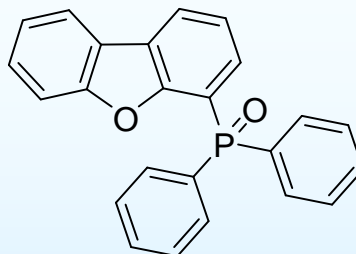




Novel Host Materials for Blue Phosphorescent OLED

LT-N4051 DBFPPO

Formula $C_{24}H_{17}O_2P$
Molecular Weight 368.36
Reference : ¹Chem. Eur. J. **2011**, 17, 445 – 449
²Adv. Mater. **2011**, 23, 2491–2496



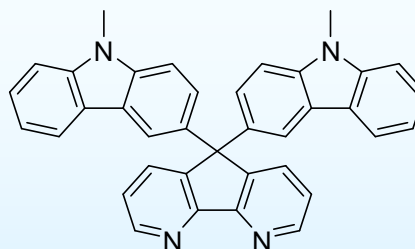
Blue-phosphorescent device configuration:

ITO/MoOx (2nm)/m-MTDATA:MoOx (3:1, 10nm)/m-MTDATA (30nm)/[Ir(ppz)3](1nm)/**DBFPPO**:
10% Flrpic (10nm)/3TPYMB (10nm)/BPhen(30nm)/LiF(1nm)/Al

Very low turn-on voltage of 2.6 V,
a high current efficiency of 36 cd A⁻¹,
a high EQE of 15.5%,
and a high power efficiency of 35.5 lm W⁻¹.

LT-N4052 MCAF

Formula $C_{37}H_{26}N_4$
Molecular Weight 526.63
Reference : Chem. Mater. **2012**, 24, 643–650



Blue-phosphorescent device configuration:

ITO/NPB (30nm)/TCTA (10nm)/**MCAF**: 8% Flrpic (30nm)/TPBI (30nm)/LiF (1nm)/Al

Very low turn-on voltage of 2.6 V,
a high current efficiency of 32.2 cd A⁻¹,
a high EQE of 17.9%,
and a high power efficiency of 31.3 lm W⁻¹.

DBFPPO represents as host materials of electron transport type, in which a dibenzofuran core was condensed with phosphine-oxide derivatives. And MCAF contains an electron-transporting 4,5-diaza fluorene moieties and a hole-transporting carbazole group as an ambipolar compound.

The thermal analysis also indicates that DBFPPO and MCAF exhibit high decomposition temperature corresponding to 5% weight loss (296/395°C). Moreover, the HOMO/LUMO energy level are measured as -5.99/-2.77 eV of DBFPPO and -5.96/-2.86 eV of MCAF, both them successfully keep high triplet energies of 3.15 and 2.82 eV.

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