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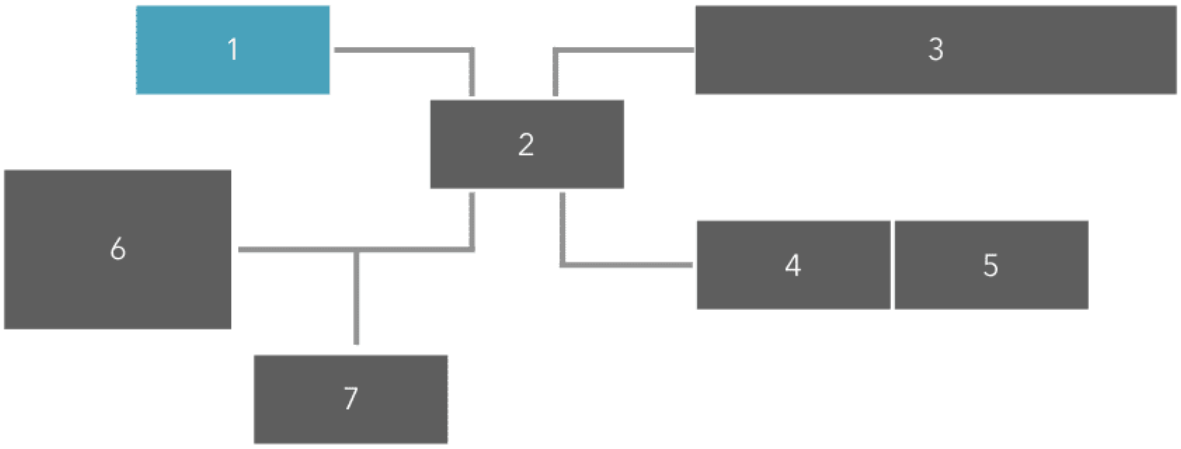
ARTICLE

FYLA White Laser for Chromatic Dispersion of photonic devices

This OPA technical note presents the main characteristics of the **supercontinuum laser SCT** developed by FYLA, and an application note co-developed with a Research Center.

Stable supercontinuum sources offer **very significant advantages to characterize photonic devices: full VIS-NIR spectrum availability, high spectral power density and low-loss coupling**, among others. Not only amplitude, but also phase properties can be measured comfortably.

In this work we present an **interferometric method to measure chromatic dispersion of photonic devices** (e.g. photonic crystal fibers) using a pulsed FYLA SCT supercontinuum source of fixed repetition rate. A synchronized control of the pulses overlapping allows an optimum visibility of fringes, resulting in very high-resolution dispersion measurement. Below the Experimental Layout.



ABOVE: Experimental layout for interferometer:

1. Supecontinuum Source SCT1000.
2. Fiber wideband Coupler 50/50.
3. Free Space Length-Tunable Arm.
4. Reference Standard Fiber.
5. Photonic Device to Characterize.
6. Optical Spectrum Analyzer
7. Fast Oscilloscope

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Besides the advantage of the pulse overlapping, there are **more benefits** about the using of a pulsed SCT1000 supercontinuum source for the interferometric methods. **The most direct one is the spectrum wideness**. Working with LED’s involve a long and tedious procedure because the system must be realigned every time the light source is changed. Moreover, there are wavelength bands that aren’t accessible at all. This implies less accuracy when curve is reconstructed along the incomplete bands.

Not only a wider spectrum is swiped, but also the point density is also higher. This fact leads to the **second main benefit about using a pulsed SCT1000 source: its high-power stability**. The high stability enhances the capability of differentiating the interferences and a high density of measures is allowed.

As a conclusion, the application note shows an interferometric method to measure chromatic dispersion using a single picosecond pulsed SC source of fixed repetition rate applied to the design and fabrication of customized supercontinuum sources is presented. Optimum visibility of fringes has been obtained by synchronized control of pulse overlapping within the full VIS-NIR range down to a resolution of less than 1nm. **This method simplifies very significantly the long and tedious state-of-the-art interferometric methods based in several SLEDs as illumination sources**.

Below the link to the complete paper:

https://www.sedoptica.es/Menu_Volumenes/Pdfs/OPA_51_3_SECphO_2.pdf

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