Electronic Supplementary Material (ESI) for Materials Advances.

Supplementary Information

Development of highly sensitive fluorescent sensor and fluorescent sensor-doped polymer films for trace amounts of water based on photo-induced electron transfer

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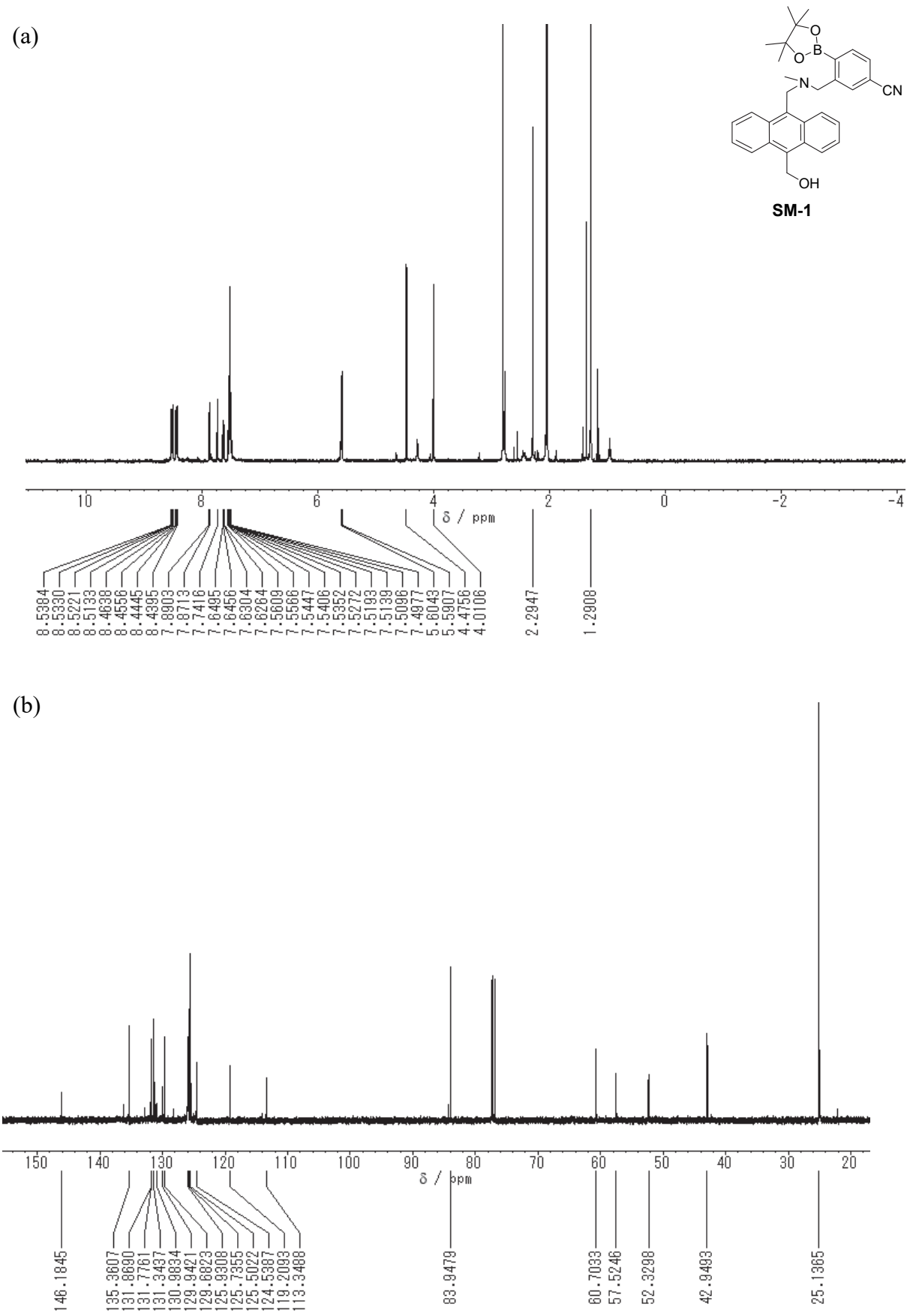

Fig. S1 (a) ^{1}H NMR (400 MHz) spectrum of **SM-1** in acetone-d_6. (b) ^{13}C NMR (125 MHz) spectrum of **SM-1** in $CDCl_3$.

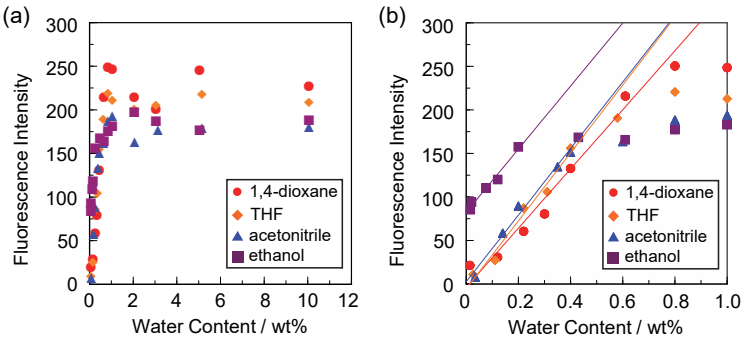

Fig. S2 Fluorescence peak intensity at around 413 nm of **OF-2** (λ^{ex} = 366 nm) as a function of water content below (a) 10 wt% and (b) 1.0 wt% in 1,4-dioxane, THF, acetonitrile, and ethanol.

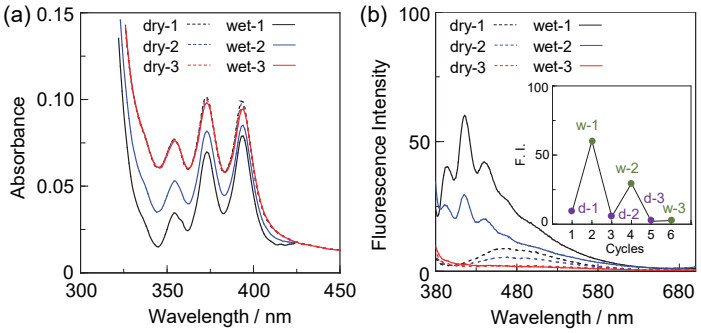

Fig. S3 (a) Photoabsorption and (b) fluorescence spectra (λ^{ex} = 366 nm) of spin-coated **OF-2** film before (in dry process) and after (in wet process) exposure to moisture. For photoabsorption spectra, baseline-correction has been made to be the same absorbance at 425 nm for all the spectra. Inset in (b) shows reversible switching of fluorescence intensity at around 470 nm in dry process and at 415 nm in wet process of spin-coated **OF-2** film.

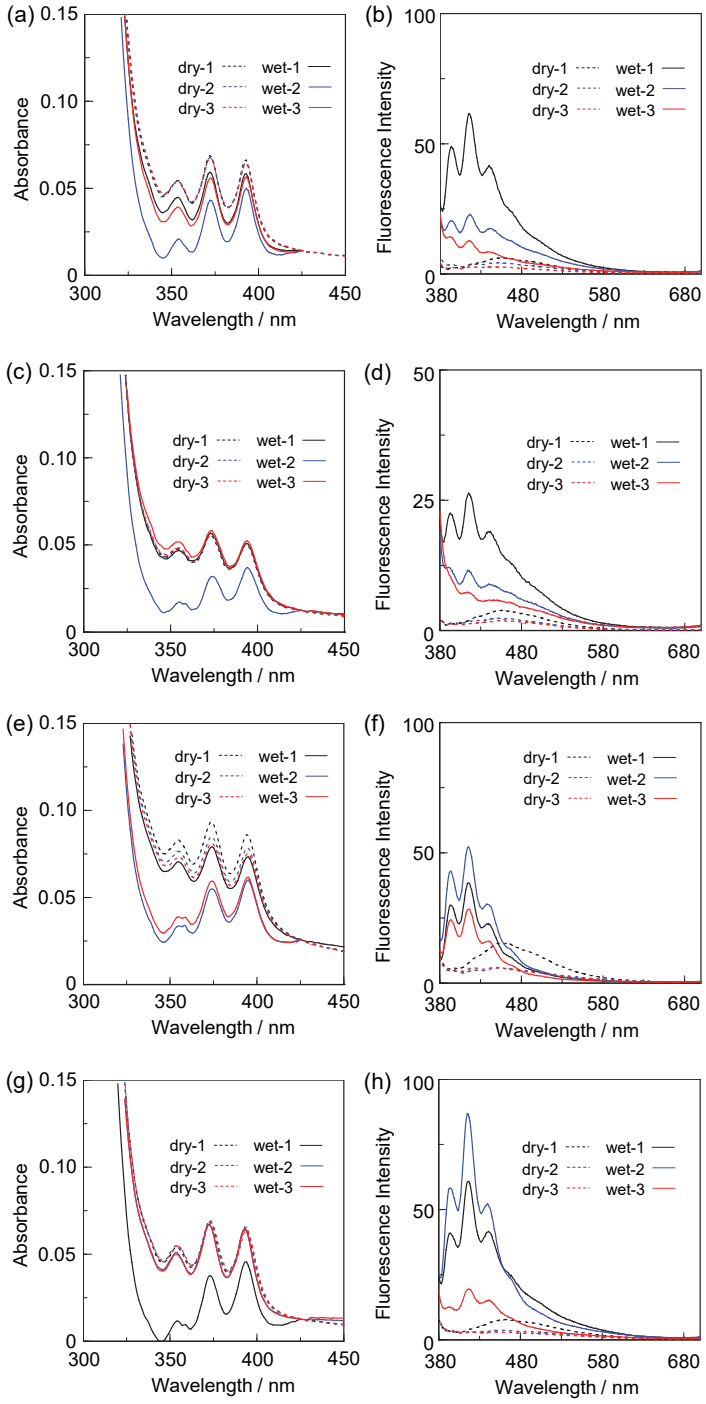

Fig. S4 (a) Photoabsorption and (b) fluorescence spectra (λ^{ex} = 366 nm) of spin-coated PS film with 50 wt% **OF-2** before (in dry process) and after (in wet process) exposure to moisture. (c) Photoabsorption and (d) fluorescence spectra (λ^{ex} = 366 nm) of spin-coated PVP film with 50 wt% **OF-2** before (in dry process) and after (in wet process) exposure to moisture. (e) Photoabsorption and (f) fluorescence spectra (λ^{ex} = 366 nm) of spin-coated PVA film with 50 wt% **OF-2** before (in dry process) and after (in wet process) exposure to moisture. (g) Photoabsorption and (h) fluorescence spectra (λ^{ex} = 366 nm) of spin-coated PEG film with 50 wt% **OF-2** before (in dry process) and after (in wet process) exposure to moisture. For all the photoabsorption spectra, baseline-correction has been made to be the same absorbance at 425 nm.

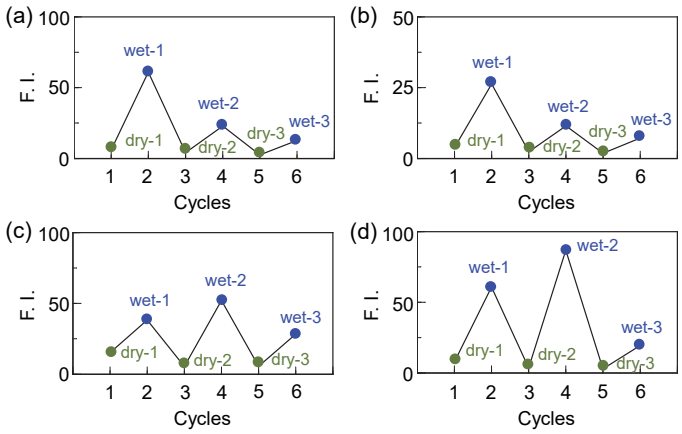

Fig. S5 Reversible switching of fluorescence intensity at around 470 nm in dry process and at 415 nm in wet process of 50 wt% **OF-2**-doped (a) PS, (b) PVP, (c) PVA, and (d) PEG films.