High performance for analytical instruments and spectroscopy with PYRONEER detectors from InfraTec.

DLaTGS – The Performance Boost for FTIR Spectroscopy

InfraTec has enhanced its detector portfolio in the field of FTIR spectroscopy with the high-performance, pyroelectrically sensitive material DLaTGS (deuterated L-alanine doped triglycine sulphate). With a threefold detectivity (D*), the DLaTGS detectors in the PYRONEER series are clearly superior to LiTaO3 detectors at modulation frequencies in the kHz range and are a real performance boost for FTIR spectroscopy.

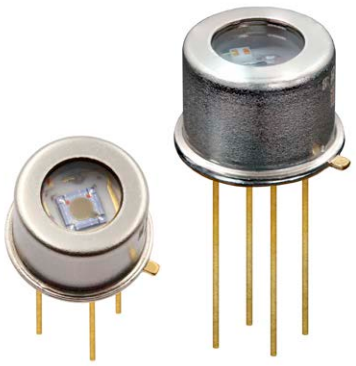
InfraTec Launches the PYRONEER Series

The **high-performance detector DSV-7311** is the first detector based on DLaTGS and the forerunner of the new "PYRONEER" product series. The specifications are exceptionally good for a detector of this size:

- Single channel detector in TO39 housing
- Pyroelectric element with a diameter of 1.3 mm
- Voltage mode with low-noise junction field effect transistor (JFET)
- Specific detectivity (D*) of 3.3×10^8 Jones at 1 kHz
- Thermal time constant of 12 milliseconds
- Field of View (FOV) of 110°

Pyroelectric Detectors

Pyroelectric detectors for analytical devices have been part of the InfraTec portfolio for over 20 years. To date, they have been based exclusively on high-quality, single-crystalline lithium tantalate (LiTaO3) with a precious metal black layer on the pyroelectric elements specially adapted for these detectors. They therefore meet the highest requirements that are common in FTIR spectroscopy.



DLaTGS – The Gold Standard for FTIR Spectroscopy

This combination of high pyroelectric coefficient, low heat capacity and low relative permittivity meets all requirements for achieving very good signal-to-noise ratios at very high modulation frequencies. Detectors with sensitive elements made of DLaTGS are real performance boosters and are considered the gold standard among infrared detectors in Fourier transform infrared spectrometers (FTIR). In combination with the particularly thin precious metal black layer, they are unmatched in terms of performance.

Detector	PYRONEER $LiTaO_3$	PYRONEER DLaTGS
Detector series	LSV, LIE-312(f), LIE-332(f)	DSV
Pyroelectric material	Lithium tantalate ($LiTaO_3$)	Deuterated L-Alanine doped Tri-Glycine Sulfate (DLaTGS)
D* Detectivity	+	+++
Flat spectral response (2 … 20 µm)	+++	+++
Thermal stabilization	No	In development
Operating mode	Voltage mode	Voltage mode
Active area	Ø 1.3 mm, Ø 2.0 mm	Ø 1.3 mm, further formats in development
Package	TO39	TO39
Response Time	+	++

One-stop Solution

The production process for the DLaTGS detectors takes place from start to finish at InfraTec's headquarters in Dresden:

- Growing the sensitive DLaTGS crystal material
- Preparation of DLaTGS sensor elements
- Assembly of the detector with applying the precious metal black layer

Thanks to its modular design, the PYRONEER series can be flexibly adapted to your application-specific requirements.

For a Clear View

When selecting the entrance windows for the detectors, a wide range of materials is available that are characterized by consistently high transmission over a wide wavelength range. Up to now, they have been available with an optional anti-reflective coating:

- Barium fluoride
- Caesium iodite
- Potassium bromide
- Zinc selenide

In the future, InfraTec will also offer window materials that possess good transmission properties in the far infrared (FIR) and terahertz range. In particular, CVD diamond and polyethylene should be highlighted here.

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