

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 other biomolecules**
- pH-insensitive between pH 3 and pH 10
- Good aqueous solubility; this label does not alter the solubility of the protein conjugate
- **Very high photostability**; e.g. compared to fluorescein or Cy5TM
- 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

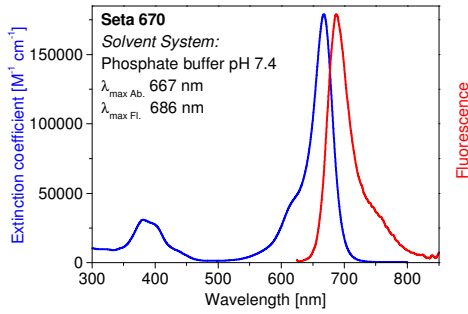
Solvent System: phosphate buffer pH 7.4

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 2	4.6	670		693	2

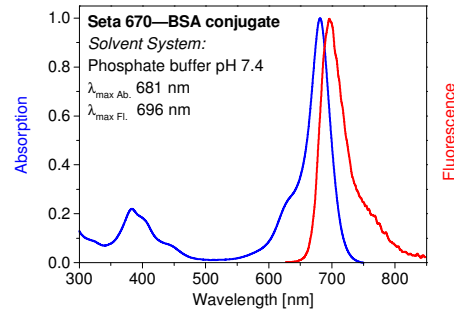
* Excitation at 635 nm

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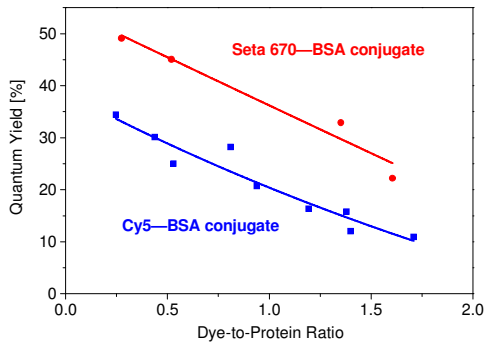
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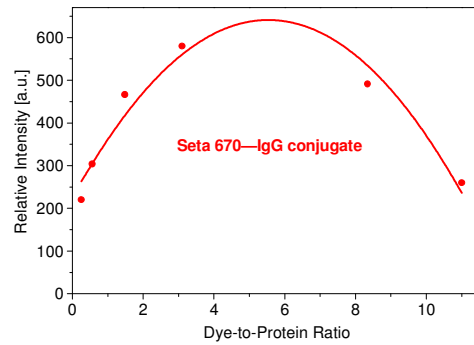
Absorption and emission spectrum of **Seta 670** in phosphate buffer (pH 7.4)



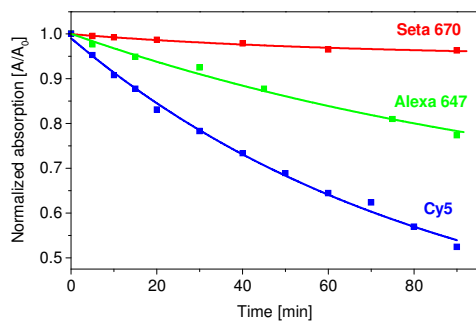
Absorption and emission spectrum of **Seta 670—BSA conjugate** in phosphate buffer (pH 7.4) (Dye-to-protein ratio 1.0)



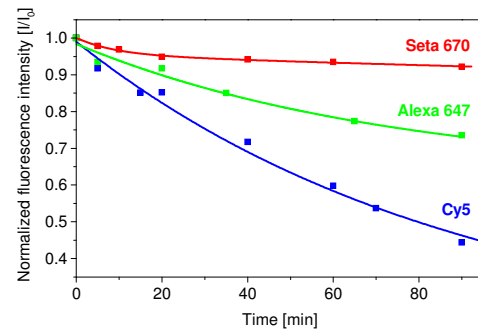
Quantum Yield vs. Dye-to-protein Ratio of **Seta 670—BSA conjugates** in phosphate buffer (pH 7.4)



Relative Intensity vs. Dye-to-Protein Ratio of **Seta 670—IgG conjugates** in phosphate buffer (pH 7.4)



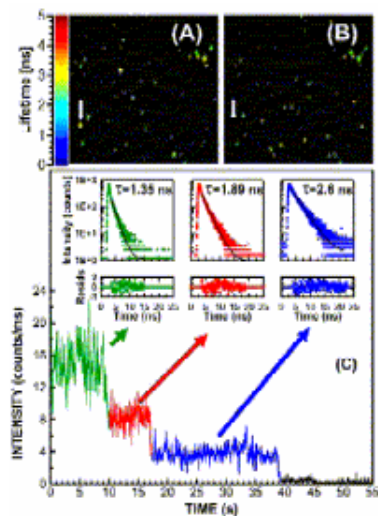
Relative decrease of the long-wavelength absorption band of **Seta 670** as compared to **Cy5** and **Alexa Fluor 647** upon irradiation with a Xenon lamp



Relative decrease of the emission of **Seta 670** 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).