

Smart Notes



What are the trade-offs between point-and-shoot FTIR microscopy and area mapping for pharmaceuticals?

Fourier transform infrared (FTIR) microscope users can approach analysis from the typical standpoint of point-and-shoot microscopy or area mapping. That choice can make a big difference in analytical efficiency so it's important to understand the difference and when to use each approach.

Point-and-shoot microscopy

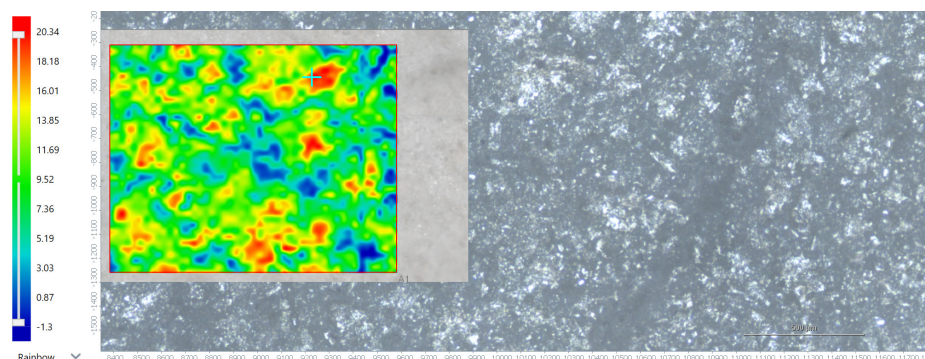
In point-and-shoot FTIR microscopy, the user defines a single target point to analyze.

The important step in the point-and-shoot approach is to visually locate the target and then focus the infrared beam onto it. This requires high-quality visuals and precision stage location tools. Once the target is located with the microscope, the method of collection (reflection, transmission, or ATR) is chosen, the collection parameters are set, and the data is collected. The analysis then proceeds as users would with any normal spectrum (typically, searching for a spectral match).

Area mapping

In area mapping (or imaging), a broader region is selected, and data collection occurs over the entire region.

The user who employs the mapping approach selects the area of interest, sets the collection parameters, and collects the data. The analysis may involve statistical tools (PCA or MCR) or correlation searching over the entire region. Typically, the spectrum is then colorized using some criterion (like the best match to a reference spectrum). Alternately, spectra of interest may be extracted and analyzed individually.



Area mapping to look at distribution of active pharmaceutical ingredients (API) in a tablet.

How to decide

The choice of point-and-shoot versus mapping comes down to the desired result. Analysis of a single point is efficient and can answer “what is this contaminant?” At the same time, the area map can show details of the distribution of API in a formulation.

The Thermo Scientific™ Nicolet™ RaptIR™ FTIR Microscope is ideally suited to both approaches. The superior visual acuity of the microscope and the automation within the Thermo Scientific OMNIC™ Paradigm™ Software makes point-and-shoot simple. A comprehensive set of analytical tools also helps make area mapping easy for users from novices to experts. With the Nicolet RaptIR Microscope, users can see it fast and identify it faster.

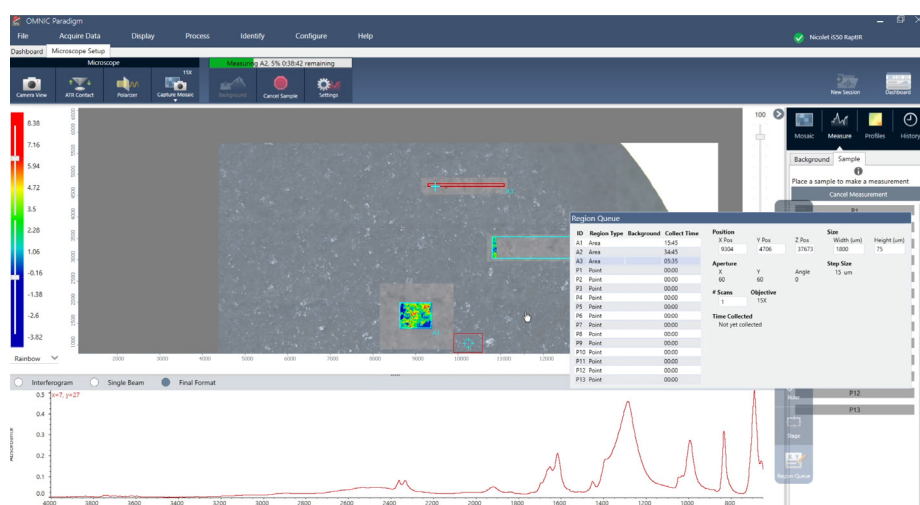


Image of point-and-shoot and area mapping approaches combined from the Nicolet RaptIR FTIR Microscope.

Answer

Time is the primary trade-off. Area maps give a wide view of the sample, helping users to gain information about the distribution of areas of interest. If this is the goal, area mapping is faster. However, users may need to analyze only one spot to get an answer; in that case area mapping would waste time so point-and-shoot is a more efficient solution. With the Nicolet RaptIR FTIR Microscope, users need not choose; they can just get to work.

Learn more about the FTIR microscope that allows users to choose either point-and-shoot microscopy or area mapping with ease at thermofisher.com/raptir