Electronic Supplementary Information (ESI) for *Photochem. Photobiol. Sci.*

Organic nanoparticles based on Lewis-pair formation: Observation of prototropically controlled dual fluorescence

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Mechanical Grinding of the Solid-State Mixture of *p*-ABT and DPBA.

Fig. S1-a shows photos of the solid-state mixtures of *p*-ABT/DPBA before grinding (images (i) and (ii)) and after grinding (images (iii) and (iv)). The left and right side images were obtained under normal light and UV-light (365 nm) irradiation, respectively. We could find neither the material color change nor the emission color change upon grinding. Indeed, absorption and fluorescence spectra (λ_{ex} = 360 nm) of the mixture in chloroform were identical with those of pure *p*-ABT in chloroform, as is shown in Fig. S1-b.

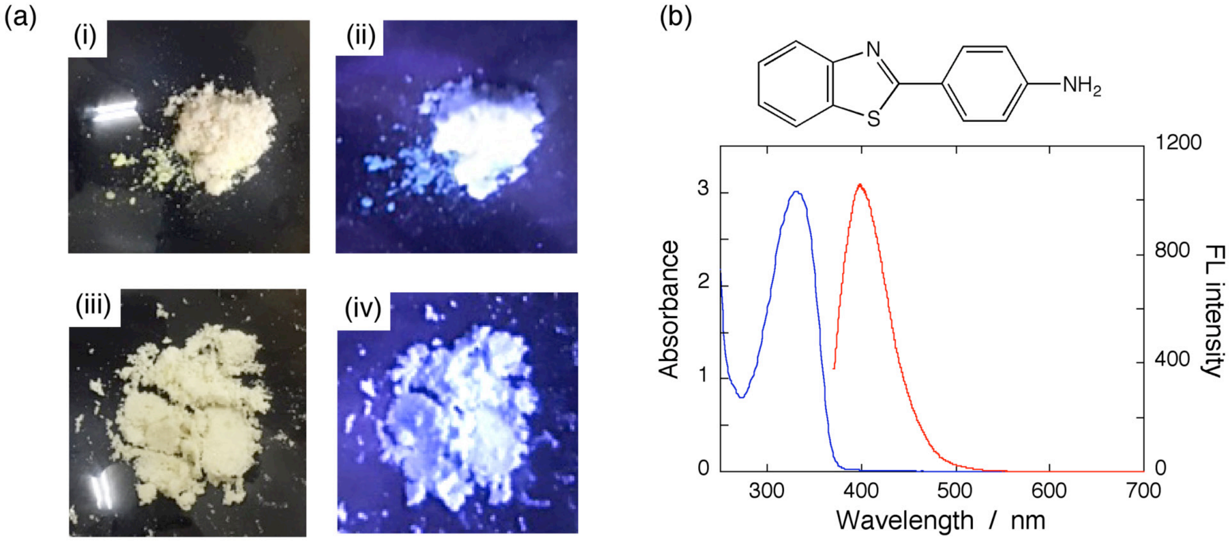

Fig. S1. (a) Photos of the solid-state mixtures of p-ABT/DPBA before grinding (images (i) and (ii)) and after grinding (images (iii) and (iv)). The left and right side images were obtained under normal light and UV-light (365 nm) irradiation, respectively. (b) Absorption and fluorescence spectra of the ground mixture of *p*-ABT/DPBA in chloroform.

NMR Spectroscopy

Fig. S2 shows ^{1}H NMR chart of *o*-ABT/DPBA adduct in $CDCl_3$. The spectrum was recorded on a 500 MHz spectrometer. A resonance peak at 4.64 ppm can be due to the proton from dihydrothiazole moiety in the imine adduct.[1,2]

^{1}H NMR (500 MHz, $CDCl_3$) δ (ppm) : 7.95-7.13 (m, 27H), 6.54 (d, J = 8.5 Hz, 1H), 6.42-6.38 (m, 1H), 5.82 (brs, 1H), 4.64 (brs, 1H).

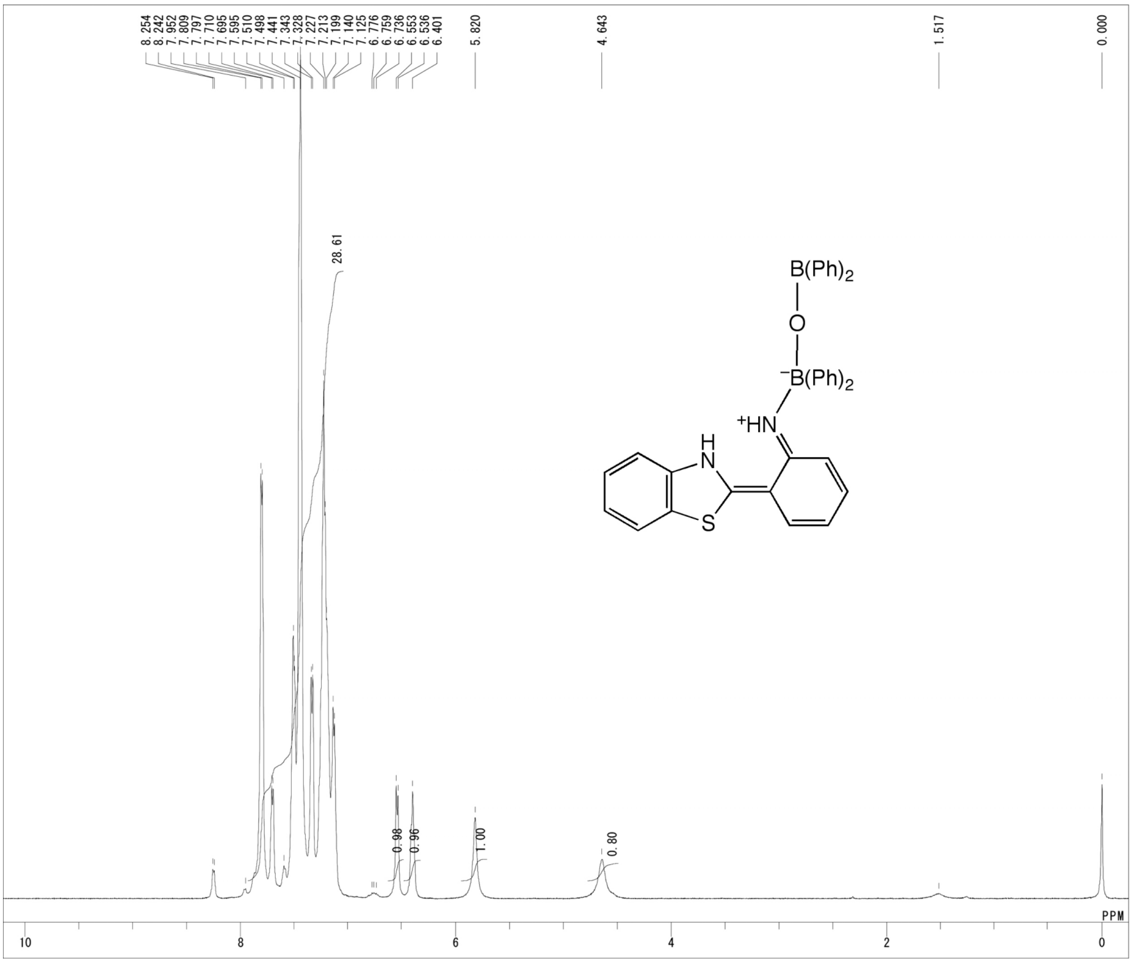

Fig. S2. ^{1}H NMR spectrum of *o*-ABT/DPBA adduct in $CDCl_3$. The spectrum suggests the formation of imine adduct.

STEM Images of Pure *o*-ABT Nanoparticles and DPBA prepared by the Reprecipitation Protocol under the Concentrated Condition.

Their STEM images of pure *o*-ABT nanoparticles and DPBA prepared by the reprecipitation protocol under the concentrated condition are shown in Figs. S3-a and S3-b, respectively. In pure *o*-ABT, although some small nanoparticles with the diameter of 80–100 nm could be seen in the images, a large lump of particle aggregates were predominant (Fig. S3a). On the other hand, no particle formation was observed for DPBA (Fig. S3b),

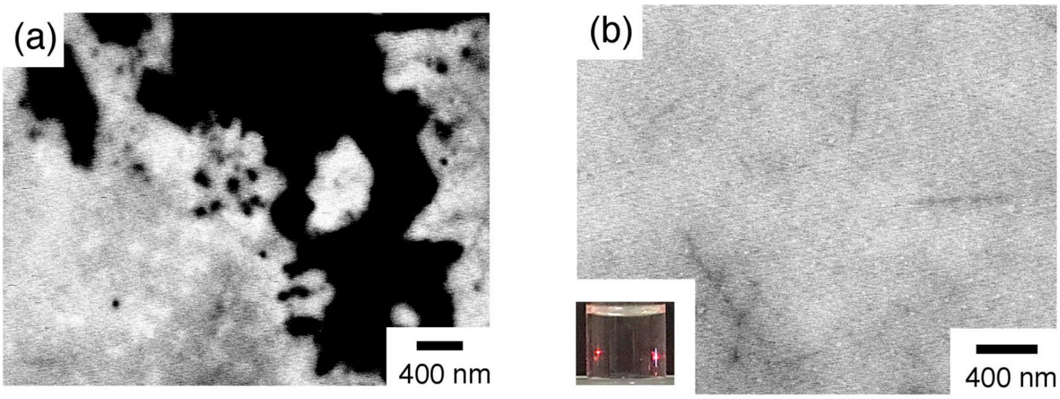

Fig. S3. STEM images of (a) pure *o*-ABT nanoparticles and (b) DPBA prepared by the reprecipitation protocol under the concentrated condition. The inset in (b) shows a photo presenting the absence of Tyndall scattering for this sample.

References

1. J. Zhang and W. Guo, *Chem. Commun.*, 2014, 50, 4214–4217.
2. P. Zhang, R. M. Kriegel and J. W. Frost, *ACS Sustainable Chem. Eng.*, 2016, 4, 6991–6995.