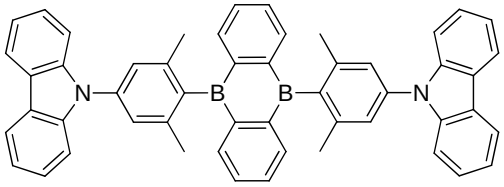
Luminescence Technology Corp.

Diboron Compound-Based Organic Light-Emitting Diodes with High Efficiency and Reduced Efficiency Roll-off

Product Specifications

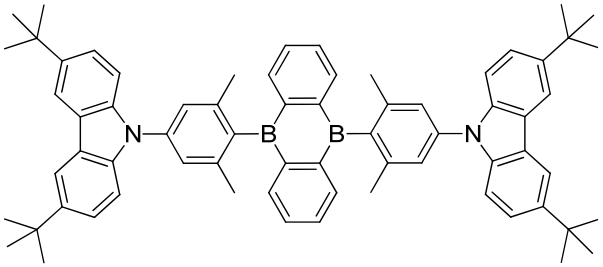
LT-N569 CzDBA

Name.	5,10-bis(4-(9H-carbazol-9-yl)-2,6-dimethylphenyl)-5,10-dihydroboranthrene
CAS No.	2171334-43-1
Grade	Sublimed, >99 % (HPLC)
Formula	$C_{54}H_{42}B_2$
Molecular Weight	714.51 g/mole
Absorption	342 nm (in Toluene)
PL_{fl}	524 nm (in CBP at 77K)
HOMO/LUMO	- 5.93eV/ -3.45 eV



LT-N571 tBuCzDBA

Name.	5,10-bis(4-(3,6-di-tert-butyl-9H-carbazol-9-yl)-2,6-dimethylphenyl)-5,10-dihydroboranthrene
CAS No.	2171334-46-4
Grade	Sublimed, >99 % (HPLC)
Formula	$C_{70}H_{74}B_2$
Molecular Weight	938.93 g/mole
Absorption	348 nm (in Toluene)
PL_{fl}	553 nm (in CBP at 77K)
HOMO/LUMO	-5.88 eV/ -3.49 eV



** Reference: Nature Photonics **12**, 235-240(2018)*

Features

- A green OLED based on CzDBA exhibits a high external quantum efficiency of 37.8±0.6%, a current efficiency of 139.6±2.8cd/A and a power efficiency of 121.6±3.1 lm/W with an efficiency roll-off of only 0.3% at 1000cd/m2. The device has a peak emission wavelength of 528 nm and colour coordinates of the CIE of (0.31, 0.61), making it attractive for colour-display applications.
- This donor-acceptor-donor (D-A-D) type and rod-like compounds concurrently generate TADF with a photoluminescence quantum yield of ~100% and an 84% horizontal dipole ratio in the film.

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Device Application

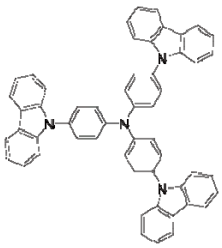
The Green Device A:

ITO/ NPB (40 nm)/ TcTa (10 nm)/ CBP:CzDBA (10%) (30 nm)/ TmPyPB (60 nm)/ LiF (1 nm)/ Al (100 nm).

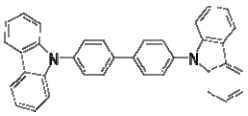
The Green Device B:

ITO/ NPB (40 nm)/ TcTa (10 nm)/ CBP:tBuCzDBA (10%) (30 nm)/ TmPyPB (60 nm)/ LiF (1 nm)/ Al (100 nm).

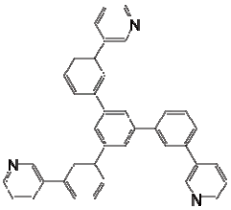
LT-E101 NPB



LT-E207 TcTa



LT-E409 CBP



LT-N863 TmPyPB

LiF = LT-E001

Al = LT-E005

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