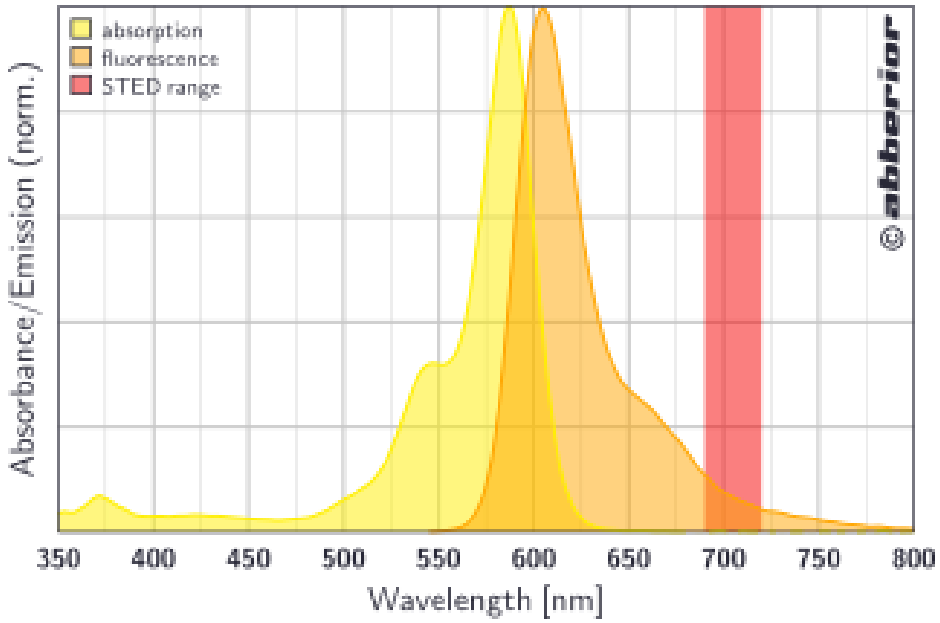
38377 Abberior® STAR 580, NHS ester

Absorption & Fluorescence Spectrum



Key Features

- Exceptionally bright orange fluorescent dye
- Ideal for STED microscopy@690-720nm
- 2-color labeling partner with STAR 635 for 2-color STED microscopy

Description

Abberior STAR 580 is the latest development for STED microscopy with a fluorescent dye in the orange regime. The dye can be excited from 550 to 580 nm. Abberior STAR 580 can substitute dyes like ATTO® 590/594 or AlexaFluor® 584/594. The dye can most effectively be depleted in STED microscopy at 690 to 720 nm via e.g. a Ti:Sa laser or IR diodes.

Chemical Data : Abberior® STAR 580 NHS ester

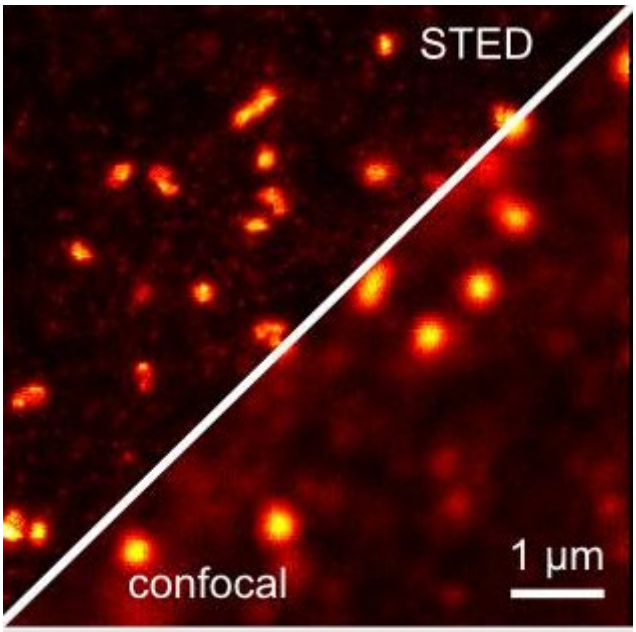
Chemical Structure:	on request
Molecular Formula:	$C_{43}H_{43}F_3N_4O_8$
Molecular Weight:	800.8 g/mol
Exact Mass:	800.30 Da
m/z	687 (M^+)
Solubility:	DMF; DMSO; aq. acetonitrile; MeOH; PBS, pH 7.4 (limited solubility)
Polarity:	polar (cationic)
Net Charge (at PH 7.4):	+1
Content:	> 90 %

Photophysical Data : Abberior® STAR 580 NHS ester

Absorption Maximum, λ_{abs}, nm:	587 (PBS, pH 7.4; water) 584 (MeOH, aq. ACN)
Fluorescence Maximum, λ_{fl}, nm:	607 (PBS, pH 7.4) 604 (MeOH, aq. ACN)
Extinction Coefficient, ε, $M^{-1}cm^{-1}$:	85 000 (PBS, pH 7.4; water) 95 000 (MeOH; aq. ACN)
Correction Factor, $CF_{260} = \varepsilon_{260}/\varepsilon_{max}$:	0.17 (PBS, pH 7.4; water) 0.16 (MeOH; aq. ACN)
Correction Factor, $CF_{280} = \varepsilon_{280}/\varepsilon_{max}$:	0.17 (PBS, pH 7.4; water) 0.15 (MeOH; aq. ACN)
Recommended STED Wavelength, λ_{STED}, nm:	700 – 780
Fluorescence Quantum Yield, η:	0.90 (PBS, pH 7.4)
Fluorescence Lifetime, τ:	3.5 ns (PBS, pH 7.4)

Applications

Abberior STAR 580 is the dye of choice for orange fluorescence. Moreover, the dye is particularly designed and tested for **2-color STED microscopy** in combination with Abberior STAR 635 using 2 separate STED wavelength. This offers the great advantage of using 2 regular (not featuring a long Stokes-shift) dyes, which are in general more photostable. Please see out **2-color dye section** for more information.



Comparison of a STED (left) and the corresponding confocal (right) microscopy image obtained with an Abberior STAR 580 labelling.

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.