

Application of SoloVPE to UV Concentration Measurement

FUJIFILM Diosynth Biotechnologies is implementing the newest evolution of UV-vis spectroscopy. The simple-to-use SoloVPE system provides accurate concentration measurements in under a minute, whereas comparable UV methods may take over an hour. This difference translates into less time spent on cumbersome in-process testing and more time spent confidently making product. It can measure concentration without the need for dilution, which eliminates pipetting and mixing errors associated with sample preparation.

The SoloVPE system uses a variable-pathlength measurement to identify the linear range of absorbance as it relates to pathlength. The sample concentration is calculated from a slope spectroscopy equation, which is derived from the Beer-Lambert Law.

We have demonstrated the dynamic range for a number of proteins ranging in concentrations from 25 µg/mL to 240 mg/mL without dilution with an accuracy and repeatability of less than 2%. Performance of the SoloVPE system has been demonstrated to be equal or superior to the established methodology of a standard UV-vis spectrophotometer operating on a fixed pathlength. The system also requires a minimum volume of no more than 10 µL depending on the sample concentration.

Because there is no sample manipulation and the SoloVPE System is at its core a UV technique, validation of the instrument and methods is straightforward. The same SoloVPE method can be used across analytical and process development, quality control, and manufacturing. Once the system is implemented on the manufacturing floor, the need to send STAT UV samples to QC for in-process testing is eliminated.

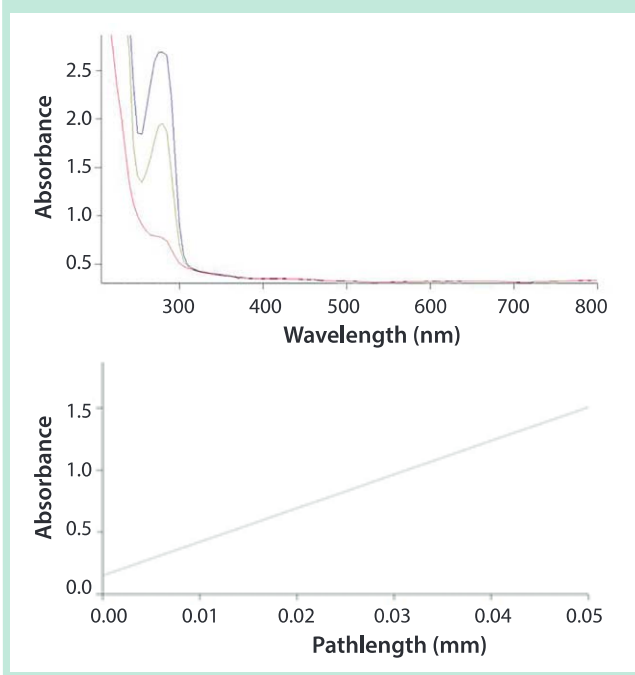


SoloVPE system by C Technologies, Inc. (<http://solovpe.com>)

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Figure 1: Survey scan and slope analysis for MAb sample; pathlength range is 0.005–0.100 mm; observed concentration is 174.1 mg/mL; 99.5% accuracy against expected concentration of 175 mg/mL.



The benefits of using the SoloVPE include the elimination of dilution time, waste, and error and improved accuracy and repeatability for sample analysis as compared to standard UV-Vis spectrophotometers. The Solo VPE system represents a significant leap forward in our laboratories' capability for analysis of total protein concentration. 🌐

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