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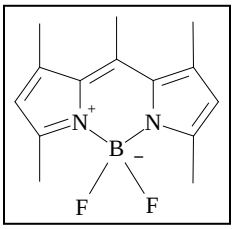
PYRROMETHENE 546



Chemical Name: 1,3,5,7,8-pentamethylpyrromethene-difluoroborate complex; BODIPY® 493/503
MW: 262.11 **Melting Point:** 259-261°C

CAS Registry Number: 121207-31-6 **Catalog No.:** 05460
Synonyms: PMP-BF_2, PM-546

Spectral Information:

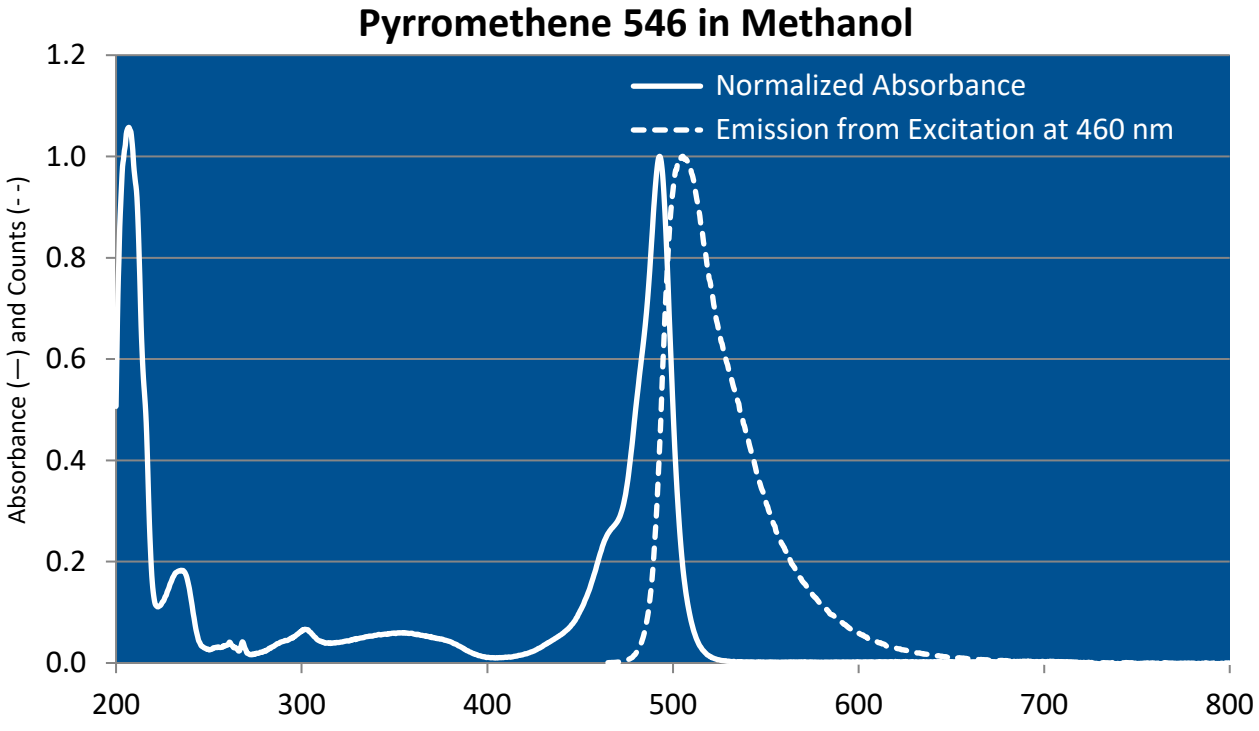
$\lambda_{max,abs}$ = 493nm (Methanol)[195]
ε_{493} = 7.9x10^4 liter mol^{-1} cm^{-1} [195]
$\lambda_{max,fl}$ = 519nm (Methanol)[195]
Φ_f = 0.99 (Methanol)[195]

Selected Solubility Limits (25°C):		λ_{abs} max:
p-dioxane	4.4g/liter	
Methanol	120mg/liter	492
Ethanol	74mg/liter	
EG	<30mg/liter	
DMF	2.0g/liter	
NMP	6.7g/liter	495.5
EPH	990mg/liter	499
n-Propanol		495.8
Propylene Carbonate	1.5g/liter	493

Lasing Wavelength

Max. (nm)	Range (nm)	Pump Source (nm)	Solvent	Concentration (molar)	Conversion Efficiency	Stability (1/2- life)
542	523-580	FL(Triaxial)[193,195]	Methanol	2.5x10^{-4}	28.7%[s]	-
546		FL(Triaxial)[227]	Acrylic Copolymer	1.6x10^{-4}	25.7% [s]	-
542	(532-565)*	FL(Coaxial)[194]	DMA/MeOH,1/10	1.5x10^{-4}	33%	ca. 50kJ/l
546(bb)		FL[196]	Ethanol	1.5x10^{-4}	-	-
550	535-580	N_2(337)[183]	p-Dioxane	32mg/20ml	22%	-
526	522-550	Ar(488)[232]	NMP/EPH, 1/9	2.5x10^{-3}	5.5%	500watt hrs

*(FWHM); bb (broad band); s (slope efficiency)
DMA (N,N-dimethylacetamide); DMF (N,N-Dimethylformamide); EG (Ethylene Glycol); EPH (2-Phenoxyethanol); MeOH (Methanol); NMP (N-Methyl-2-Pyrrolidinone)



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The information presented above is believed to be accurate but is not a specification. The customer is fully responsible for determining the suitability of this product for use in their application. Exciton, Inc. does not represent that the information is sufficient or complete for any specific application.

Quantum Yields and Lifetimes

Absorbance (nm)	Emission (nm)	Quantum Yield (max = 1.0)	Solvent	Lifetime (ns)	References, Notes
493	519	0.99	Methanol		195

REFERENCES:

183. Thermo Laser Science, Inc., 26 Landsdowne Street, Cambridge, MA 02139

193. Characterization of Pyrromethene-BF_2 Complexes as Laser Dyes, W.E. Davenport, J.J. Ehrlich, and S.E. Neister, *Proceedings of the International Conferences on Lasers '89*, New Orleans LA, 408 (1989). [Phase-R 1200 Laser System]

194. S.E. Neister, private communication. [Phase-R Laser System]

195. Pyrromethene-BF_2 Complexes as Laser Dyes: 1, M. Shah, K. Thangaraj, M.-L. Soong, L.T. Wolford, J.H. Boyer, I.R. Politzer, and T.G. Pavlopoulos, *Heteroatom Chem*., 1(5), 389 (1990). [Non-commercial Dye Laser-details in paper]

196. Efficient Laser Action from 1,3,5,7,8-Pentamethylpyrromethene-BF_2 Complex and its Disodium 2,6-Disulfonate Derivative, T.G. Pavlopoulos, M. Shah, and J.H. Boyer, *Optics Commun*., 70(5), 425 (1989). [Non-commercial Dye Laser-details in paper]

227. Progress in Solid State Dye Laser Development, R.E. Hermes, Proceedings of the Int. Conf. on Lasers '90, STS Press, (1991)

232. **a.** David Borst, private commun., 1998. Using 6 Watt pump power at 488nm (Argon-ion) with Coumarin 540 optics, Pyrromethene 546 produced 326mW at 526nm, about 3 times the output of Coumarin 540, while at different wavelengths, about 1/2 the output of Rhodamine 590. Concentration 0.65 grams/liter; lifetime ~500 Watt Hours. **b.** Oliver Broden (Coherent Scientific, SA) private commun., 1994. Used combination of Coumarin 540 and Rhodamine 560 optics in a Coherent 819-29 laser system with dye concentration of $3.2x10^{-3}$M.

For a current list of biology, biological stain, or biochemistry references for Pyrromethene 546 from PubMed, click on the following link:

Pyrromethene 546

NOTES:

Pyrromethene 546 is reported in U.S. Patent Nos. 4,916,711 and 5,189,029 and other worldwide patents.
Use of EPH and/or PPH as a laser dye solvent was reported in U.S. Patent No. 4,896,329 (Exciton).