



# Luminescence Technology Corp.

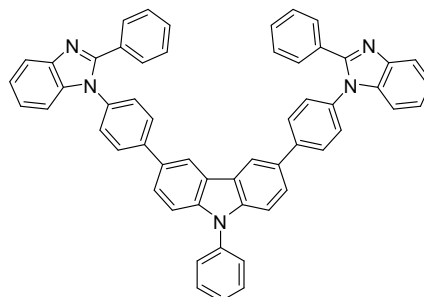
## Novel Bipolar Host Material for High Efficiency RGB and White PHOLEDs

### Product Specifications

**LT-N4046****CNBzIm**

Formula	C <sub>56</sub> H <sub>37</sub> N <sub>5</sub>
Molecular Weight	779.93 g/mole
HOMO (eV)	-5.57eV
LUMO (eV)	-2.20 eV
E <sub>T</sub>	2.71eV

Reference : J. Mater. Chem., 2011, 21, 19249–19256



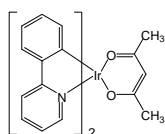
### Information

- A novel bipolar molecule CNBzIm comprised of electron-donating carbazole and electron-accepting phenylbenzimidazole is designed for PHOLEDs usage.
- The thermal properties of CNBzIm were measured by thermal gravimetric analysis (TGA) showing high thermal stability. The T<sub>d</sub> (5% weight loss) of CNBzIm was 405°C, high T<sub>g</sub> of 185°C was also observed.
- The electrochemical properties of CNBzIm were investigated by cyclic voltammetry (CV) and HOMO/LUMO energy level are -5.57eV/-2.20eV,
- The triplet energy of CNBzIm (E<sub>T</sub> 2.71 eV) is sufficiently higher than that of Firpic (E<sub>T</sub> 2.62eV).

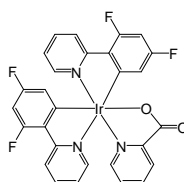
### Device Application

- ITO/PEDOT :PSS(30 nm)/DTAF (25 nm)/emitter (25 nm)/TPBI (50 nm)/LiF (0.5nm)/Al (100nm).
- CNBzIm as a host respectively doped with Os(bpftz)<sub>2</sub>(PPh<sub>2</sub>Me)<sub>2</sub>, Ir(ppy)<sub>2</sub>(acac) and FIrpic show excellent performance with external quantum efficiencies (η<sub>ext</sub>) as high as 19.1% for red, 17.8% for green, and 12.7% for blue.
- A two-color, all-phosphor and single-emitting-layer WOLED hosted by CNBzIm was achieved with a maximum external quantum efficiencies (η<sub>ext</sub>) of 15.7%, current efficiency of 35 cdA<sup>-1</sup>, and power efficiency of 36.6 lm W<sup>-1</sup>.

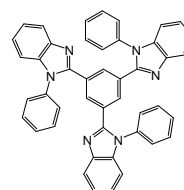
#### Related Products from Lumtec



LT-E505 Ir(ppy)<sub>2</sub>(acac)



LT-E607 Firpic



LT-E302 TPBi

Materials are used by qualified for testing and research only, there are not guaranteed in patent contention by customer use.

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