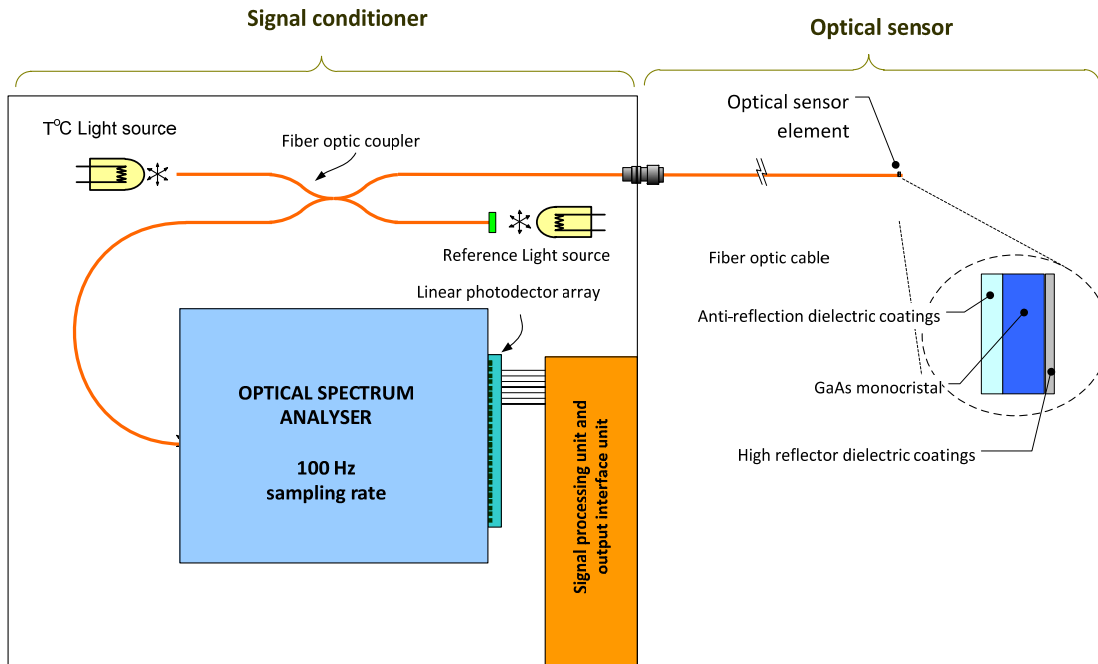




GaAs technology overview

Opsens Gallium Arsenide (GaAs) fiber optic temperature sensing technology is based on a simple but robust spectrophotometric technique. This technique relies on the temperature dependency of the bandgap of GaAs semiconductor crystal. GaAs crystal is opaque for wavelengths below its bandgap and transparent for wavelengths above. The transition region, i.e. the bandgap spectral position, is a function of the temperature.

The schematic of the GaAs technology is shown in Figure 1. The fiber optic temperature sensor is made of a miniature GaAs crystal bonded to the tip of an optical fiber. Light injected from the signal conditioner into the optical fiber is delivered to the GaAs crystal. The crystal absorbs light with wavelengths below the bandgap spectral position and reflects back to the signal conditioner wavelengths above the bandgap. Light reflected back to the signal conditioner goes into a miniature optical spectrum analyser (OSA) that spatially decomposes the light into its wavelength constituents. A linear CCD array detector measures the intensity versus wavelengths. Each pixel of the CCD array corresponds to a specific calibrated wavelength and therefore the whole detector array provides the spectral intensity distribution of the light reflected back by the GaAs crystal. A typical spectral intensity distribution curve is shown on Figure 1.



Spectral intensity distribution of the light signal returned by the sensor

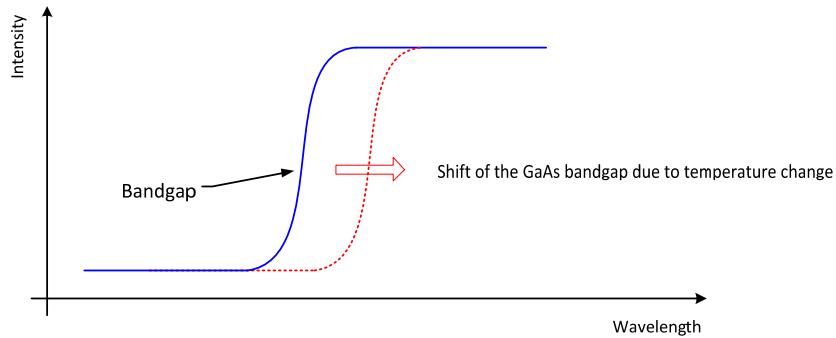


Figure 1: Opsens GaAs technology overview