FTIR: A Brief History

Today, Fourier transform infrared (FTIR) spectroscopy is a common technique performed in any laboratory where researchers are analyzing organic and inorganic samples. Its wide spectral range capabilities make the technology almost limitless—and a lab favorite. But it wasn't always like that—FTIR spectroscopy was ahead of its time, waiting for other technologies to catch up before reaching its full potential. Here's a brief history of FTIR spectroscopy, from the origin technology to today's modern workhorse.

1887



Albert Abraham Michelson develops the Michelson interferometer—optical equipment at the heart of FTIR spectrometers even today

1954

Scientists from the Institute of Optics in Japan develop the nation's first IR spectrometer. Four years later, they create the Japan Spectroscopic Company (JASCO) to commercialize their technology

1969

Digilab pioneers the world's first commercial FTIR spectrometer (Model FTS-14)

1949

Astrophysicist Peter Fellgett uses an interferometer to measure light from celestial bodies, producing the world's first Fourier transform infrared spectrum

1965

James Cooley and John Tukey publish a paper reinventing an algorithm discovered in 1805 that describes how to execute fast Fourier transform on a microcomputer



1972

JASCO unveils the company's first FTIR spectrometer, as well as an HPLC pump and UV detector







Huge, costly FTIR devices begin to flood the R&D market in response to user demand

Mid-1980s



Sophisticated imaging software inspires new FTIR innovations, opening the technology to broader research applications, including aerospace

1990s

JASCO debuts the company's first fully integrated FTIR microscope

2018



Nearly four years after launch, Hayabusa2 lands on the asteroid Ryugu for another sample-return mission. The spacecraft left the asteroid in November 2019 and is expected to return to Earth in late 2020. JASCO will again play a pivotal role in the analysis of samples from the near-Earth asteroid

1980

Development of the personal computer revolutionizes FTIR technology, as does a trend toward instrument miniaturization, which allows formerly large FTIR spectrometers in well-funded labs to exist on a more ubiquitous level

1990s

Manufacturers and researchers begin to embrace fully integrated FTIR microscopes, rather than accessories/OEM components designed for FTIR spectrometers. Subsequently, FTIR becomes a common instrument to couple not only with microscopy, but with additional techniques such as Raman and thermogravimetric analysis

2005



The Hayabusa spacecraft, developed by Japan Aerospace Exploration Agency, lands on the asteroid Itokawa to collect samples to return to Earth for analysis. JASCO spectroscopic instruments mineralogically investigate/ evaluate four extraterrestrial particles from the asteroid

2020 and Beyond

While FTIR technology is already used extensively throughout research and development, manufacturers are

rapidly responding to the ever-evolving requirements of current— and future—





