

[Poster#12]

Bipolar Gold(III) Complexes for Solution-Processable Organic Light-Emitting Devices with a Small Efficiency Roll-Off

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A new class of bipolar alkynylgold(III) complexes containing triphenylamine and benzimidazole moieties has been synthesized and fully characterized. The incorporation of methyl groups in the central phenyl unit has been found to rigidify the molecule to reduce non-radiative decay, yielding a high photoluminescence quantum yield of up to 75 % in spin-coated thin films. More importantly, this class of alkynylgold(III) complexes exhibits excellent solubility in various organic solvents and is capable of serving as phosphorescent dopants in the fabrication of solution-processable organic light-emitting devices (OLEDs). Efficient solution-processable OLEDs with high external quantum efficiency (EQE) of up to 10 % and an extremely small efficiency roll-off of less than 1 % at a practical brightness of 1000 cd m⁻² have been demonstrated.

References

- [1] M.-C. Tang, D. P.-K. Tsang, Y.-C. Wong, M.-Y. Chan, K. M.-C. Wong, V. W.-W. Yam. *J. Am. Chem. Soc.*, **2014**, *136*, 17861.