ATR-FTIR

Attenuated total reflection (ATR) is a sampling technique used alongside traditional infrared spectroscopy, which ultimately qualifies samples to be observed directly in an either solid or liquid state, without additional preparation. FTIR stands for 'Fourier-transform infrared' spectroscopy: a technique that can be used to procure an infrared spectrum of either the emission or absorption of a liquid, solid, or gas sample.

An FTIR spectrometer synchronously collects the data of high-spectral-resolution over an extensive range. This is advantageous over the traditional dispersive spectrometer which only measures the spectral intensity over a much smaller range of wavelengths at any one time. The term 'Fourier-transform infrared spectroscopy' is based upon the Fourier transform process, which is required to convert the raw data into spectra.

Primary uses of ATF-FTIR

This technique can be used to analyze biological samples in a cheaper, more economical manner. The significant cost of substrates is a well-known obstacle when it comes to the introduction of bio-spectroscopy into routine laboratory/clinical practice. As a versatile and cheaper substrate, readily available aluminium foil has been shown in experiments to repeatedly compete with low emissivity, gold-coated, and glass slides used for cytological and histological specimen analysis by ATR-FTIR.

The featureless/low background signal given off by aluminium foil facilitates the production of traditional infrared or Raman spectra, without any interference with the substrate itself, and without sacrificing relevant fingerprint biochemical data of the specimen – even for incredibly thin samples (*i.e.* approximately 2 μm).

The aluminium foil has been previously found to behave either just as efficiently as (or even better than) the low emissivity or gold-coated slides. Albeit transmission FTIR is not possible on aluminium foil, past studies demonstrate that this foil is a potentially

inexpensive, versatile, and readily available substrate that could one day be suitable for ATR-FTIR analysis of a variety of biological samples.

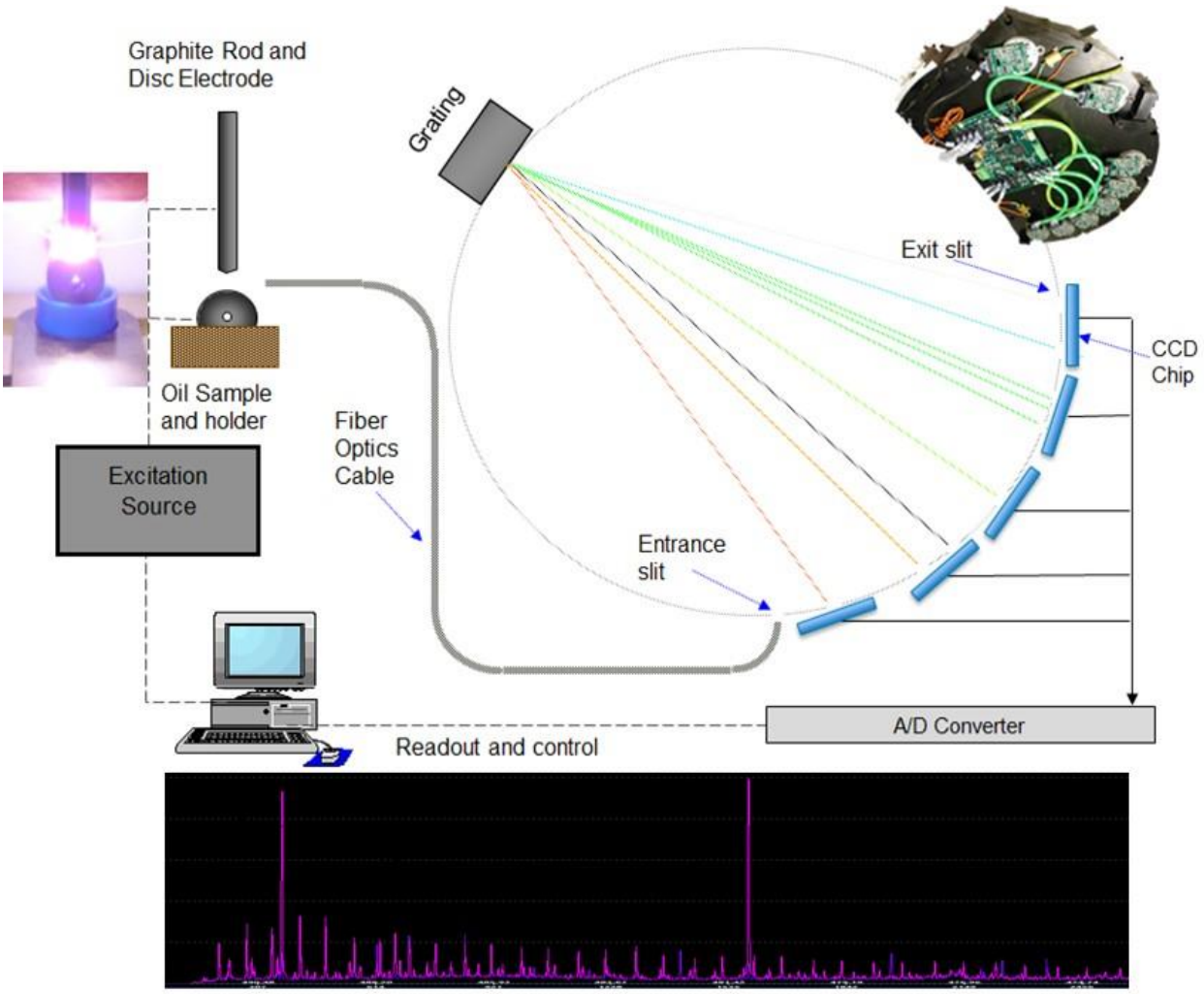
To conclude, the characteristics of aluminium foil demonstrated in previous ATR-FTIR studies could soon promote a progression towards more accessible substrates, some of which can be readily applied in either clinical or research milieus.

SpectrOil 100 Series

- (RDE-OES) Elemental Analyzer

The SpectrOil 100 Rotating Disc Electrode Optical Emission Spectrometer (RDE-OES) is the eighth generation of the market leading RDE elemental spectrometer. It is widely used in commercial oil laboratories, on-site or trailer labs, as a proven means of precisely determining elemental composition in lubricating oil, coolant, light or heavy fuels, grease, and process water. It also supports the Joint Oil Analysis Program (JOAP) calibration with results that correlate to those from the SpectrOil MNW, the only approved spectrometer for elemental analysis of lubricating oil for US and NATO military use (Model SpectrOil 120M). It is also a key component of Spectro's TriVector™ MiniLab 153 on-site oil analyzer.

Principle of Operation



Key Features

- No sample dilution, no solvent
- Only use 2 ml of oil
- 30 second test time with up to 31 elements simultaneously measured
- Sub PPM lower limit of detection (LOD) for most elements
- Push button operation, simple to use for both laboratory and on site applications
- Conforms to ASTM-D6595 (Oil) and ASTM-D6728 (Fuel)

Application

- Elemental Analysis of **mineral and synthetic lubricants**
- Elemental Analysis of **Distilled fuel**
- Elemental Analysis of **Heavy fuel oil (HFO)**

- Elemental Analysis of **Crude oil**
- Elemental Analysis of **Glycol coolants**