Transmission percentage of the test window

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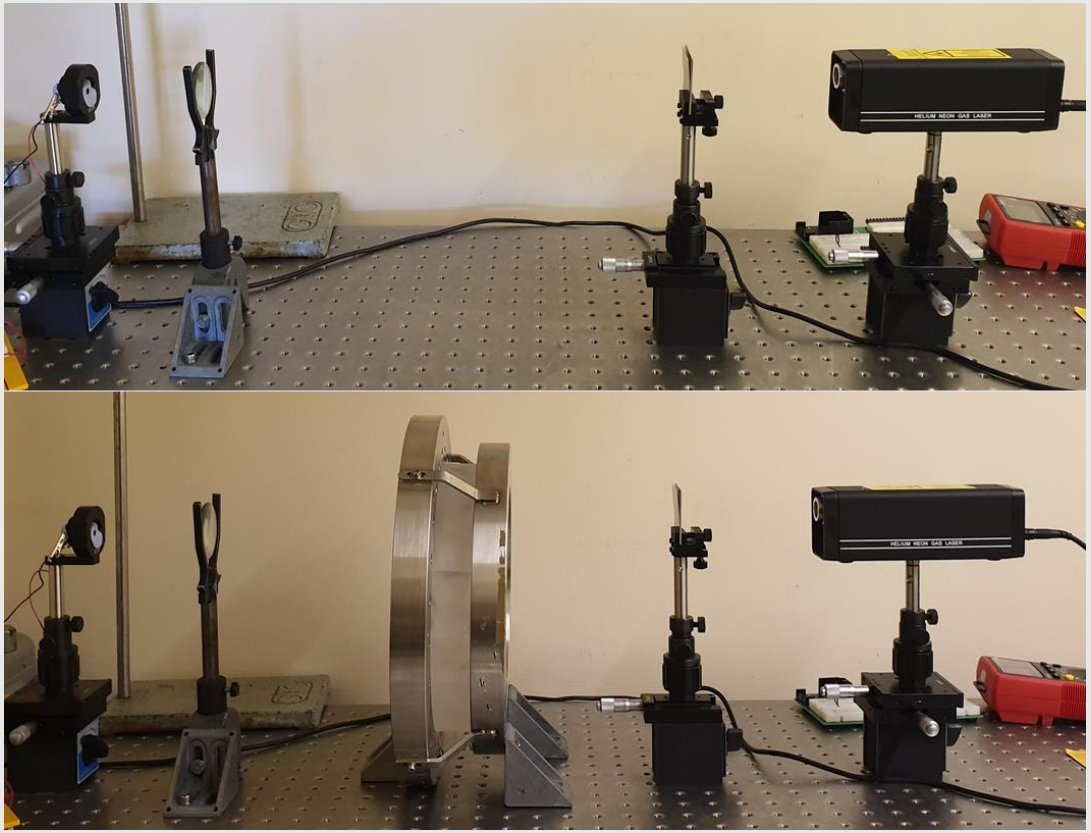
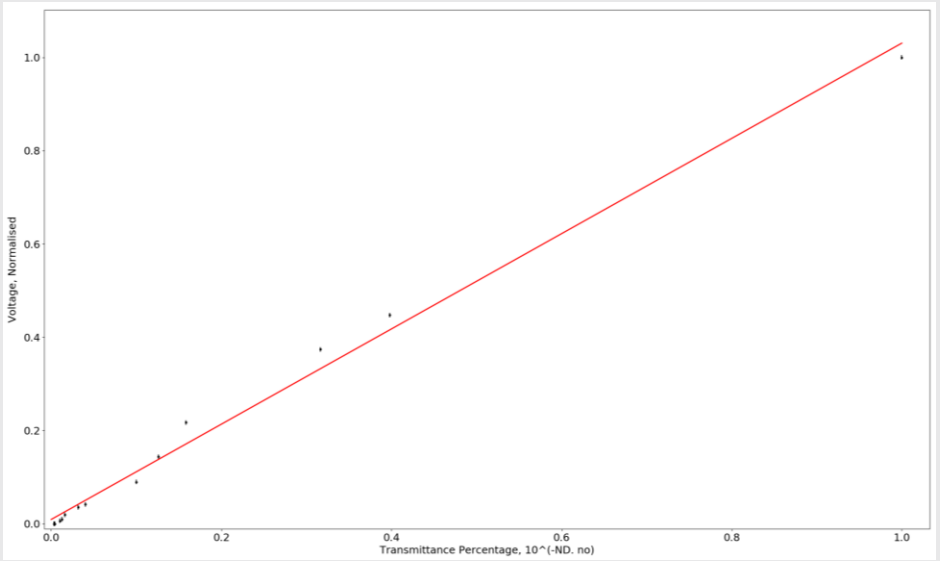
Set up

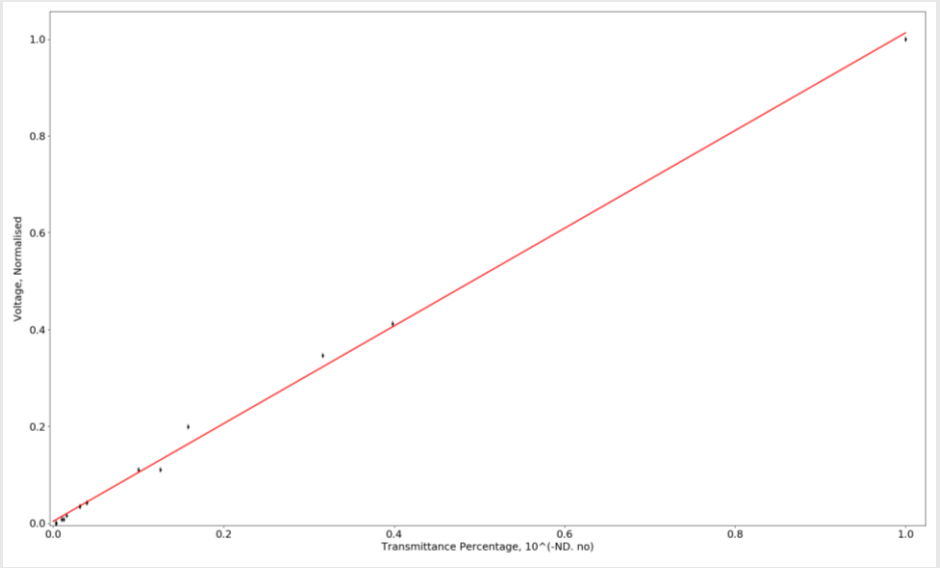
- Using a helium neon laser of wavelength 632.8nm
- Shone laser through Neutral density filters and a lens into photo diode
- Top image is without the test window, bottom is with
- Aim was to measure the voltage with and without the window in order to use the ratio to get the transmission percentage of the window



Plots

- Here is a plot of the normalised voltage against the Transmission percentage of laser light allowed through by the ND. Filters, with a linear line fit.
- Above is with no window, gradient = 1.0212 +- 0.026
- Below is with window, gradient = 1.009 +- 0.0163
- I then used the ratio of the gradient of the two graphs to calculate the transmission percentage of the window as 93.2%
- Currently working on error calculations





Saturation Issues

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- Initially there was an issue of the laser light being over saturated, as evident from the last data point on the graph, forming more of a 3rd degree poly curve fit instead of a linear fit (graph above)
- To accommodate this, the filter required to cut out the saturation region out was used as a new baseline for all future measurements, resulting in a nice linear fit line (graph below)