

Press Release 04/2017

Miniaturized UV-LED lighting with multiple wavelengths

CiS Research Institute has expanded its opto-electronic skills to be able to develop multispectral UV light sources for fluorescence or absorbance measurements. Manufacturers of measuring devices utilized in bioanalytics and medical technology are now able to build significantly smaller systems and to open up new fields of application. The users of this new technology also benefit from low system costs.

The first functional models of the new UV lighting have already been tested successfully. A constant light illumination module with three UV LEDs in the wavelengths 245, 265 and 280 nm was developed, for example, to be applied in molecular biology for the absorbance measurement on DNA samples (fig. 1).

The collimation, the spectral purity and the beam diameter of less than 4 mm of the emitted light were among the special challenges in the optics design.

The stability of the LED intensities, which is influenced by degradation and temperature changes, is monitored by UV sensitive diodes and control electronics.

High quality, miniaturized UV light sources are also required in tumor diagnostics. For the measurement of the fluorescence lifetime of markers, a lighting unit with the wavelength of 370 nm was developed (fig. 2). The module is operated in pulse with a pulse duration of 1 ns.

The electrical interfaces and the size of the two functional models fulfil the requirements of laboratory equipment technology enabling the application of the UV lighting modules in the grid of microtiter plates. The new UV lighting can also be applied in laboratory equipment by parallelization of the modules (fig. 3).

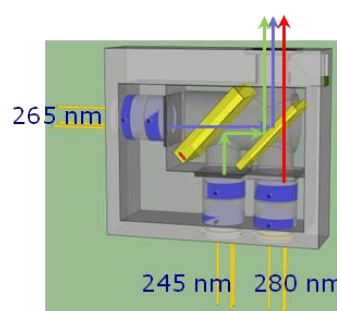


Fig. 1: Multi-wavelength UV module

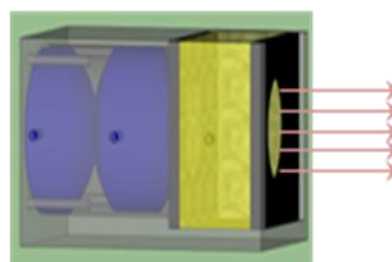


Fig. 2: Short-pulse UV module for the excitation of fluorescence

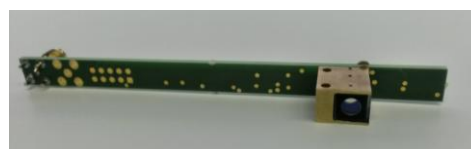


Fig. 3: UV lighting with ns pulser electronics

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Presentation at:

Hanover Fair, 24-28 April 2017, Hanover, hall 4 booth F34

SMT Hybrid Packaging, 16-18 May 2017, Nuremberg, hall 4A, booth 318B

SENSOR+TEST, 30 May – 1 June 2017, Nuremberg, hall 1, booth 1-150

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