

## AIMsight™ Infrared Microscope & AIRsight™ Infrared/Raman Microscope



# No liquid nitrogen required!

## New detector capable of infrared microscopy measurements of minute samples.

### New Option

### TEC MCT (Peltier Cooled MCT) Detector

Equipping the AIMsight Infrared Microscope or the AIRsight Infrared/Raman Microscope with the TEC MCT (peltier cooled MCT) detector makes it possible to obtain infrared spectra without using liquid nitrogen. If more sensitivity is required, simply switch to the standard T2SL\*<sup>1</sup> detector in the software.

\*1: Liquid nitrogen is required when using the T2SL.



IRXross™ Fourier Transform Infrared Spectrophotometer  
AIRsight™ Infrared/Raman Microscope

## Examples of Problems Solved

I would like to quickly perform an experiment with the infrared microscope, but work can not proceed without liquid nitrogen.



The qualitative analysis was performed quickly on the sample without the need for adding liquid nitrogen to the infrared microscope.

There is a DLATGS detector that can perform measurements without using liquid nitrogen. However, the sensitivity is insufficient, there is a lot of noise, and peaks are not found.



Using the TEC MCT detector, even minute samples on the order of 25 μm in size can be measured with good sensitivity, and without using liquid nitrogen.

## Highlights of the Three Detectors

Choose the optimal detector for the application. The T2SL\*<sup>1</sup> detector is ideal for measuring microscopic areas 25 μm in size or smaller. A room temperature detector (DLATGS)\*<sup>2, 3</sup> is also available for acquiring data with a wavenumber range up to 400 cm<sup>-1</sup>.

Detector	T2SL * <sup>1</sup>	TEC MCT * <sup>2</sup>	DLATGS * <sup>2, 3</sup>
Standard/Optional	Standard	Optional	Optional
Suitable Measurement Size	10 × 10 μm or larger	25 × 25 μm or larger	100 × 100 μm or larger * <sup>4</sup>
Liquid Nitrogen	Required	Not required	Not required
Measured Wavenumber Range	5,000 to 700 cm <sup>-1</sup>	5,000 to 700 cm <sup>-1</sup>	4,600 to 400 cm <sup>-1</sup>

\*1: Liquid nitrogen is required when using the T2SL.

\*2: A TEC MCT and DLATGS cannot be installed at the same time.

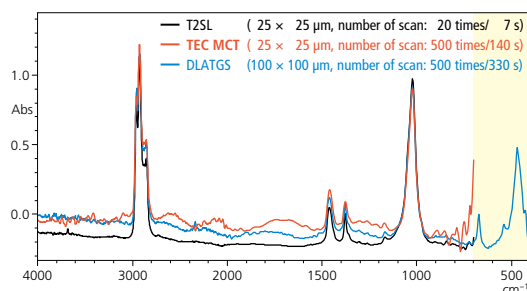
\*3: The DLATGS can measure across a wide wavenumber range. However, its sensitivity is substantially lower than the T2SL and TEC MCT.

\*4: Measurable size in transmission/reflection method.

## Examples of Analyses Using the TEC MCT (Peltier Cooled MCT) Detector

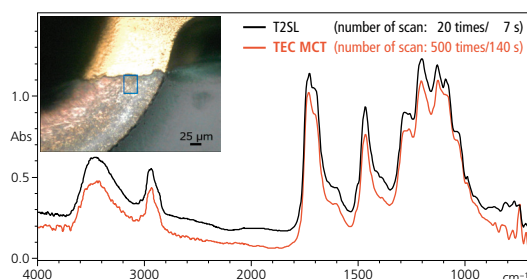
### Example 1 Transmission Method

Infrared spectra of polypropylene-based (containing TALC) resin for automotive bumpers are shown to the right to compare the three detectors. The sample was placed in a diamond cell and measured in transmission method. It was measured by the T2SL and TEC MCT with a 25 × 25 μm aperture size, and by the DLATGS with a 100 × 100 μm aperture size. Liquid nitrogen was not used with the TEC MCT, and it is evident that there is a little more noise in the spectrum collected with the T2SL, which does require liquid nitrogen. A larger aperture is needed for data collection with the DLATGS detector due to its much lower sensitivity than the T2SL and TEC MCT. However, the DLATGS does have the advantage of being able to measure the sample in the low wavenumber region (down to 400 cm<sup>-1</sup>).



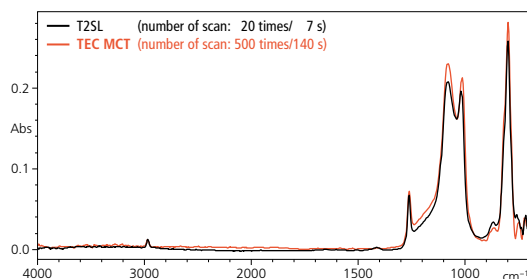
### Example 2 Reflection Method

Reflection measurements of adhesions on board terminals were performed with the T2SL and TEC MCT. The aperture size was set to 30 × 40 μm. In general, the reflection method yields less sensitivity than transmission method due to an overall less amount of light collected off the sample. However, it is evident that with more scan time, the TEC MCT is capable of providing comparable S/N data as the T2SL for sub-50 μm areas without the need for liquid nitrogen.



### Example 3 ATR Method (Optional)

ATR measurements of silicone rubber were performed using the T2SL and TEC MCT. The aperture size was set to 200 × 200 μm. The ATR method is effective for samples incompatible with the transmission method and the reflection method. With the ATR method, rather than measuring the entire region of the configured aperture size, the measurement region is determined by the size of the detector's light receiving surface, and the magnification from the light receiving surface to the aperture settings position. It is recommended that a large aperture size be used when measuring with the ATR method to achieve good sensitivity.



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