Fresh

PerkinElmer
For the Better

HUMAN HEALTH | ENVIRONMENTAL HEALTH

Volume 2 February 2009
INDIA ANALYTICAL SCIENCES

Dear Customers

Welcome to Fresh, PerkinElmer India monthly communication. We take this opportunity to keep you update on latest applications and techniques for your scientific needs. Happy Reading

What's Fresh in this edition...!

- New Lambda Bio & XLS UV VIS spectrometers
- Bio Diesel analyzer as a ready to use solution
- OilExpress system an effective tool for oil and lubricant industries
- PerkinElmer Optima 7000 ICP for heavy metals determination as US Pharmacopeia 32NF

It's Not Just a UV/Vis Spectrophotometer. It's a LAMBDA.

New

The LAMBDA™ XLS and XLS+ have been specially designed for academic and industrial laboratories that require a small-footprint, dedicated instrument for a wide range of applications. The LAMBDA XLS and XLS+ are extremely reliable and sensitive instruments that provide a level of performance which is only normally found in more expensive systems.

The LAMBDA™ Bio and Bio+ have been specially designed for life-science laboratories that require a dedicated instrument for the determination of nucleic acid purity and concentration, protein concentrations and cell density measurements. The LAMBDA Bio and Bio+ are compact, lightweight and designed for maximum convenience and ease-of-use.

A full suite of stored methods includes DNA, RNA and Oligonucleotide calculations, protein assays such as direct UV measurement, BCA, Biuret, Bradford, Lowry and cell density measurement. Unlike many dedicated life-science spectrophotometers, the LAMBDA Bio and Bio+ can also measure absorbance or concentration at any wavelength, providing flexibility to address future applications

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New Personal Life-Science UV/Vis Spectrophotometers Speed, Stability and Confidence in Results

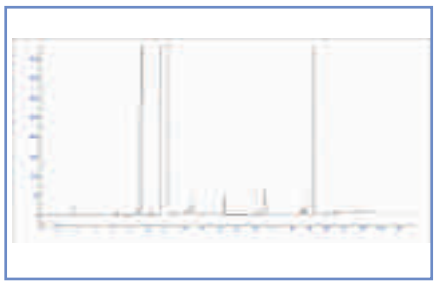
Biodiesel Methanol and Glycerin Analyzer

In the production of biodiesel, free fatty acids (lipids) are catalytically converted to fatty acid methyl esters (FAME) with alcohol, typically methanol. Following this reaction, glycerin, water and residual catalyst must be removed to create a fuel suitable for use in compression ignition (diesel) engines. A number of quality problems can arise if the reaction is incomplete or if by-products are not removed effectively. To ensure fuel quality, both the European Committee for Standardization (EN 14214) and ASTM International (ASTM D6751) have issued standard test criteria for biodiesel. These standards utilize multiple gas chromatographic (GC) analyses. The PerkinElmer® EcoAnalytix™ Biodiesel Glycerin and Methanol Analyzer provides a unique solution to test biodiesel using the GC test methods included in both the EN and ASTM standards. The analyzer incorporates a TurboMatrix™ Headspace Sampler coupled to a Clarus® GC.

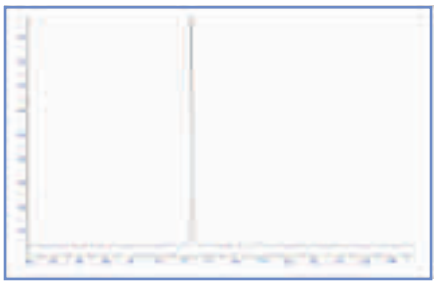
This is a complete solution from PerkinElmer EcoAnalytix .

ecoanalytix

Method	Analytes	Injection	Analysis Time
EN14105	Free & total Mono-, Di- & Triglyceride content	On-column	35 min
EN14110	Residual Metanol	Headspace	< 5 min
ASTM D6584	Free & total Glycerin	On-column	25 min



Biodiesel Chromatogram demonstrating glycerin, mono, di and tri-glycerides



Methanol at 0.1% in biodiesel matrix

Spectrum Oil Express Analyzer for Lubricant and Oil Industries

The upsteream sector of the oil industry where the drilling of exploratory wells is done can be a user of infrared instruments. Water-oil emulsions can be characterized by infrared to gain information on the chemical properties and the physical properties such as particle size and even reaction kinetics under high temperatures and pressures. Infrared spectroscopy serves in many cases for classification of crude oils[1]. The crude oil can be characterized by infrared into various types such as saturates or aromatics etc. the aromatic content of crude oils can be deduced from the intensity ratio of the absorption bands at about 1600 cm-1 and 720 cm-1.

Within the range near 720 cm-1, the paraffinic compounds of the oils as well as the aliphatic side chains of the aromatics are absorbing. Raw crude oil are refined to separate and refined into gasoline, diesel fuel, liquid petroleum gas and asphalt. The downstream oil sector is where the refining of crude oil and manufacturing of products such as gasoline, lubricants, plastics, pestisides, etc. are done. These plants that process these byproducts are large users of analytical instruments due to the wide spectrum of products that are produced. The main application areas in the oil and petroleum industry can be defined into at least seven areas :

1. Characterization of crude and distilled petroleum fractions
2. Analysis of fuels
3. Characterization of lubricant base oils
4. Qualitative analysis of formulated lubricants
5. Quantitative analysis of formulated lubricants (quality control)
6. Analysis of lubricant additives
7. Analysis of lubricant in service. (Used oil analysis)

Spectrum Oil Express Analyzer

Summary of oil parameters

Parameter	Spectral Regions	Measurement Units
Soot	3800 & 1980 cm-1	Abs/cm
Hydroxy (water & Glycol)	3650 - 3150 cm-1	Abs/cm %Water
Glycol (mineral oils)	1140 - 1000 cm-1	%
Oxidation (mineral oils)	1720 cm-1	Abs/cm
NOx/Carboxylate (mineral oils)	1650 - 1538 cm-1	Abs/cm
NOx	1630 cm-1	Abs/cm
Oxidation/Sulfate	1150 cm-1	Negative Abs/cm
Antiwear loss (synthetic oils)	1000 - 930 cm-1	Negative Abs/cm
Sulfate	640 - 590 cm-1	Abs/cm
Fuel contamination (diesel)	820 - 800 cm-1	Abs/cm
Fuel contamination (gasoline)	780 - 760 cm-1	Abs/cm
Ester Breakdown (synthetic oils)	3720 - 3590 cm-1	Abs/cm

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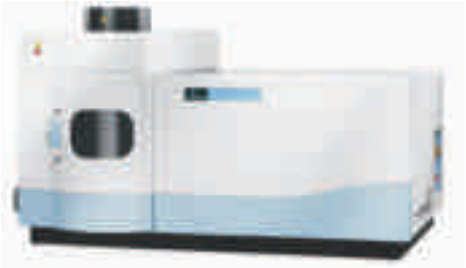
PerkinElmer Optima 7000 ICP for heavy metals determination - US Pharmacopeia perspective



Heavy metal analysis is an integral part of all Pharmaceutical processes. The analysis becomes more important as some of them are toxic and others not so toxic; but may reflect quality issues. Heavy metals like Lead, cadmium, Mercury, Tin and other elements like Nickel, Platinum, Palladium can find the source of contamination from Catalyst leaching, carried through the process (raw material) or carried through the process (leaching from Pipes & equipments). The current method JP & EP (Method 231) for analysis of Heavy metal by wet chemistry analysis is now under scrutiny as the process results in loss of most of the elements like Hg, As, Sn etc. during ash process & also it is time consuming with much less yields.

USP is proposing a broader reaching chapter to reflect Inorganic Impurities that reflects Modern Instrumentation techniques to be used (Inductive Coupled Plasma Optical Emission Spectrometer) to help in monitoring realistic toxicological limits for Individual metals as also to control the levels of metals in food & dietary supplement products. The method will effectively replaced the classical wet analysis where the recoveries are low and at times no recoveries.

Benefits of the OPTIMA 7x00 Series

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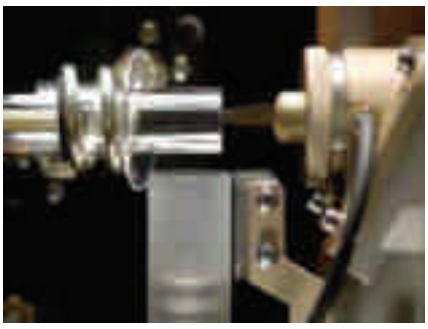
We at PerkinElmer understand your needs to meet the stringent regulatory guidelines and are committed to provide you the right solutions to your analysis requirements to keep you one step ahead always. The New Optima 7000 series of Inductive Couples Plasma Optical Emission Spectrometer (ICP-OES) from PerkinElmer is designed to meet the stringent Inorganic Metal analysis of Pharmacopeia Guidelines. The Advisory Panel set up by USP to discuss potential Instrumental Techniques acknowledges ICP as the best suited Instrument to monitor the metal concentrations.
The Optima 7000 is designed with modern days Echelle Optical system with Solid state Detector (CCD) to provide the best optical performance Heart of any spectroscopy techniques. The Unique Duel View capabilities allow you to work on a wide dynamic range from low ppb to higher ppm in a single run. The system has an amazing uptime performance and is ready for analysis in less then 10 minutes from Cold start. The widest choice of sampling accessories allows you to use any type of sample from Aqueous, to Organic to High Dissolved solid samples with very little or no sample preparation required. The unique compatibility of FIAS accessory allows you to achieve sub ppb analysis of Toxic elements like Hg, As, Se, Sn Sb etc. The Powerful Winlab control software make it much more easy to operate the system & optimize parameters with virtually every thing under control from Winlab platform. To meet the 21 CFR protocols add Winlab ES version of software & our trained & qualified IQ,OQ PQ support services.

PerkinElmer is committed to support you in achieving your goals with our dedicated focus on providing the right solution to your analytical needs. We would love to see you one step ahead in Technology.

We shall be pleased to discuss this technique for inorganic analysis and related issues. Your queries are highly solicited



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