Supporting Information

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

Gui-Ju Zhang,[a] Xin Gan,[b] Quan-Qing Xu,[b] Yong Chen,[a] Xi-Juan Zhao,[a] Biao Qin,[a] Xiao-Jun Lv,[a] Siu-Wai Lai,[c] Wen-Fu Fu,*[a,b] and Chi-Ming Che*[c]

[a]*Key Laboratory of Photochemical Conversion and Optoelectronic Materials, CAS-HKU Joint Laboratory on New Materials, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Peking 100190, P.R. China*

[b]*College of Chemistry and Chemical Engineering, Yunnan Normal University, Kunming 650092, P.R. China*

[c]*Department of Chemistry, Institute of Molecular Functional Materials and CAS-HKU Joint Laboratory on New Materials, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, P.R. China*

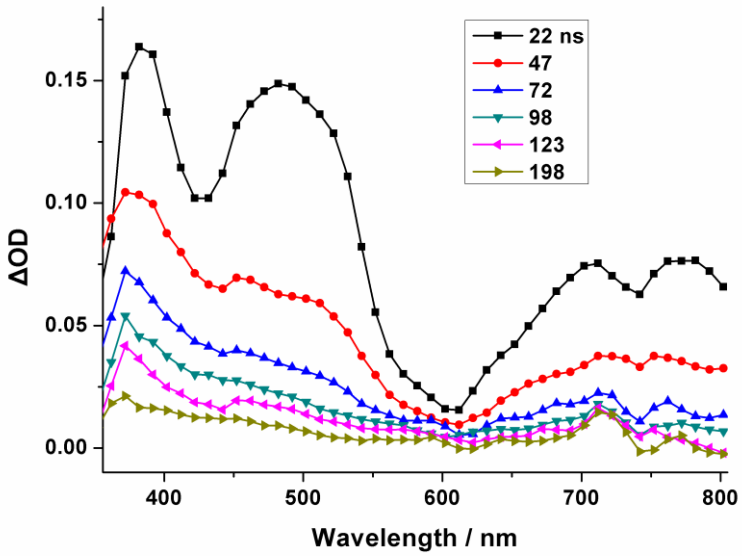

Fig. S1. Transient absorption spectra of complex **2** in CH_3CN (λ_{exc} = 355 nm) at room temperature.

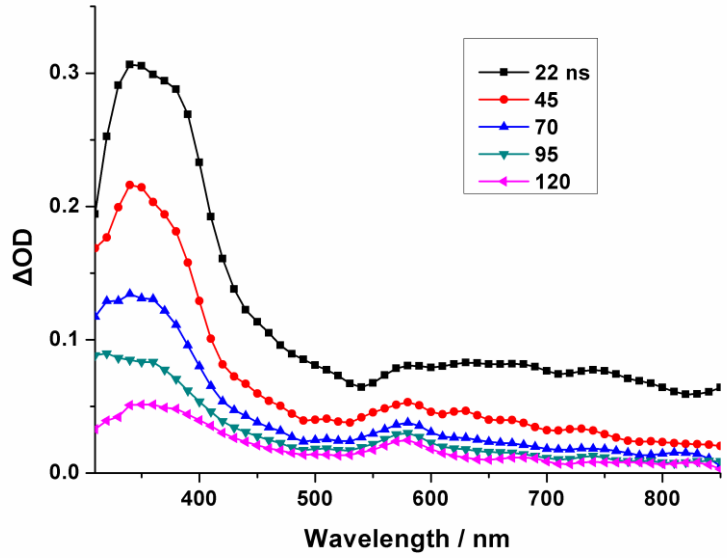

Fig. S2. Transient absorption spectra of complex **3** in CH_3CN (λ_{exc} = 355 nm) at room temperature.

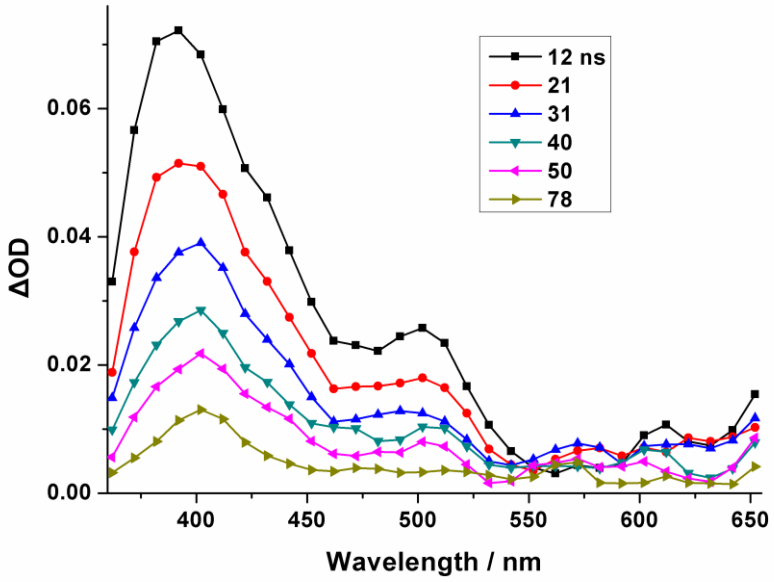

Fig. S3. Transient absorption spectra of complex **4** in CH_3CN (λ_{exc} = 355 nm) at room temperature.

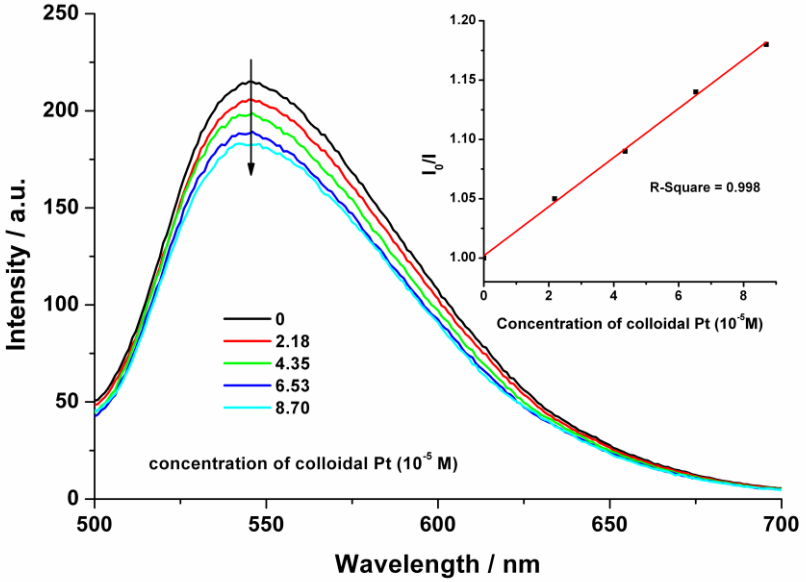

Fig. S4. Emission spectral changes of **1** (1.3×10^{-5} M) in degassed CH_3CN/H_2O (v/v, 1:1) at room temperature as a function of the colloidal Pt concentration. Inset: Stern-Volmer plot for emission quenching of **1**.

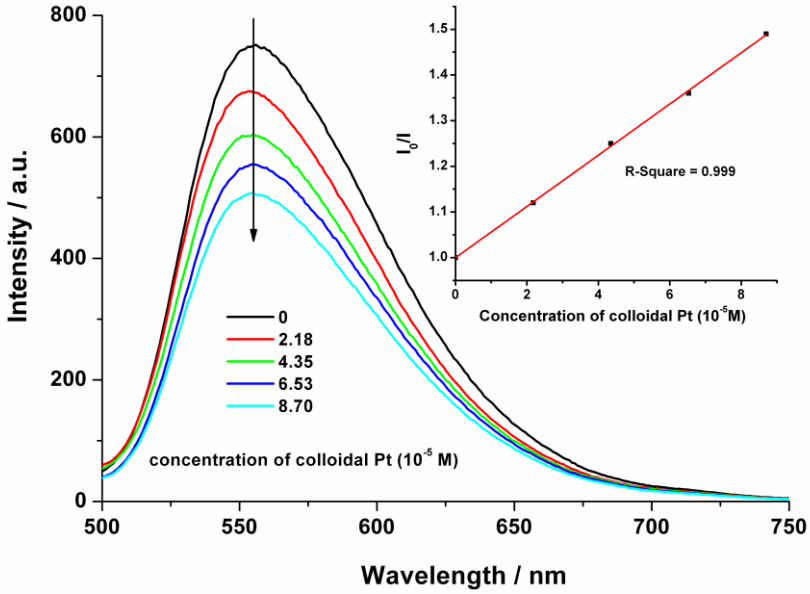

Fig. S5. Emission spectral changes of **9** (2.0×10^{-5} M) in degassed CH_3CN/H_2O (v/v, 1:1) at room temperature as a function of the colloidal Pt concentration. Inset: Stern-Volmer plot for emission quenching of **9**.

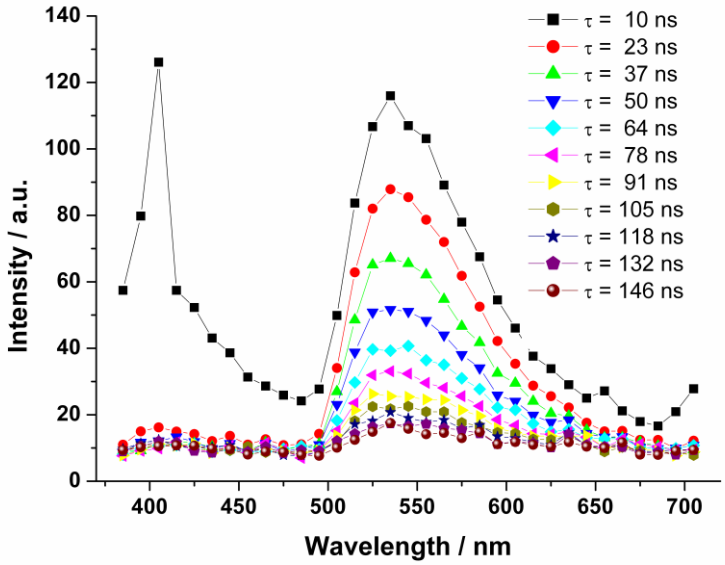

Fig. S6. Time-resolved emission spectra of complex **3** (2.5×10^{-5} M) with excitation at 355 nm in the mixed CH_3CN/H_2O (v/v, 1:1) in the absence of Pt nanoparticles (4.3×10^{-5} M).

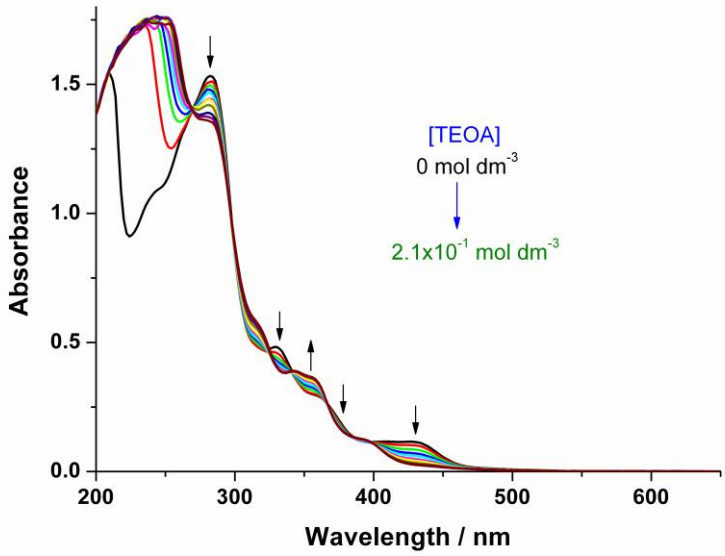

Fig. S7. Changes in the absorption spectra of **5** (3.3×10^{-5} M) in acetonitrile upon addition of various concentrations of TEOA (0–2.1×10^{-1} M).

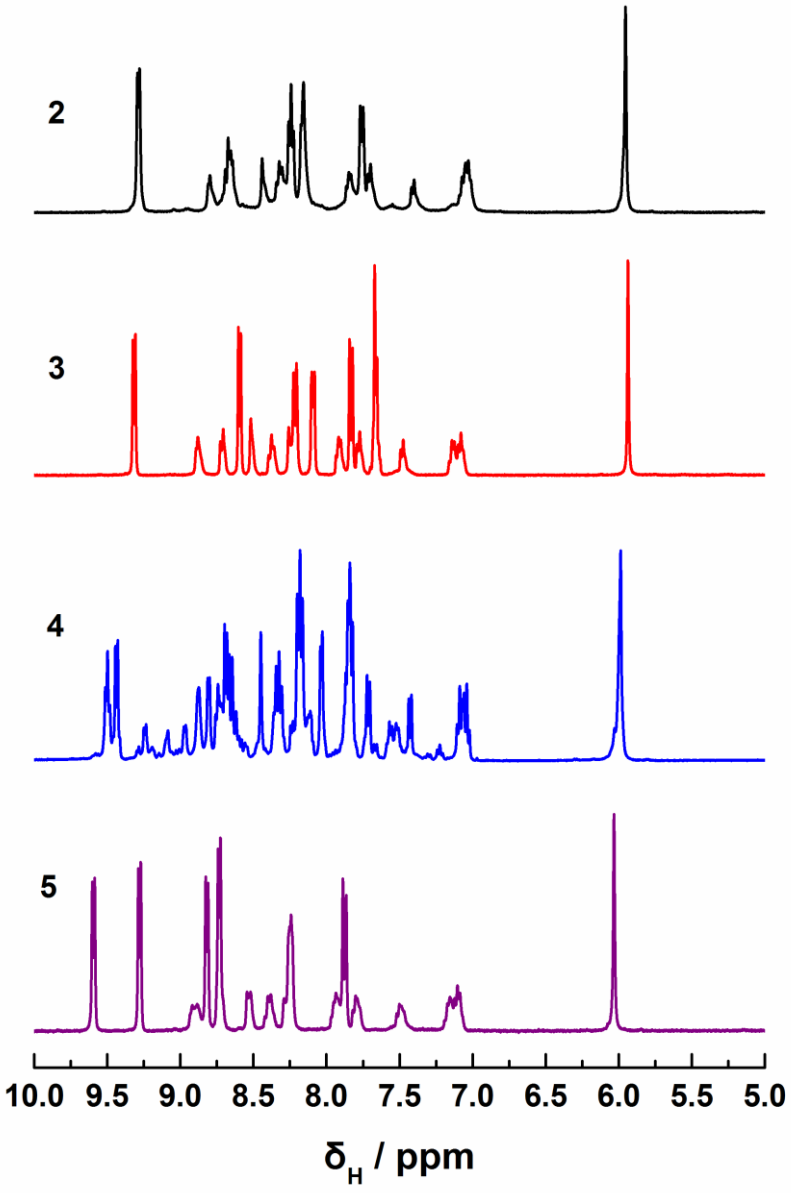

Fig. S8. ^{1}H NMR spectra of complexes **2–5** in DMSO-d_6.

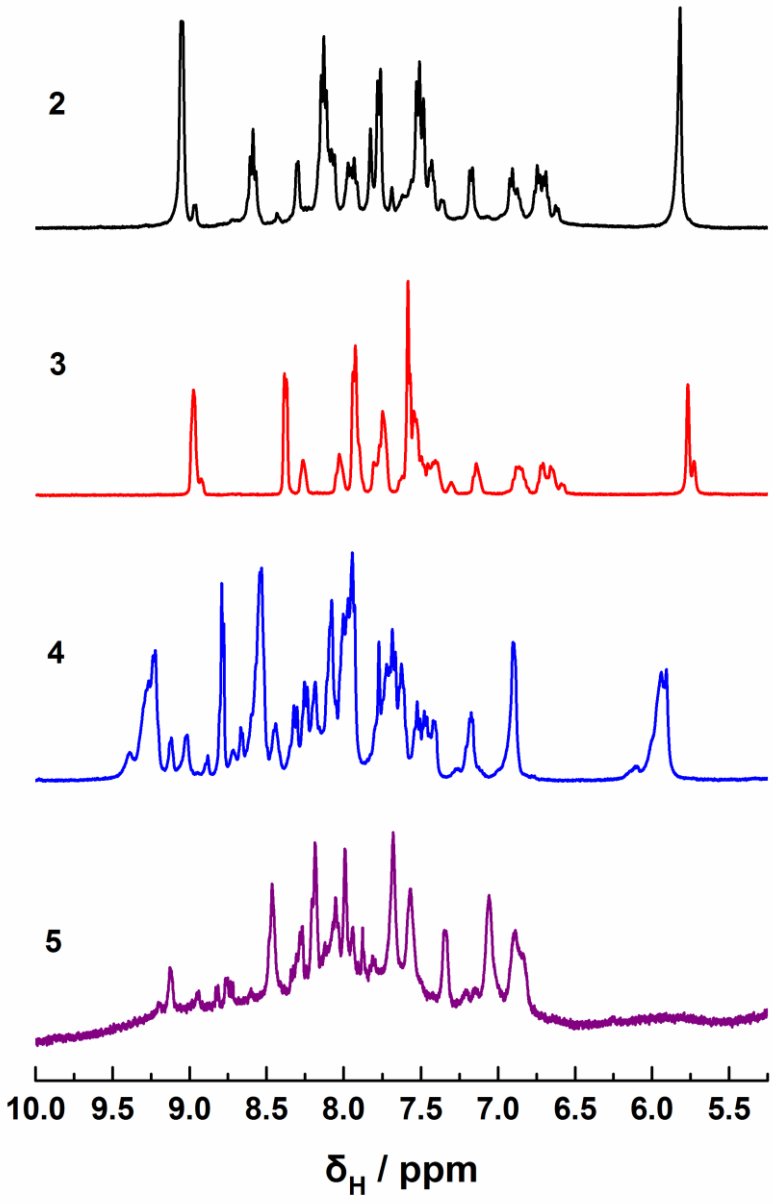

Fig. S9. ^{1}H NMR spectra of complexes **2–5** in DMSO-d_6/D_2O (v/v, 2:1), in the presence of excessive amounts of TEOA.

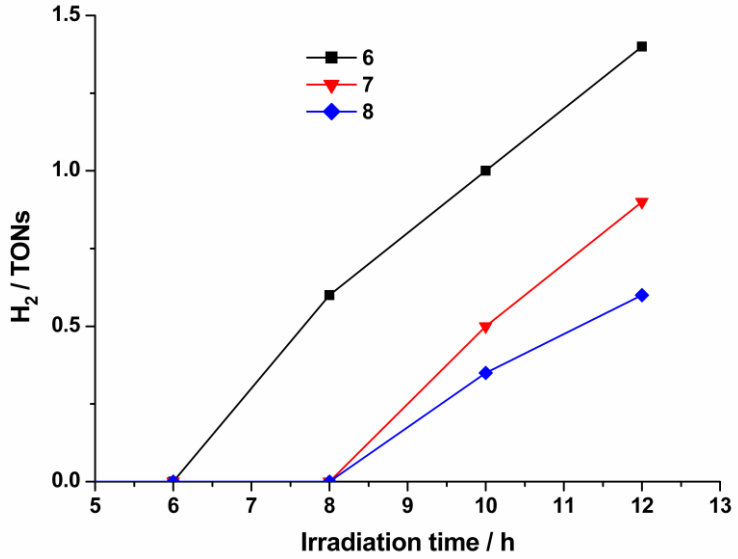

Fig. S10. Hydrogen production from system containing TEOA (2.2×10^{-2} M), complexes **6**–**8** (4.4×10^{-5} M) and colloidal Pt (8.7×10^{-5} M) in CH_3CN/H_2O (v/v, 1:1) upon irradiation ($\lambda > 390$ nm) at pH 7.0. TONs are calculated based on the Pt(II) chromophore.