

**A Novel Class of Phosphorescent Gold(III) Alkynyl-Based Organic Light Emitting
Devices with Tunable Color**

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Electronic Supplementary Information

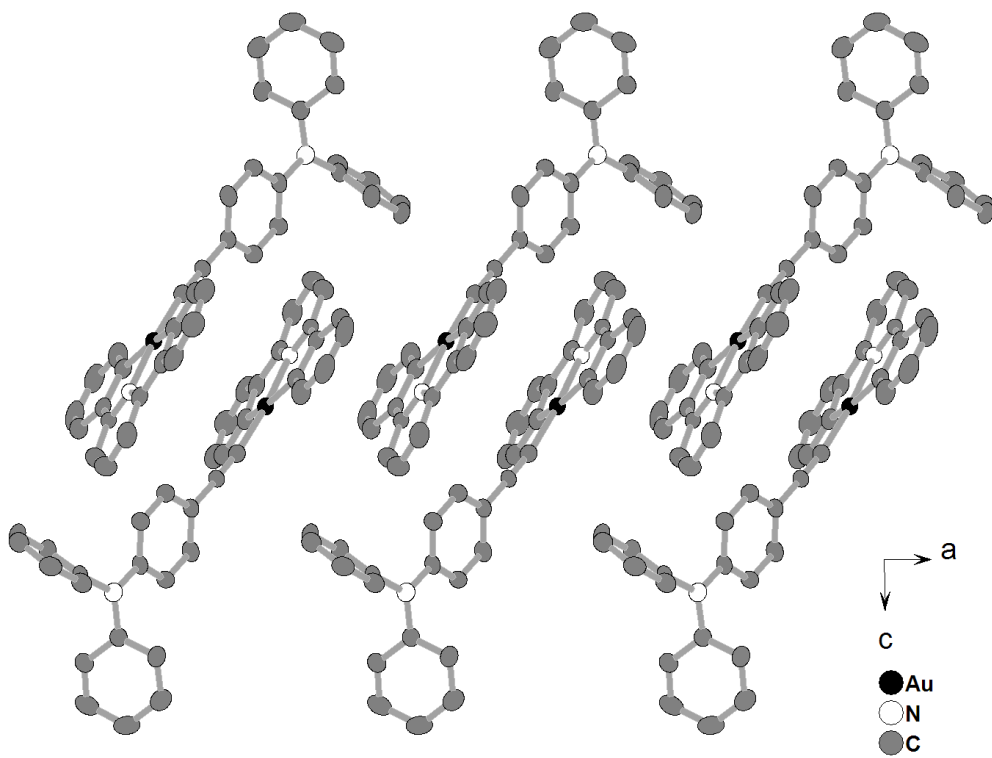


Fig. S1 Crystal packing of 1. Hydrogen atoms are omitted for clarity.

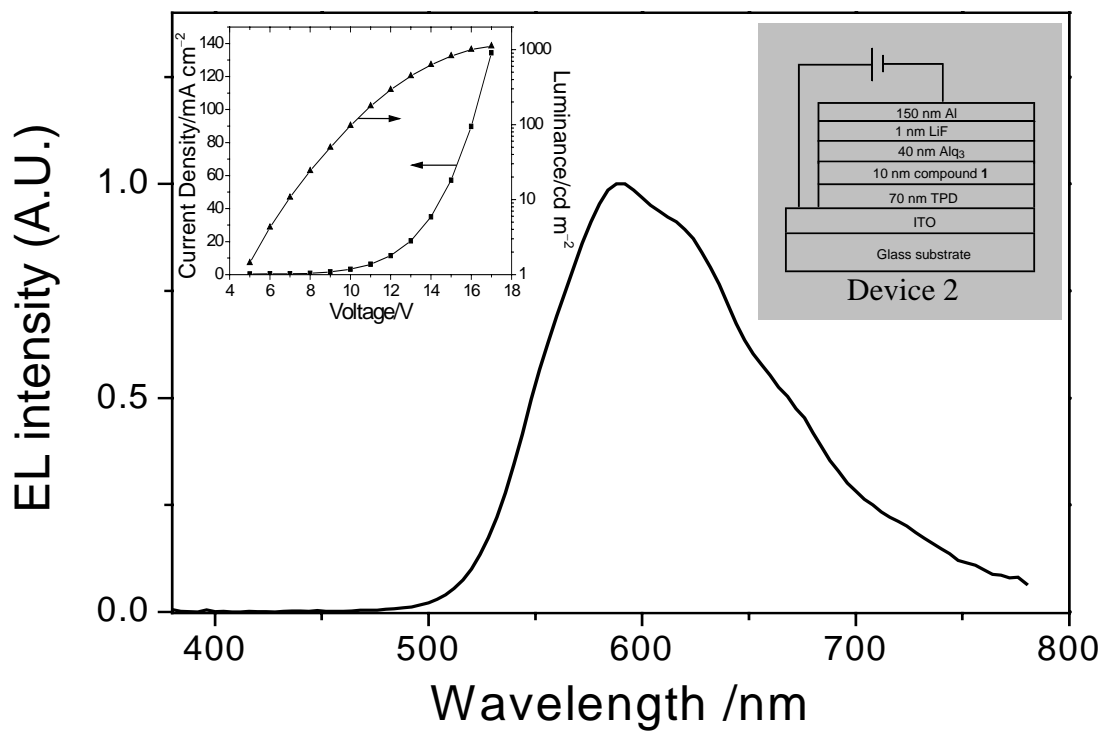


Fig. S2 Electroluminescence spectrum of device 2 upon applying 5 V DC voltage. Inset: (left) Current density and luminance *versus* voltage; (right) Schematic drawing showing the OLED structure of device 2.

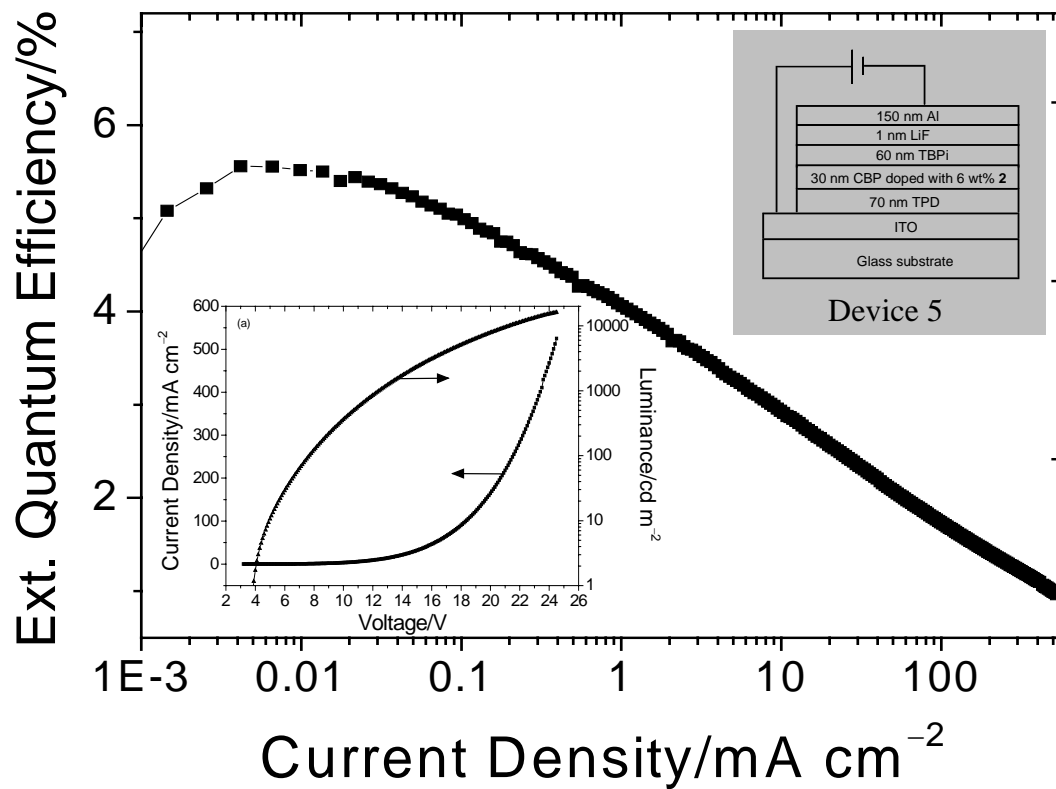


Fig. S3 Plot of external quantum efficiency *versus* current density of device 5. Inset: (left) Plot of current density and luminance *versus* voltage; (right) Schematic drawing showing the OLED structure of device 5.

Characterization Data of compound 2

^1H NMR (300 MHz, CH_2Cl_2 , 298 K, relative to Me_4Si): δ 8.05 (dd, 7.2 and 1.2 Hz, 2 H, C^NC), 7.92 (t, 8.0 Hz, 1 H, C^NC), 7.64 (dd, 7.2 and 1.2 Hz, 2 H, C^NC), 7.56 (d, 8.0 Hz, 2 H, C^NC), 7.48 (d, 8.8 Hz, 2 H, C^NC), 7.42 (t, 7.2 Hz, 2 H, C^NC H's), 7.32 – 7.26 (m, 6H, C^NC, C_6H_4 and N- C_6H_5), 7.14 – 7.02 (m, 8H, C^NC, C_6H_4 and N- C_6H_5); positive EI-MS: m/z 694 $[\text{M}]^+$; IR (Nujol): 2149 cm^{-1} $\nu(\text{C}\equiv\text{C})$; elemental analyses calcd for $\text{C}_{25}\text{H}_{16}\text{NAu}\cdot\frac{1}{2}\text{CH}_2\text{Cl}_2$ (found): C 61.10 (60.85), H 3.53 (3.67), N 3.80 (3.78).

OLEDs fabrication

Commercial 20–30 Ω/\square indium-tin oxide (ITO) coated glass was used as the starting substrates. The OLED devices were fabricated in the usual manner with sequential vacuum evaporation of the various organic layers on indium-tin oxide (ITO) coated glass substrates. The ITO glass substrates were cleaned in ultrasonic assisted detergent, followed by rinsing in deionized water before being dried in oven at 100 °C. After 10 min of O_2 -plasma treatment, the substrates were transferred into a multi-source vacuum chamber with a base pressure of about 1×10^{-6} torr for OLEDs fabrication by sequential evaporation of the constituent organic layers. NPB and TPD were the hole-transport layer, CBP was the doping-host, BCP was the hole-blocking layer, Alq_3 and TPBi were electron-transport layer. The cathode, consisting of lithium fluoride (LiF) and aluminum (Al), was subsequently evaporated through a shadow mask. The layer thickness during evaporation was monitored *in situ* using a quartz crystal oscillator. The current–voltage characteristics were measured using a Hewlett-Packard semiconductor parameter analyzer HP4145B. The EL spectra were measured using a PR650 spectrophotometer.