Supporting Information

Photophysical and Electrochemical Properties of Platinum(II)
Complexes Bearing a Chromophore-Acceptor Dyad and their
Photocatalytic Hydrogen Evolution

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Fig. S1. Transient absorption spectra of complex 2 in CH3CN (λexc = 355 nm) at room temperature.
**Fig. S2.** Transient absorption spectra of complex 3 in CH$_3$CN ($\lambda_{\text{exc}} = 355$ nm) at room temperature.

**Fig. S3.** Transient absorption spectra of complex 4 in CH$_3$CN ($\lambda_{\text{exc}} = 355$ nm) at room temperature.
**Fig. S4.** Emission spectral changes of 1 (1.3 × 10⁻⁵ M) in degassed CH₃CN/H₂O (v/v, 1:1) at room temperature as a function of the colloidal Pt concentration. Inset: Stern-Volmer plot for emission quenching of 1.

**Fig. S5.** Emission spectral changes of 9 (2.0 × 10⁻⁵ M) in degassed CH₃CN/H₂O (v/v, 1:1) at room temperature as a function of the colloidal Pt concentration. Inset: Stern-Volmer plot for emission quenching of 9.
Fig. S6. Time-resolved emission spectra of complex 3 (2.5 × 10^{-5} M) with excitation at 355 nm in the mixed CH_{3}CN/H_{2}O (v/v, 1:1) in the absence of Pt nanoparticles (4.3 × 10^{-5} M).

Fig. S7. Changes in the absorption spectra of 5 (3.3 × 10^{-5} M) in acetonitrile upon addition of various concentrations of TEOA (0–2.1 × 10^{-1} M).
Fig. S8. $^1$H NMR spectra of complexes 2–5 in DMSO-$d_6$. 

10.0 | 9.5 | 9.0 | 8.5 | 8.0 | 7.5 | 7.0 | 6.5 | 6.0 | 5.5 | 5.0

$\delta_H$ / ppm
Fig. S9. $^1$H NMR spectra of complexes 2–5 in DMSO-$d_6$/D$_2$O (v/v, 2:1), in the presence of excessive amounts of TEOA.
Fig. S10. Hydrogen production from system containing TEOA (2.2 × 10^{-2} M), complexes 6–8 (4.4 × 10^{-5} M) and colloidal Pt (8.7 × 10^{-5} M) in CH$_3$CN/H$_2$O (v/v, 1:1) upon irradiation (λ > 390 nm) at pH 7.0. TONs are calculated based on the Pt(II) chromophore.