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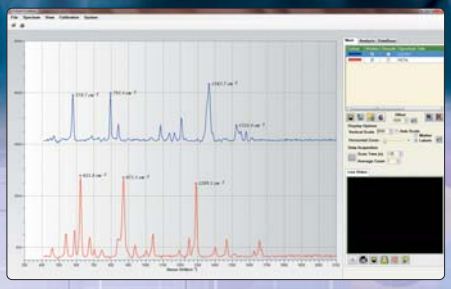
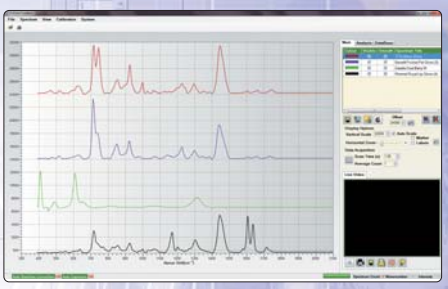
Foram®

RAMAN SPECTROSCOPY

foster+freeman





a range of Raman spectrometers with integral video microscopes for the analysis of trace evidence

- ***Raman spectral analysis takes less than a minute***
- ***Video imaging with X Y translation stage for precise sample alignment***
- ***Choice of 532, 685 and 785nm laser wavelengths***

Foram®

Raman spectroscopy - a new dimension in trace evidence examination

Raman spectra exhibit numerous features that are specific to molecular structure and provide valuable "fingerprints" for comparing and differentiating materials; their examination provides an ideal technique for evaluating trace evidence.

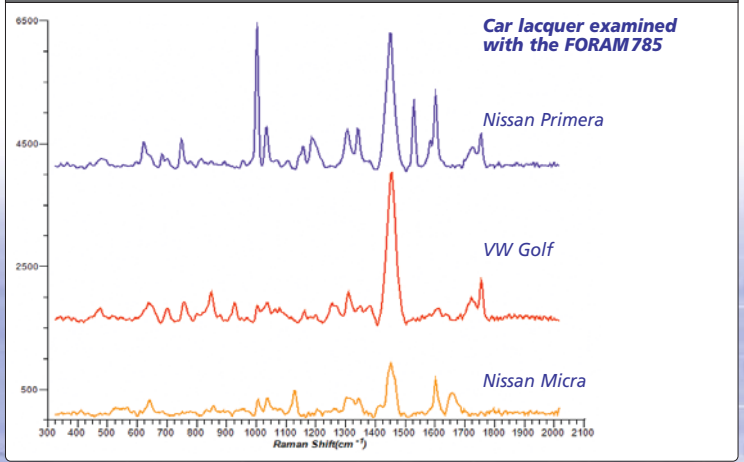
The Foram has a range of lenses that provide on-screen magnification of up to x600 on a 22" monitor.

The advantages

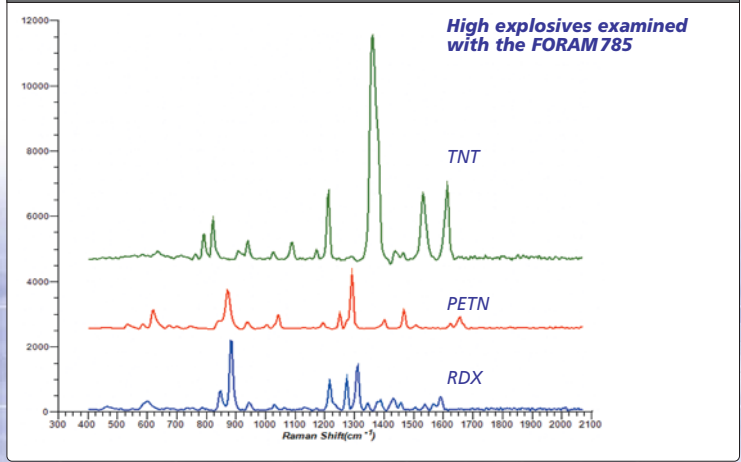
- non-destructive and fast, in situ examinations
- effective on samples as small as 5 microns
- minimal technical training
- simple peak-to-peak correlation technique for matching spectra
- database facilities for identifying unknown substances

Raman spectroscopy offers a fast technique for identifying substances of forensic value

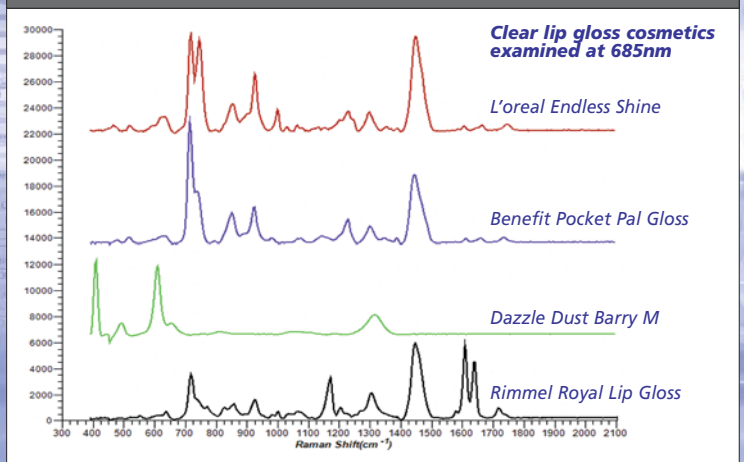
Differentiating vehicle paints



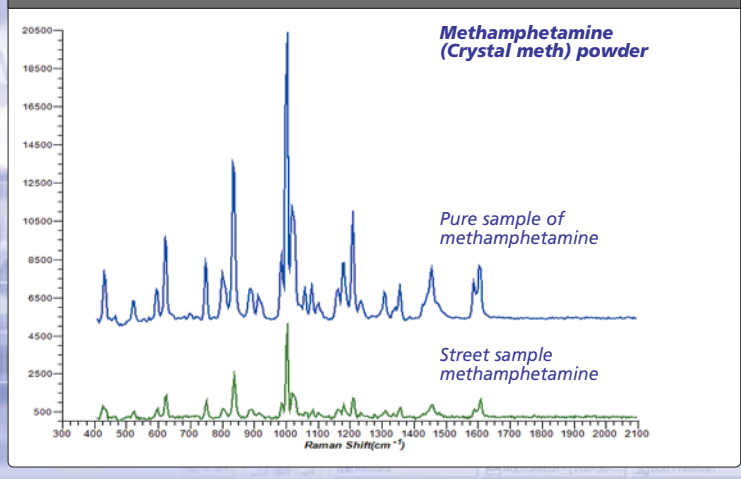
Differentiating explosives



Differentiating cosmetics



Differentiating drugs



Foram® Raman spectroscopy

The Foram has a precision X-Y translation stage for accurate laser alignment.

Video microscopy to assist sample selection

The **Foram®** has a large, A4 size, XY translation stage with fine spatial adjustment to allow the operator to align the laser probe on to a sample as small as 5 microns. Sample selection is assisted by the use of an integral video microscope with a rotating turret that can be fitted with up to four objective lenses to provide on-screen magnification of up to x450 on a 22" monitor. The ability to select small samples enables the operator to examine individual particles or fibres for instance.

To protect samples from laser damage, the **Foram®** is fitted with a low power laser probe with an intensity control that permits operation as low as 10% of maximum output. Operation at low laser intensity is compensated for by signal integration to provide measurable Raman spectra.

Powerful signal processing functions

Processing functions such as signal integration and averaging enhance the naturally low intensity of Raman emissions to ensure accurate and reproducible spectra. Other functions include baseline correction to remove background fluorescence and peak labelling for easy-to-read printouts.

Technical features

The **Foram®** is designed to make Raman spectroscopy reliable and easy, features include:

- **External cavity laser for maximum wavelength stability.**
- **Low laser power for sample protection.**
- **Choice of laser wavelengths - 532, 685 and 785nm.**
- **A4 size XY translation stage**
- **Integral video microscope providing up to x450 magnification for sample selection.**
- **Minimum sample size of 5 microns diameter.**
- **Standard PC operation.**

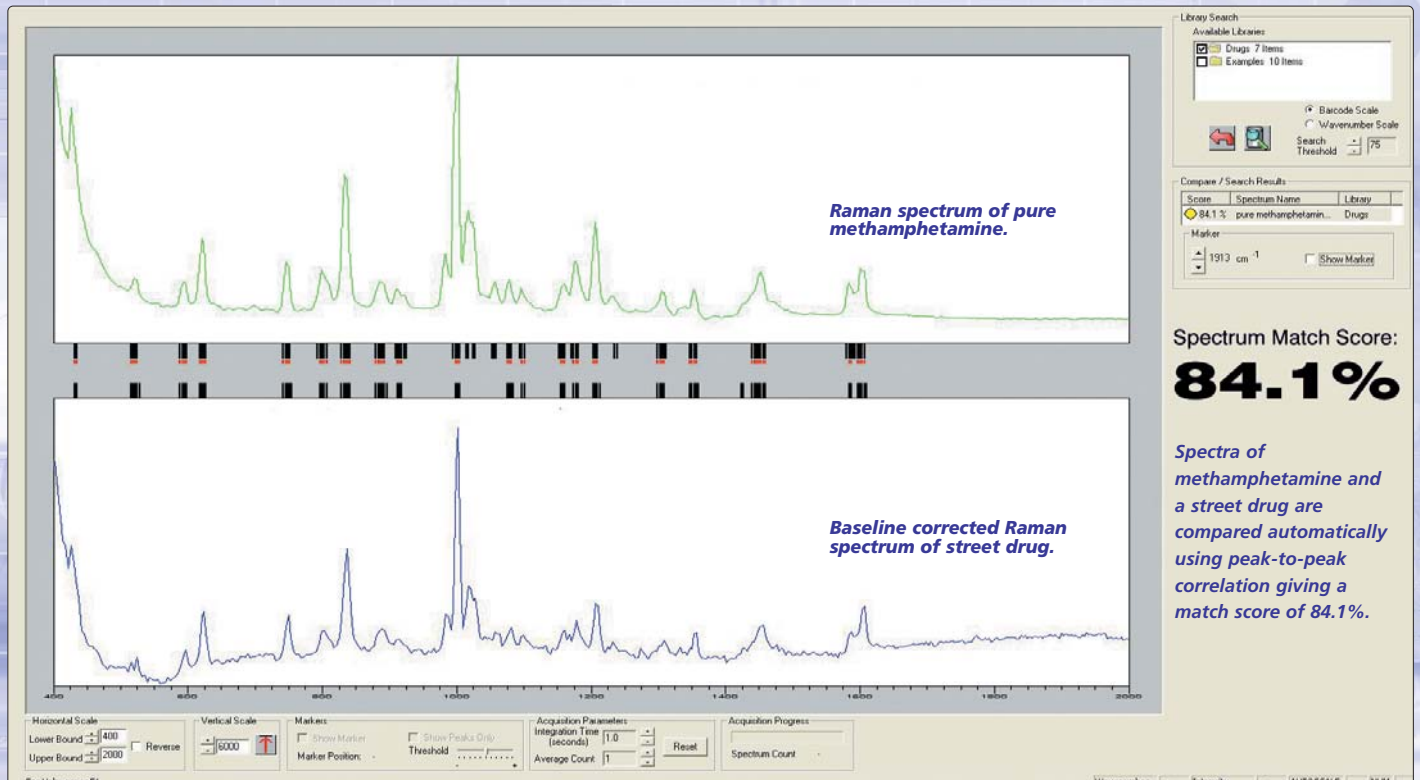
Software features

The **Foram®** is supplied with a comprehensive software package that provides:

- **Easy to use on-screen menus.**
- **Multiple spectral displays for visual comparison.**
- **Advanced signal processing for maximum sensitivity.**
- **Automatic spectral comparisons using peak-to-peak correlation.**
- **Data archiving with search and match facilities.**

Spectral comparisons and database search

Foram® employs an automatic peak-to-peak correlator, a program that identifies the peaks in two pre-selected spectra and determines the significance of their match. This provides a simple numeric measure of the degree of similarity of two spectra, making it ideal for comparing large numbers of spectra and for database search and match enquiries. **Foram®** also provides facilities for users to create databases.



Spectra of methamphetamine and a street drug are compared automatically using peak-to-peak correlation giving a match score of 84.1%.

Foram® specifications

Laser probe:

532, 685 and 785nm, external cavity stabilised diode lasers.

Power emission of the 685nm and 532nm laser probes is 4.5mW.
Class 3R laser products.

Power emission of the standard 785nm laser probe is 2.5mW.
Class 3R laser product.

Also available is the 785nm laser model with a power emission of 10mW.
Class 3B laser product.

Laser power controls:

Provides operation at 10%, 25% and 100% of maximum power.

Video microscope:

Colour CCD.

Rotating objective lens turret *(4 lens capacity)*.

Provides on-screen magnification of x450.

x20, x10 and x5 objective lenses supplied as standard.

Focus adjustment.

A4 size XY translation stage with ±2mm of adjustment on both axes.

Detector:

CCD array, thermoelectrically cooled.

Spectrometer range:

400 to 2000 wavenumbers.

Spectral resolution:

8 wavenumbers.

Computer:

Please consult your Sales Office for the current specification.

Software:

Operating system.

Signal processing software including:
- Signal integration.
- Background *(fluorescence)* removal.
- Spectral comparison.

Casework reporting system with data archive.

Instrument calibration.

Software updates for 2 years.

Safety Classification:

Class 3R laser product.

Foster & Freeman Ltd reserve the right to alter the specification of the Foram® or any accessories without prior notice.

Appointed Agent:

After Sales Support

Foster & Freeman's excellent product engineering is supported with full after sales support including advice, training and maintenance.

For more information on our world-wide services please contact your nearest Sales Office.

foster+freeman

www.fosterfreeman.com

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