

EasyLife™ L

Low Cost Phosphorescence Lifetime LRET System

An exceptionally fast, sensitive and accurate luminescence spectrometer for LRET assays and general phosphorescence



Advantages of Lanthanide-Based Probes

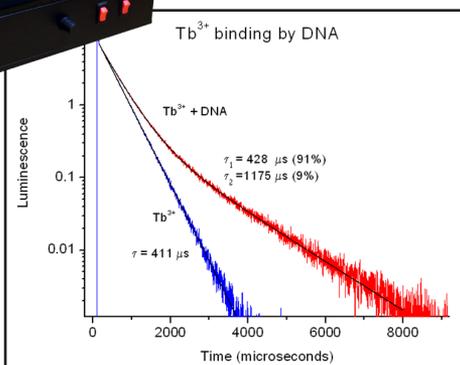
Chelated lanthanide probes offer some distinct advantages over conventional organic fluorophores. Lanthanides exhibit luminescence lifetimes ranging from hundreds of microseconds to milliseconds, which are orders of magnitudes higher than typical fluorescence lifetimes. By utilizing a pulsed excitation source combined with time-resolved detection, and selecting only the long-lived emission from the lanthanide ion, one can easily eliminate the background signal due to native or impurity fluorescence and scattered light, thus greatly enhancing the sensitivity and accuracy of an assay. This has led to development of numerous assays based on Luminescence Resonance Energy Transfer (LRET), which utilizes chelated lanthanide donors rather than organic fluorophores.

Features and Benefits

- Very fast single-shot decay acquisition
- Ideal for LRET assays and phosphorescence
- Ultra-high sensitivity and acquisition speed
- Very high precision
- High stability and reproducibility
- Instant lifetime determination
- Time-based lifetime scan
- Time-based intensity scan
- Lifetime temperature ramping
- Intensity temperature ramping
- Reduced bleaching
- Low maintenance

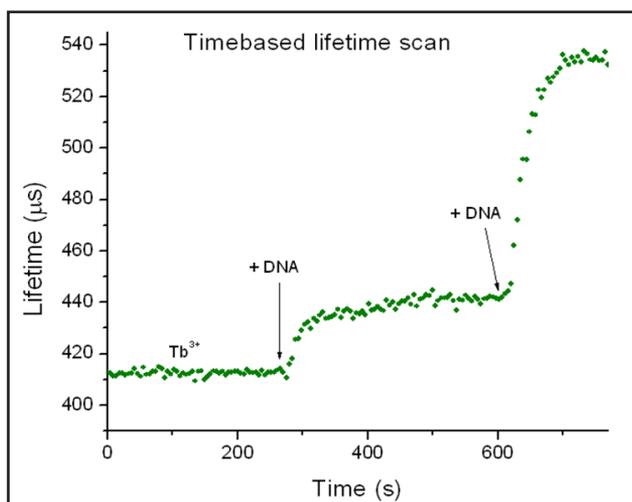
Key Applications

- Rare earth phosphorescence
- LRET-based kinase activity assays
- Conformational changes in ligand-binding glutamate receptor
- Lanthanide doped semi-conductors
- Semiconducting nanocrystals
- Sigma factor binding to RNA polymerase
- K+ channel voltage sensor movement in cell membranes
- Detection of salicylic acid in blood by sensitized Tb luminescence
- Assays for determining antibiotics (norfloxacin, garenoxacin, grepafloxacin) in urine and serum
- DNA-lanthanide assays for multi-drug resistance of TB strains



DNA-lanthanide assays are used in a number of diagnostic tests, for example DNA-Tb³⁺ in testing for antibiotic resistance of tuberculosis strains. Terbium luminescence is enhanced upon binding to DNA, which results in 3 fold increase of Tb³⁺ lifetime.

Unique Acquisition Protocol



The binding kinetics of Tb³⁺ to DNA can be followed free of intensity artifacts by using the unique Timebased Lifetime Scan. Here the EasyLife™ L performs continuous rapid measurements of the average terbium lifetime in real time.

EasyLife™ L Offers Special Features

Due to its unique 'single-shot' detection technique, the EasyLife™ L is lightning fast. It can acquire a complete decay from a single flash of the 1 µs pulsed xenon lamp. Decays can be instantly analyzed in real time enabling the user to follow reaction kinetics by plotting the lanthanide lifetime rather than the intensity as a function of time. This is the basis for a new, unique feature that only the EasyLife™ L can offer: the Time-based Lifetime Scan. This makes the experiment immune to artifacts that usually affect intensity, such as light scattering, concentration fluctuations, precipitation etc. The lifetime-based technique is ideal for sensing applications, where binding of a substrate changes the lanthanide lifetime.

Optional Accessories

- Manual sheet polarizers
- Liquid nitrogen dewar
- Rotatable solid sample holder
- Rotatable powder sample holder
- Bandpass filters
- Long-pass filters
- Neutral density filters
- Microcuvette with adapter

Specifications

Lifetime range	A few microseconds to 300 ms
Multiple automatic lifetime fitting	1 to 4 exponential
Excitation	High powered pulsed xenon lamp
Repetition rate	1 to 500 Hz under software control
Optical pulse width	4 µs (FWHM)
Excitation range	200 to 2000 nm
Emission range	185 to 680 nm, optional to 900 nm
Excitation and emission wavelength selection	1 inch round bandpass and longpass filters
Sample temperature control	Air-cooled Peltier under software control
Temperature range	20 to 50° C
Sample stirrer	Built in, variable speed
System control	FluoroScan software
Dimensions	16.9 x 11 x 7.7 inches
Weight	12 lbs



OPTICAL BUILDING BLOCKS



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