



Agilent Cary Eclipse Fluorescence Spectrophotometer

Applications

The benefits of xenon

With unique, xenon flash lamp technology the Cary Eclipse is capable of fluorescence, phosphorescence, chemi- and bioluminescence measurements.

The Cary Eclipse optical design enables measurements of samples sensitive to light without photo-bleaching, yet also provides room light immunity for fluorescence measurements.

Work with the sample compartment open! With exceptionally fast data collection, a scan of the entire wavelength range can be completed in under three seconds. Or collect 80 points per second for fast kinetics measurements at a single wavelength.

The Cary Eclipse has the lowest cost of ownership as the lamp typically lasts over 10 years. Save money over the life of the instrument.

Applications for Life Sciences

Characterize bio-labels for live cell imaging

Measure luminescence and quantum yield of nanocrystals (quantum dots) using the Cary Eclipse and a standard quartz cuvette (Byrne et al. 2005 *Proc of SPIE* Vol. 5824 doi:10.1117/12.604814). See Figure 1.

Characterizing GPCR oligomerization

Rapid kinetics showing G-Protein coupled receptor oligomerization. With the Cary Eclipse measure time based experiments as well as analyze emission spectra (Pellissier et al. 2011 *J Biol Chem* Vol 286(12) doi:10.1074/jbc.M110.201939).

Detecting specific bacterial strains using fluorescent assay

Measuring probe fluorescence to detect specific bacterial strains – get the benefits of room light immunity while adding reaction components, and no warm up time! (Aguirre et al. 2012 *J Vis Exp* Vol. 63 doi: 10.3791/3961). See Figure 2.

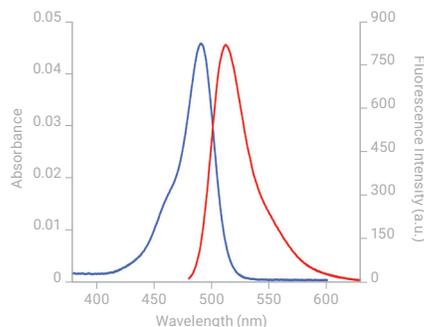


Figure 1. Absorbance/excitation (blue) and fluorescence (red) spectra of fluorescein dye. Fluorescein derivatives are used for fluorescence assays such as ELISA and fluorescence microscopy.

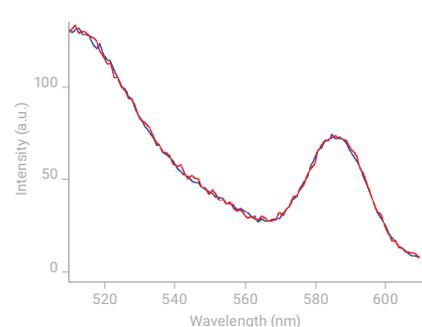


Figure 2. Room light immunity –sample compartment closed (blue trace) and open (red trace).

Understanding platelet response using cellular signaling

Cary WinFLR software has a dedicated 'Ratio' application ... allowing measurement of intracellular ions, such as calcium ion mobilization, that may occur in specific cell types. With the fast filter accessory, data can be collected every 50 ms (Petrucci et al. 2011 *J. Pharm and Exp Ther* Vol. 336 doi:10.1124/jpet.110.174821). See Figure 3.

Analyze changes in tertiary structure of proteins

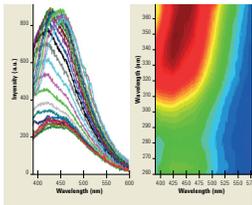
Analysis of lyophilized proteins (solid state) using the Cary Eclipse and a powder cell holder – another tool for the analysis of the stability of pharmaceuticals during long term storage (Ramachandar et al. 2008 *Analytical Biochem* Vol. 376 doi:10.1016/j.ab.2008.02.008). See Figure 4.

Thermal stability of biocatalysts and pharmaceuticals

The Cary Eclipse with temperature control using the four cell peltier accessory is capable of ramping sample temperature for analysis of thermal stability. Ideal for applications such as analyzing the influence of protein quaternary structure on stability and looking at aggregation and long term storage of pharmaceuticals (van Lieshout et al. 2012 *Appl Biochem Biotechnol* Vol. 167 doi: 10.1007/s12010-012-9674-z). See Figure 5.

Application flexibility

With a range of easy-to-use accessories available, the Cary Eclipse is able to do any fluorescence application.



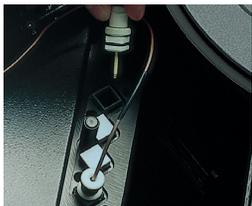
3D and contour software viewing



Fiber optics for liquid and solid samples



Automatic polarizers/fast filters



Temperature control with sample probes



Microplate reader

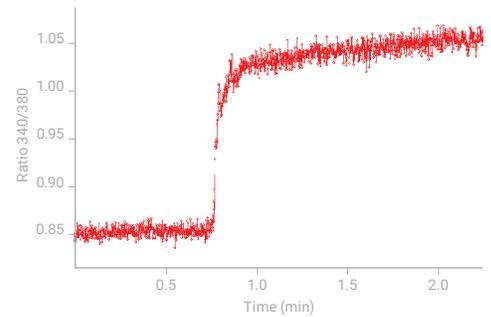


Figure 3. Intracellular Ca^{2+} concentration determined with 340/380 ratio.

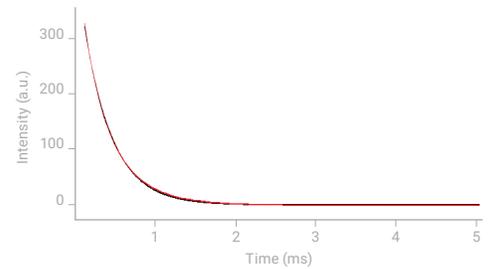


Figure 4. Analyze fluorescence lifetimes, such as those of lanthanide chelates used for fluorescent bioassays.

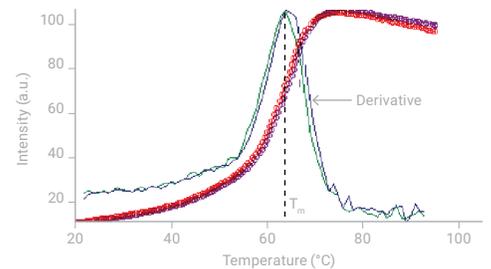


Figure 5. T_m value using 13mer DABCYL labelled PNA probe with 5' 6-carboxyfluorescein labelled DNA. T_m was calculated by performing a derivative curve using the Cary Eclipse thermal software. It was calculated to be 63.9 °C.

For more information visit the Agilent website at:

www.agilent.com/chem/cary-eclipse

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