SETA BioMedicals
Fluorescent Tools for BioMedical Applications
http://www.setabiomedicals.com
e-mail: info@setabiomedicals.com

Product number: K9-3162
Product name: SeTau-500-NHS

General Data

Molecular Mass:	1628.70
	1370.22 (protonated form)
Solubility:	Water, Alcohol, DMF, DMSO, Acetonitrile
Insoluble:	Hexane
Storage:	Store in absence of light, desiccate, and refrigerate

Description

- Large Stokes shift, highly stable and bright, water-soluble, amine-reactive label containing one NHS-ester group.
- Ideal for labeling antibodies, proteins, and other amino-modified biomolecules, including oligonucleotides.
- Brighter and more photostable replacement for Cy3 and fluorescein-type labels such as Alexa 488 and Alexa 555.
- Perfectly suited for excitation with 480–505-nm light sources.

Advantages

- Significantly higher photostability compared to FITC, Alexa 488, or Cy3 (see below).
- Excellent chemical stability against oxidation by peroxides and other reactive oxygen species (ROS).
- Exceptionally large Stokes shift of >60 nm (much larger than Alexa 488 (494/517) (23 nm), Alexa 555 ex/em:553/568, (15 nm), or Cy3 ex/em:550/565 (15 nm).
- The large Stokes shift enables the use of wider filter sets (e.g., 585/15, 535 LP, 560/40, 535 LP), improving measurement sensitivity.
- Very high fluorescence quantum yield of 40–70% in aqueous media and ~60% for protein and antibody conjugates, which is much higher than Cy3 (QY ~ 4% [1]) or Alexa 555 (QY ~ 10% [2]) in PBS.
- Longer fluorescence lifetime (FLT) compared to Cy3 (τ ~ 0.3 ns [3]) and Alexa 555 (τ ~ 0.3 ns [2]) in PBS.

Spectral Data

Sample	Solvent System	Dye-to-protein Ratio	Absorption max. [nm]	Extinction Coefficient [$M^{-1}cm^{-1}$]	Fluorescence max. [nm]	Quantum Yield* [%]	Fluorescence Lifetime at 25 °C [ns]
Free dye	5% DMF in PBS (pH 7.4)	–	502	59,700	568	67	1.7
Free dye	PBS (pH 7.4)	–	502	59,600	567	43	1.7
IgG conjugate 0.5		0.5	500		563	59	2.8
IgG conjugate 1.0		1.0	500		563	58	2.7
IgG conjugate 2.0		2.0	500		563	57	2.6
IgG conjugate 3.0		3.0	500		563	55	2.5
IgG conjugate 4.0		4.0	500		563	53	2.5
BSA conjugate 0.6		0.6	501		561	64	3.0
BSA conjugate 1.0		1.0	501		563	58	2.9

* Fluorescein in 0.2 N NaOH (QY = 92%) was used as the reference. $\lambda_{Ex.}$ = 485 nm.

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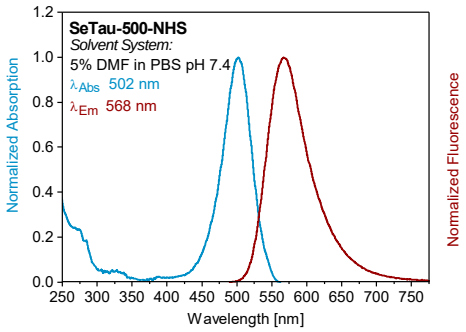
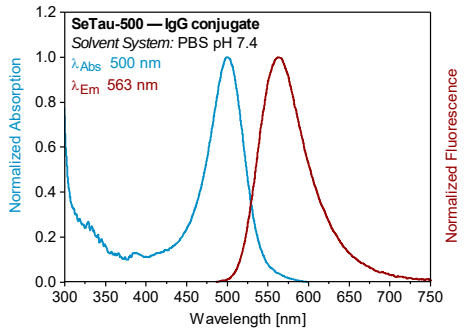
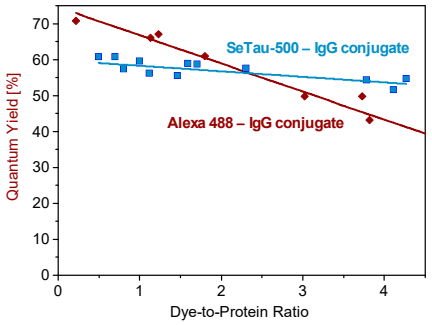


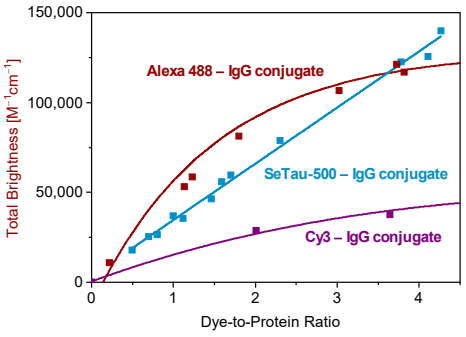
Absorption and emission spectrum
of **SeTau-500-NHS** in 5% DMF in PBS (pH 7.4)



Absorption and emission spectrum
of **SeTau-500 — IgG conjugate** in PBS (pH 7.4)
(Dye-to-protein ratio 1.0)



Fluorescence quantum yield *vs.* dye-to-protein ratio
of **SeTau-500 — IgG conjugates** in PBS (pH 7.4)
as compared to **Alexa 488 — IgG conjugates**



Total brightness (QY × ε × D/P) *vs.* dye-to-protein ratio (D/P)
of **SeTau-500 — IgG conjugates** in PBS (pH 7.4) as compared to
Alexa 488 — IgG and **Cy3 — IgG conjugates**

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[1] Cooper M, Ebner A, Briggs M, Burrows M, Gardner N, Richardson R, West R (2004) Cy3B™: improving the performance of cyanine dyes. J Fluoresc 14:145–150. https://doi.org/10.1023/b:jofl.0000016286.62641.59

[2] https://www.thermofisher.com/il/en/home/references/molecular-probes-the-handbook/tables/fluorescence-quantum-yields-and-lifetimes-for-alexa-fluor-dyes.html

[3] https://josephgroup.ucsd.edu/Protocols/Lifetime%20Data%20of%20Selected%20Fluorophores.pdf