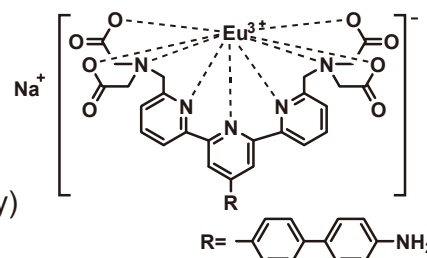


Fluorescent Labeling Dyes

Europium Chelate Complex

A2083 is easily labeled to an amino group of protein etc. after conversion to DTBTA-Eu³⁺ by cyanuric chloride.

- **Red fluorescence** derived from Europium (Eu³⁺)
($\lambda_{\text{ex, max}} = 335 \text{ nm}$, $\lambda_{\text{em, max}} = 616 \text{ nm}$)
- Long fluorescent life time (suitable for time-resolved fluorometry)
- Stable fluorescence in various aqueous buffers
- No cross talk of excitation light

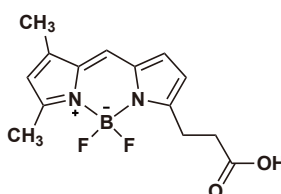


ATBTA-Eu³⁺
10mg [A2083]

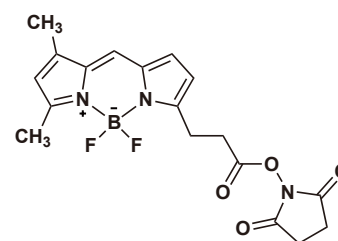
Reference T. Nishioka, J. Yuan, Y. Yamamoto, K. Sumitomo, Z. Wang, K. Hashino, C. Hosoya, K. Ikawa, G. Wang, K. Matsumoto, *Inorg. Chem.* **2006**, 45, 4088.

Boron Dipyrromethenes

D5554 and **D5555** which produce **green fluorescence** ($\lambda_{\text{ex}} = 490 \text{ nm}$ ($\lambda_{\text{ex, max}} = 505 \text{ nm}$), $\lambda_{\text{em, max}} = 513 \text{ nm}$) can be labeled to amino groups.



BDP FL
5mg / 25mg
[D5554]

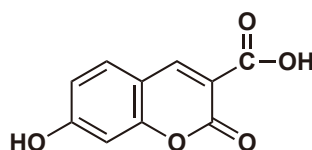


BDP FL NHS Ester
5mg / 25mg
[D5555]

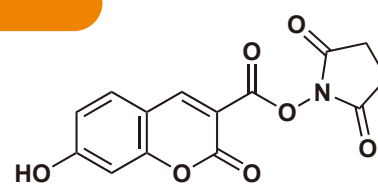
Reference K. Kitamura, H. Itoh, K. Sakurai, S. Dan, M. Inoue, *J. Am. Chem. Soc.* **2018**, 140, 12189.

Coumarins

H1352 and **S0866** which produce **blue fluorescence** ($\lambda_{\text{ex, max}} = 342 \text{ nm}$, $\lambda_{\text{em, max}} = 447 \text{ nm}$, in pH4 buffer) can be labeled to amino groups. Fluorescent spectra depend on pH.



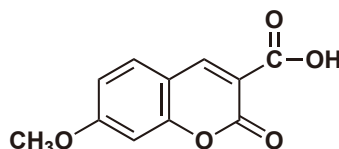
7-Hydroxycoumarin-3-carboxylic Acid
200mg / 1g [H1352]



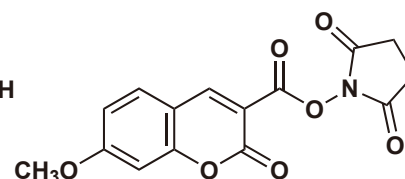
7-Hydroxycoumarin-3-carboxylic Acid N-Succinimidyl Ester
200mg / 1g [S0866]

References O. S. Wolfbeis, E. Koller, P. Hoggmuth, *Bull. Chem. Soc. Jpn.* **1985**, 58, 731.
Y. C. Lee et al., *J. Biol. Chem.* **2000**, 35, 26772.

M2233 and **S0867** which produce **blue fluorescence** ($\lambda_{\text{ex, max}} = 360 \text{ nm}$, $\lambda_{\text{em, max}} = 410 \text{ nm}$, in pH7 buffer) can be labeled to amino groups. Fluorescent spectra do not depend on pH.



7-Methoxycoumarin-3-carboxylic Acid
100mg / 1g [M2233]



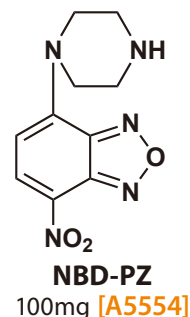
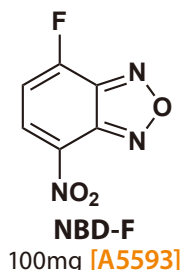
7-Methoxycoumarin-3-carboxylic Acid N-Succinimidyl Ester
100mg / 1g [S0867]

Reference M. Kitamatsu, M. Futami, M. Sisido, *Chem. Commun.* **2010**, 46, 761.

Benzofrazans

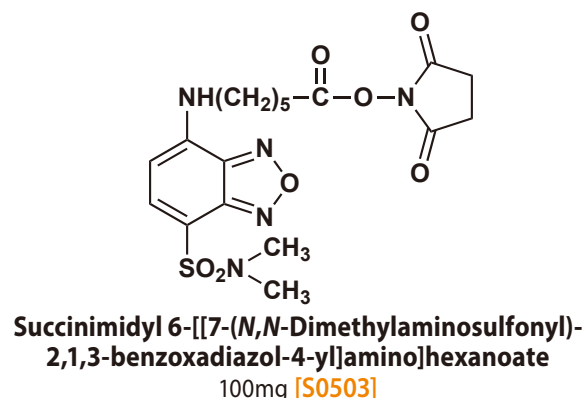
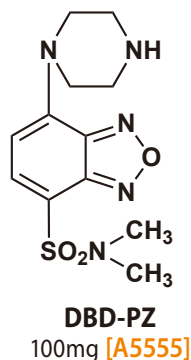
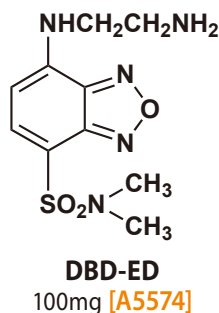
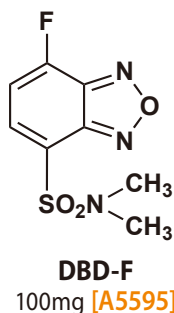
A5593, **A5592** and **A5554** emit **green-yellow fluorescence** ($\lambda_{\text{ex, max}} = \text{ca. } 470 \text{ nm}$, $\lambda_{\text{em, max}} = \text{ca. } 530 \text{ nm}$) due to nitrobenzoxadiazole (NBD) core.

- **A5592** and **A5593** can be labeled to amino groups or thiol groups.
- **A5554** can be labeled to carboxyl groups by amide bond formation using a coupling agent.



A5595, **A5574**, **A5555** and **S0503** emit **yellow fluorescence** ($\lambda_{\text{ex, max}} = \text{ca. } 380 \text{ nm}$, $\lambda_{\text{em, max}} = \text{ca. } 510 \text{ nm}$) due to dimethylaminosulfonylbenzoxadiazole (DBD) core.

- **A5595** can be labeled to amino groups or thiol groups.
- **A5574** and **A5555** can be labeled to carboxyl groups by amide bond formation using a coupling agent.
- **S0503** can be labeled to amino groups due to the active *N*-hydroxysuccinimide group.

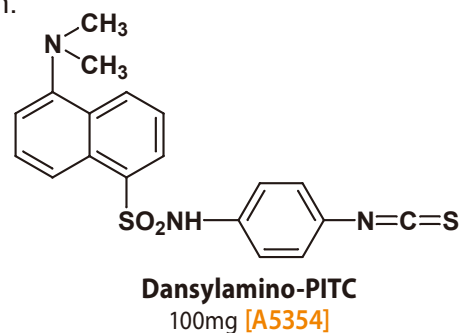
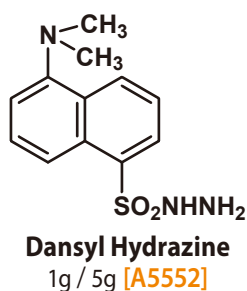
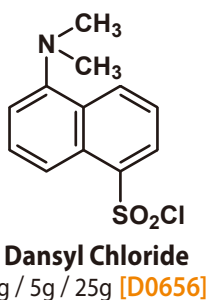


References K. Imai, *Yakugaku Zasshi (J. Pharm. Soc. Jpn.)* **2003**, 123, 901.
S. Uchiyama, T. Santa, N. Okiyama, T. Fukushima, K. Imai, *Biomed. Chromatogr.* **2001**, 15, 295.
T. Kurihara et al., *J. Biol. Chem.* **2012**, 287, 24113
B. Xu et al., *Langmuir* **2013**, 29, 15191

Dansyls

D0656, **A5552** and **A5354** emit **green-yellow fluorescence** ($\lambda_{\text{ex, max}} = \text{ca. } 335 \text{ nm}$, $\lambda_{\text{em, max}} = \text{ca. } 460 \text{ nm}$, dependent on the environment) due to dimethylaminonaphthalene sulfonyl (DANSYL) core.

- **D0656** can be labeled to amino groups by sulfonamide bond formation.
- **A5552** can be labeled to carbonyl groups by hydrazone bond formation.
- **A5354** can be labeled to amino groups by thiourea bond formation.

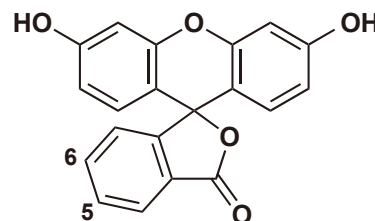


References T. Hiratsuka, *Tanpakushitsu Kakusan Koso (Protein, Nucleic Acid and Enzyme)* **1997**, 42, 1069.
B. K.-K. Fung, L. Stryer, *Biochemistry* **1978**, 17, 5241.
V. R. N. Munasinghe, J. E. T. Corrie, G. Kelly, S. R. Martin, *Bioconjugate Chem.* **2007**, 18, 231.
S. Siricilla, K. Mitachi, K. Skorupinska-Tudek, E. Swiezewska, M. Kurosu, *Anal. Biochem.* **2014**, 461, 36.

Fluoresceins

Fluoresceins emit **green fluorescence** ($\lambda_{\text{ex, max}} = 494 \text{ nm}$, $\lambda_{\text{em, max}} = 521 \text{ nm}$).

- **F0026**, **F0783** and **F0784** can be labeled to amino groups or thiol groups.¹⁾
- **C2477** and **C2478** can be labeled to amino groups by amide bond formation using a coupling agent.²⁾
- **C2479** can be labeled to amino groups without a coupling agent due to the active *N*-hydroxysuccinimide group.³⁾
- **F0810** can be labeled to thiol groups due to the maleimide group.⁴⁾
- **A0306** and **A0864** can be labeled to carboxyl groups by amide bond formation using a coupling agent.⁵⁾
- **F1222** can be labeled to azido groups via click reaction.⁶⁾



5 = -NCS	Fluorescein 5-Isothiocyanate (isomer I) (=5-FITC)	100mg / 1g	[F0026]
6 = -NCS	Fluorescein 6-Isothiocyanate (isomer II) (=6-FITC)	100mg	[F0783]
5or6 = -NCS	Fluorescein Isothiocyanate (mixture of 5- and 6- isomers)	100mg / 1g	[F0784]
5 = -COOH	5-Carboxyfluorescein Hydrate (=5-FAM)	100mg	[C2477]
6 = -COOH	6-Carboxyfluorescein Hydrate (=6-FAM)	100mg	[C2478]
5 = -CO-NHS	5-Carboxyfluorescein <i>N</i>-Succinimidyl Ester	20mg / 100mg	[C2479]
5 = -maleimide	Fluorescein-5-maleimide	25mg	[F0810]
5 = -NH₂	5-Aminofluorescein (isomer I)	1g / 5g	[A0306]
6 = -NH₂	6-Aminofluorescein (isomer II)	1g 24,100円 / 5g	[A0864]
5 = -CONH-Alkyne	5-FAM-Alkyne	5mg / 25mg	[F1222]

References 1) H. Rinderknecht, *Nature* **1962**, 193, 167.

2) S. Onoue, B. Liu, Y. Nemoto, M. Hirose, T. Yajima, *Anal. Sci.* **2006**, 22, 1531.

3) P. Breeuwer, J. Drocourt, F. M. Rombouts, T. Abee, *Appl. Environ. Microbiol.* **1996**, 62, 178.

4) T. Cihlar, E. S. Ho, *Anal. Biochem.* **2000**, 283, 49.

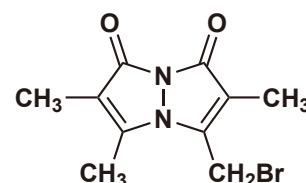
5) W. B. Dandliker, A. N. Hicks, S.A. Levison, R. J. Brawn, *Biochem. Biophys. Res. Commun.* **1977**, 74, 538.

6) W. M. Rink, F. Thomas, *Org. Lett.* **2018**, 20, 7493.

Bimane

B4220 emits **blue fluorescence** ($\lambda_{\text{ex, max}} = 390 \text{ nm}$, $\lambda_{\text{em, max}} = 480 \text{ nm}$, only when bonding to a thiol group).

B4220 can be specifically labeled to thiol groups.



Bromobimane

20mg / 100mg

[B4220]

References N. S. Kosower, E. M. Kosower, G. L. Newton, H. M. Ranney, *Proc. Natl. Acad. Sci. USA* **1979**, 76, 3382.

H. Yano, S. Kuroda, B. B. Buchanan, *Proteomics* **2002**, 2, 1090.

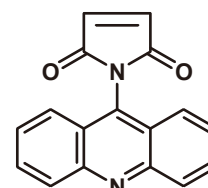
Acridine

A5591 can be labeled to thiol groups and emits **blue fluorescence**

($\lambda_{\text{ex, max}} = 365 \text{ nm}$, $\lambda_{\text{em, max}} = 440 \text{ nm}$).

References T. Konno, T. Kamata, H. Ohruji, H. Meguro, *Anal. Sci.* **1993**, 9, 871.

M. Hashida *et al.*, *J. Pharm. Sci.* **2012**, 101, 3398.



NAM

50mg / 100mg

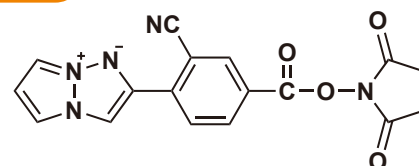
[A5591]

Triazapentalene

C2727 can be labeled to amino groups due to the active *N*-hydroxysuccinimide group.

- **Yellow fluorescence** ($\lambda_{\text{ex, max}} = 420 \text{ nm}$, $\lambda_{\text{em, max}} = 572 \text{ nm}$, in dichloromethane)
- Shows fluorescence solvatochromism

Reference K. Namba, K. Tanino, *et al.*, *Chem. Sci.* **2015**, 6, 1083.



2-[2-Cyano-4-[(*N*-succinimidyl)oxy]carbonyl]phenyl]-1,3a,6a-triazapentalene

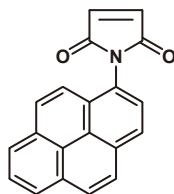
10mg

[C2727]

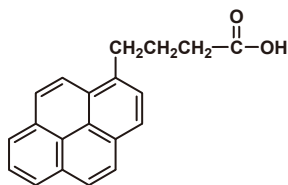
Pyrenes

Pyrenes emit **blue fluorescence** ($\lambda_{\text{ex, max}} = 342 \text{ nm}$, $\lambda_{\text{em, max}} = 386 \text{ nm}$).

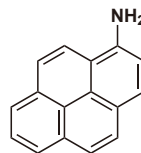
- **P1214** can be labeled to thiol groups.¹⁾
- **P1213** can be labeled to amino groups by amide bond formation using a coupling agent.²⁾
- **A1632** can be labeled to carboxyl groups by amide bond formation using a coupling agent.³⁾
- **E0939** and **P2226** can be labeled to azido groups via click reaction.⁴⁾
- **A2791** can be labeled to terminal alkynes or cyclooctynes via click reaction.⁵⁾



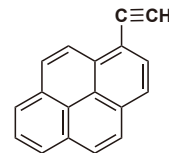
N-(1-Pyrenyl)-maleimide
250mg
[P1214]



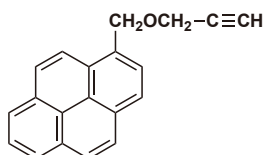
1-Pyrenebutyric Acid
1g / 5g
[P1213]



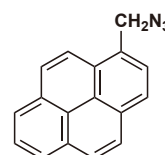
1-Aminopyrene
1g / 5g / 25g
[A0632]



1-Ethynylpyrene
200mg / 1g
[E0939]



1-[(2-Propynyloxy)methyl]pyrene
200mg / 1g
[P2226]

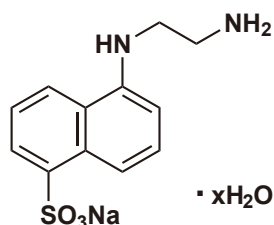


1-(Azidomethyl)pyrene
200mg / 1g
[A2791]

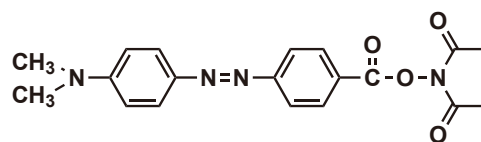
References 1) C. Wu, L. R. Yarbrough, F. Y. H. Wu, *Biochemistry* **1976**, *15*, 2863. 4) P. Wessig, P. Müller, *et al.*, *Biochim. Biophys. Acta.* **2011**, *1808*, 2781.
2) K. Yamana, M. Nakamura, *et al.*, *Bioconjugate Chem.* **2002**, *13*, 1266. 5) Y. Xia, L. Peng, *et al.*, *J. Med. Chem.* **2012**, *55*, 5642.
3) M. Kumar *et al.*, *Dalton Trans.* **2012**, *41*, 408.

Others

- **S0891** can be labeled to carboxyl groups by amide bond formation using a coupling agent, and emits **blue fluorescence** ($\lambda_{\text{ex, max}} = 336 \text{ nm}$, $\lambda_{\text{em, max}} = 490 \text{ nm}$).
- **S0857** can bind chemically to amino groups by amide bond formation, and has been applied to the synthesis of FRET probes because working as a dark quencher for **S0891**.¹⁾



1,5-EDANS Hydrate
100mg
[S0891]



DABCYL N-Succinimidyl Ester
200mg / 1g
[S0857]

References 1) G. T. Wang, E. Matayoshi, H. J. Huffaker, G. A. Krafft, *Tetrahedron Lett.* **1990**, *31*, 6493.
2) A. Pessi *et al.*, *Anal. Biochem.* **1996**, *240*, 60.

For further information please refer to our website at www.TCIchemicals.com.

fluorescent



Ordering and Customer Service

TCI AMERICA

Tel : 800-423-8616 / 503-283-1681
Fax : 888-520-1075 / 503-283-1987
E-mail : Sales-US@TCIchemicals.com

TCI EUROPE N.V.

Tel : +32 (0)3 735 07 00
Fax : +32 (0)3 735 07 01
E-mail : Sales-EU@TCIchemicals.com

TCI Deutschland GmbH

Tel : +49 (0)6196 64053-00
Fax : +49 (0)6196 64053-01
E-mail : Sales-DE@TCIchemicals.com

Tokyo Chemical Industry UK Ltd.

Tel : +44 (0)1865 784560
Fax : +44 (0)1865 784561
E-mail : Sales-UK@TCIchemicals.com

TCI Chemicals (India) Pvt. Ltd.

Tel : 1800 425 7889 / 044-2262 0909
Fax : 044-2262 8902
E-mail : Sales-IN@TCIchemicals.com

梯希爱(上海)化成工业发展有限公司

Tel : 800-988-0390 / 021-67121386
Fax : 021-6712-1385
E-mail : Sales-CN@TCIchemicals.com

TOKYO CHEMICAL INDUSTRY CO., LTD.

Tel : +81 (0)3-5640-8878
Fax : +81 (0)3-5640-8902
E-mail : globalbusiness@TCIchemicals.com

Availability, price or specification of the listed products are subject to change without prior notice. Reproduction forbidden without the prior written consent of Tokyo Chemical Industry Co., Ltd.