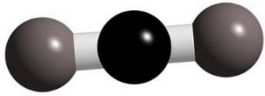


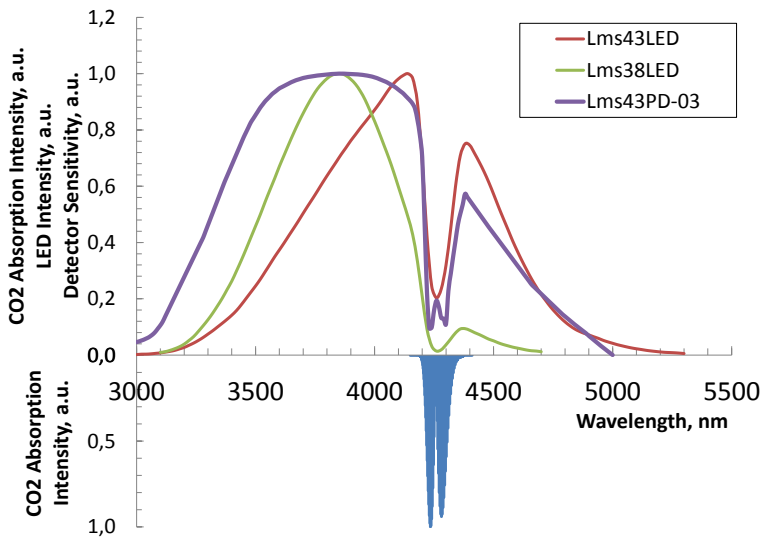
CO₂



Carbon dioxide has a wide range of commercial uses, from the production of lasers to the carbonation of soft drinks. This gas has become a topic of interest because it is classified among the greenhouse gases, gases which impact the Earth's environment when they reach high concentrations in the atmosphere.

Carbon dioxide has the main absorption band at **4200-4300 nm** (the data are taken from HITRAN Catalogue). So, we recommend using light emitting diode **Lms43LED** and **Lms43PD** series photodiode.

The spectra of **LEDs** and **PDs** for CO₂ detection:



Range of **applications**:

- HVAC (heating, ventilation, and air conditioning)
- refrigeration and cooling
- foods and beverages (measurement of CO₂ concentration during drinks carbonation, winemaking process, bakery etc.)
- greenhouses (CO₂ emission control)
- pharmacy and other chemical processing (quantification of liquid CO₂ used as solvent)
- automotive industry (combustion control, welding control)

Advantages of our devices:

- ▶ Possibility to arrange a **compact design** of an optical cell thanks to compact size of the LED chip – **0.35 × 0.35 mm**
- ▶ No need of using additional optical filters – LED emission band width is comparable to absorption band width of CH₄
- ▶ **Low power consumption** (<1 mW)
- ▶ **Short response time** (10–50 ns)
- ▶ Possibility to achieve modulation **ranges** of up to **100 MHz**
- ▶ Operation temperatures up to +150°C
- ▶ **Lifetime** of **80 000 hours**



LED-PD based **Evaluation systems** for carbon dioxide

For quick start we offer **out-of-the-box** solutions that can be launched with minimal effort – **evaluation systems**:

- Flexible **evaluation kit** with modular design that includes:
 - Light emitting diodes Lms43LED and Lms38LED (other LED is available) with an LED driver
 - Photodiode Lms43PD-03 (other PD is available) with a preamplifier
 - SDM synchronous detector
- **CDS-3** system with a 3-pass gas chamber that provides optical path about 70-80 mm long and efficient focusing of the LED emission on the PD sensitive area.

The system includes:

- 3-pass optical chamber
- Light emitting diodes Lms43LED and Lms38LED with an LED driver
- Photodiode Lms43PD-03 with a preamplifier
- SDM synchronous detector



CDS-3 optical chamber