Supplementary Material

**TiO$_2$ Films Functionalized with ABDA for Enhanced Photoelectrochemical Performance**

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Figure S1 $^1$H NMR spectrum of ABDA.

Figure S2 TG curve of ABDA in the range of 100-450 °C under N$_2$ atmosphere.
The thermogravimetric analysis (TG) indicated that ABDA was stable enough under N₂ atmosphere at approximately 200 °C. Therefore, we preferred to calcine the FTO glass for the preparation of ABDA/TiO₂ films at 150 °C in a tube furnace under N₂. The peak intensity of IR spectra of ABDA/TiO₂ was poor, which might be owing to the low content of ABDA and interference of TiO₂.

Figure S4 The chronoamperometry results under AM 1.5 for 12000 seconds.
Figure S5 Survey XPS spectrum of ABDA/TiO₂.

Figure S6 Survey XPS spectrum of ABDA.
Figure S7 Survey XPS spectrum of TiO$_2$. 

![Survey XPS spectrum of TiO$_2$.](image-url)