

## TITLE: LASER LIGHT SOURCE WITH DIGITALLY PROGRAMMABLE CONTINUOUS SPECTRUM

### DESCRIPTION OF THE TECHNOLOGY

This technology consists of a system to digitally control the spectrum of a super-continuum laser light source in the visible (VIS) and near-infrared (NIR) range. In this way, it is possible to digitally reproduce in a laser source different spectra, including the solar spectrum, and thus generate a solar laser simulator. It is therefore a tunable digital

spectrum laser optical system in the VIS-NIR range that covers wavelengths in the range of 400 nm to 1600 nm. Therefore, the main characteristic of this technology is to be able to define the spectrum of a super-continuum laser in that range.

### BUSINESS APPLICATION SECTORS

Optical Communications Sector

Biomedical Sector

A system of this type will allow the development of multiple applications, among which would highlight the development of light sources with a variable and selectable spectrum. This system would be applicable as a hyperspectral lighting system (systems with sequential lighting with different wavelengths) that currently use mechanical wheels with different color filters. It would also serve for the artificial generation of spectra of known light sources, with the aim of performing recognition or photonic sensing by spectral correlation. Also, it will allow generating light beams with arbitrary spectra, not existing in the current light sources.

### TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

There is no system on the market to arbitrarily and programmable filter the spectrum of a supercontinuum laser, giving the possibility of generating a laser source with a digitally designed spectral content and covering a spectral range that includes the visible region (VIS), with wavelengths between 400 and 750 nm, and the near infrared (NIR) region, between 750 and 1600 nm. The extension to the NIR range is extremely important given the multiple applications of infrared light in this range in optical communications applications, or biomedical applications, among others. The extension to the NIR range also allows to reproduce the solar spectrum, and therefore allows to produce a solar simulator.

### TECHNOLOGY DEVELOPMENT LEVEL

It has been developed exclusively in the laboratory.

### INTELLECTUAL PROPERTY RIGHTS

Protected by a patent in Spain. Rights owned 60% by the Universidad Miguel Hernández de Elche, 20% by Universidad de Valencia and 20% by Universidad Autónoma de Barcelona.

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### SEARCHED COLLABORATION

Collaboration with interested companies to carry out technology proof of concept that facilitates its commercialization and industrial implantation.

### RELATED IMAGES

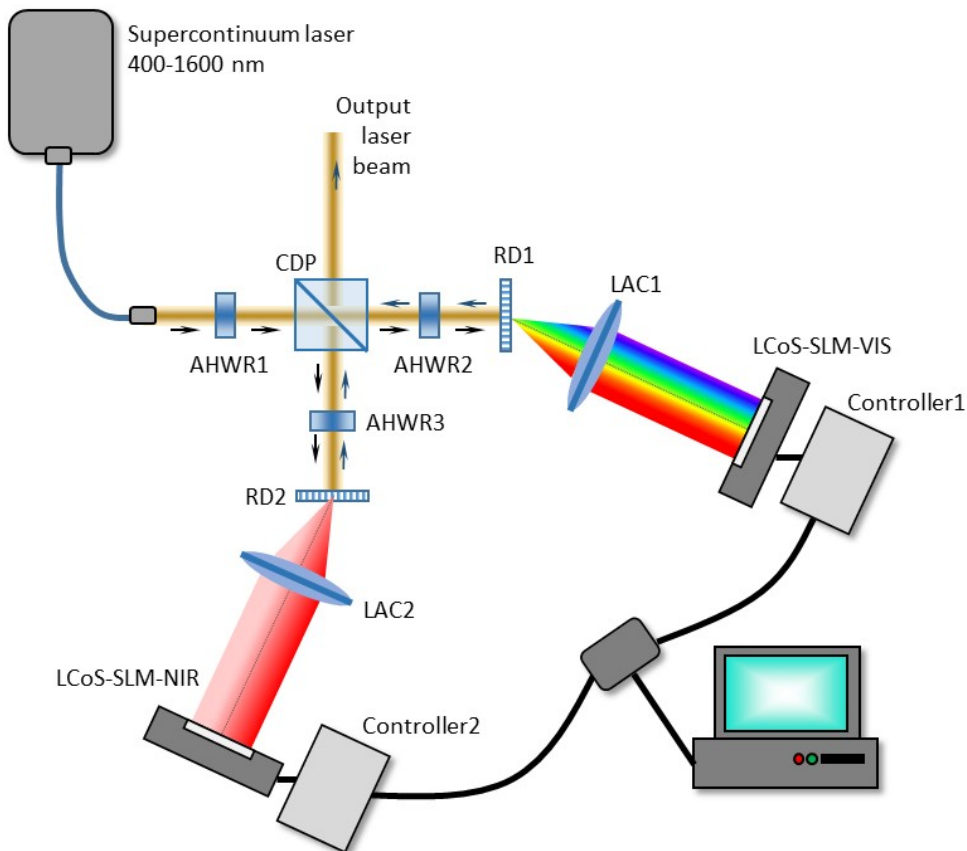


Fig. 1: Proposed optical system

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