**Supporting Information**

# Photodynamic Behavior of Heteroleptic Ir(III) Complexes with Carbazole-Functionalized Dendrons Associated with Efficient Electron Transfer Processes

*Ah-Reum Hwang, Won-Sik Han, Kyung-Ryang Wee, Hyun Young Kim, Dae Won Cho, Chyongjin Pac,* and Sang Ook Kang**

Department of Advanced Materials Chemistry, Korea University, Sejong Campus, Chungnam 339-700, Korea.

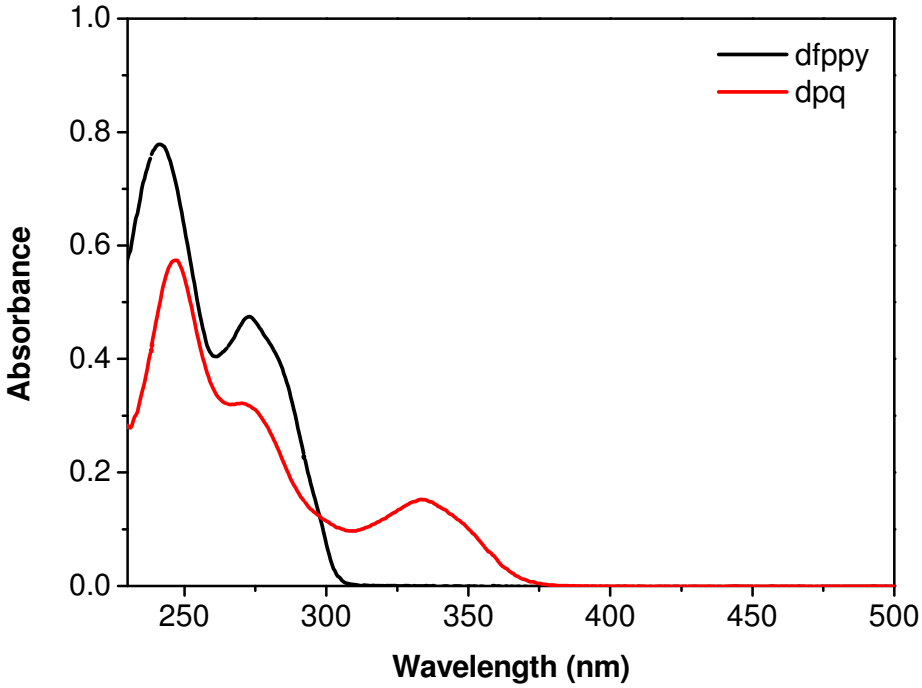



**Figure S1.** Absorption spectra for 10 $\mu$M $CH_2Cl_2$ solution of dfppy ligand (black) and dpq ligand (red).

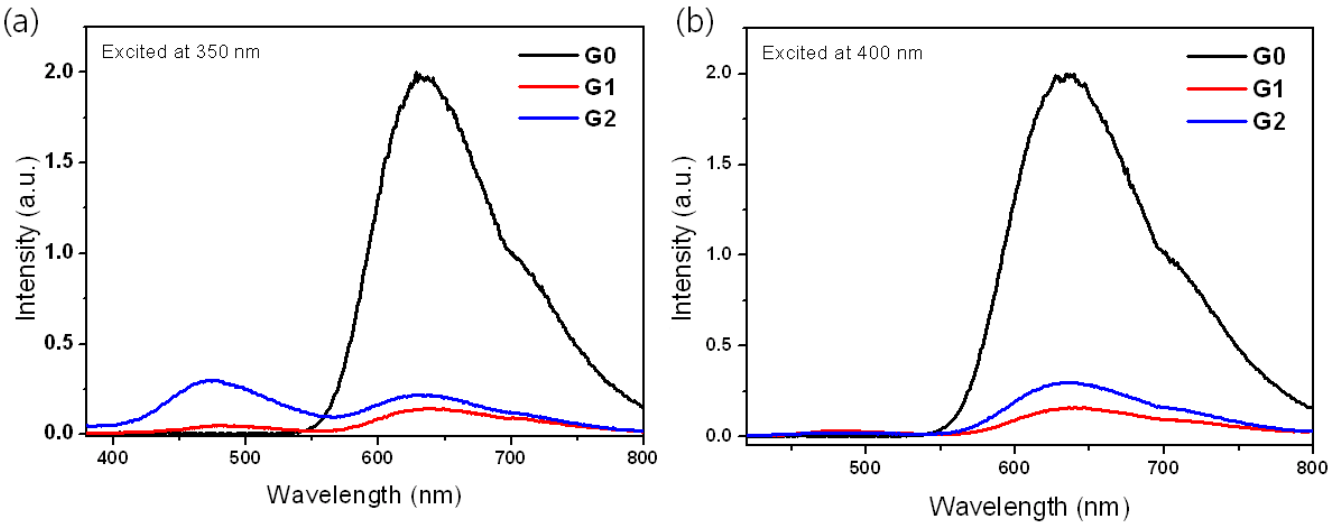



**Figure S2.** Emission spectra taken at room temperature for 10 $\mu$M $CH_2Cl_2$ solution of $[(dfppy)_2Ir(dpq)]^+$ (black) and $[(dfppy\text{-}Cz_n)_2Ir(dpq)]^+$ (n = 1 (red), 2 (blue)); The excitation wavelength is (a) 350 and (b) 400 nm, respectively.

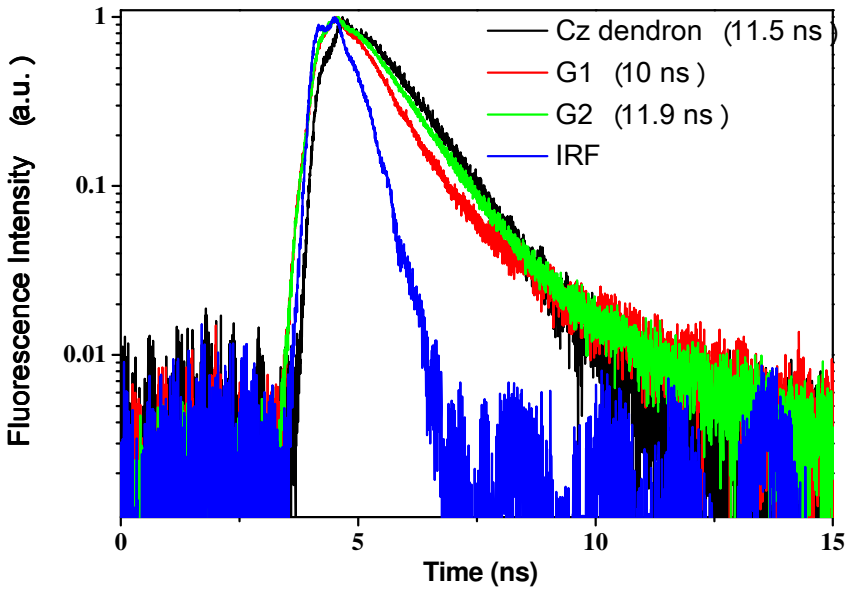



**Figure S3.** Fluorescence lifetime of carbazole for $[(dfppy\text{-}Cz_n)_2Ir(dpq)]^+$ in 2-MeTHF solution at 77 K. Excitation wavelength is 309 nm.

**Table S1.** Fluorescence lifetime and component rate of carbazole for $[(dfppy\text{-}Cz_n)_2Ir(dpq)]^+$ at room temperature.

$(dfppy\text{-}Cz_1)_2Ir(dpq)$

| $\tau_1$ (ns) | component | $\tau_2$ (ns) | component |
|---|---|---|---|
| 6.2 | 10 % | 0.002 | 90 % |

$(dfppy\text{-}Cz_2)_2Ir(dpq)$

| $\tau_1$ (ns) | component | $\tau_2$ (ns) | component |
|---|---|---|---|
| 5.88 | 67 % | 0.062 | 33 % |

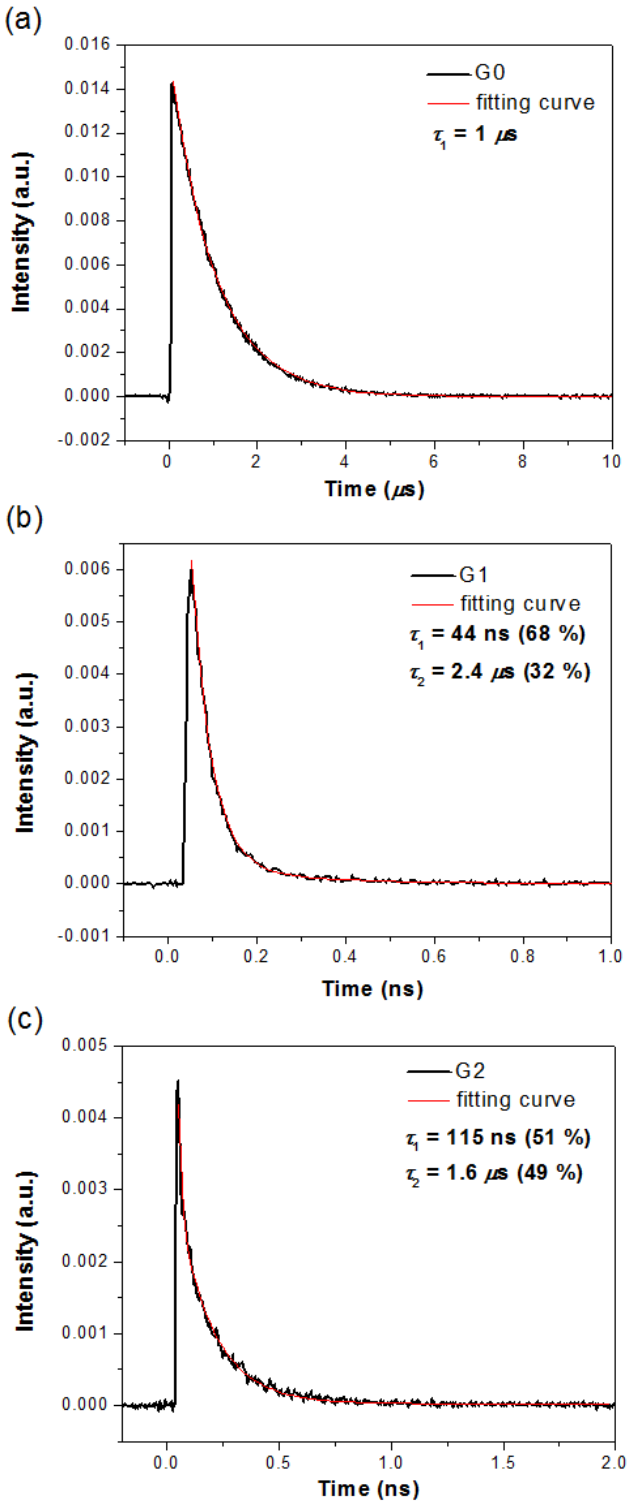



**Figure S4.** Phosphorescence lifetime of Ir(dpq) core for (a) **G0** (b) **G1** (c) **G2** in MC solution at room temperature. Excitation wavelength is 309 nm.

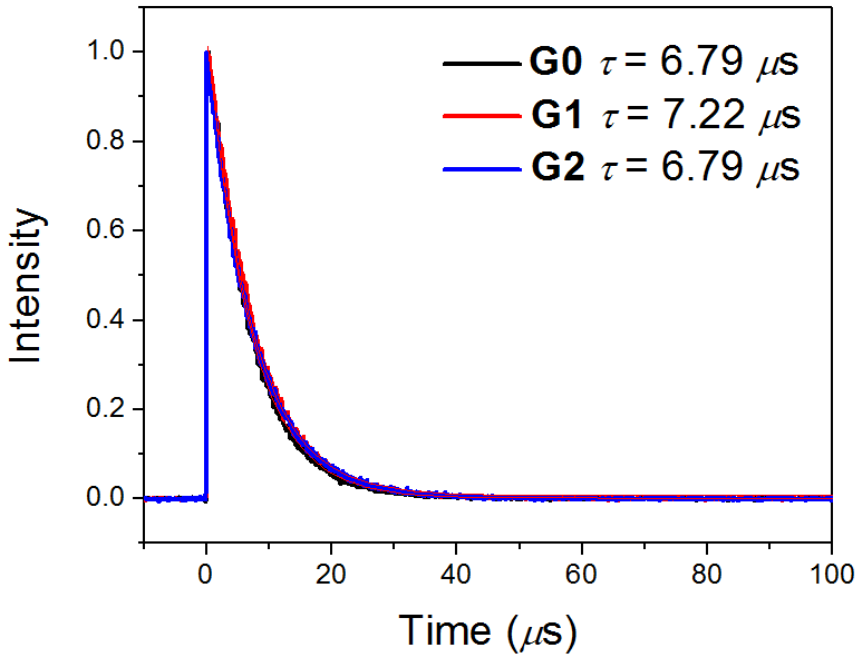



**Figure S5.** Phosphorescence lifetime of Ir(dpq) core for (a) **G0** (b) **G1** (c) **G2** in MC solution at 77 K. Excitation wavelength is 309 nm.

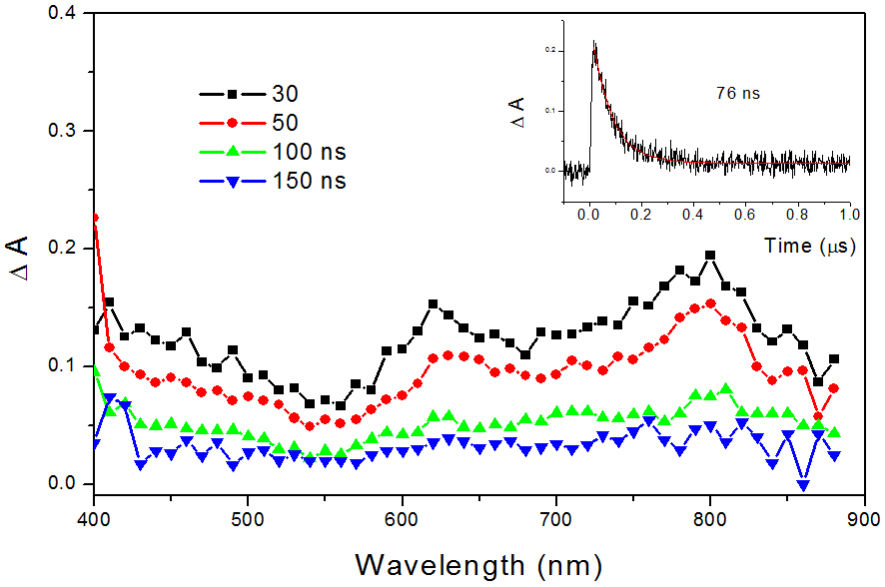
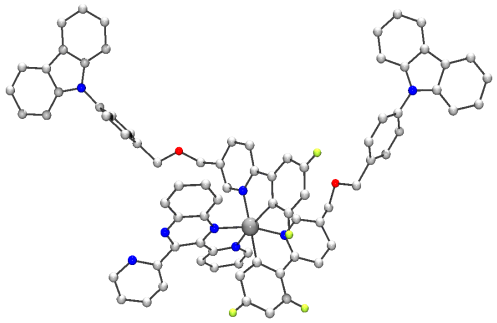



**Figure S6.** Transient absorption spectra of **G2** as obtained by laser flash photolysis techniques. Excitation wavelength is 355 nm. Inset decay profiles are measured at 800 nm (blue line).

(a)



(b)

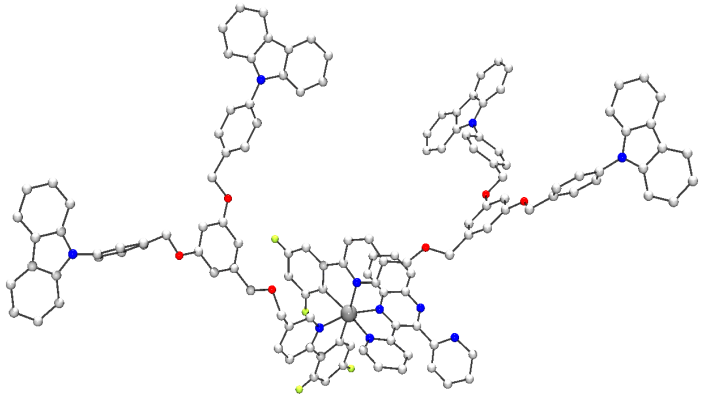


**Figure S7**. Optimized structures of (a) **G1** and (b) **G2** using semi-emperical (AM1) calculation. Hydrogen atoms are omitted.