

APPLICATION NOTE

On-Line Monitoring of Water in Ethylene Glycols with a ClearView db Photometer

Purpose

To determine water content in ethylene glycol (EG) without sample temperature control.

Experimental

Our LAB NIR-O™ spectrometer was used to measure the NIR spectra of 0 to 100% water in EG in the 18-43°C temperature range using a 10 mm pathlength SST™ probe. The resulting data were then used to define the wavelengths for our on-line ClearView® db process photometer.

Results

The resulting spectra are shown in Figure 1 for 5 concentrations ranging from 0-100% water in EG, each at 20, 25, 30, 35, 40 and 45°C. A multiple linear regression was performed, see Figure 2. Excellent linearity ($R^2 > .9999$) is achieved using 4 wavelengths in the range tested showing data at all temperatures.

Conclusions

Our ClearView db photometer with 4 filters can be used to determine water from 0-100% in ethylene glycol using a 10 mm optical path insertion probe, or a flow cell (for a slip stream) on-line. The ClearView db can be configured with 4-20 mA analog outputs (6 answers max on a single channel system, and 4 per channel on a dual channel system) and corresponding contact closure outputs to alert error states. Modbus communication over Ethernet is also standard.

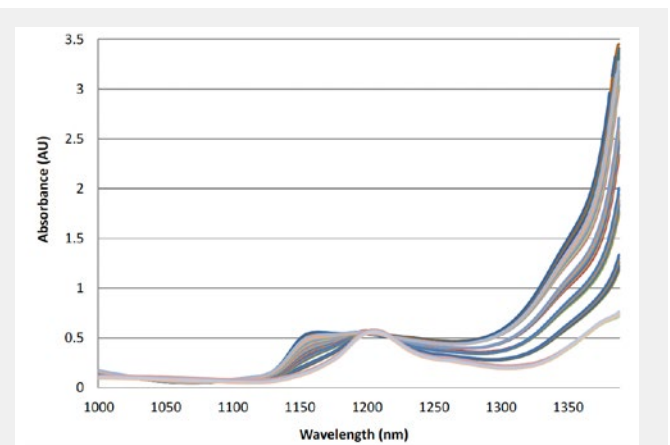


Figure 1: Spectra of Water: Ethylene Glycol Mixtures at Various Temperatures

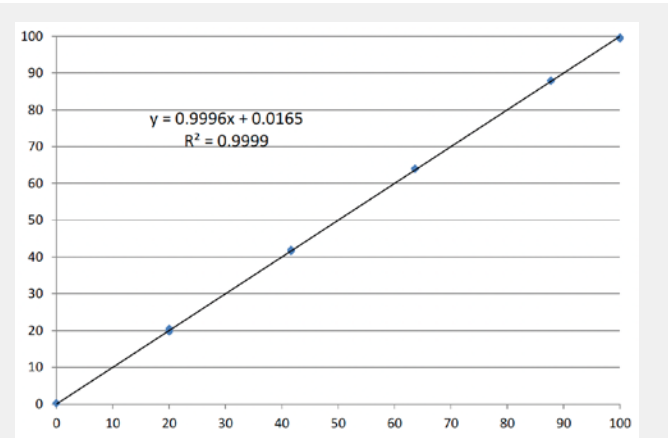


Figure 2: Actual vs Predicted % Water in Ethylene Glycol



**ClearView db
General
Purpose
Enclosure**

GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights manufactures and delivers premium sensors, monitors, detectors, analyzers, instrumentation, and software that are mission-critical to keep your operations, personnel, and the environment safe – every day across the globe.

Get the most reliable, precision analytical technologies available on the market today. We will work to match your needs and budget, and provide the optimal, and most stable process analysis solution for your application.

CENTERS OF EXCELLENCE | PROVIDING PROVEN SOLUTIONS

Process Insights is committed to solving our customers' most complex analytical, process, and measurement challenges everyday.

Process Insights – The Americas

4140 World Houston Parkway Suite 180, Houston, TX 77032, USA +1 713 947 9591

Process Insights – EMEA

ATRICOM, Lyoner Strasse 15, 60528 Frankfurt, Germany +49 69 20436910


Process Insights – APAC

Wujiang Economic and Technology, Development Zone, No. 258 Yi He Road, 215200 Suzhou, Jiangsu Province, China +86 400 086 0106

For a complete range of products, applications, systems, and service options, please contact us at: info@process-insights.com

For a complete list of sales & manufacturing sites, please visit: <https://www.process-insights.com/about-us/locations/>

COSA Xentaur, Tiger Optics, Extrel, Alpha Omega Instruments, ATOM Instrument, MBW Calibration, MGA, Guided Wave, ANALECT and LAR TOC Leader are trademarks of Process Insights, Inc.



REVOLUTIONIZING MEASUREMENT

EVERYWHERE