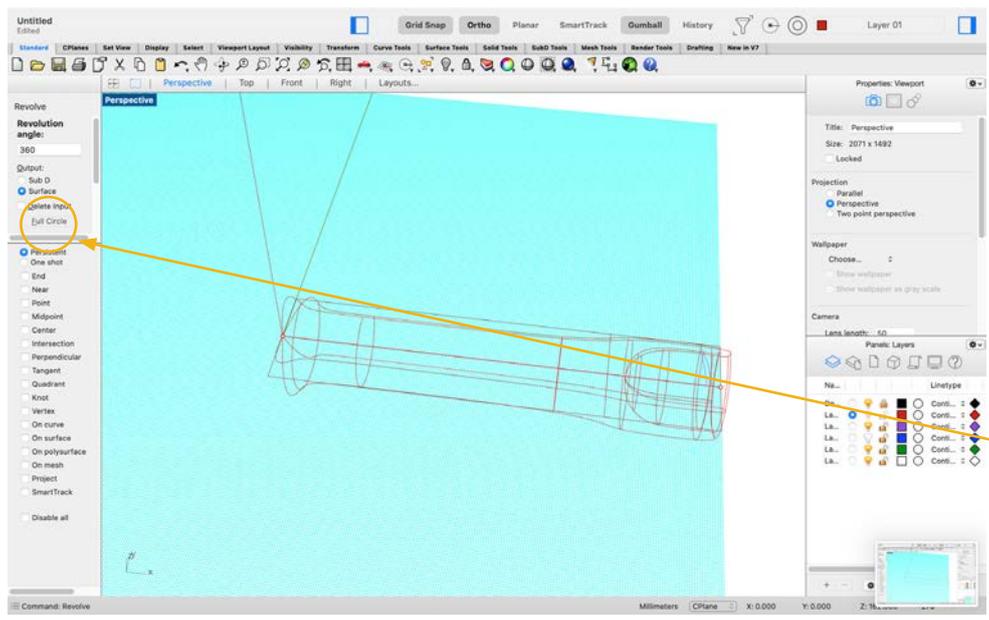
Use the "full circle" option to finish the revolution

Type in revolve in the command prompt. Now select the curve you created for the body and press enter.
Draw the revolve axis that you want to revolve around. Start angle will be set to 0 and the revolution angle will be set to full circle. Press enter to finish the revolve command.

3. The lens

The result should look like this.

Revolve The lens as well using the command prompt.

Do the same thing with the lens.

Tip:
You can switch off the Visibility of the other layers by clicking the light bulb in the panels tab. This lets you see the lens a little better.

4. The Knob

1

Use the command prompt to draw the sphere (button).

Snaps will help you with positioning.
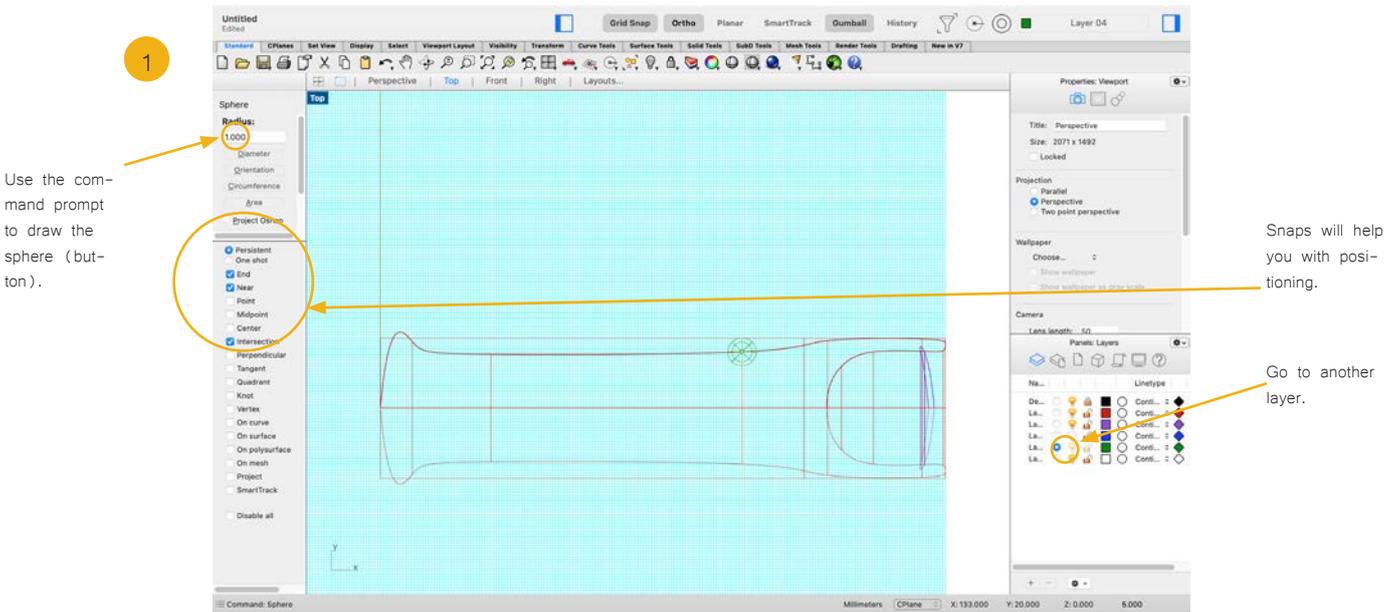
Go to another layer.

The Flashlight needs a button to be switched on. Go to the top view port. Activate intersection or near and end snap.

Then activate another layer and type in sphere in the command prompt.

Pick a place for the button and then define its size.

5. Layer names

Tip:

Using many layers helps keeping order and lets you define different properties to them like material or color.

1

Change the layers' names
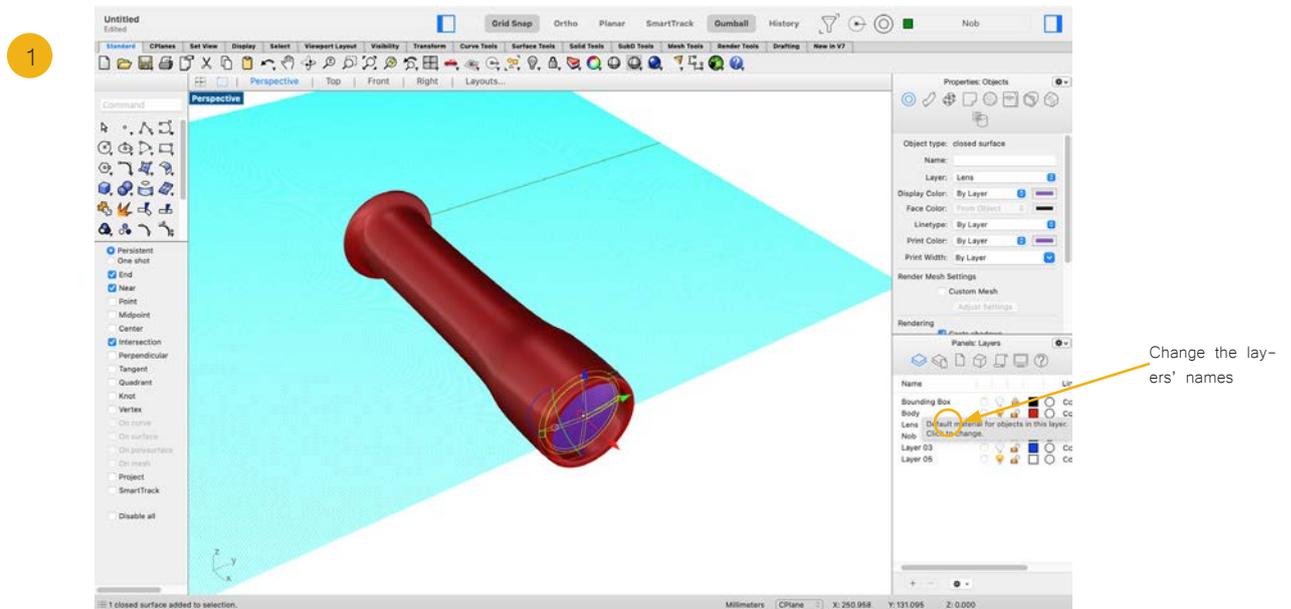
You can rename every layer to your liking.
Now that we set the proper names to all the layers we've created, we can start working on assigning materials and colours to the individual elements of your flashlight.

6. Layer properties

Set the material and colour you wish the flashlight to have
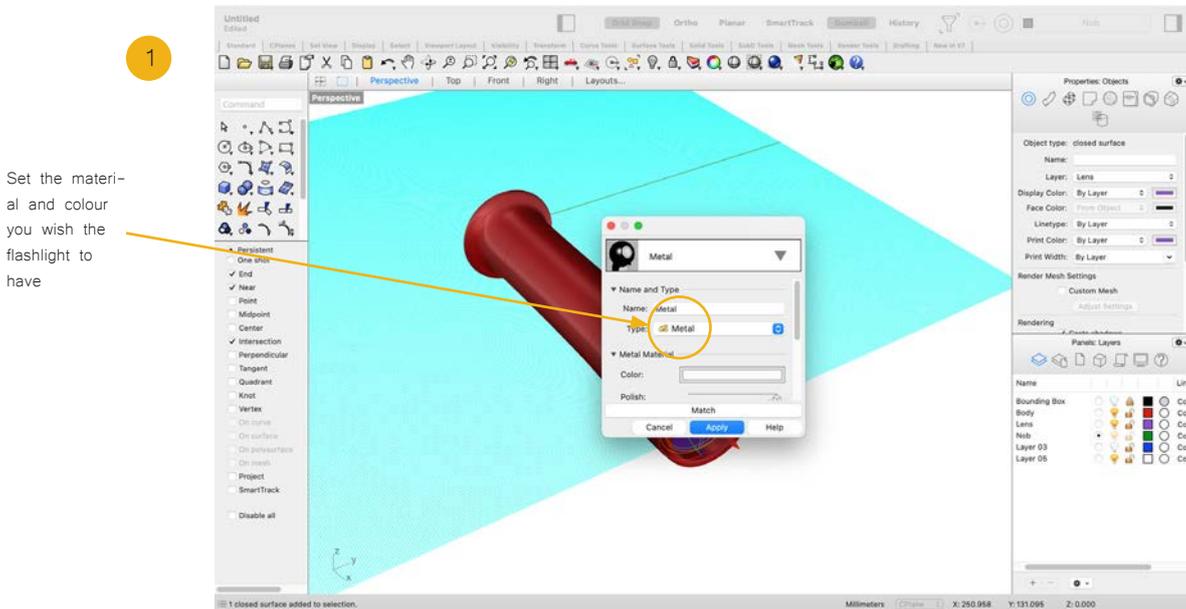
You can also change the material by clicking in the little white circle in the panels display. Here, the material of the body was changed to metal and the color to a silver gray.

Check out the other material and colour options.
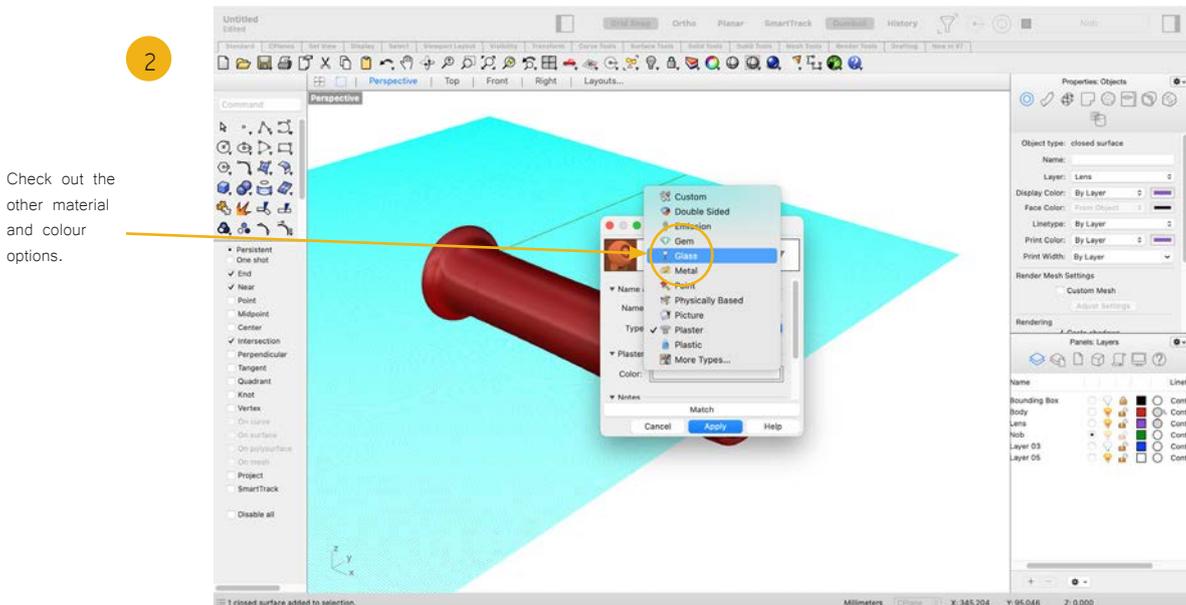
Now lets assign a glass material to the lens, the colour chosen was light blue. The only thing missing is the little button on top of the flashlight. Choose any color and material you like and check out other settings as well.

6. Render

1

Go to the render option in the menu and click render
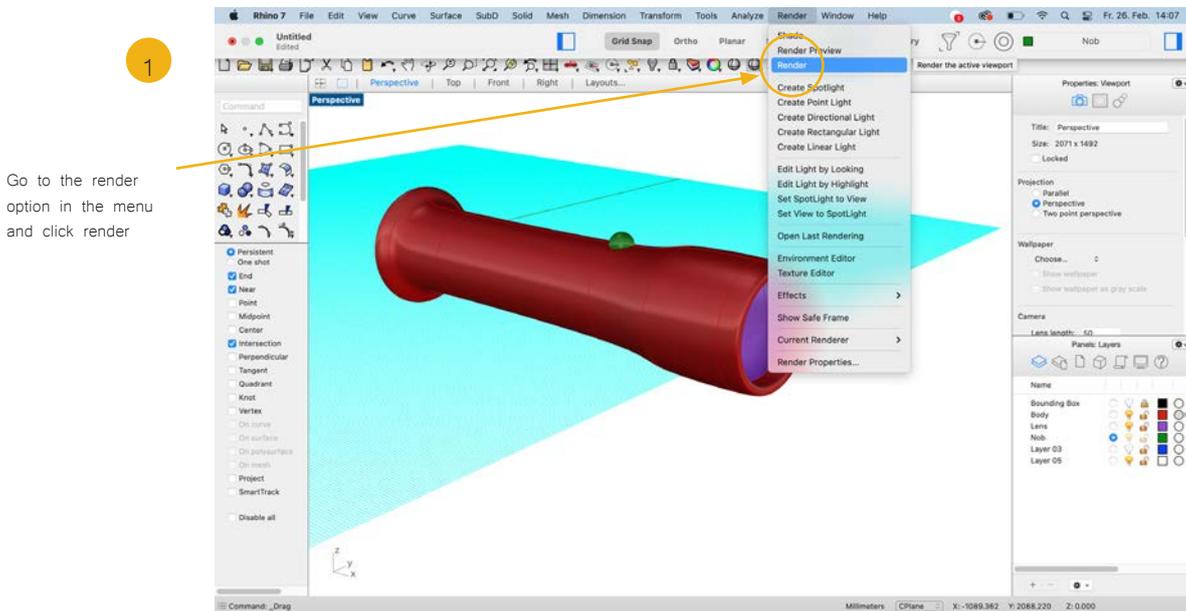
Set up your perspective viewport as if you are looking through a camera lens. The position you set the object to is the position in which it will render.

After that, you can click "render" and rhino will render an image of your model with the set parameters.

2
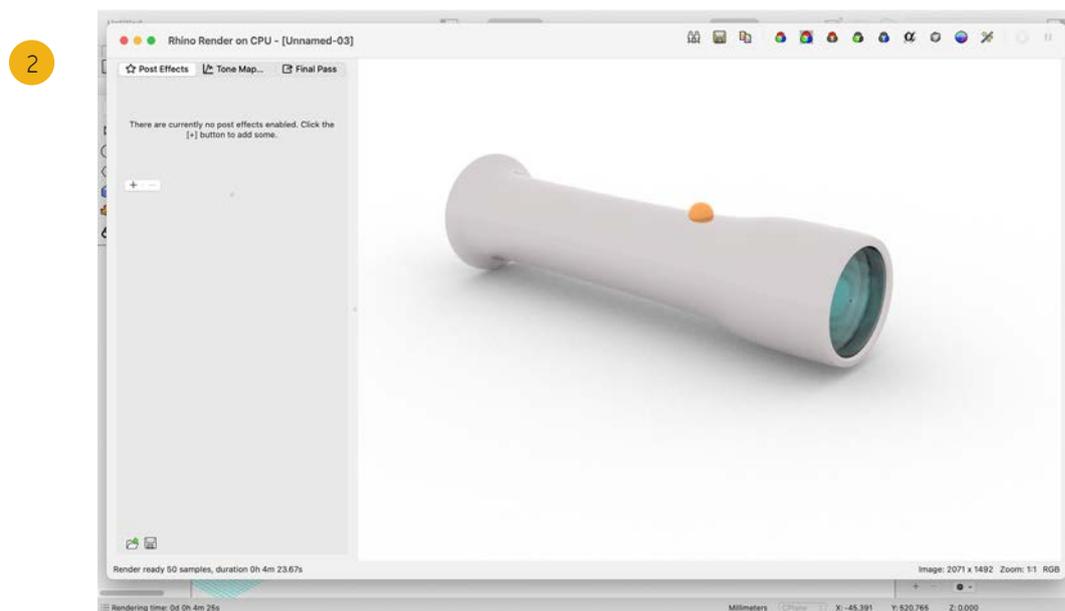
Several moments later, depending on your computing power, you will have the rendered image of your model. Explore further settings and adjustments in your render window.

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