

Product number: K8-1342

Product name: Seta-670-mono-NHS

General Data

- Molecular Mass:** 966.07
- Solubility:** Water, Alcohol, DMF, DMSO
- Insoluble:** Acetone, Chloroform, Toluene
- Storage:** Store out of light, desiccated and refrigerate

Description

High hydrophilic, amine-reactive fluorescent label containing one reactive NHS-ester group.

Applications

- Covalent labeling of proteins, amino-modified DNA and **amino-modified oligonucleotides**
- Fluorescence Lifetime Label — this label exhibits a distinct lifetime change upon binding to a biomolecule
- Fluorescence Resonance Energy Transfer (FRET) applications
- Single Molecule Applications – Seta-670 shows extreme low blinking in single molecule measurements
- Flow Cytometry
- Immunofluorescence
- Gene Expression
- Homogeneous Assays
- Assessment of protein structure

Advantages

- Perfectly suited for excitation with the 380, 404, 635, 670-nm diode lasers and UV light
- Sensitive; high extinction coefficients and high quantum yields up to 50% after covalent attachment to proteins
- **Quantum yield is highly increased after covalently attachment to proteins and amino-modified oligonucleotides**
- pH-insensitive between pH 3 and pH 10
- Good aqueous solubility; this label does not alter the solubility of the protein conjugate
- High photostability; e.g. compared to fluorescein or Cy5™
- Low molecular weight — **Seta** dyes do not add substantial mass to the conjugates
- Ideal for non-radioactive labeling of proteins, amino-modified DNA probes and amino-modified oligonucleotides

Spectral Data

Solvent System: phosphate buffer pH 7.4

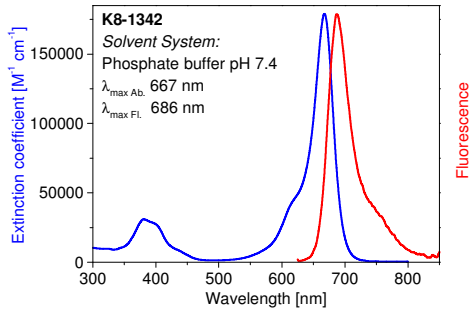
Sample	Dye-to-protein Ratio	Absorption max. [nm]	Extinction Coefficient [$M^{-1}\cdot cm^{-1}$]	Fluorescence* max. [nm]	Quantum Yield [%]
Free dye	—	667	180,000	686	7
BSA conjugate 1	0.5	681		695	45
IgG conjugate 1	2.6	673		693	6
IgG conjugate 1	4.6	670		693	2

* Excitation at 635 nm

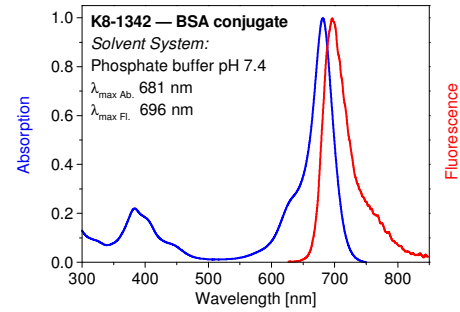
Quantum yield is increased when covalently and non-covalently bound to protein.

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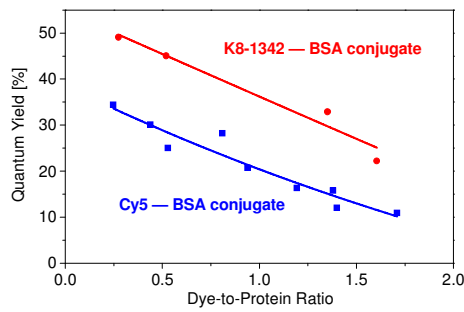
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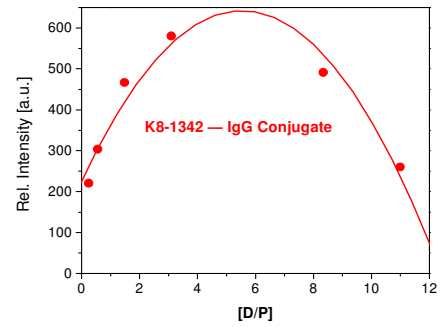
Absorption and fluorescence spectra of **K8-1342** in phosphate buffer (pH 7.4)



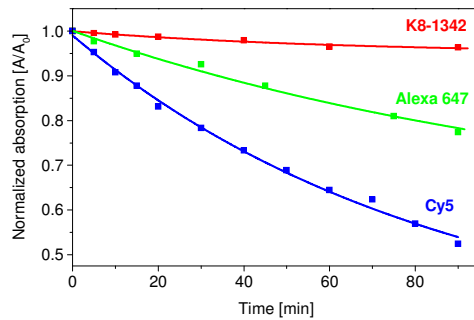
Absorption and fluorescence spectra of **K8-1342 — BSA conjugate** in phosphate buffer (pH 7.4) (Dye-to-protein ratio 1.0)



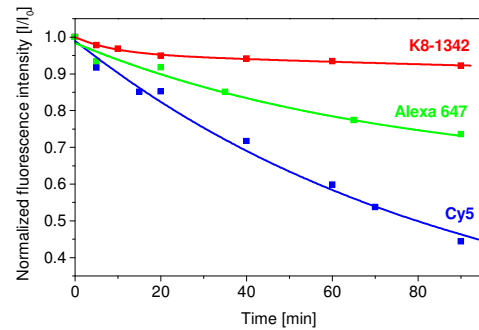
Quantum Yield vs Dye-to-protein Ratio of **K8-1342 — BSA conjugates** in phosphate buffer (pH 7.4)



Rel. Intensity vs Dye-to-Protein Ratio of **K8-1342 — IgG conjugates** in phosphate buffer (pH 7.4)



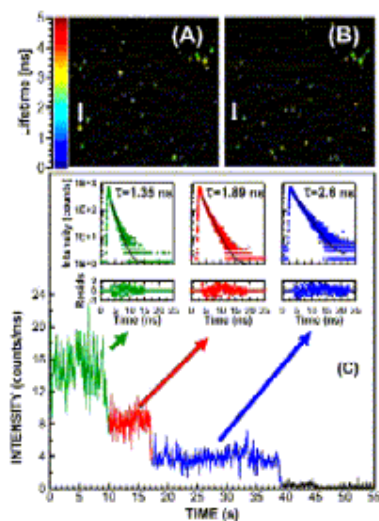
Relative decrease of the long-wavelength absorption band of **K8-1342** as compared to **Cy5** and **Alexa Fluor 647** upon irradiation with a Xenon lamp



Relative decrease of the emission of **K8-1342** as compared to **Cy5** and **Alexa Fluor 647** upon irradiation with a Xenon lamp

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Single molecule applications: [Seta-670-mono-NHS](#), a dye that has been recently used in single molecule, homo-FRET measurements showed a remarkably low blinking effect which is an important factor in such measurements

Luchowski R., Matveeva E.G., Gryczynski I., Terpetschnig E.A., Patsenker L., Laczko G., Borejdo J., Gryczynski Z. Single molecule studies of multiple-fluorophore labeled antibodies. Effect of homo-FRET on the number of photons available before photobleaching. [Current Pharmaceutical Biotechnology, 9, 411-420 \(2008\)](#).