

A close-up photograph of dark red rose petals, filling the frame. The petals are layered and have a rich, velvety texture. The lighting is soft, highlighting the edges and creating a sense of depth. The overall color palette is a range of reds, from deep burgundy to a slightly lighter, almost blackish-red in the shadows.

re/fib/ri

A refractometer designed for concentration measurements by means of a fiber optic sensor



Precise measurement of the liquid concentration is important due to its applications in bio-chemical analysis, environments and contamination assessment, diagnostics, food and chemical industry.

So far, many different techniques offer the liquid concentration measurement, among them the current technique which is based on Fresnel reflection gained attentions for the advantages of having real-time measurement, easy to operate, cheap setup and remote monitoring.

Laser light at wavelength of 1550 nm passes through a single mode fiber optic cable. Generally changing the medium at the interface between the fiber optic tip and the liquid sample results in changing the refractive index, therefore the reflected light (feedback signal) has an angle proportional to the refractive index of the second medium. Since refractive index is depending on concentration, easily we can calculate the percentage of components of a binary solution.



SOME OF APPLICATIONS

Fundamental research

- concentration of binary fluidic mixtures for aerospace purpose
- effect of environmental parameters (i.e. temperature, humidity, pressure, etc.) on refractive index of liquid

• optimization of concentration measurements based on time consuming techniques

Food industry

- measurement of Brix level of glucose in
 - tomato industry
 - milk industry
 - wine and beer industry

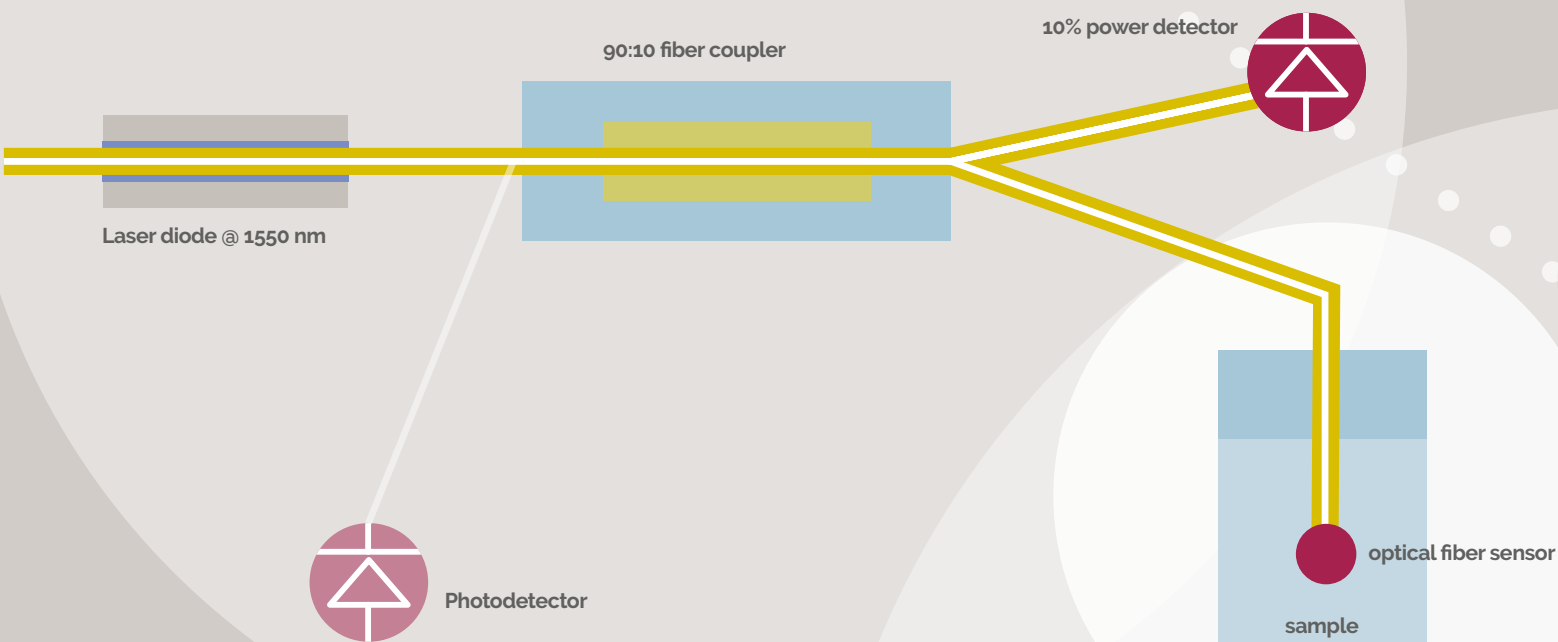
Other industry

- paper mill

How Refibri works

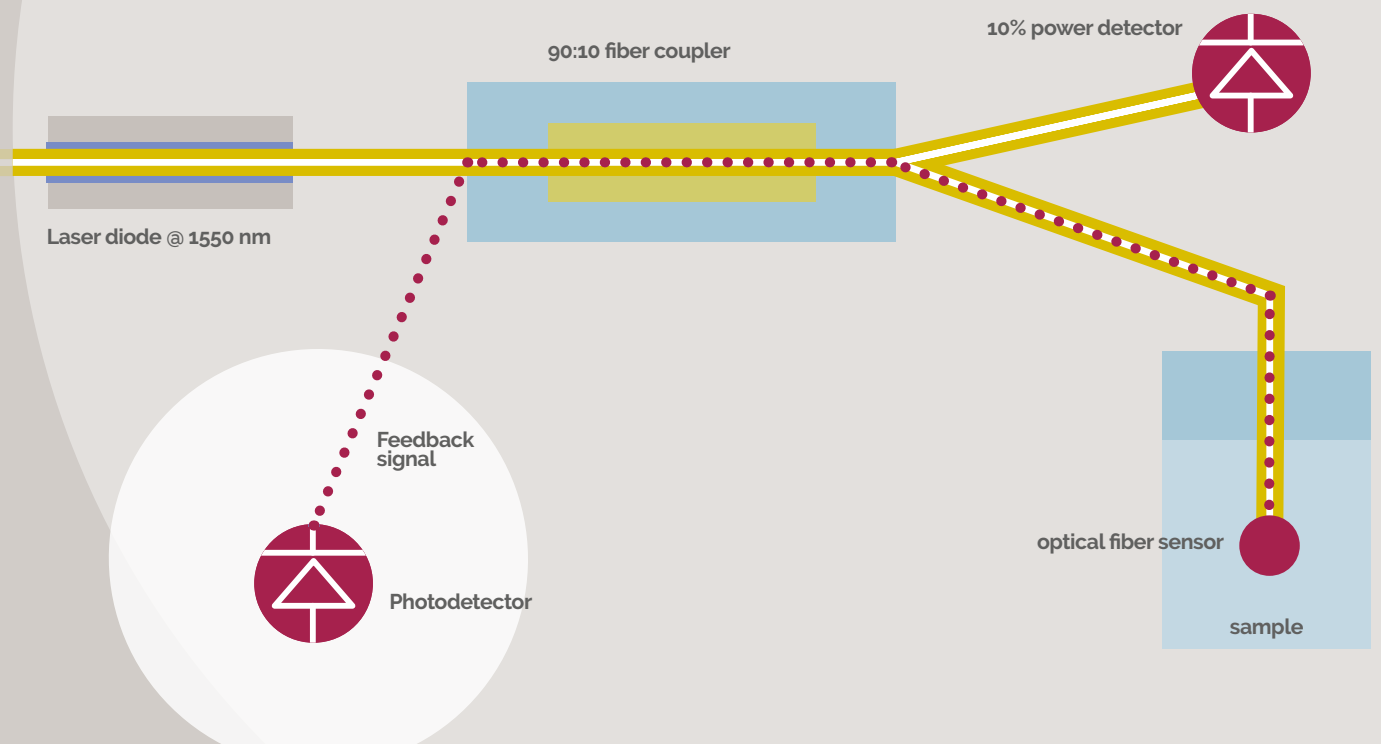
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The light sent from the diode source is splitted into two beams by means of a X-coupler type. One arrives to a High Speed InGaAs Photodiodes to measure the intensity of 10% of principal input light. While the other would be inserted to the sample through a fiber optic sensor.



2

The feedback signal is reflected to the second photodetector.





Typical Physical Properties

CENTRAL LASER WAVELENGTH

1550 nm

TYPICAL OPERATING VOLTAGE

8 (V) – DC

MAX REV VOLTAGE

2 V

TYPICAL OUTPUT POWER

55 mW

STORAGE TEMP

-10 to 65 °C

OPERATING TEMP

0 to 50 °C

TYPICAL WEIGHT

1 Kg

TYPICAL DIMENSION

200 mm x 150 mm x 80 mm (main box)

+ 95 mm x 87 mm

(external card)

FIBER OPTICS CABLE

Single mode fiber - glass

LENGTH OF FIBER OPTICS CABLE

to be decided based on the application

PHASE OF SAMPLE

Liquid

SAFETY

Class 3R laser product

Class 3B laser product

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