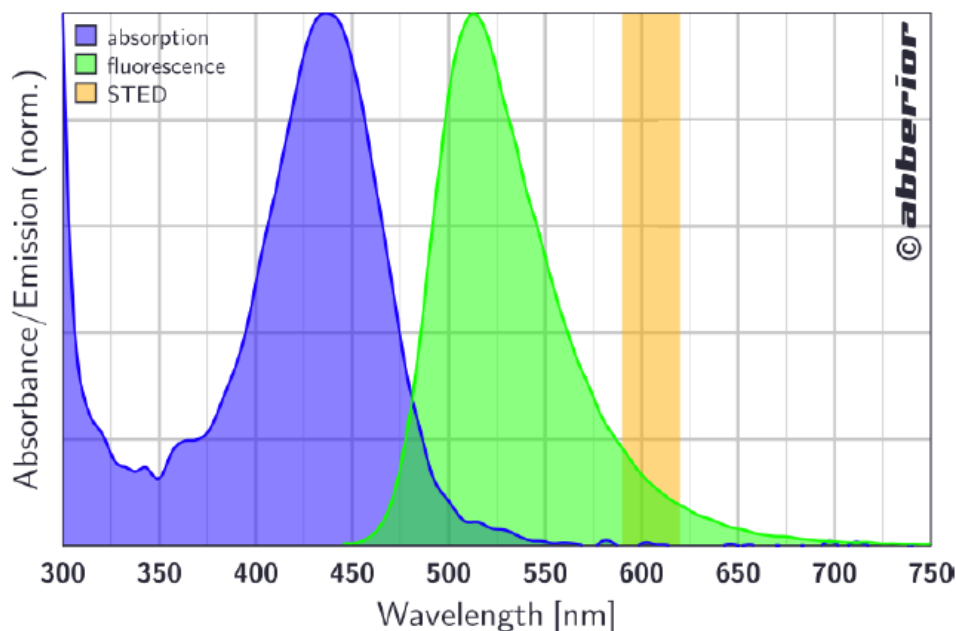


68221 Abberior® STAR 440SXP, NHS ester

Absorption & Fluorescence Spectrum



Key Features

- Ideal for STED and well suited for confocal microscopy
- Long Stokes' shift (~80 nm) for 2-color applications
- High water solubility

Description

Abberior STAR 440SXP is a dye with a large Stoke's shift of approx. 80 nm. It can be excited between 400-460 nm and emits around 510 nm. For STED, a depletion wavelength around 590 nm is recommended. It is therefore well suited for two-color (STED) imaging and is also recommended by Leica Microsystems for use in the Leica TCS STED CW microscope. It can substitute dyes like ATTO® 425 or BD Horizon® V500.

After conjugation with proteins, the quantum yield remains very high. The hydrophilic properties of Abberior STAR 440SXP preclude unspecific binding of this dye and thus decrease undesired background fluorescence.



Chemical Data (STAR 440SXP NHS Ester)

Chemical Structure:	on request
Molecular Formula:	C ₂₈ H ₂₈ N ₃ O ₁₀ P
Molecular Weight:	597.5 g/mol
Exact Mass:	597.15 Da
Solubility:	PBS, pH 7.4, DMF, DMSO, aq. acetonitrile, MeOH
Polarity:	polar (anionic)
Net Charge (at PH 7.4):	-2
Content:	> 90 %

Photophysical Data (STAR 440SXP NHS Ester)

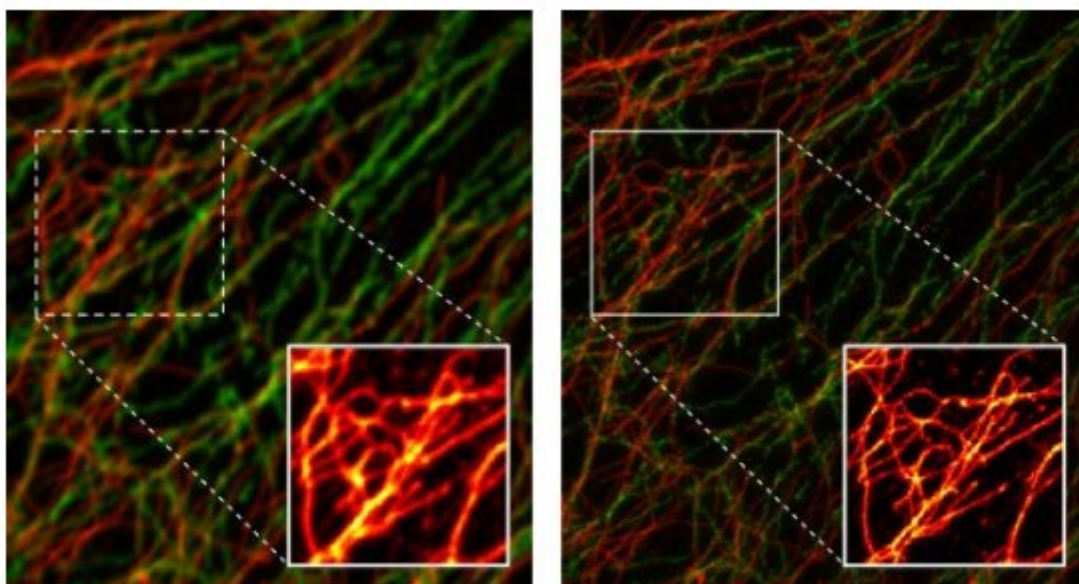
Absorption Maximum, λ_{max} , nm:	432 (PBS, pH 7.4) 434 (water) 433 (MeOH)
Fluorescence Maximum, λ_{fl} , nm:	511 (PBS, pH 7.4; water) 502 (MeOH)
Extinction Coefficient, ϵ , M ⁻¹ cm ⁻¹ :	33 000 (PBS, pH 7.4) 31 000 (water) 36 000 (MeOH)
Correction Factor, $CF_{280} = \epsilon_{280}/\epsilon_{\text{max}}$:	0.47 (PBS, pH 7.4, water) 0.38 (MeOH)
Correction Factor, $CF_{280} = \epsilon_{280}/\epsilon_{\text{max}}$:	0.31 (PBS, pH 7.4, water) 0.30 (MeOH)
Recommended STED Wavelength, λ_{STED} , nm:	590 – 620
Fluorescence Quantum Yield, η :	0.57 (PBS, pH 7.4)
Fluorescence Lifetime, τ :	3.7 ns (PBS, pH 7.4)

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Applications



Comparison of a dual-color confocal (left) and the corresponding STED (right) microscopy image. Vimentin is labeled with Abberior STAR 440SXP and shown in red. The inset shows an enlargement of the Vimentin fibers.

Due to the large Stokes shift, Abberior STAR 440SXP can be used in **2-color STED imaging** with a single STED laser, e.g. at 590 nm (cw) as implemented in the Leica TCS STED CW microscope. Please also see our 2-color STED section.

Literature

1. Leica Microsystems recommendations for 2-color applications.
2. T. Müller, C. Schumann, A. Kraegeloh, "STED Microscopy and its Applications: New Insights into Cellular Processes on the Nanoscale", *ChemPhysChem* 13 (8), 1986–2000 (2012).

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

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