

# TGA/FTIR Accessory

## AT A GLANCE

- ▶ Gas cell design conforming to IR beam geometry – maximizes IR throughput with minimum cell volume
- ▶ 100-mm IR beam pathlength for maximized FTIR sensitivity
- ▶ Temperature control settable up to 300 °C for flow cell and transfer line
- ▶ User-changeable IR transparent windows to minimize cost of operation
- ▶ Heated, glass-lined stainless steel transfer line for inert transfer of TGA effluent
- ▶ Baseplate-mounted in your FTIR for flexible sampling

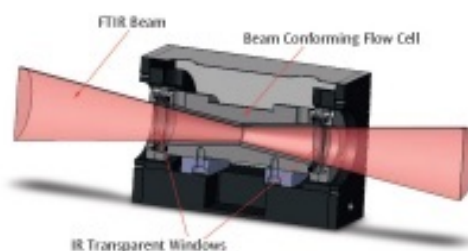


TEMPERATURE CONTROL  
OPTIONS AVAILABLE

The TGA/FTIR accessory is designed to be an interface for evolved gas analysis from a thermogravimetric analyzer (TGA) to your FTIR spectrometer. Qualitative and quantitative measurements are doable from sample masses—typically in the low milligram range.

## DESIGN

Evolved gases from the TGA pass through a heated transfer line into the beam conforming flow cell in the FTIR sample compartment. As these evolved gases travel through the flow cell, FTIR spectra are collected and stored for further processing.



IR beam conforming optical design of TGA/FTIR Accessory.

## APPLICATIONS AND MEASURING TECHNIQUES

During the TGA analysis sample mass is lost through a combination of volatilization and degradation of the sample material. The heated TGA/FTIR system maintains the vapor state of the evolved gases throughout the FTIR analysis. Typical samples include polymers, epoxies, fibers and laminates for investigating deformation, thermal stability or comparative study applications.

Typically, the FTIR spectrometer is set to collect spectra at 10-second intervals during the evolved gas analysis using the kinetics software package for your FTIR. With this software you can generate reconstructions of total IR response versus time or temperature (Gram-Schmidt) or specific IR band reconstructions to isolate points of unique component evolutions. FTIR spectra are extracted from the data set and an identification is made by comparing these unknown spectra to vapor phase spectral libraries.

