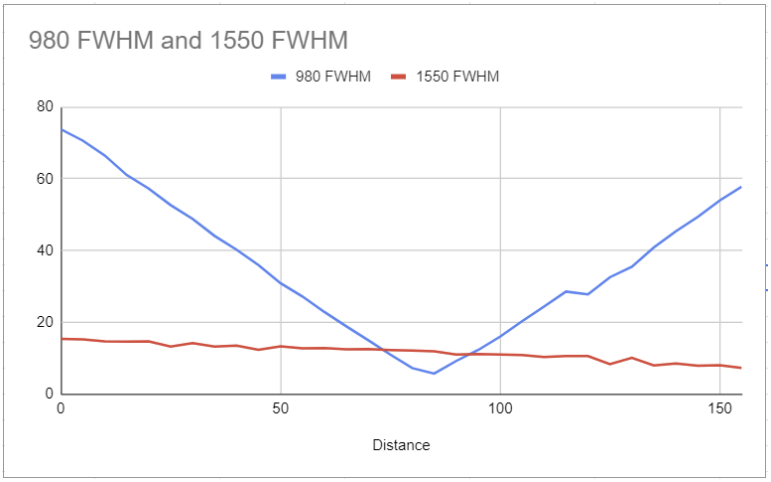
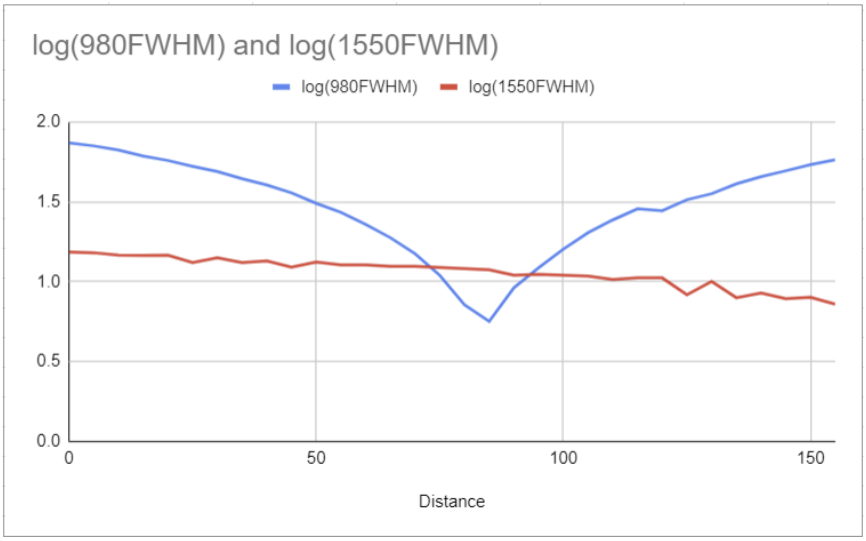
6/2/22 Results



Here the focal point of the 980nm beam through the objective is clear, but the 1550 nm beam is slowly decreasing towards some point, it does not seem to reach that point.



Focus Photos:

https://drive.google.com/drive/u/1/folders/1DRmt0N_QEdqlmFKbVrnMEooxzIFO1krC

**See procedures for how data was collected and results calculated*

Raw Calculated Data

Aa Title	# Distance (hundredths of an inch)	# 980 FWHM	# 1550 FWHM	# log(980FWHM)	# log(1550FWHM)
Untitled	0	73.8465828	15.3365607	1.868330403	1.185727978
Untitled	5	70.68021465	15.16005345	1.84929786	1.180700732
Untitled	10	66.5491443	14.65014885	1.823142476	1.165842037
Untitled	15	61.0857327	14.57493015	1.785939787	1.163606482
Untitled	20	57.286317	14.61788535	1.758050902	1.164884551
Untitled	25	52.68919215	13.16018745	1.72172154	1.119262075
Untitled	30	48.8491056	14.12488965	1.688856616	1.149985064
Untitled	35	44.0859768	13.1689716	1.644300468	1.119551861
Untitled	40	40.2354105	13.45230165	1.604608437	1.128796597
Untitled	45	35.90284635	12.31511925	1.55512888	1.090438622
Untitled	50	30.8912415	13.2311436	1.489835363	1.121597383
Untitled	55	27.171519	12.715587	1.434113918	1.104336414
Untitled	60	22.84583145	12.7418688	1.358806968	1.105233129
Untitled	65	18.83686785	12.4494249	1.275008691	1.09514929
Untitled	70	14.93298435	12.4620006	1.17414661	1.095587768
Untitled	75	10.9485834	12.24018315	1.039357931	1.087787916
Untitled	80	7.17533175	12.0763458	0.8558419854	1.08193554
Untitled	85	5.63186475	11.87854935	0.7506522166	1.074763406
Untitled	90	9.15833595	10.9673763	0.9618165705	1.040102745
Untitled	95	12.21832875	11.10643905	1.087011806	1.045574838
Untitled	100	15.96659385	10.9506558	1.203212278	1.039440128
Untitled	105	20.2458879	10.81602045	1.306336828	1.0340675
Untitled	110	24.3255957	10.2905493	1.386063484	1.012438558
Untitled	115	28.53607665	10.5517659	1.455394263	1.023325147
Untitled	120	27.7659681	10.5481863	1.44351282	1.023177792
Untitled	125	32.53703325	8.2742925	1.512377951	0.9177308693
Untitled	130	35.468184	10.01842905	1.549838953	1.000799627
Untitled	135	40.86907035	7.93156935	1.611394759	0.8993591259

Aa Title	# Distance (hundredths of an inch)	# 980 FWHM	# 1550 FWHM	# log(980FWHM)	# log(1550FWHM)
Untitled	140	45.37493895	8.49045795	1.656816054	0.9289311154
Untitled	145	49.3747416	7.820955	1.693504836	0.8932597871
Untitled	150	53.9863968	7.98728865	1.732284342	0.9023993795
Untitled	155	57.8071488	7.23293505	1.761981549	0.8593145653

Iris Alignment Confirmation Video

https://youtu.be/MH0oDRcpSPE

Focus Alignment Confirmation Video

https://youtu.be/NDfyGI9Fgxc

Power Performance Comparison to previous alignment

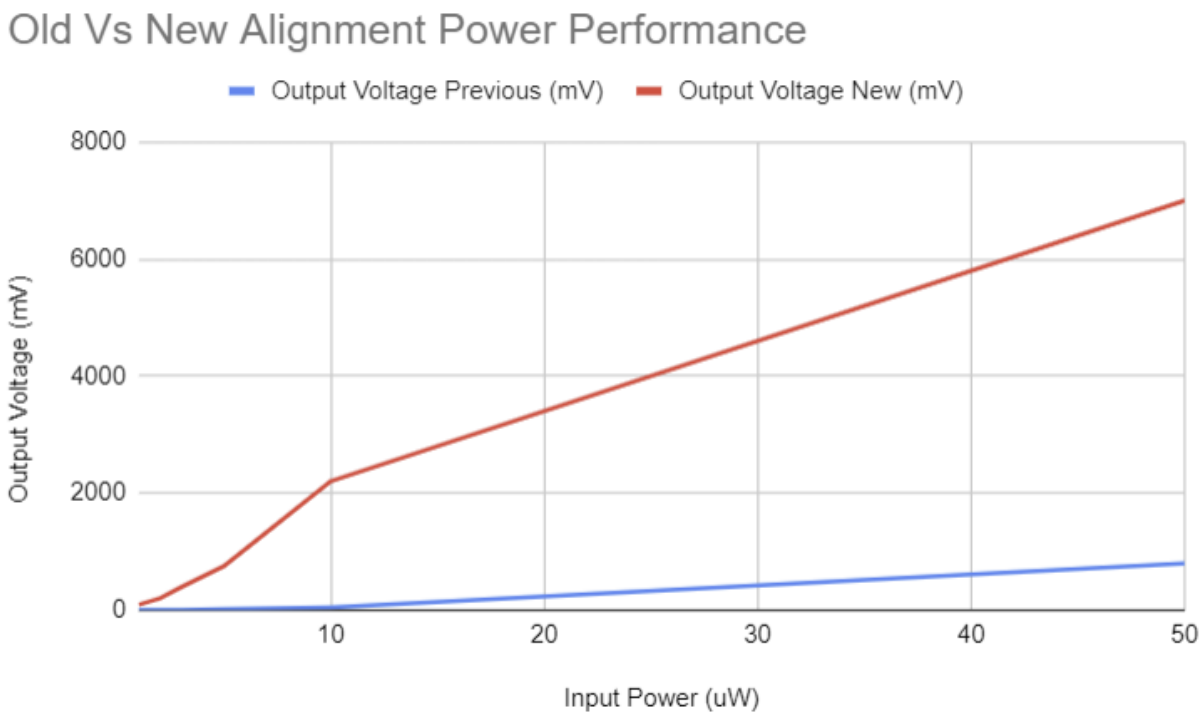
This was just readings taken from an oscilloscope compared to plotted points from previous alignment data using the calibration sample in both cases

Input vs Output

# Input Power (uW)	# Output Voltage Previous (mV)	Aa Output Voltage New (mV)
50	800	saturated
10	46	2200

# Input Power (uW)	# Output Voltage Previous (mV)	Aa Output Voltage New (mV)
5	14	750
3	5.1	390
2	2.32	200
1	1.15	90

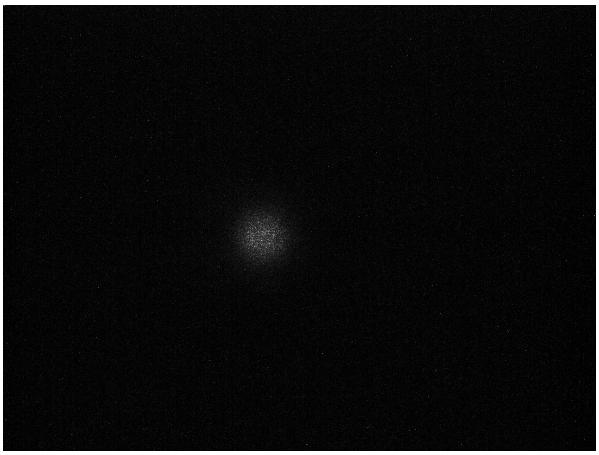
- Major optimization changes here include:
  - new collimator/ stabilized collimator with same lens a previous alignment.
  - using the collimator focus as a parameter for optimization.
  - Green filter angle as parameter for optimization.



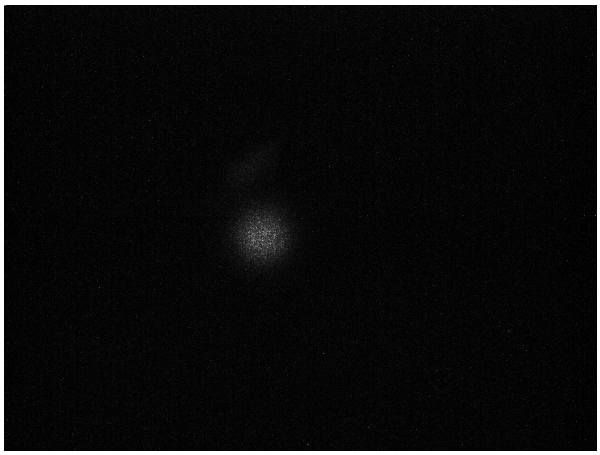
Returning Beam Analysis

here we were looking at the returning beams using a flip mirror before the detector to shoot the beams out and focused into the phosphor camera with the objective focused at highest input power for the 980 nm beam. A 1550 short pass filter was used to

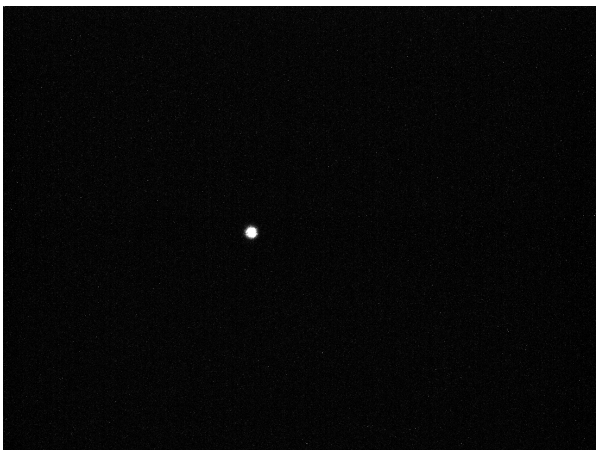
remove the 1550 beam from the returning path in the first case. The 1550 pictures should technically also still include the 980 beam



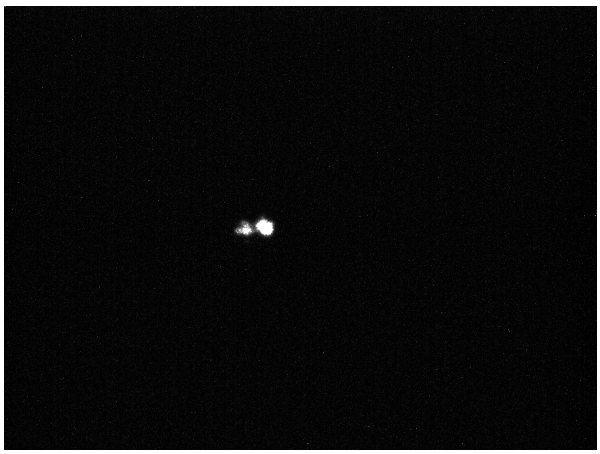
980 fluorescent beam in thick part of sample (no aberration)



980 fluorescent beam in thin part of sample (small aberration top left corner)



1550 (1550 filter removed) returning beam in thick part of sample



1550 (1550 filter removed) returning beam in thin part of sample