USB-SPECTROMETER: QUICK ASSEMBLY

In order to build the spectrometer, you need the components shown in Figure 1. These are:

- The 3D-printed components
- A transmission-grating (1000 lines/mm, as shown in the picture. Available at hobby stores for a few euros).
- A razor blade for the entrance gap/slit (plus superglue and cling film)
- Nine M4x10 screws
- A C-mount camera with the typical kit lens (5-50 mm) with a front diameter of 30 mm.

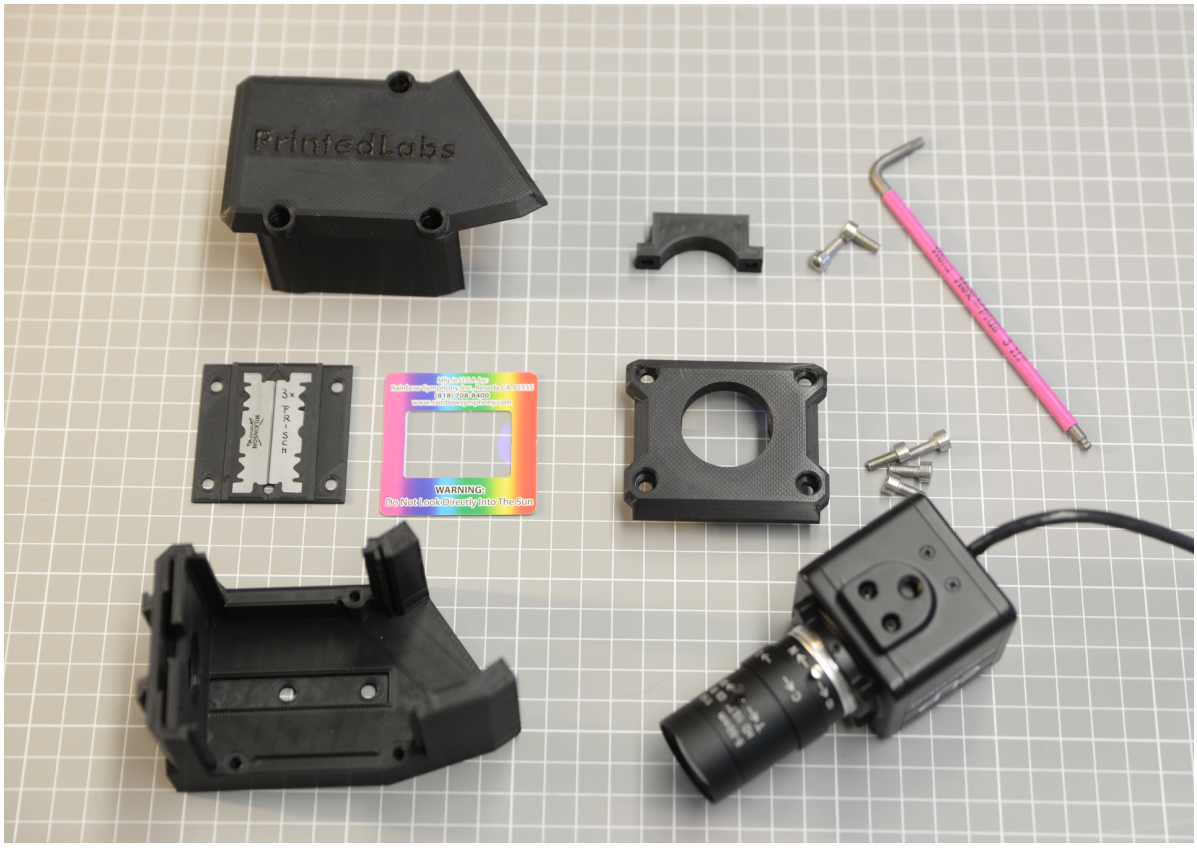

Figure 1: Required components

Assembly

1. Prepare the slit by cutting a razor blade in half. Use two layers of cling film and use them (without pressure) as spacers between the two parts of the blade while

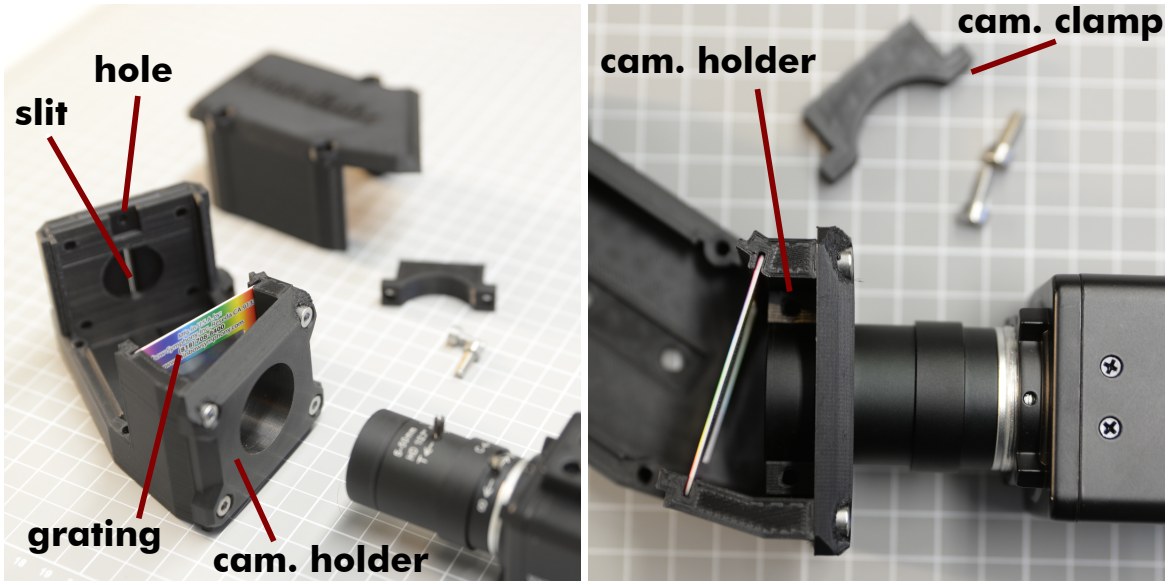

Figure 2: Assembly steps

sticking them to the slit frame. This part is crucial as the slit width determines the spectral resolution of the spectrometer. After the glue has dried, carefully remove the cling film without leaving any residue. The resulting slit frame you can see in Figure 1.

2. Place the slit-frame at the front of the main body (see left image of Figure 2). Make sure that the small hole is facing upwards. You can easily remove the slit and replace it by a wider or thinner one, if you want.

3. Place the grating into the center part of the main body.

4. Attach the camera holder to the main housing using four of the M4x10 screws .

5. Finally as shown in the right part of Figure 2, insert your C-mount camera with the attached lens into the camera holder and attach the lens to the main housing/camera holder using the clamp. Make sure that only the front part of the lens is clamped so that you can still adjust the focal length, focus and aperture of the lens. It is also helpful to align the camera housing so that the sensor is parallel to the housing.

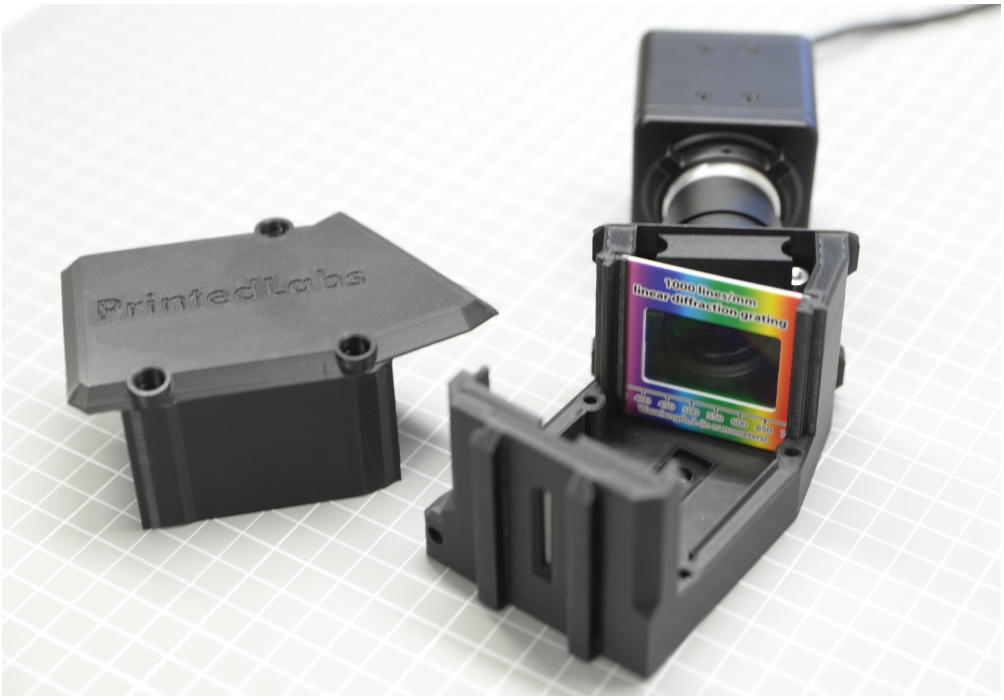

Figure 3: Assembled spectrometer and front cover