

Brimrose NIR Application Note

Transferring Laboratory NIR Calibration Models to Brimrose On-Line Process Analyzer Systems

Brimrose's rugged and high performance on-line process spectrometers deliver fast-responding, multi-component analysis for a variety of applications throughout the Pharmaceutical, Food & Beverage, Chemical/Polymer and other process industries.

Now, chemometric-based calibration models created for laboratory NIR analyzers are directly transferable and compatible with Brimrose Luminar-series on-line AOTF-NIR analyzers. As a result, the user can utilize existing laboratory calibrations in an on-line instrument to save development time/cost and ensure that the new on-line NIR models meet laboratory standards and prediction performance.

Use of Brimrose's AOTF (Acousto-Optic Tunable Filter) analytical technique within the NIR (Near-infrared) spectrum allows for characterization and monitoring of chemical species and physical/mechanical properties of a wide range of applications to include liquids, slurries, powders and solid products.

Ideally suited for solving research, quality control and inspection needs, leading manufacturers choose Brimrose to provide new analytical solutions that become an integral part of plant-wide control systems that reduce operating costs and improve process control.

Universal Compatibility with Third-Party Chemometric Software

Laboratory NIR-Analyzer users select third-party software or NIR-Analyzer supplier software to create calibration models for specific products monitored for quality control or research purposes. Chemometric software, detailing NIR wavelength versus absorbance/transmission data and PLS and other mathematical treatment algorithms allow for the prediction/monitoring of the product of interest.

Companies such as CAMO (Corvallis, OR), InfoMetrix (Woodlinville, WA) and Thermo Galactic (Salem, NH) supply third-party modeling solutions for a variety of NIR applications. Brimrose's *Transcal* calibration program transfers these models directly for predicative use in Brimrose on-line Analyzer systems. For users who do not use third-party software, Brimrose also offers a chemometric-modeling module as part of their *LABPRED* software package.

Table 1 below summarizes Brimrose compatibility with third-party chemometric modeling software.

Supplier	Product Family Name	Brimrose Compatability
CAMO	Unscrambler [®]	Yes
InfoMetrix	Pirouette	Yes
MathWorks	MATLAB [®]	Yes
Thermo Galactic	Grams	Yes
Umetrics	SIMCA	Yes

Table I: Third-Party Chemometric Software Compatibility Chart with Brimrose Luminar-Series AOTF-NIR On-Line Analyzer Systems

Independent Test Confirms Calibration Transfer Results

Brimrose Application Report #Transcal1 details performance results for calibration transfer between a Foss NIRSystems 6500 NIR laboratory spectrometer and a Brimrose Luminar FreeSpace™ process spectrometer used to measure protein, oil, and moisture in a pellet-sized product. A calibration model constructed from a data set of 398 samples was created for the Foss instrument.

After using Brimrose's *Transcal* calibration program, an independent test revealed that on-line prediction performance matched the laboratory prediction performance with excellent correlation.

For more information, contact:

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