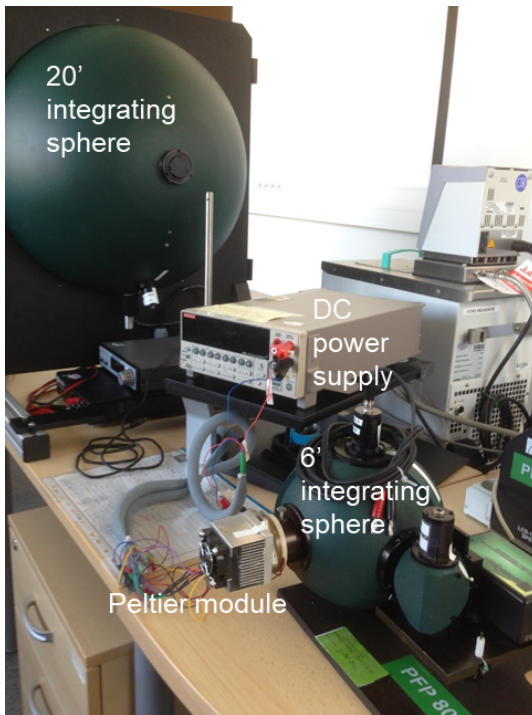


For MILEDI project, CEA-Leti has at its disposal several equipment for color conversion measurements. Two main tools are used for MILEDI:

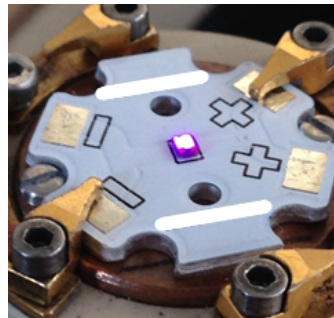
- A. The first one allows the measurement of the color conversion efficiency of the quantum dots (QDs) coating a LED;
- B. The second one allows the measurements of the laser patterned samples.

- A. QD-coated LEDs can be characterized on star boards using a calibrated integrating sphere.



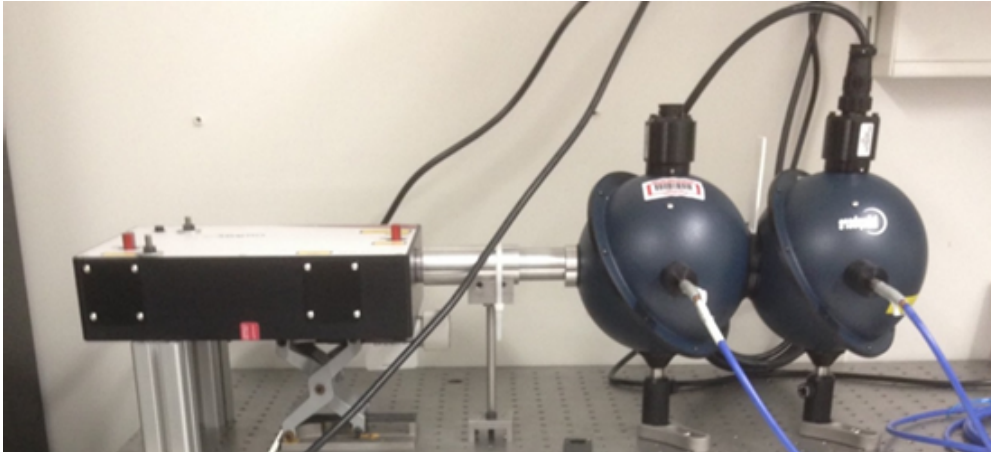
Picture of the integrating sphere's setup at CEA-Leti.

QD-coated LED sample prepared for color conversion measurements.



In this case, the star board with the QD-coated LED is mounted on an in-house dedicated socket, which comprises a Peltier module to control the board temperature during the measurements. Then, this socket is inserted in a 6' calibrated integrating sphere for an absolute spectral optical power measurement. In order to avoid inopportune luminous flux variations, the LED sample is also driven by a stabilized DC power supply.

- B. Laser-patterned samples can be characterized in an in-house dedicated tool comprising two integrating spheres.



Picture of the double integrating sphere system used at CEA-Leti for laser-patterned sample characterization.

The principle of this setup is to simultaneously measure the reflected and transmitted spectrum from the sample, by illuminating it with a laser and by positioning the sample between two calibrated integrating spheres. Thus, the analysis of the amount of light collected in each sphere as a function of the wavelength allows calculating the absorption and conversion efficiency of the sample.