

Can new multi-line lasers help realise future clinical flow cytometers?

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Introduction

Cobolt Skyra™ is an extremely compact, permanently aligned and service free multi-line laser with up to 4 laser lines integrated in a single hand sized package.



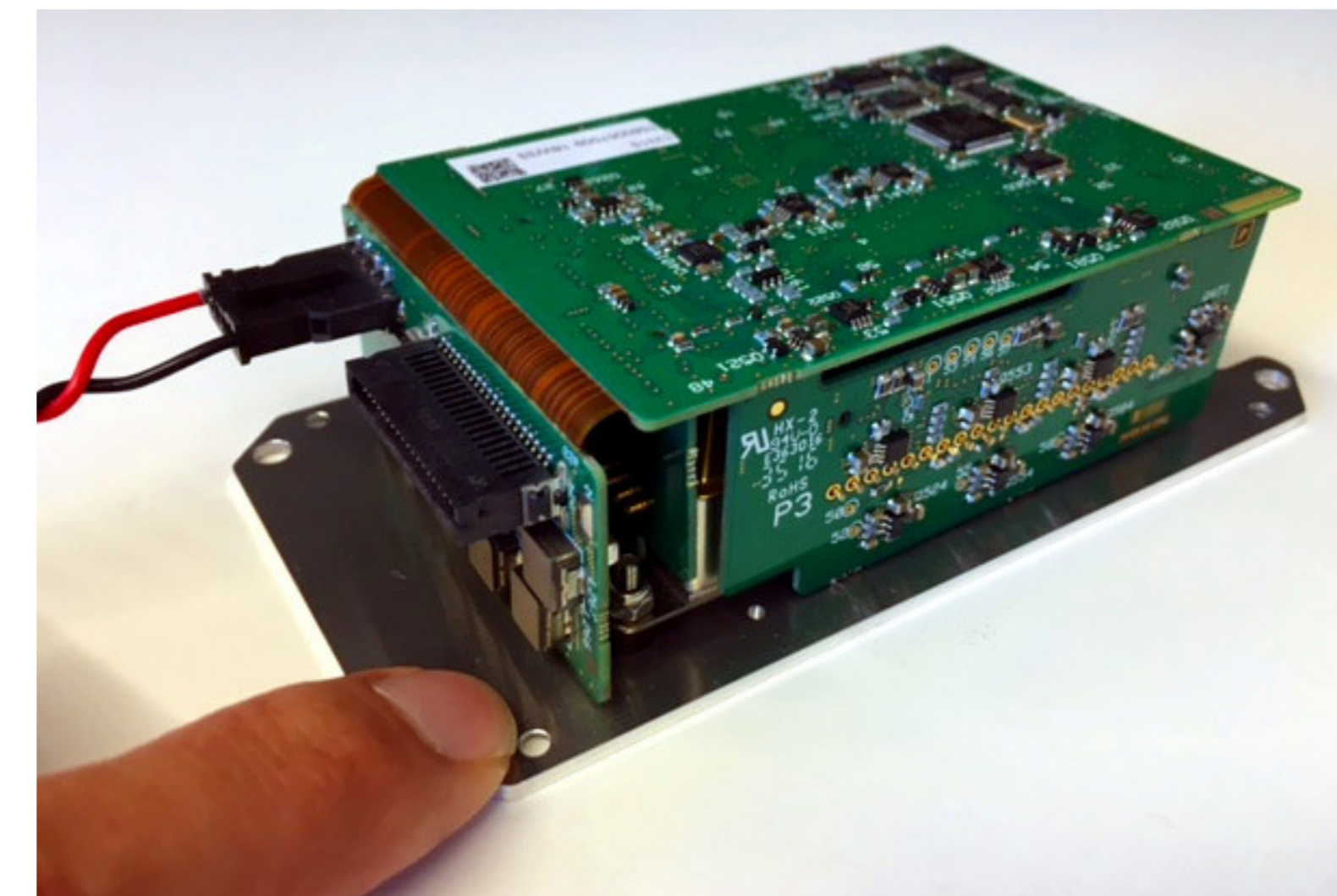
Compact housing : 144 x 38 x 70 mm

Conventional laser combiner solutions used in fluorescence-based bio-instrumentation equipment use multiple individual lasers combined through optical elements in systems that are bulky, costly to manufacture and challenging to keep aligned.

The HTCure™ laser manufacturing technology allows for a high precision mounting and ultra-stable permanent alignment of the output beams. A novel production process (*patent pending*) enables a beam overlap of better than 150 μrad. The optical platform can be customized for a higher degree of integration into the flow cytometer.

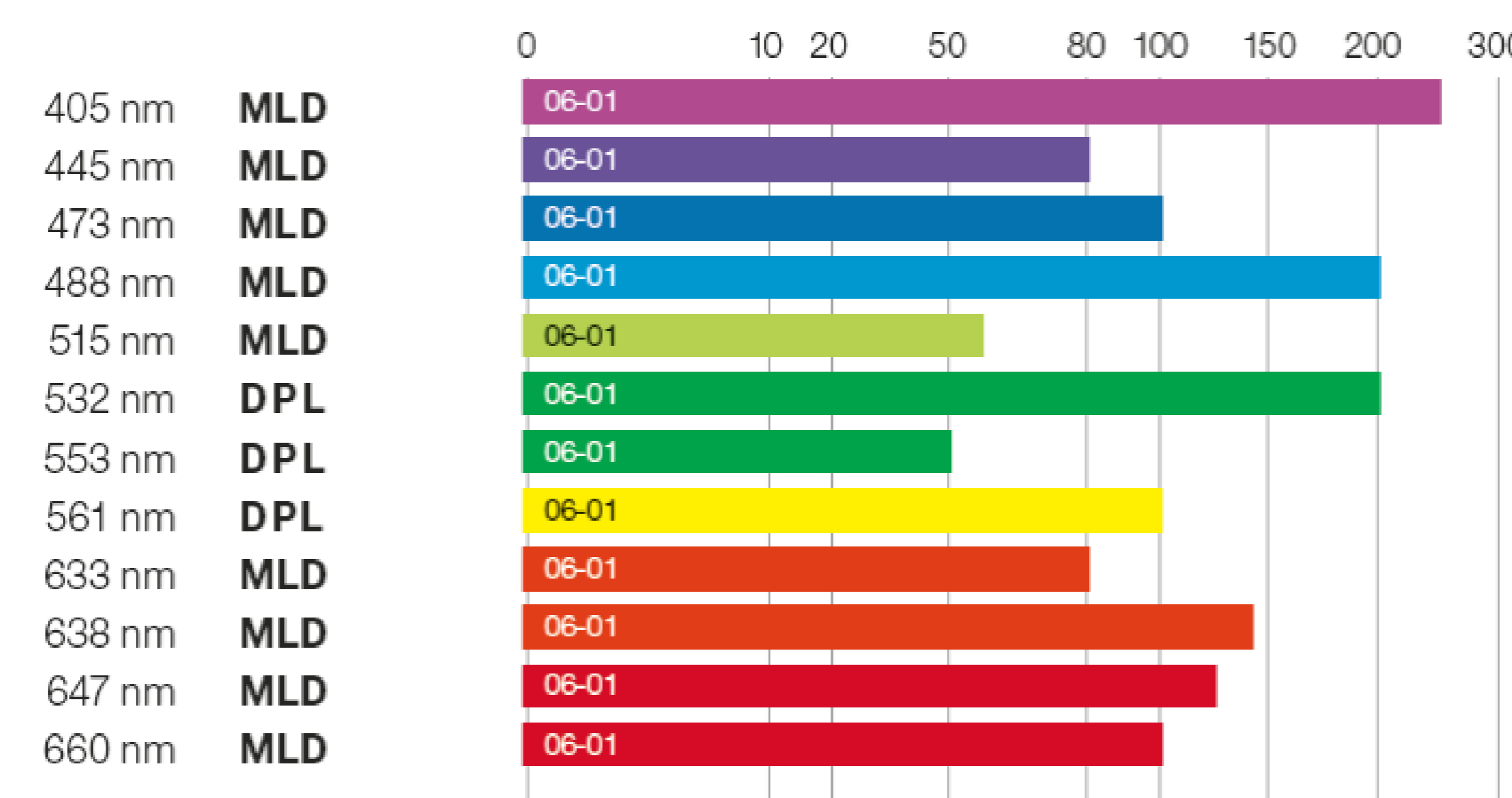
Technology

All optical elements are assembled onto one temperature-controlled platform and components for beam shaping and alignment are integral parts of the device.

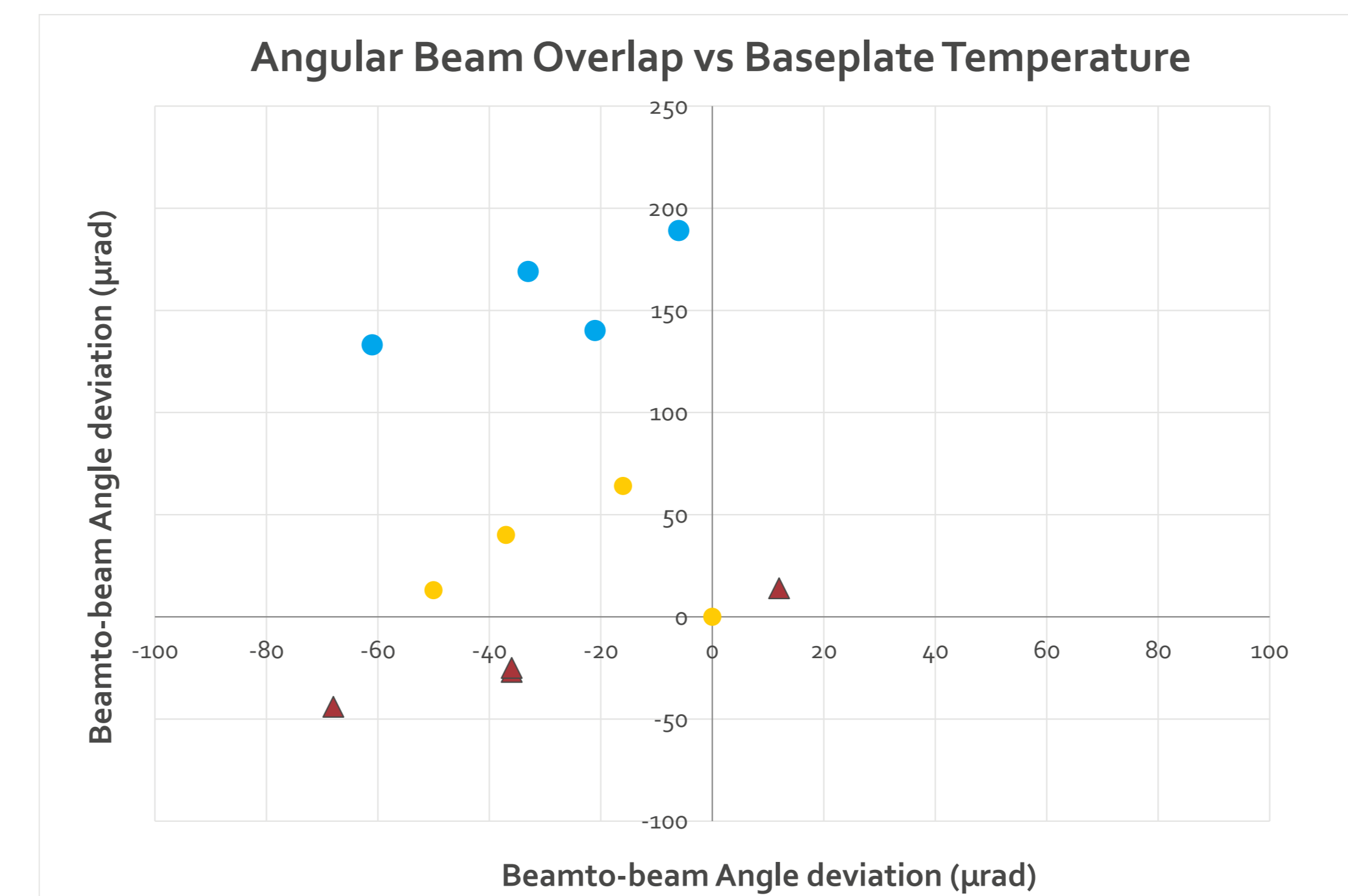


Hermetically sealed package with integrated electronics

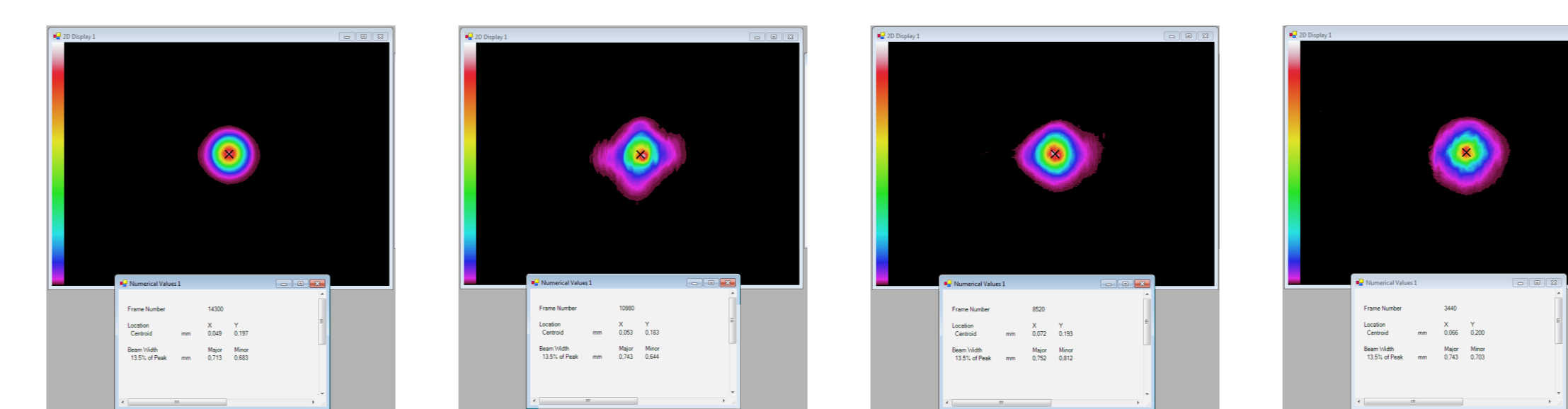
Through fully integrated electronics all lines can be individually controlled and intensity modulated. By combining both diode-pumped and direct diode laser technology, 12 different colors in the wavelength range 405 nm to 660 nm are available, with up to 100 mW output power per line.



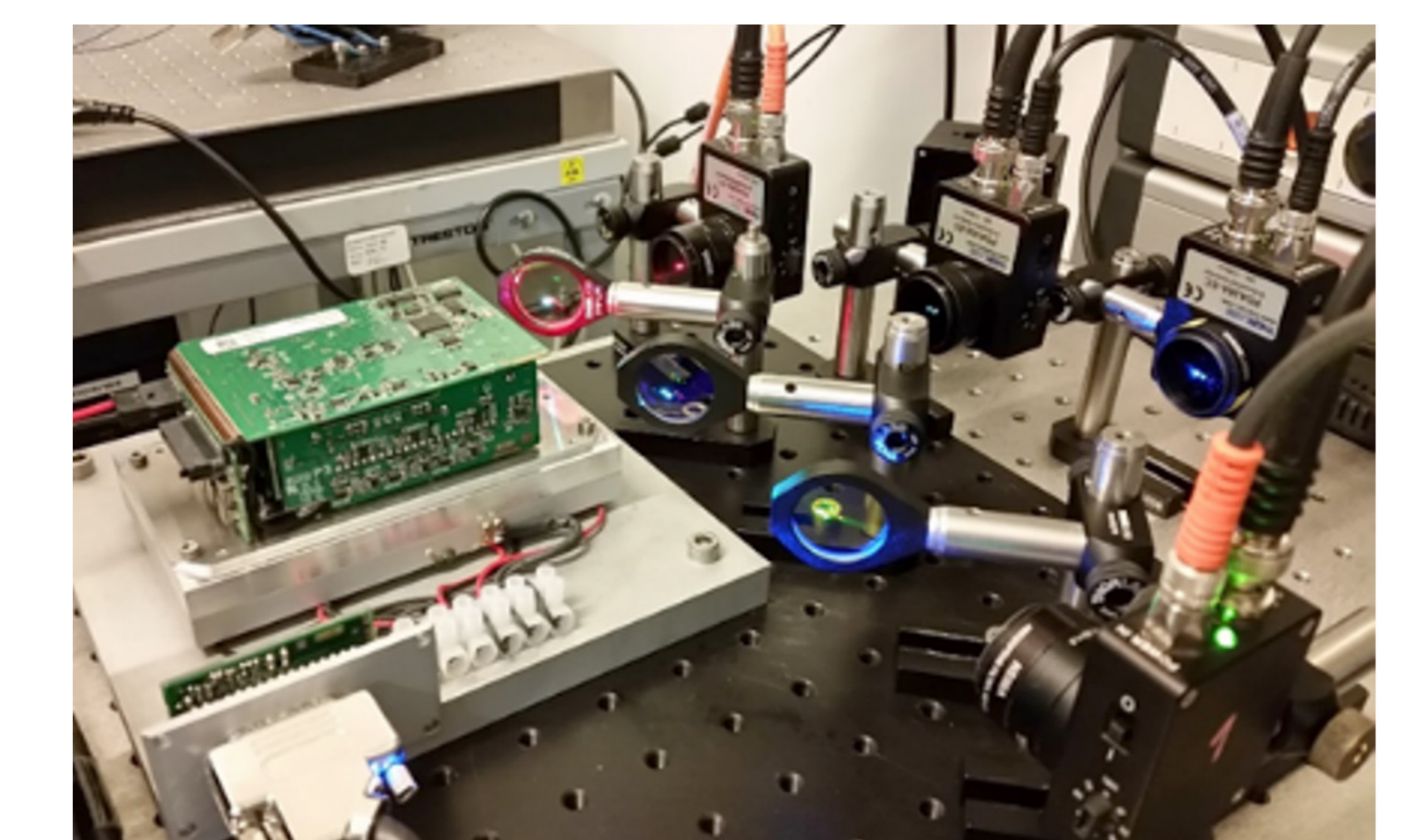
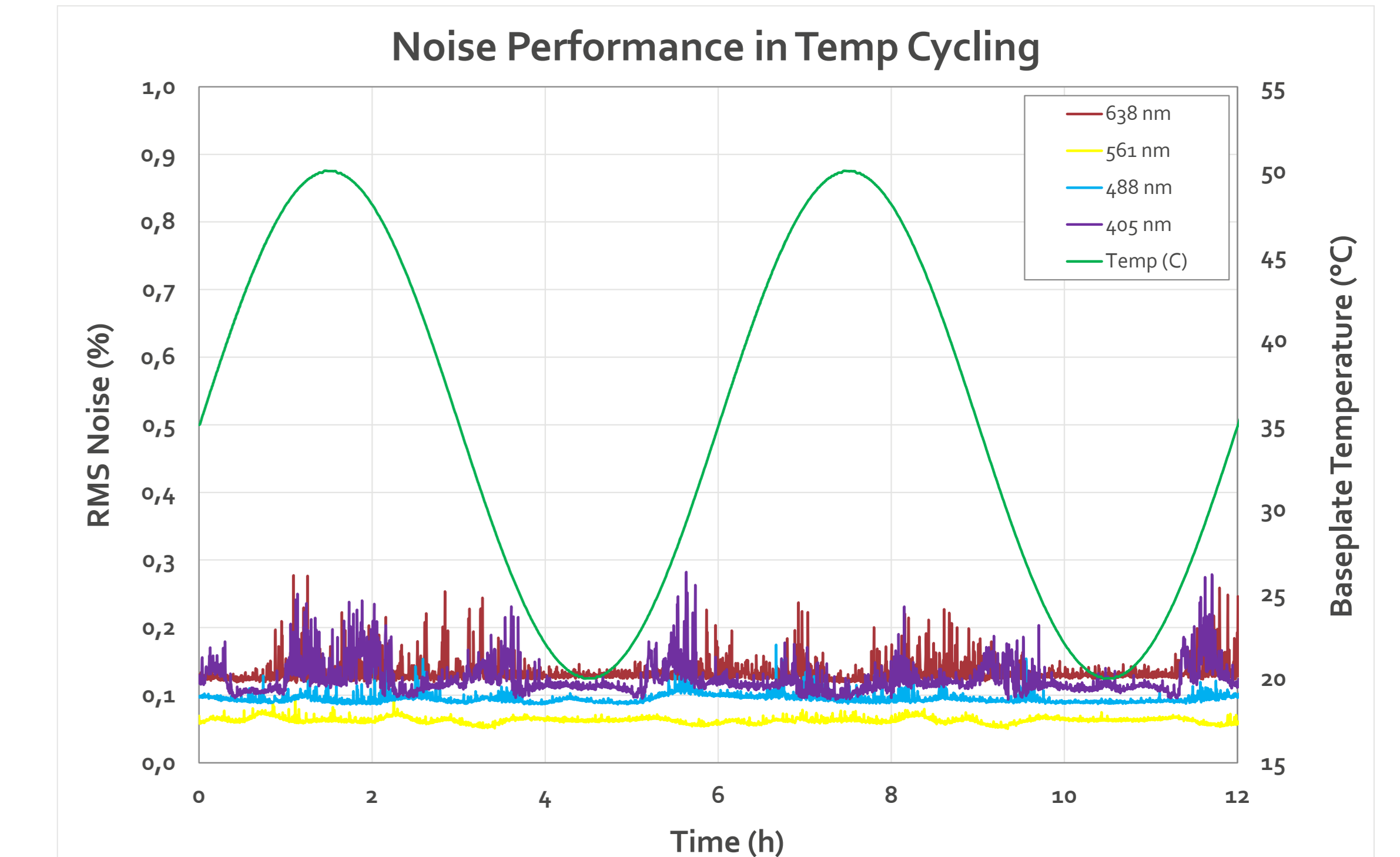
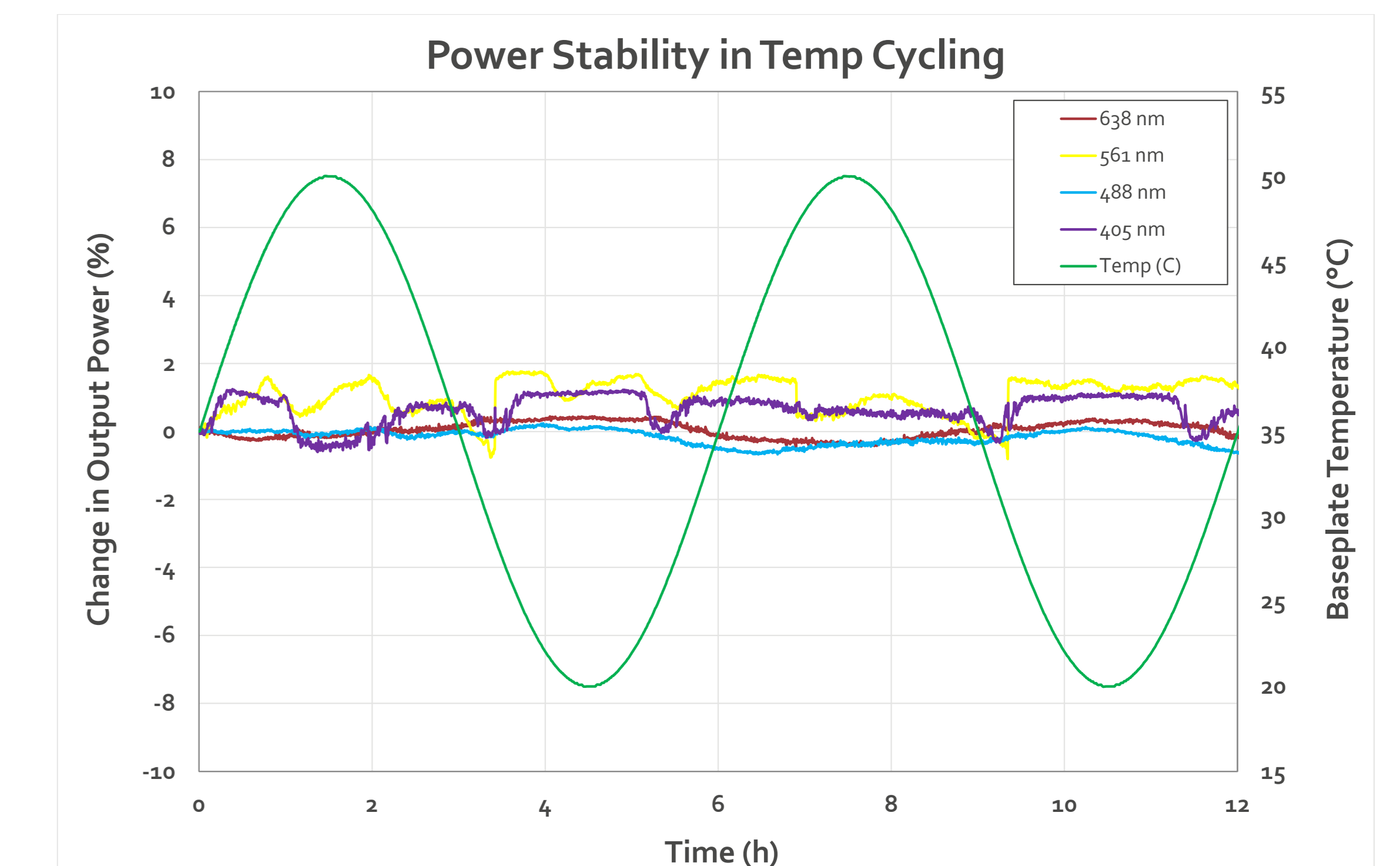
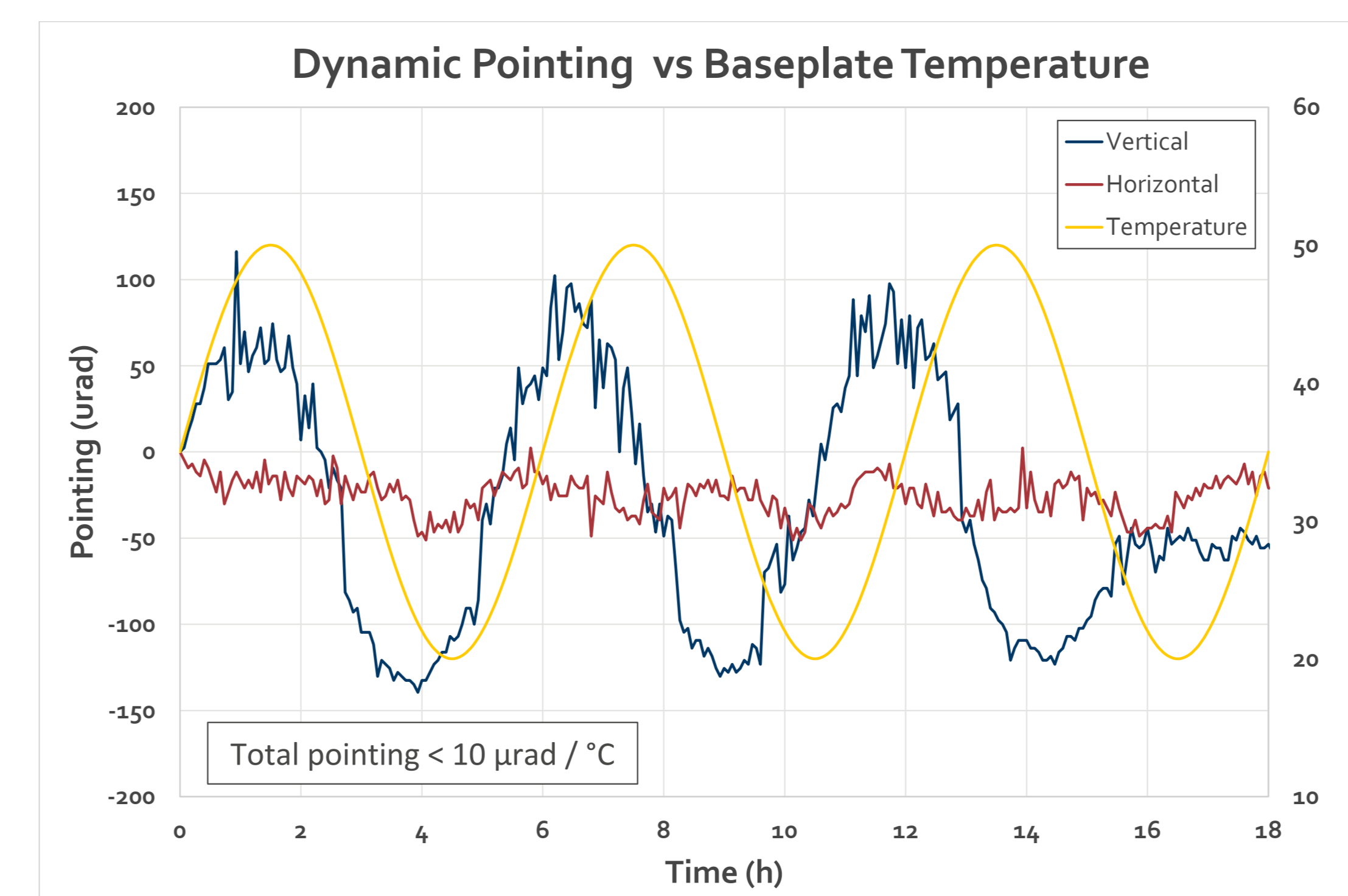
Performance



Temp (°C)	561 nm	638 nm	488 nm	405 nm
20C	0	15	13	2
638 nm		0	21	16
488 nm			0	11
405 nm				0
35C	0	9	14	8
638 nm		0	16	15
488 nm			0	9
405 nm				0
50C	0	6	18	11
638 nm		0	20	16
488 nm			0	10
405 nm				0



Beam position overlap at exit (μm)



4-line measurement Setup

Conclusion

Cobolt Skyra™ will facilitate reducing the size and cost of cytometers and other instruments for bioanalysis by removing the complexity of integrating multiple lasers and simplifying service and maintenance.