Supplementary Information

Fluorescent sensor for water based on photo-induced electron transfer and Förster resonance energy transfer: anthracene-(aminomethyl)phenylboronic acid ester-BODIPY structure

Daisuke Jinbo, Keiichi Imato and Yousuke Ooyama *

Department of Applied Chemistry, Graduate School of Engineering, Hiroshima University, Higashi-Hiroshima, 739-8527, Japan.
Fax: +81 824 24 5494; Tel: +81 824 24 7689; E-mail:yooyama@hiroshima-u.ac.jp
Synthesis of 10-((1,1'-Biphenyl)-4-yl)-5,5-difluoro-1,3,7,9-tetramethyl-5H-4λ4,5λ4-dipyrrol-1,2-c:2',1'-f][1,3,2]diazaborinine (B-1)

A solution of 5,5-difluoro-10-(4-iodophenyl)-1,3,7,9-tetramethyl-5H-4λ4,5λ4-dipyrrolo[1,2-c:2',1'-f][1,3,2]diazaborinine (0.050 g, 0.11 mmol), phenylboronic acid (0.016 g, 0.13 mmol), PdCl2(PPh3)2 (0.017 g, 0.024 mmol), and K2CO3 (0.061 g, 0.44 mmol) in 1,4-dioxane (9 mL) and water (0.44 mL) was refluxed for 12 h under a nitrogen atmosphere. After concentrating under reduced pressure, the resulting residue was dissolved in dichloromethane, and washed with water. The dichloromethane extract was dried over Na2SO4, filtrated, and evaporated under reduced pressure. The residue was chromatographed on silica gel (dichloromethane-hexane = 2 : 1 as eluent) to give B-1 (0.027 g, 61 % yield) as an orange solid; 1H NMR (400 MHz, CDCl3): δ = 1.45 (s, 6H), 2.57 (s, 6H), 5.99 (s, 2H), 7.35 (d, J = 8.3 Hz, 2H), 7.40 (t, 1H), 7.40 (t, 2H), 7.69 (d, J = 7.2 Hz, 2H), 7.75 (d, J = 8.3 Hz, 2H) ppm; HRMS (ESI): m/z (%):[M+Na+] Caled for C25H23N2BF2Na, 423.18146; found 423.18143.

Scheme S1 Synthesis of B-1
Fig. S1 (a) $^1$H NMR (400 MHz) and (b) $^{13}$C NMR (125 MHz) spectra of 1 in CDCl$_3$. 
Fig. S2 (a) $^1$H NMR (500 MHz) and (b) $^{13}$C NMR (125 MHz) spectra of 2 in CDCl$_3$. 

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Fig. S3 (a) $^1$H HMR (400 MHz) and (b) $^{13}$C HMR (125 MHz) spectra of 3 in CDCl$_3$. 
Fig. S4 (a) $^1$H HMR (400 MHz) and (b) $^{13}$C HMR (125 MHz) spectra of 4 in CDCl$_3$. 
Fig. S5 (a) $^1$H NMR (400 MHz) and (b) $^{13}$C NMR (125 MHz) spectra of DJ-1 in CDCl$_3$. 
**Fig. S6** $^1$H NMR (400 MHz) spectrum of B-1 in CDCl$_3$.

**Fig. S7** Fluorescence spectra ($\lambda_{ex} = 472$ nm) of DJ-1 ($c = 4.0\times10^{-6}$ M) in acetonitrile containing (a) 0.007–0.99 wt% and (b) 2.1–39 wt% of water. Fluorescence peak intensity at 508 nm of DJ-1 ($\lambda_{ex} = 472$ nm) as a function of water content (c) below 40 wt% and (d) 1.0 wt% in acetonitrile.

**Fig. S8** Fluorescence peak intensity at 507 nm of B-1 ($\lambda_{ex} = 367$ nm) as a function of water content (a) below 40 wt% and (b) 1.0 wt% in acetonitrile.