

FLUORESCENT CHELATE

Advancing new technology in the fluorophores industry

Background

Immunofluorescence techniques are widely employed, for the specific detection of microorganisms and to identify regions of interest in histopathology samples. Typical fluorescent lifetimes (τ) of most fluorophores are in the nanosecond regime, for example, Fluorescein has τ of 4 nanoseconds. A luminescent chelate developed by Scientists at Macquarie University (BHHST) belongs to a class of compounds that exhibit exceptionally long luminescent decay lifetimes when bound to trivalent europium ions. The persistent luminescence of the chelate makes the compound valuable for use in time-gated luminescence studies.

Technology

The Macquarie University chelate, BHHST is a derivative of BHHCT. BHHST has improved properties in aqueous solutions compared to the parent molecule. This new fluorescent compound is intensely luminescent and has been used for the preparation of immunoconjugates that have proved successful in time-gated luminescence studies of *Cryptosporidium* and *Giardia*.

Key Benefits

Preparation of the fluorophore

- Simplified preparation techniques
- Improved purity yield
- Less expensive

Conjugation with MAb

- Less aggressive coupling activity
- Improved storage stability
- Storage half-life extended more than 20x
- Less hydrophobic than similar compounds
- More stable immunoconjugates
- Easier to prepare compared to most other luminescent chelates
- Improved stability related to low F/P ration

Time Gated Applications

- 10x enhancement of Signal to Noise Ratio (SNR)
- Avoids the need for time consuming fluorescence-enhancement strategies
- Does not require special medium – strongly fluorescent in Bicarbonate buffer + TOPO
- Image processing techniques - machine vision can be used – reduction in trained labour requirements
- Luminescence Lifetime > 500 microsecond

Market

The total market size for long excitation fluorochromes products and associated reagents is estimated to be in the vicinity of US \$150 -180M, with an annual growth rate of 15 – 20%, as this market is developing rapidly.

Potential Business Applications

In situ direct labelling of organisms with immunoconjugate

Conjugation of fluorophore to protein

Time gated fluorescence techniques

- ELISA
- Confocal microscopy
- High through put screening in drug discovery

Comparative hybridisation/DNA microarray techniques

Management & Scientific

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