

# 2015

## Seeing The World in a Better Light PRODUCT CATALOG

### AOTF-NIR Spectrometers

#### Major Markets We Serve:

- Pharmaceutical
- Food/Agriculture/Dairy
- Polymer
- Chemical
- Petrochemical



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# WELCOME to Our 2015 AOTF-NIR Spectrometer Catalog



Welcome to the 2015 Brimrose Spectrometer Catalog!

Once you get to know us you will understand how seriously we take spectrometers at Brimrose. They are a core product for us and we spend a substantial amount of time, effort and resources every day to make sure they are the best in the industry.

As you read through the pages of this catalog, you will discover our "secret sauce," our acousto-optic tunable filter (AOTF) technology, which differentiates Brimrose spectrometers from lesser models. AOTF technology is the scientifically proven way to obtain optimum results in the study of materials by spectrometers. They allow Brimrose to operate at the unusually high scanning speed of 16,000 wavelengths per second.

With this kind of capability, it is not really surprising that the largest pharmaceutical companies and food processing organizations in the world depend on Brimrose spectrometers every day to improve their operations. Think Johnson & Johnson, Bristol-Myers Squibb, Archer-Daniels Midland, Kraft and Monsanto.

The 2015 Brimrose Spectrometer Catalog will acquaint you with our extensive line of spectrometers, which have evolved from a proud, 30 year tradition of excellence.

Our emphasis continues to be on you, our customer, and anyone who knows our company will see how our spectrometers have become lighter, more rugged, more efficient and less costly over the years—because that is what our customers want!

We have added some features to this year's catalog that we believe will be helpful as you navigate our company. We are, after all, a global company, and want to emphasize that our spectrometers and related services are available to your company, no matter where you are located around the world. We have therefore included a list of our distributors. Each is knowledgeable about our spectrometers and can help your company fit the Brimrose spectrometer you need to your particular requirements.

As you page through the catalog, you will get a better understanding of the many applications our customers use our spectrometers for to better understand the world around them. From maximizing the amount of moisture in bread crumbs (see P. 7), to identifying the active agents in drugs, our spectrometers open up a new world in the exciting area of process analytical technology, or PAT.

Through these pages, you will review our best spectrometers ever, made with one thought in mind: to help your business benefit from this extraordinary technology, to see the world in a better light.

Sincerely,

Ronald G. Rosemeier, Ph.D.  
Founder and CEO  
Brimrose Corporation



## Welcome to the Brimrose 2015 Spectrometer Catalog 2

A letter from our president and CEO

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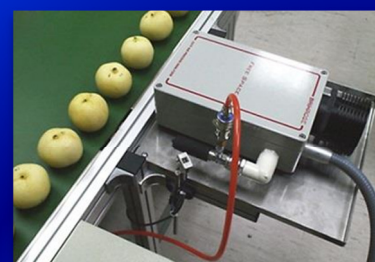
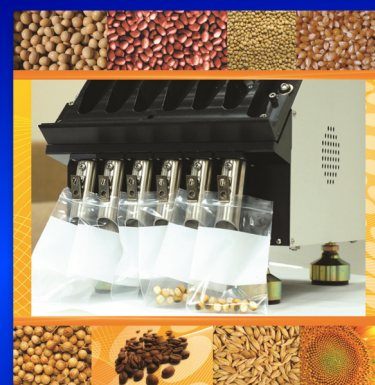
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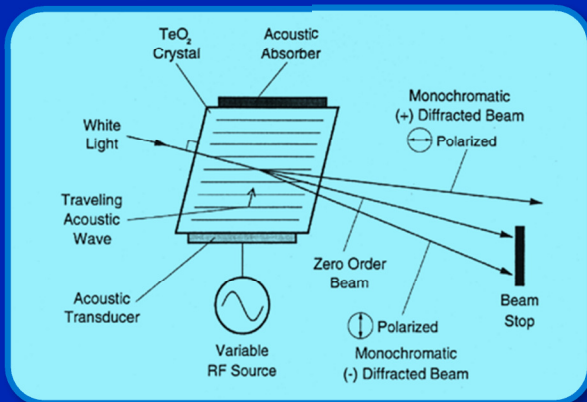
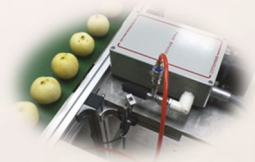
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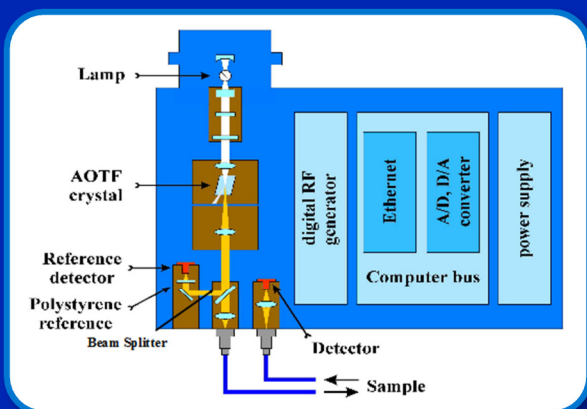
# A Heritage of Technology Leadership:

## Our AOTF-NIR Spectrometers

A major reason why Brimrose spectrometers are superior is our Acousto-Optic Tunable Filter (AOTF) technology, which the company has fully mastered after many years of research and application. AOTF technology is a scientifically proven way to obtain optimum results in the study of materials by spectrometers. Following are a list of advantages of AOTF technology and benefits of AOTF-NIR real-time monitoring and control:



Schematic Representation of the AOTF



Schematic Showing Elements of a Typical AOTF Spectrometer (Brimrose Luminar)

### Advantages of the AOTF Technology

- Fast Scanning Speed – 16,000 Wavelengths/sec
- Solid State, No Moving Parts
- Real-Time Full Spectrum Dual-Beam with No Baseline Correction Required
- Pre-Aligned Lamp Assembly
- Excellent Wavelength Repeatability
- High Signal-to-Noise Ratio
- Immune to Ambient Light Variations (rejection 1 to  $1 \times 10^6$ )
- Works Reliably in Harsh Environmental Conditions

### Benefits of AOTF-NIR Real-Time Monitoring and Control

- Extensive Testing and Analyses at Every Manufacturing Process at Lower Cost than Existing Practices
- Significant Manufacturing Cost Reduction
- Reduction of Product Inventory
- Elimination of Laboratory Testing
- Quality Control at Time of Manufacture
- Statistical Process Control
- Compliance at Point of Use

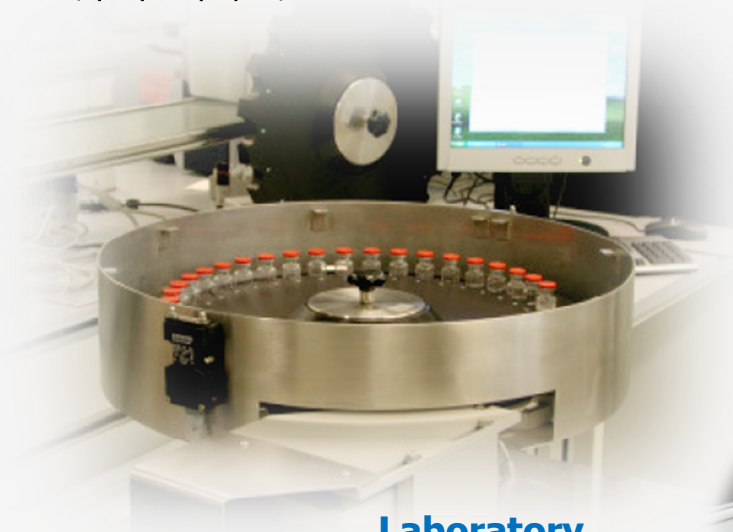


## Meet Our Spectrometer Family ...

Brimrose's rugged and high performance on-line NIR spectrometers deliver fast-responding and multi-component analysis for a variety of process applications throughout the pharmaceutical, food & dairy, chemical, polymer, petrochemical, agricultural, seed, pulp & paper, and wine industries.



**Field**



**Laboratory  
Online Process**



## ➤ Luminar 4020 Thin Film Analyzer

Brimrose's Luminar 4020 is a miniaturized, solid state, near infrared integrated thin-film analyzer.

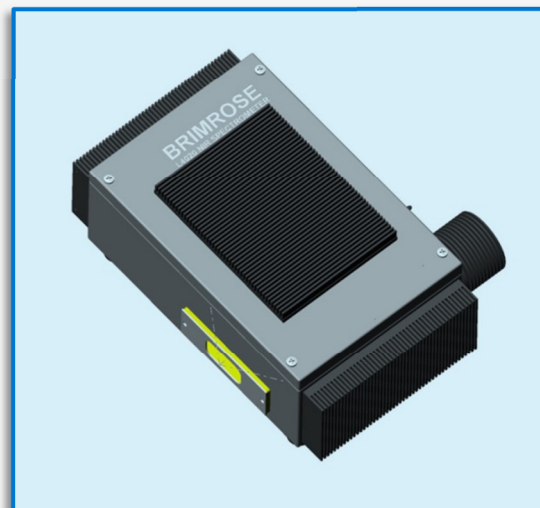
It is designed for non-contact, non-destructive measurements of chemical and physical properties on a wide range of substrates and coatings.

Applications include thickness of organic lacquer or lubricant on metallic foils, tin-plate, resin-coated steel sheets, metalized polymer films, extruded thin films, etc. Thus, the coating weight of adhesive and residual solvents can be routinely measured using this high-speed, on-line analyzer, which can either be mounted on a traveler and scanned across the web or have measurements performed statically.

The Luminar 4020 is not sensitive to ambient light, which is an important advantage. This eases installation requirements in the production environment. A novel optical design eliminates the interference fringes making the measurement of thin films now possible eliminating the need for costly gamma radiation or beta radiation monitors.

These units feature a state-of-the-art miniature integrated design, which includes an optical module and scaled-down electronics that mount on the optical module. They also include dual beam, pre-aligned lamp assembly and indium-gallium-arsenide detectors.

A leading customer for the Luminar 4020 is 3M, which has used the unit to measure multiple coatings at a time.



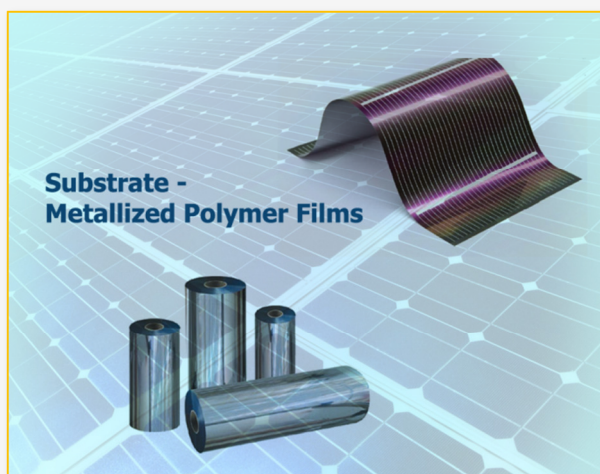
Luminar 4020 Isometric View

### Key Features

- Miniaturized Design Includes Optical Module and Scaled-Down Electronics Mounted on the Optical Module
- No Moving Parts
- Dual-Beam, Pre-Aligned Lamp Assembly, InGaAs Detectors
- Fast Scanning Speed - 16,000 Wavelengths per Second
- Brimrose SNAP32! Analytical Software

### Applications

- Measurements of chemical compositions, film thickness and film coating potentially to the micron level
- Coating Material: acrylic, epoxy, epoxy-phenolic, epoxy-urea, multi-layer films and tapes, nitrocellulose, polyesters, polystyrene, vinyl, etc.
- Film thickness and residual solvents measured in-line
- Measurement of coating thickness of organic lacquer or lubricant on metallic foils





## ➤ Luminar 4030 Free Space Analyzer

The popular IP55 Luminar 4030 analyzer with miniaturized electronics can be directly connected into the production line for non-contact, non-destructive measurements of chemical and physical properties of powders, solids, suspensions, gels, etc, in diffuse reflectance mode. It can be fan-cooled or vortex-cooled with an internal heat exchanger.

The Luminar 4030's rugged design and solid-state technology offer a variety of solutions for real-time process applications. This versatile instrument can also be placed into a vast variety of housings to match process area needs.

The lightweight unit can easily be transferred among measuring points. Common applications include blenders, dryers, etc.

The 4030 can be outfitted with optical fiber, flow cells, probes or cuvettes to measure samples for contact measurement.

"Our pilot application (using the Luminar 4030) has returned well over six figures in the first eight months of operation," says Kerry's Robert Newton. "We expect similar returns with the installation and commissioning of four additional units."

The U.S. Food and Drug Administration, BMS, Owens-Corning and Corning are among the many Luminar 4030 customers.

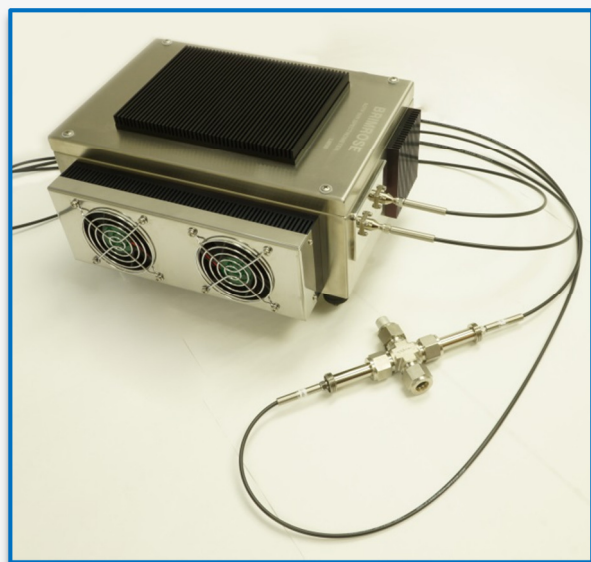


### Key Features

- Dual-Beam, Pre-Aligned Lamp Assembly Including InGaAs Detectors
- Fast Scanning Speed - 16,000 Wavelengths per Second (30 scans per second for range of 1200 to 2200 nm)
- No Moving Parts
- Miniature Integrated Electronics and Optical Modules in Same Stainless-Steel Enclosure
- Lightweight -- about 8.5 kg, (18.7 lbs) -- Provides Versatility in Deployments
- Measuring Non-Destructively Powders, Solids, Gels, etc, in Diffuse Reflectance Mode
- SNAP32! Brimrose Analytical Software with Brimrose MACRO Language

### Applications

- **Blend Control:** Real-time homogeneity monitoring and blending control process
- **Drying process:** Direct placement on spray or fluid bed dryers
- **Pharmaceutical:** 100 percent inspection of solids, gels, liquids and powders
- **Agricultural/Food:** On-line food analysis for fat, protein, bread crumb, moisture, starch, etc
- **Polymer:** In-site measurement of pellets, films and coatings
- **Textile:** Cotton/polyester ratio accurately by the web
- **Pulp and paper:** In-line thickness and coating analysis
- **Tobacco:** Measurements of nicotine, sugars, potassium, etc.



Luminar 4030 with Fiber Optics

## Moisture Analysis in Food Becomes an Opportunity for Our Spectrometers

*By Evan Ramer, Application Engineer, Brimrose Corp.*

A beautiful thing about working with spectrometers is that you don't always know where the next application is going to come from. These are great instruments that allow us to see and understand materials well beyond what we otherwise would be able to do.

Several years ago, we were contacted by someone from a company involved with programmable logic control, or PLC. They explained that a large food-producing company that they were doing business with was having problems maximizing its moisture content in the manufacture of bread bi-products. Food companies these days often have large quality-control units where they do sophisticated food analysis using process analytical technology or PAT.

### Why is moisture content important?

Moisture is water and water doesn't cost much compared to other ingredients in bread and bread crumbs. People also don't like bread that is too dry and brittle. This may seem like a small matter until you multiply croutons or crackers by a million or billion. Then it becomes very important.

The challenge for the food production company was to get the maximum amount of moisture allowed by law, without going over it. If you exceed the acceptable moisture content, there are problems with mold.

The spectrometer we used, the Brimrose Luminar 4030, was able to consistently provide moisture content of between 10 percent and 12 percent, which is exactly what the company hoped for.

The result was that they saved \$170,000 in the first four months of use. Needless to say, the company was very happy. The result was that they bought our spectrometer (we had originally loaned it to them), and have since bought four more. We are anticipating additional orders.

The Luminar 4030 is perfect for these applications. It small, compact and rugged and integrates easily into the production environment. It is vortex-cooled with a heat exchanger that easily replaces hot air with cooler air. The



The 4030 can and normally operates 24 hours a day, seven days a week, 365 days a year.

### How does it all work?

The crumbs or other bread bi-product go through an oven to be baked before they go to the hoppers to be packaged. The trick is to set the oven at the right temperature so the right amount of moisture will be baked out of the crumbs.

Cables connect the Luminar 4030 spectrometer to the PLC unit, which in turn interfaces with the oven. The spectrometer tells the PLC what percentage moisture is coming out in the bread and the PLC unit adjusts the temperature of the oven to the optimum setting. In essence, our spectrometer controls the oven.

Robert Newton of Kerry Corporation is very excited about the capabilities of the process. "We've interfaced our first unit via PID loop to thermal bake technologies in an effort to optimize the moisture content of our products," he says. "Our application is a real-time iterative approach that not only optimizes the desired output, but has eliminated product rejections due to over and under drying. Our pilot application has returned well over six figures in the first eight months of continuous operation. We expect similar returns with the installation and commissioning of four additional units in like processes across the Americas Regions."

With endorsements like these, I have to believe this market will continue to grow together with the food processing industry.



## ➤ Luminar 4060 Free Space Analyzer

The Luminar 4060 is a new Brimrose spectrometer that offers advantages in size and power consumption. The Luminar 4060 is seen being a good fit for a variety of different applications.

The Luminar 4060 includes other modern conveniences, including touch screen display.

Similar to our other spectrometers, the unit includes a battery and battery charger. The unit features a long-operating time.

The Luminar 4060 is compatible with our SNAP32 software and features new software that has a graphic, touchscreen interface, and is capable of stand-alone operation.

The Luminar 4060 analyzer has a number of potential uses as miniaturized electronics can be directly connected into the production line for non-contact, non-destructive measurements of chemical and physical properties of powders, solids, gels, etc, in diffuse reflectance mode.

The Luminar 4060 comes with a variety of options and can be fitted with several different accessories.

### Applications

- **Blend Control:** Real-time homogeneity monitoring and blending control process
- **Drying process:** Direct placement on spray or fluid bed dryers
- **Pharmaceutical:** 100 percent inspection of solids, gels, liquids and powders
- **Agricultural/Food:** On-line food analysis for fat, protein, moisture, starch, etc
- **Polymer:** In-site measurement of pellets, films and coatings; high speed polymer waste identification
- **Textile:** Cotton/polyester ratio accurately by the web
- **Pulp and paper:** In-line thickness, pulp properties, paper coating analysis
- **Tobacco:** Measurements of nicotine, sugars, potassium, etc.



### Key Features

- Small Size, Low-Power Consumption
- No Moving Parts
- Economic Price Tag
- USB Capable, Removable Memory
- Amazing Scanning Speed of 16,000 Wavelengths per Second
- Miniature Integrated Electronics and Optical Modules in Same Stainless Steel Enclosure
- New Linux-based Software with a Graphic Touchscreen Interface and Stand-alone Operation
- Measuring Non-Destructively Powders, Solids, Gels, etc, in Diffuse Reflectance Mode



### Key Features

- Dual-Beam, Pre-Aligned Lamp Assembly
- No Moving Parts
- Fast Scanning Speed - 16,000 Wavelengths per Second
- SNAP32! Brimrose Analytical Software with Brimrose MACRO Language
- 6 mm Diameter Sample Area at 40 mm Sampling Distance (Amounts can vary.)

### Applications

- In-line blend uniformity
- In-line food analysis for fat, protein, moisture, starch, etc.
- **Polymer:** measurements of pellets and resins
- **Paper and Textile Goods:** In-line coating thickness measurements
- Measurements of Tobacco and Tobacco Leaves
- On line and at line analysis of oil, moisture and dry matter in olive oil extraction process

## ➤ Luminar 5030 Hand-held Analyzer

The extremely popular Brimrose solid-state Luminar 5030 is a miniature, hand-held Acousto-Optic Tunable Filter-Near InfraRed (AOTF-NIR) analyzer. This portable platform does an exceptional job when conducting non-destructive and contact/non-contact analytical testing and inspection.

The Luminar 5030 is very versatile, able to be used in the lab, on the production floor and in the field.

This unit delivers rapid, multi-component analysis for a wide variety of applications. These include diffuse reflectance measurements of powders, pellets, grapes, olives, suspensions, moving films and many more solid products.

The Luminar 5030 is a new powerful tool for quality control and process troubleshooting. The instrument is a portable, battery-powered device that measures Brix, pH, TA, etc. from any grape in the vineyard without removing it from the vine or oil in whole olives on the tree.

Additional probe attachments allow the same analyzer to be used for liquid transmission measurements.

The unit enjoys widespread use. Some customers include Amgen, BMS, UCLA and Instituto de Lagrassa.



Luminar 5030 Testing Olive Leaves

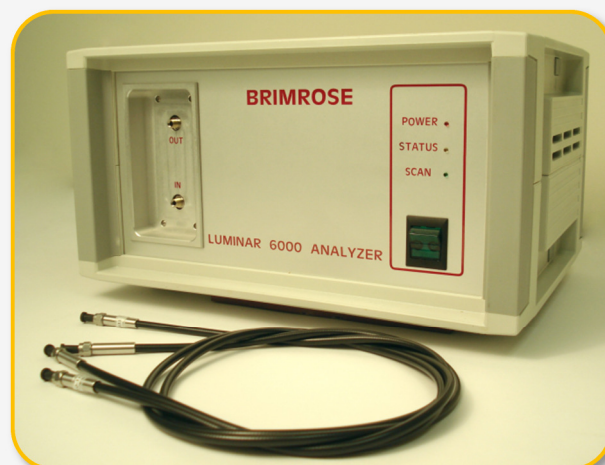


## ➤ Luminar 6000 Laboratory Analyzer

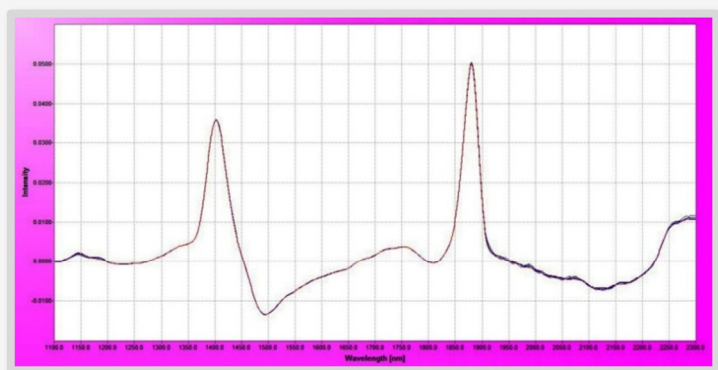
The Brimrose solid-state Luminar 6000 Acousto-Optic Tunable Filter-Near InfraRed (AOTF-NIR) Miniature Laboratory Analyzer represents a recently introduced platform for conducting non-destructive and contact/non-contact analytical testing.

The Luminar 6000 is an excellent tool for lab measurements of chemical and physical properties. It can do multiple measurements with different types of probes, cuvettes and flow cells.

Models created using the Luminar 6000 can easily be transferred to a real-time, in-line system.



Luminar 6000 with Fiber Bundle



Moisture Analysis in Tobacco Mixture

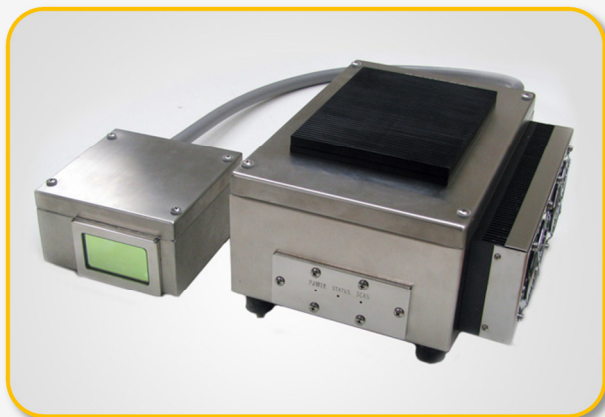


### Key Features

- Dual-Beam, Pre-Aligned Lamp Assembly
- InGaAs Detectors
- No Moving Parts
- Fast Scanning Speed - 16,000 Wavelengths per Second
- SNAP32! Brimrose Analytical Software with Brimrose MACRO Language

### Applications

- Laboratory Measurements of Chemical and Physical Properties: powders, polymer pellets/resins, liquids
- Fruit and Grain
- Raw Material ID
- Petrochemical: Determination of aromatics, cetane index, density, and viscosity in petroleum product
- Paper and Textile Goods



### Key Features

- Dual-Beam, Pre-aligned Lamp Assembly, InGaAs Detectors
- No Moving Parts
- Fast Scanning Speed - 16,000 Wavelengths per Second
- SNAP32! Brimrose Analytical Software with Brimrose MACRO Language
- 6 mm Diameter Sample Area at 55 mm Sampling Distance (can be other distances)
- NEMA 4X Miniature Stainless-Steel Integrated Enclosure for IP55 Protection



Blending Application

### ➤ Luminar 7030 Free Space Analyzer

The exciting Luminar 7030-IP55 Miniature Stainless-Steel Free Space Process AOTF-NIR analyzer is built to be installed directly into the production line.

The unit's miniature size allows for implementation where space is tight, such as in small blenders, vacuum dryers, pipes, fluid beds, etc.

This high-speed unit is based on diffuse reflectance optics and can be integrated into a vast variety of housings. The unit is a fully IP55 water tight - dust tight enclosure.

Brimrose offers this rugged solid-state analyzer in a variety of different configurations to meet the high demand of different industries and applications. The Stainless-Steel Free Space spectrometer meets all requirements and standards for on-line applications in the pharmaceutical industry and is built to work reliably even in the toughest environmental conditions.

The integrated AOTF-NIR technology offers an outstanding S/N ratio combined with ultra-high-speed scanning rates and makes it possible to analyze in real time, in-line and with laboratory accuracy.

Astellas Pharma, BMS and R.J Reynolds are among the many customers for this unit.

### Applications

- **Blender Control:** Real-time homogeneity monitoring and blending control process
- **Pharmaceutical:** 100 percent inspection of solids, gels, liquids and powders
- **Agricultural/Food:** In-line food analysis for fat, protein, moisture, starch, etc.
- **Polymer:** In-site measurement of pellets, films and coatings
- **Drying Process:** Direct placement on spray or fluid bed dryers
- **Tobacco:** Measurement of nicotine, sugars, potassium, etc.



## ➤ Luminar 3010 Process Analyzer

Brimrose's Luminar 3010 Acousto Optic Tunable Filter-Near InfraRed (AOTF-NIR) Analyzer is a fiber optic-based system popular for industrial plant monitoring and control applications.

The Luminar 3010 is engineered to measure the chemical and physical properties of liquids and gels, and has the toughness to operate in a production environment.

In fact, the technology is global scale with an amazing sampling speed of up to 16,000 wavelengths per second. The process control offers up to 16 analog/digital channels, 16 digital/analog channels, and 16 I/O channels fully accessed via a macro, Modbus interface.

The Luminar 3010, which has been continually upgraded throughout its history, connects with a wide variety of process interfaces, including fiber optic probes and other attachments.

Global pharmaceutical company Lundbeck, for example, had success using the Luminar 3010 for solvent recovery. Akzo Nobel has deployed the unit for the monitoring and control of solvents, acids and binders.

The Luminar 3010 comes with three types of refrigeration, including: (1) the 3010-601: fan cooled NEMA 12X enclosure; (2) the 3010-602: TE-cooled NEMA 12X enclosure; and (3) the 3010-609: vortex cooled with heat exchanger NEMA 4X enclosure. The unit can be easily equipped to comply with all levels of explosion proof, including ATEX categories.



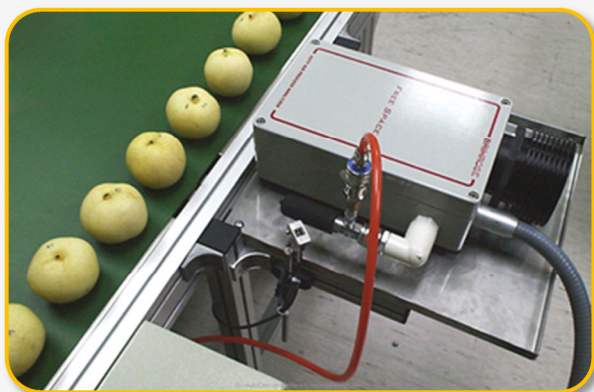
### Key Features

- Fiber Optics-Based System
- No Moving Parts
- Sampling Speed of 16,000 Wavelengths per Second
- Connects with A Variety of Process Controls, Including Fiber Optic Probes and Other Attachments

### Applications

- Measurements of the chemical and physical properties of liquids and gels
- Gasoline, diesel, kerosene blending
- Analysis of chemical and physical properties of fuels and molten polymers
- Reaction monitoring, solvent recovery
- Paper and pulp industry applications (black and green liquor)
- On line polymer manufacturing
- Sugar refining





Real-time Online Fruit Inspection and Sorting

### Key Features

- Insensitive to Vibrations and Ambient Light
- Amazingly Fast Scanning Speed - 16,000 Wavelengths per Second
- No Moving Parts
- Non-Invasive, Contactless Measurement
- Superior Signal-to-Noise Ratio Throughout the Entire Spectral Range

### Applications

- **Pharmaceutical:** 100 percent inspection of solids, pastes, creams and powders
- **Agricultural/Food:** In-line food analysis for fat, protein, moisture
- **Polymer:** In-site measurement of pellets, films and coatings
- **Textile:** Cotton/polyester
- **Drying Process:** Direct placement on spray or fluid bed dryers
- **Pulp and Paper:** In-line thickness and coating analysis

## ➤ Luminar 3030 Free Space Analyzer

Brimrose's 3030 Free Space Acousto-Optic Tunable Filter-Near InfraRed (AOTF-NIR) Analyzer is rugged and can be inserted directly into the production line. As such, the Luminar 3030 eliminates the need for fiber optic lines.

The free-space unit is considered an excellent tool for in-line, real-time analysis, monitoring and control.

The analyzer can identify the organic chemical composition, actives, starch and moisture content in a variety of forms, including solids, pellets, powder and suspensions. It can do this through a window.

The Luminar 3030 is insensitive to vibrations and ambient light. It offers non-invasive, contactless measurement.

The Luminar 3030 can provide superior signal-to-noise ratios across the entire spectral range and offers fast scanning rates of up to 16,000 wavelengths per second.

Bayer, Merck and Pfizer are among the many customers for this popular unit.

A number of attachments are offered for the Luminar 3030.



Moving Vial Inspection Linked to Cap Color

## ➤ Luminar 3060 Built-in Multiplexer

The Luminar 3060 Process Near-InfraRed Analyzer with Built-in Multiplexer is a leader in industrial plant monitoring and control. This unit can analyze up to 16 process points, which ensures real-time process quality control.

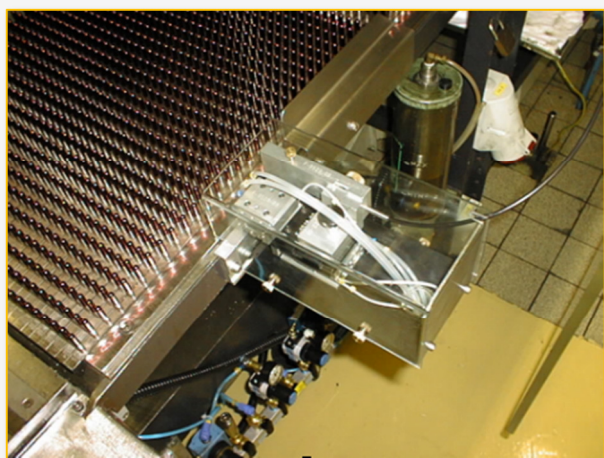
The Brimrose-patented multiplexer technology couples unmatched repeatability with minimized insertion losses and excellent signal-to-noise ratios.

The units are compatible with a variety of process interfaces including fiber optic probes and flow cells.

Astra-Zeneca is one of many customers. Others include Capsugel, the U.S. Food and Drug Administration, Hyo Seng, Samsung BP in Korea, Petrobras Brazil, YPF in Argentina, etc.



Transmittance Spectra of Palm Oil



Capsule Shell Application

### Key Features

- Analyzing up to 16 Streams, Ensuring Real-Time Process Quality Control
- No Moving Parts
- Sampling Speeds of up to 16,000 Wavelengths per Second
- Compatible with a Variety of Process Interfaces
- Can be Explosion Proof to All Requirements

### Applications

- **Polymer:** analysis of chemical and physical properties of gasoline, diesel fuel and kerosene; polymerization monitoring; NCO values; online catalyst identification
- **Hydrocarbon:** gasoline, diesel and kerosene blending
- **Pharmaceutical/Chemical:** reaction monitoring, solvent recovery, distillations, and 100 percent inspection
- **Pulp & Paper:** green, white and black liquor process control and monitoring





**Model 920A**

## ► Luminar 3070 BenchTop Analyzer

Brimrose's 3070 main BenchTop Laboratory AOTF-NIR Analyzer truly is designed for any type of non-contact, non-destructive measurement of chemical and physical properties of powders, solids, liquids, gels, etc., in a laboratory environment.

The Luminar 3070 comes in four models, all of which use diffuse reflectance in sample rotation mode.

The **Model 920A** provides transmission for liquids with integrated flow cell dynamic mode.

The **Model 920B** can be used in transmission for single seeds or tablets.

The **Model 920D** is used in transmission for liquids with separate heated flow cells in dynamic mode.

The **Model 920E** is used for diffuse reflectance measurements with rotating cup only.

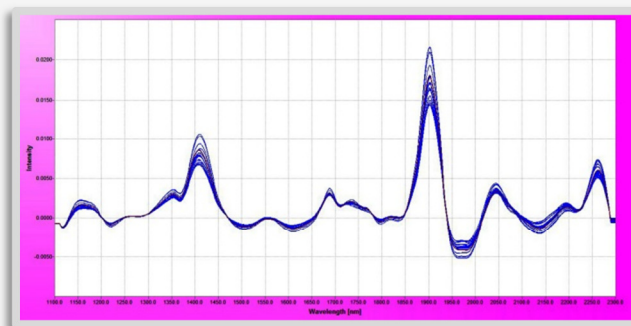
American Crystal Sugar and Norac are among the many customers for these Luminar 3070 units.

### Key Features

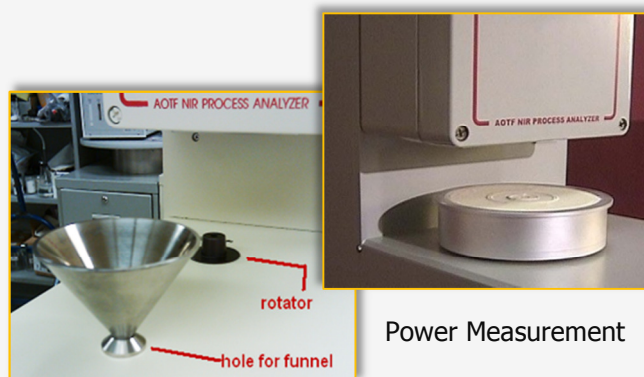
- Four Distinct Models
- Non-Contact, Non-Destructive Measurements
- No Moving Parts
- Operational in a Variety of Broad Spectral Ranges
- Fast Scanning Speed - 16,000 Wavelengths per Second

### Applications

- Measurements of chemical and physical properties of powders, solids, liquids, gels, etc
- Sugar monitoring
- Seed applications



Analysis of Protein, Ash and Moisture in Flour



Power Measurement

Liquid Measurement

## ➤ Luminar 3076 SeedMeister Analyzer

Brimrose's Luminar 3076, its well-known "SeedMeister" Analyzer, has been developed for high-speed discrimination, quantification and sorting of hybrid seeds, nuts and beans, which include but are not limited to corn, soybeans, coffee, watermelon, peanuts and sunflower.

The system is capable of sorting up to 40 individual seeds per minute. Important information on characteristics of the seed, such as oil, protein, starch, moisture, and low and high oleic contents can be measured at the same time.

The Luminar 3076 has helped numerous customers with the fast development of new genetic products. The SeedMeister allows the customer to place new hybrid products on the market at a fraction of the time and cost of other processes.

The Luminar 3076 analyzer is developed specifically for high-speed, non-contact and non-destructive 100 percent seed discrimination, prediction, quantification, and sorting.

Customers include Abbott and Cobb, JLA Global, RAGT (France) among many others.



### Key Features

- 100 Percent Accurate Seed Inspection and Sorting
- No Moving Parts
- Belt-Driven Orientation
- Easy Calibration Transfer
- Sorting Up to 40 Seeds/min.

### Applications

- Fast sorting of triploid from diploid watermelon seeds at 30 seeds per minute
- Determination of Percentage of Oleic and Linoleic Acid in Sunflower Seeds
- Classifying Corn Seeds Based on Oil Content
- Fast sorting of soybean seeds on the basis of protein content
- Sorting High Oleic, High Linoleic Peanut Seeds





## ➤ Luminar 3077 Tablet Analyzer

The Luminar 3077 Tablet Analyzer is able to provide non-contact, non-destructive measurements of chemical and physical properties of tablets used in pharmaceuticals.

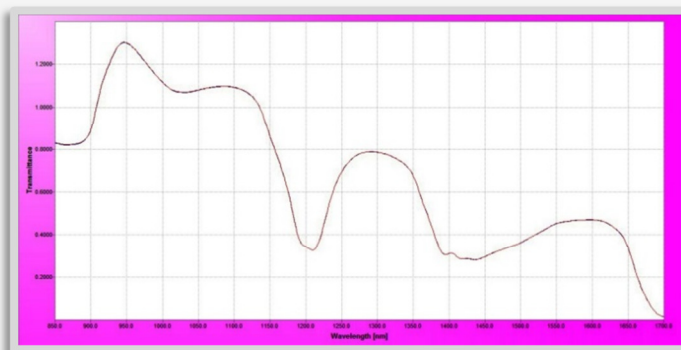
The Luminar 3077 includes a special belt-driven mechanism to create a total automatic solution for tablet manufacturers.

The unit includes a NEMA 4X stainless steel optical module with transmission and reflection detectors, NEMA 4X belt driven orienter, FDA approved conveyor belt, 16,000 wavelengths per second, embedded computer, modem, Ethernet interface, and SNAP32! Brimrose analytical software with Brimrose MACRO Language.

Customers include major pharmaceutical concern Astra-Zeneca and Rutgers University, among many others.

### Key Features

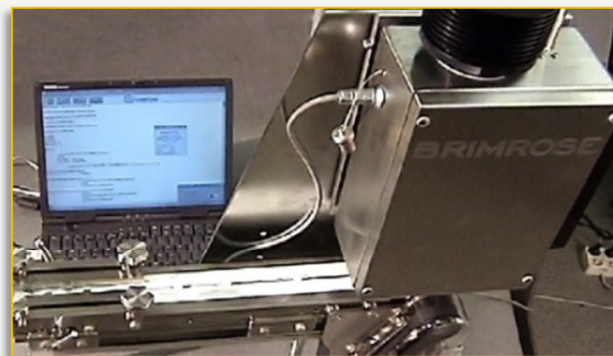
- Special Belt-Driven Mechanism
- NEMA 4X Belt-Driven Orienter
- FDA Approved Conveyor Belt
- No Moving Parts
- Fast Scanning Speed - 16,000 Wavelengths per Second
- SNAP32! Brimrose Analytical Software with Brimrose MACRO Language



Moisture Analysis for Capsule Gels

### Applications

- **Pharmaceutical:**  
Tablet transmission/reflection conveyor belt; automated monitoring system
- **Chemical and Physical properties:**  
Measurements of chemical and physical properties in tablets: I.D. of active (& excipient), moisture, dissolution, disintegration, hardness, density, and dosage levels







## ➤ Luminar 7050 AOTF Gas Analyzer

Brimrose's Luminar 7050 AOTF-NIR Gas Analyzer can conduct gas analytical testing and inspection.

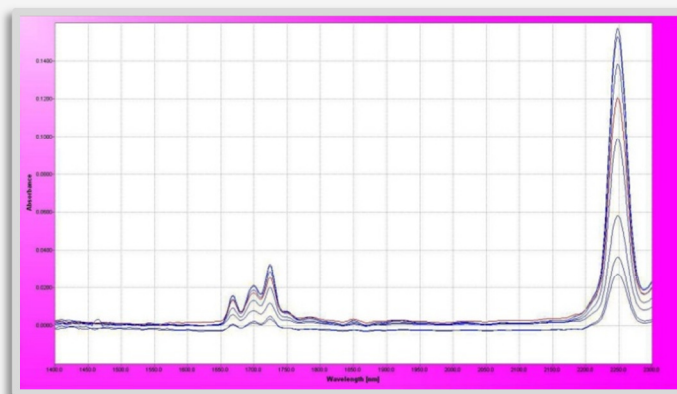
The gas analyzer is extremely versatile and can be used in numerous venues.

The use of the Luminar 7050's transmission measurement mode allows for accurate detection of a variety of gases, including carbon monoxide, carbon dioxide, methane, moisture, ethane, and propane gas.

The Luminar 7050 is offered in a variety of different configurations to meet the high demand of different industries and applications.

### Key Features

- Dual-Beam, Pre-Aligned Lamp Assembly, InGaAs Detectors
- No Moving Parts
- Fast Scanning Speed - 16,000 Wavelengths per Second
- SNAP32! Brimrose Analytical Software with Brimrose MACRO Language
- NEMA 4X Miniature Stainless-Steel Integrated Enclosure



Measurement of Difluoroethane

### Applications

- Carbon dioxide
- Butane
- Methane
- Moisture
- Propane
- Additional gases



### Flow Cells & Probes

Brimrose offers a variety of flow cells and probes should the customer need them for their spectrometers. Flow cells come with ANSI flanges, Swagelok fittings or sanitary flanges. Options include the cross flow side-stream flow cell, the transmission on-line flow cell, reflectance flow cells and transreflectance flow cells. Brimrose also provides a wide variety of probes, including diffuse reflectance, trans-reflectance, dual purpose, and a sanitary flanged reflectance probe.



Cross Flow, Side-Stream,  
Transmission On-Line  
Flow Cell



Transflectance and  
Diffuse Reflectance  
Probe



Laboratory Stand



Dark-Field Diffuse Reflectance/  
Transmission Probe



Diffuse Reflectance Probe  
with Sapphire Ball



Transmission Flow Cell

### Other Brimrose Services

Brimrose is customer friendly. The company offers extensive service and support with its spectrometers. It will install the spectrometer, provide worldwide training on-site or at the company, develop software that matches the needs of the customer, etc. The company also offers a variety of lab stands to match the needs of the spectrometer. Lab stands include motor and rotating cup. All units and accessories come with a warranty.

Thomas Ricour has been named Brimrose Corporation's Spectrometer Division Managing Director for Europe, Middle East and Africa. Thomas, who is based in France, has strong sales, marketing and management credentials. He specializes in the feed, food, beverage (wine) and pharmaceutical industries, which are major markets for Brimrose spectrometers. He also is developing chemometrics support for customers. Prior to coming to Brimrose, Thomas managed some 100 employees at Invivo Labs. Thomas can be reached at [tricour@brimrose.com](mailto:tricour@brimrose.com).

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### Some Satisfied Brimrose Customers



## Brimrose: A Proven Leader in Spectrometers

Brimrose has been making spectrometers commercially for more than 30 years for the pharmaceutical, food/agriculture/dairy and wine industries. As you can see from Page 23, we have a long list of satisfied customers, including the U.S. Food and Drug Administration, Merck, Boeing, Astra-Zeneca, Archer-Daniels-Midland, Johnson & Johnson, Owens-Corning, Kerry, IBM, Boeing, Bristol-Myers Squibb, DuPont, Bayer, Samsung and many others.

Brimrose's spectrometers are based on Acousto-Optic Tunable Filter (AOTF) technology and operate in the Near-InfraRed (NIR) wavelength range. See Page 4 for further details.

The company has been a leader in miniaturizing and digitizing spectrometers. In our 2015 catalog, you will see a variety of new features the company is introducing to continue to make our Brimrose Luminar spectrometers state of the art.

Brimrose puts its customers first. We offer a variety of customizable features with our family of spectrometers and in some instances have gone so far as to build a new product line based on new customer requirements. This "can-do" attitude has served our company well down through the years. Some customizable features include free space optics; small, hand-held units; custom-designed software; built-in multiplexers; benchtop units; seedmeisters; tablet analyzers, etc.

For general information about Brimrose's robust line of spectrometers contact us at 410/472-7070 or [office@brimrose.com](mailto:office@brimrose.com).



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