Report type writing- everything here will be saved, however, also will all be exported to latex-which will be backed up and referenced.

Design Chapter:

The first stage of the design process was to outline a specification for the testing container. These specifications were drawn from the project brief, the literature review and discussion with my supervisor Professor Moritz Riede. The specification of the design is outlined below:

1. The container must be able to accommodate a 30 mm x 30 mm substrate provided by AFMD research group
2. The container must be leakproof to outside air
3. The container must allow electrical connections from outside to connect to the substrate for measurements.
4. The container must enable the substrate to be heated to a given temperature\*.
5. The container must have a window allowing light to be shone into the box
6. The container must contain a gas inlet.
7. The container should fit into the small glovebox inlet with diameter 150 mm.

This specification provided the structure for the testing container. Using work done in the literature review, it was clear that this type of testing container is unusual for the market, thereby requiring innovative design. I was put in contact with Karl-Augustin Zaininger - a Physics researcher who had developed a simplified version of this device – to discuss viable methods for achieving the specifications. This conversation allowed me to create an extremely simple first iteration of the design shown in figure (n).

This model was 3D printed to provide a physical representation, where it was possible to see some of the flaws that were hidden by the virtual design. The first thing was that this design was very small, making it difficult for use within the glovebox. This was a problem as all assembly needed to occur within a glovebox to ensure there would be no unwanted oxygen or water residue able to degrade the cell.