

A Laser of Many Colours

Tags: LJMU Laser Supercontinuum

The Laser Fence team at Liverpool John Moores University has completed its commissioning of a NKT Photonics Supercontinuum “White” Laser source. The laser source will be deployed for developing a LaserFence systems of different colours for use in field trials.

The long held understanding of lasers is that they are a monochromatic (single colour) light source. Typically a green laser of wavelength 532nm is used in avian deterrence systems. This wavelength appears brightest to the human eye, but animal’s eyesight can be markedly different. So the project wants to assess different colours for creating a laser fence.

But the supercontinuum is a true white light laser. It does not achieve this by mixing red, green and blue lasers as would be used in light shows and projection systems. It achieves this by producing ultrashort (picoseconds) laser light pulses in a special fibre optic that is internally structured. This fibre optic “stretches” the laser pulses out from their original monochromatic colour into a broad spectrum from the ultraviolet to the infrared and is visible as a white laser beam.

The supercontinuum laser output then passes in to a filter box. This allows the light to be filtered down to a specific wavelength, or colour, and bandwidth, of the visible spectrum ranging from the deep violet to deep red. This beam would then be delivered by a plain fibre optic and beam expander to create a programmable variable colour LaserFence.

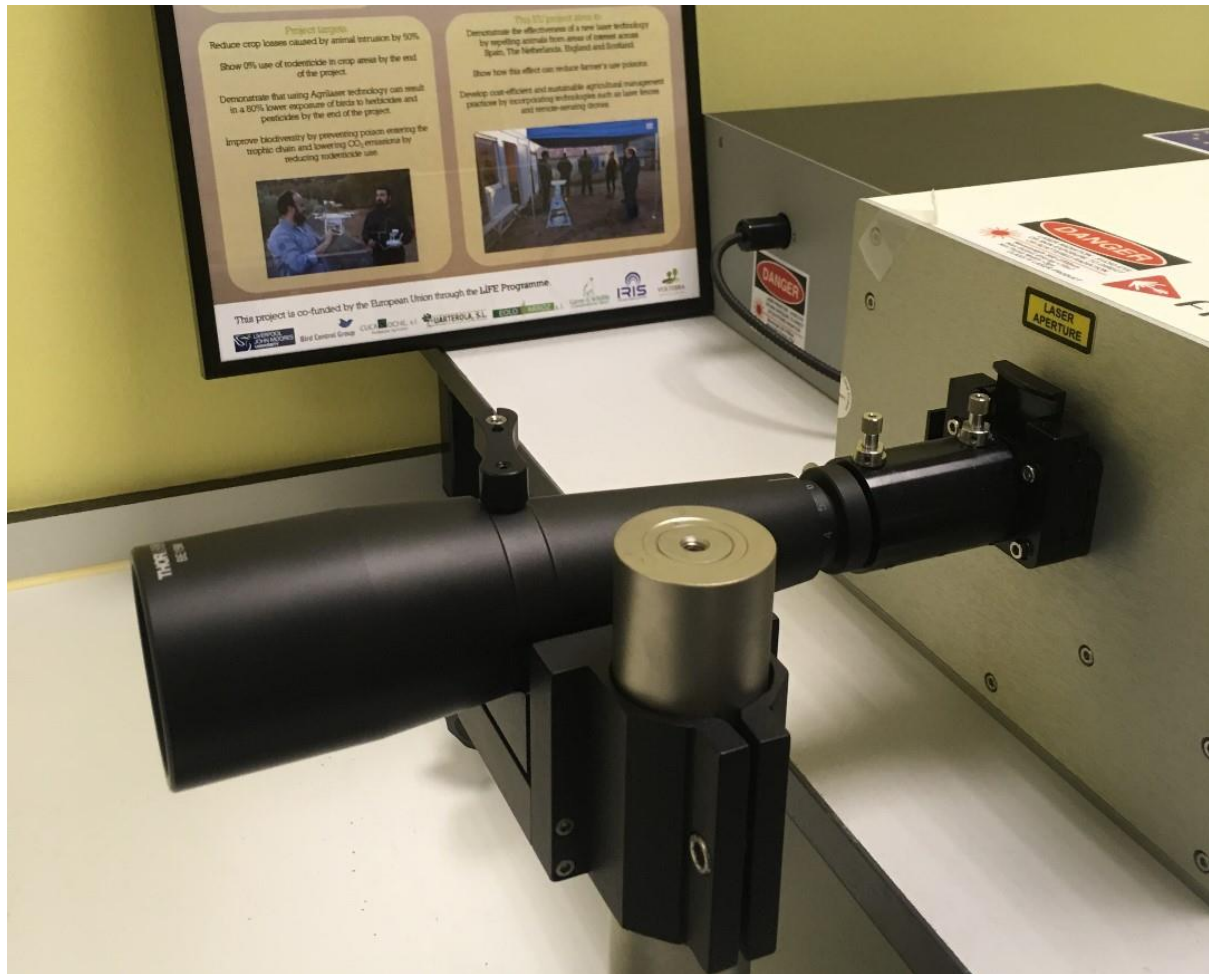


Fig. 1 Supercontinuum laser at rear, programmable filter to right and beam expander in foreground



Fig. 2 Supercontinuum Beam at 532nm (Green)

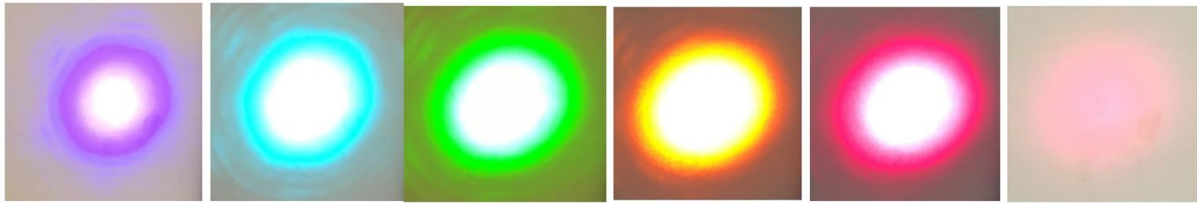


Fig. 3 Different wavelength colours from Supercontinuum laser (note camera is saturated from intensity in centre of beam)