Electronic Supplementary Material (ESI) for Dalton Transactions

Supporting Information

Efficient Photo-driven Hydrogen Evolution by Binuclear Nickel Catalysts of Different Coordination in Noble-metal-free Systems

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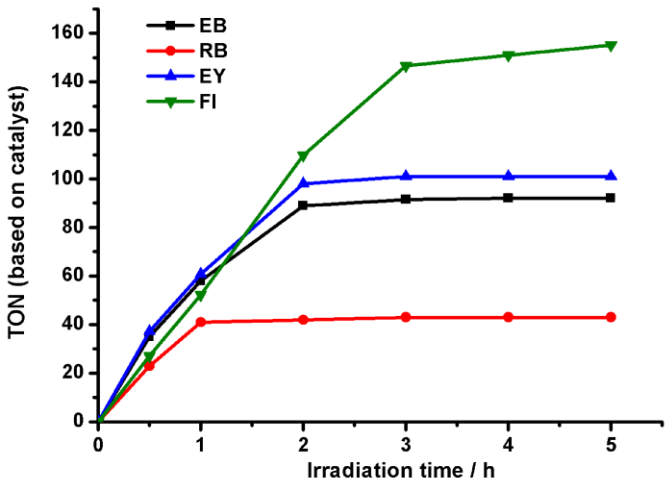

Fig. S1 Time dependence of H_2 evolution from the systems containing **C1** (0.2 mM) and TEA (5% v/v) in CH_3CN-H_2O (v/v 1:1) solution （pH = 11） upon irradiation (>400 nm) with EB (2 mM), RB (2 mM), EY (2 mM) and Fl (2 mM).

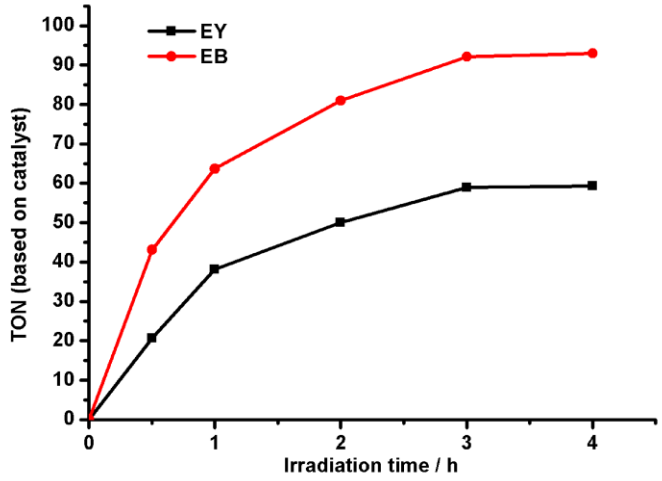

Fig. S2 Time dependence of H_2 evolution from the systems containing **C2** (0.2 mM) and TEOA (5% v/v) in CH_3CN-H_2O (v/v 1:1) solution upon irradiation (>400 nm) with EB (2 mM) and EY (2 mM).

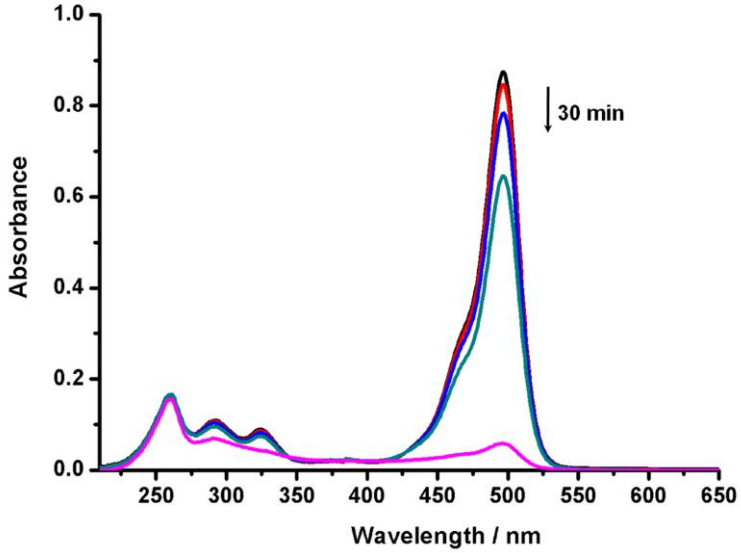

Fig. S3 Absorption spect ra of the system containing Fl (1.0×10^{-6} M) and TEOA (0.5% v/v) in CH_3CN-H_2O (v/v 1:1) solution upon irradiation (**>**400 nm).

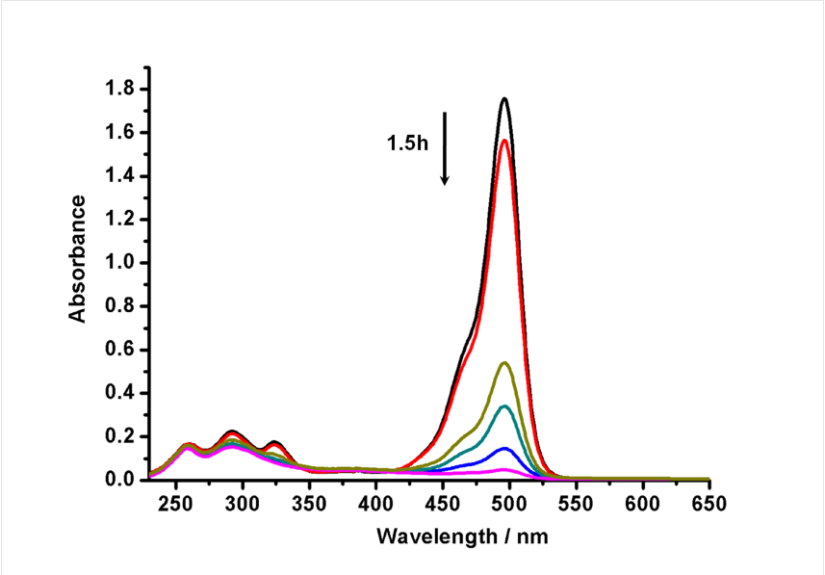

Fig. S4 Absorption spectra of the system with Fl (1.0×10^{-6} M) containing **C2** (1.0×10^{-6} mM) and TEOA (0.5% v/v) in CH_3CN-H_2O (v/v 1:1) solution upon irradiation (**>**400 nm).

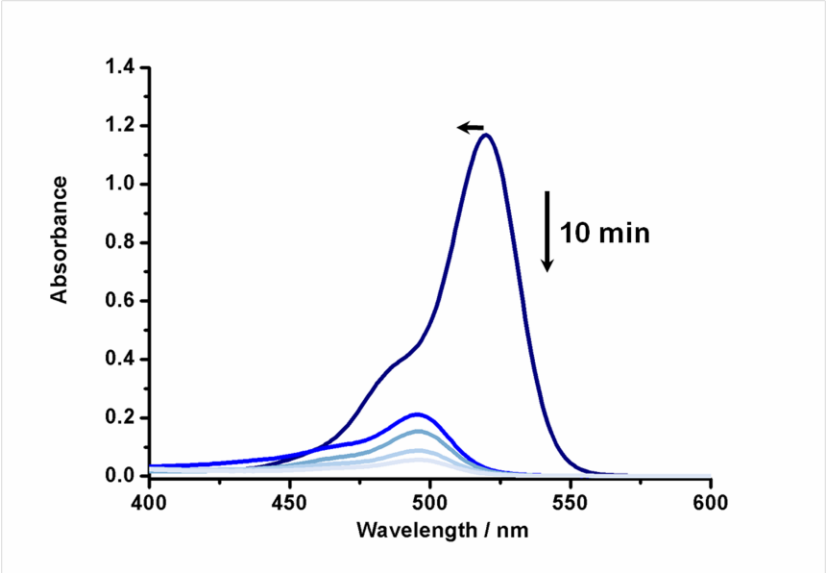

Fig. S5 Absorption spectra of system with EY (2.0×10^{-6} M) containing TEOA (0.5% v/v) in CH_3CN-H_2O (v/v 1:1) solution upon irradiation (**>**400 nm).

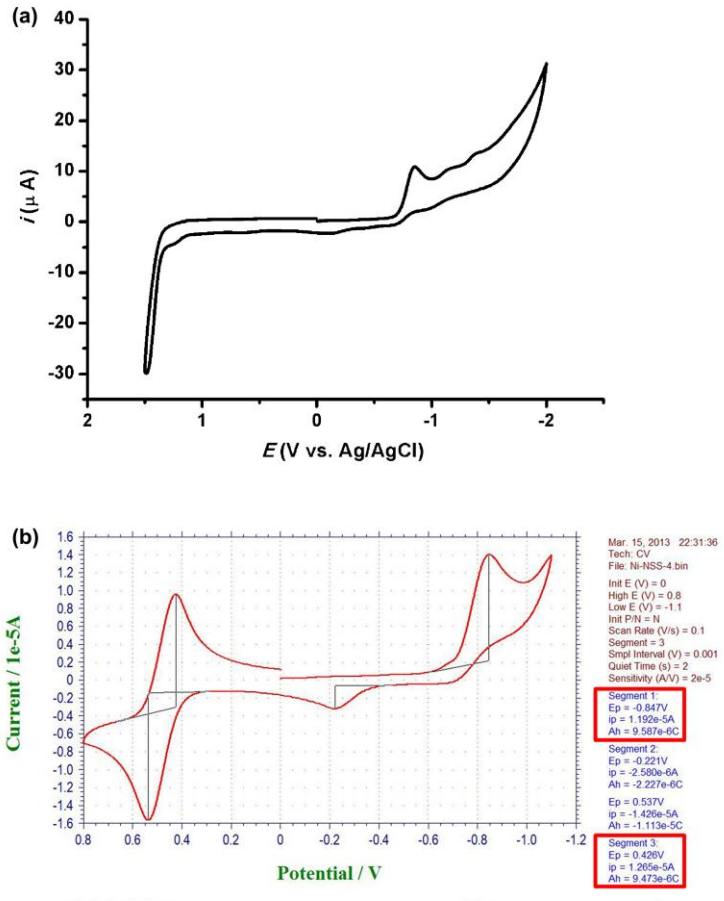

Fig. S6 (a) Cyclic voltmmogram of the complex **C2** (1 mM) was obtained at the scan rate of 0.1 V s^{-1} in the CH_2Cl_2 solution, which indicated that there were no redox reactions of **C2** in the range of the electrochemical reaction of ferrocene. (b) Cyclic voltmmograms of the first reduction process of **C2** using the equivalent ferrocene (0.5 mM) as the internal standard with the integral areas (Ah) of 9.587e-6 C for the reduction process of **C2** and 9.473e-6 C for the one of ferrocene, respectively.

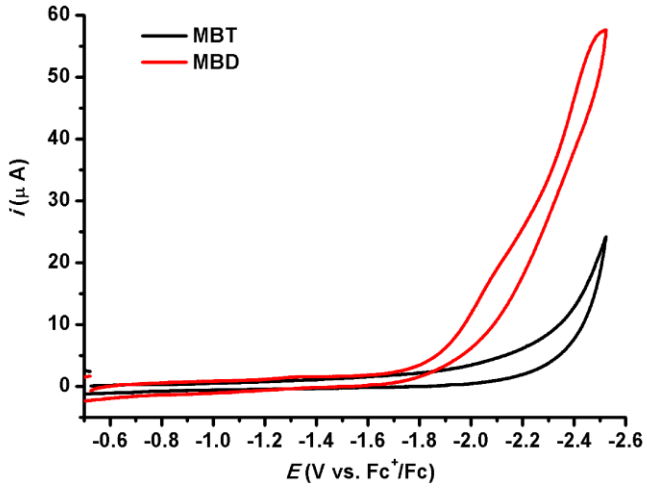

Fig. S7 Cyclic voltammograms of MBT (1 mM) (black) and MBD (1 mM) (red) at a scan rate of 100 mV s^{-1}.

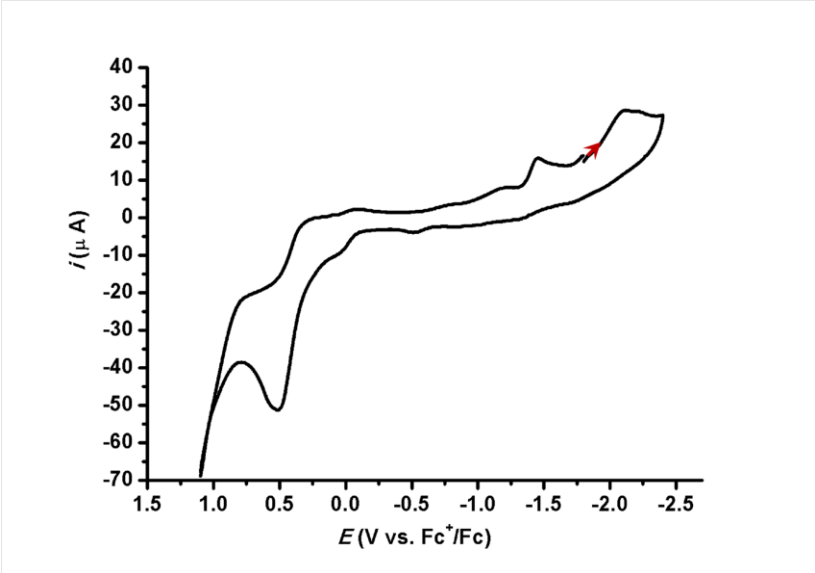

Fig. S8 Cyclic voltammograms of **C1** (1 mM) with the initial scanning voltage of -1.73 V (vs. Fc^{+}/Fc) at a scan rate of 100 mV s^{-1}.

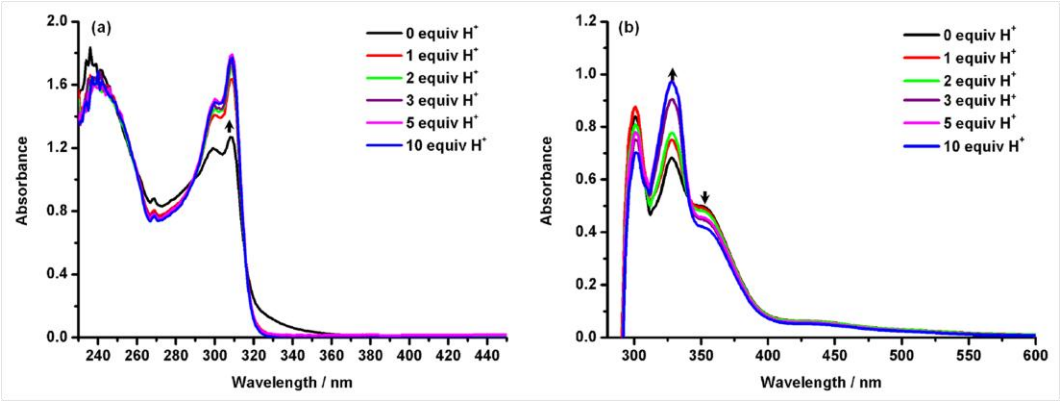

Fig. S9 Absorption spectra of **C1** and **C2** (2.0×10^{-6} mM) with the addition of HOAc in CH_3CN-H_2O (v/v 1:1) solution upon irradiation (**>**400 nm).