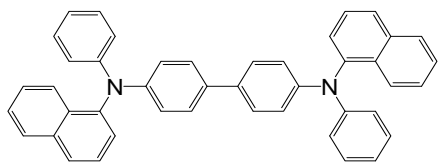


Hole Transport Layer Materials (HTL)

LT-E101

NPB

N,N'-Bis(naphthalen-1-yl)-N,N'-bis(phenyl)-benzidine

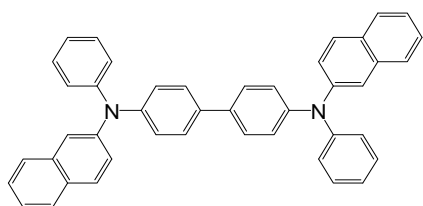


Formula : $C_{44}H_{32}N_2$
Molecular Weight : 588.74 g/mole
Glass Transition Temperature : 99°C
Thermal Gravimetric Analysis : 380°C (0.5% weight loss)
Absorption : 339nm (in THF)
Photoluminescence : 450nm (in THF)

LT-E102

β -NPB

N, N'-Bis(naphthalen-2-yl)-N,N'-bis(phenyl)-benzidine

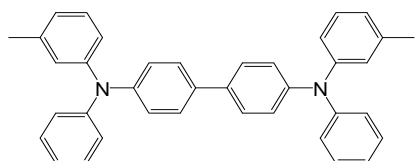


Formula : $C_{44}H_{32}N_2$
Molecular Weight : 588.74 g/mole
Glass Transition Temperature : 104°C
Thermal Gravimetric Analysis : 370°C (0.5% weight loss)
Absorption : 349nm (in THF)
Photoluminescence : 416nm (in THF)

LT-E103

TPD

N, N'-Bis(3-methylphenyl)-N,N'-bis(phenyl)-benzidine

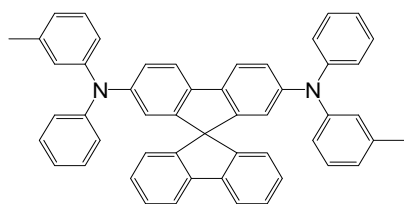


Formula : $C_{38}H_{32}N_2$
Molecular Weight : 516.67 g/mole
Thermal Gravimetric Analysis : 330°C (0.5% weight loss)
Absorption : 352nm (in THF)
Photoluminescence : 398nm (in THF)

LT-E105

Spiro-TPD

N, N'-Bis(3-methylphenyl)-N,N'-bis(phenyl)-9,9-spirobifluorene

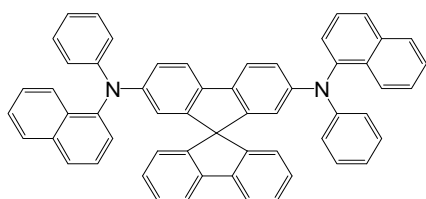


Formula : $C_{51}H_{38}N_2$
Molecular Weight : 678.86 g/mole
Glass Transition Temperature : 102°C
Thermal Gravimetric Analysis : 310°C (0.5% weight loss)
Absorption : 379nm (in THF)
Photoluminescence : 416nm (in THF)

LT-E106

Spiro-NPB

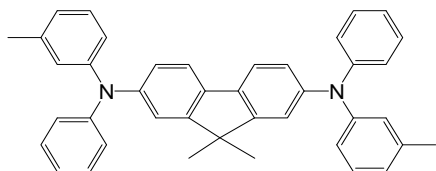
N, N'-Bis(naphthalen-1-yl)-N,N'-bis(phenyl)-9,9-spirobifluorene



Formula : $C_{57}H_{38}N_2$
Molecular Weight : 750.93 g/mole
Glass Transition Temperature : 126°C
Thermal Gravimetric Analysis : 420°C (0.5% weight loss)
Absorption : 380nm (in THF)
Photoluminescence : 453nm (in THF)

LT-E109

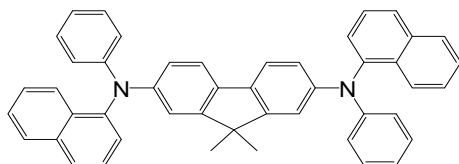
DMFL-TPD

N, N'-Bis(3-methylphenyl)-N,N'-bis(phenyl)-9,9-dimethylfluorene

Formula	: C ₄₁ H ₃₆ N ₂
Molecular Weight	: 556.74 g/mole
Thermal Gravimetric Analysis	: 320°C (0.5% weight loss)
Absorption	: 376nm (in THF)
Photoluminescence	: 401nm (in THF)

LT-E110

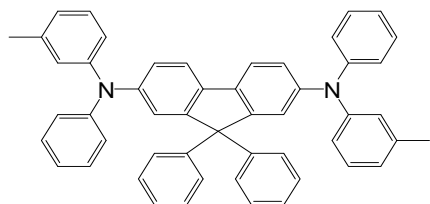
DMFL-NPB

N, N'-Bis(naphthalen-1-yl)-N,N'-bis(phenyl)-9,9-dimethylfluorene

Formula	: C ₄₇ H ₃₆ N ₂
Molecular Weight	: 628.80 g/mole
Glass Transition Temperature	: 128°C
Thermal Gravimetric Analysis	: 360°C (0.5% weight loss)
Absorption	: 381nm (in THF)
Photoluminescence	: 458nm (in THF)

LT-E111

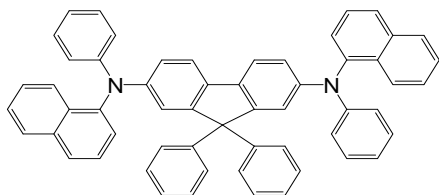
DPFL-TPD

N, N'-Bis(3-methylphenyl)-N,N'-bis(phenyl)-9,9-diphenylfluorene

Formula	: C ₅₁ H ₄₀ N ₂
Molecular Weight	: 680.88 g/mole
Thermal Gravimetric Analysis	: 350°C (0.5% weight loss)
Absorption	: 381nm (in THF)
Photoluminescence	: 410nm (in THF)

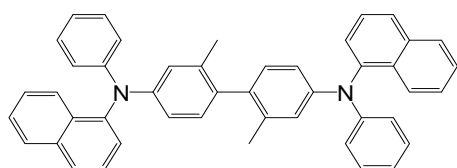
LT-E112

DPFL-NPB

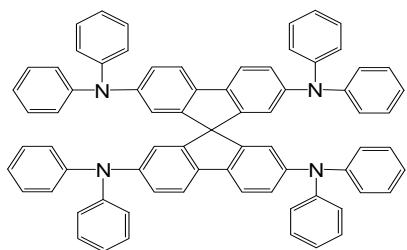
N, N'-Bis(naphthalen-1-yl)-N,N'-bis(phenyl)-9,9-diphenylfluorene

Formula	: C ₅₇ H ₄₀ N ₂
Molecular Weight	: 752.94 g/mole
Glass Transition Temperature	: 114°C
Thermal Gravimetric Analysis	: 330°C (0.5% weight loss)
Absorption	: 371nm (in THF)
Photoluminescence	: 466nm (in THF)

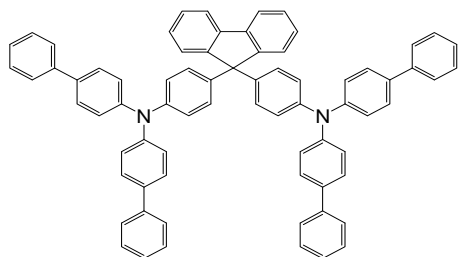
LT-E115

 α -NPD**N, N'-Bis(naphthalen-1-yl)-N,N'-bis(phenyl)-2,2'-dimethylbenzidine**

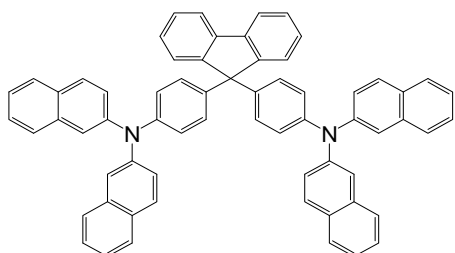
Formula	: C ₄₆ H ₃₆ N ₂
Molecular Weight	: 616.79 g/mole
Glass Transition Temperature	: 100°C
Thermal Gravimetric Analysis	: 340°C (0.5% weight loss)
Absorption	: 307nm (in CH ₂ Cl ₂)
Photoluminescence	: 447nm (in CH ₂ Cl ₂)

LT-E116**Spiro-TAD****2,2',7,7'-Tetrakis(N, N-diphenylamino)-9,9-spirobifluorene**

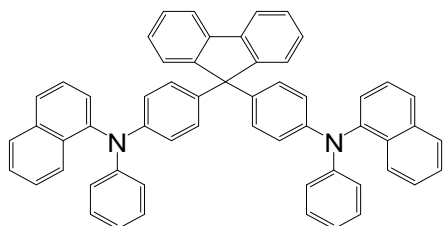
Formula : $C_{73}H_{52}N_4$
 Molecular Weight : 985.22 g/mole
 Thermal Gravimetric Analysis : 320°C (0.5% weight loss)
 Absorption : 378nm (in THF)
 Photoluminescence : 415nm (in THF)
 Reference : WO 03/037844A1

LT-N120**BPAPF****9,9-Bis[4-(N,N-bis-biphenyl-4-yl-amino)phenyl]-9H-fluorene**

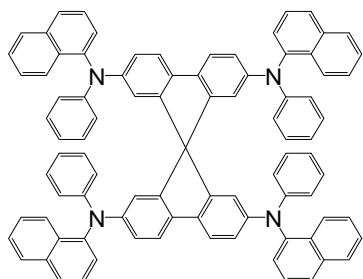
Formula : $C_{73}H_{52}N_2$
 Molecular Weight : 957.21 g/mole
 Glass Transition Temperature : 164°C
 Thermal Gravimetric Analysis : 420°C (0.5% weight loss)
 Absorption : 333nm (in THF)
 Photoluminescence : 403nm (in THF)
 Reference : US 6586120, TW 1

LT-N121**NPAPF****9,9-Bis[4-(N,N-bis-naphthalen-2-yl-amino)phenyl]-9H-fluorene**

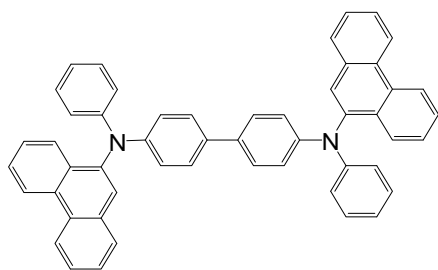
Formula : $C_{65}H_{44}N_2$
 Molecular Weight : 853.06 g/mole
 Glass Transition Temperature : 166°C
 Thermal Gravimetric Analysis : 490°C (0.5% weight loss)
 Absorption : 322nm (in THF)
 Photoluminescence : 418nm (in THF)
 Reference : US 6586120, TW 186028

LT-N124**NPBAPF****9,9-Bis[4-(N, N'-bis-naphthalen-1-yl-N,N'-bis-phenyl-amino)-phenyl]-9H-fluorene**

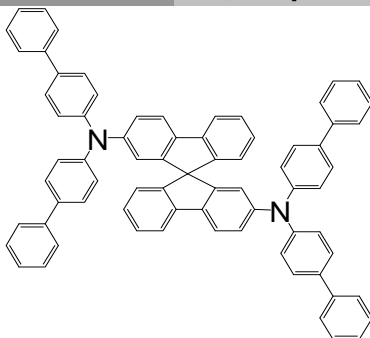
Formula : $C_{57}H_{40}N_2$
 Molecular Weight : 752.94 g/mole
 Thermal Gravimetric Analysis : 350°C (0.5% weight loss)
 Absorption : 304nm (in THF)
 Photoluminescence : 431nm (in THF)
 Reference : US 6586120, TW 186028

LT-N125**Spiro-2NPB****2,2',7,7'-Tetrakis[N-naphthalenyl(phenyl)-amino]-9,9-spirobifluorene**

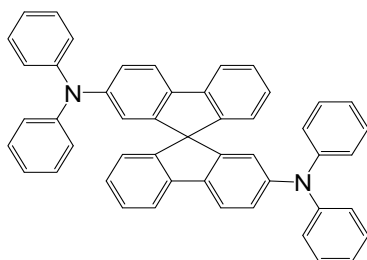
Formula : $C_{89}H_{60}N_4$
 Molecular Weight : 1185.46 g/mole
 Thermal Gravimetric Analysis : 450°C (0.5% weight loss)
 Absorption : 380nm (in THF)
 Photoluminescence : 484nm (in THF)

LT-N131**PAPB****N, N'-bis(phenanthren-9-yl)-N,N'-bis(phenyl)-benzidine**

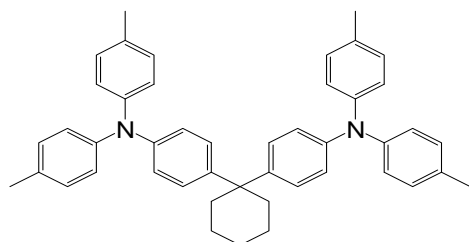
Formula : $C_{52}H_{36}N_2$
 Molecular Weight : 688.86 g/mole
 Thermal Gravimetric Analysis : 440°C (0.5% weight loss)
 Absorption : 336nm (in THF)
 Photoluminescence : 454nm (in THF)

LT-N135**2,2'-Spiro-DBP****2,2'-Bis[N,N-bis(biphenyl-4-yl)amino]-9,9-spirobifluorene**

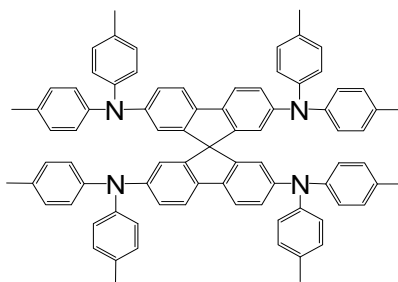
Formula : $C_{73}H_{50}N_2$
 Molecular Weight : 955.19 g/mole
 Thermal Gravimetric Analysis : 450°C (0.5% weight loss)
 Absorption : 349nm (in THF)
 Photoluminescence : 413nm (in THF)

LT-N136**Spiro-BPA****2,2'-Bis(N,N-di-phenyl-amino)-9,9-spirobifluorene**

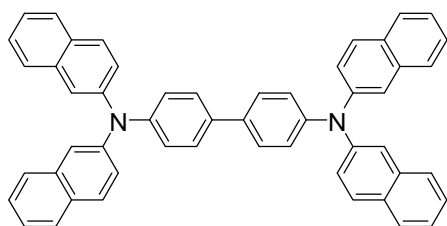
Formula : $C_{49}H_{34}N_2$
 Molecular Weight : 650.81 g/mole
 Thermal Gravimetric Analysis : 340°C (0.5% weight loss)
 Absorption : 348nm (in THF)
 Photoluminescence : 398nm (in THF)
 Reference : *Adv. Mater.* 2006, 18, 1216-1220.

LT-N137**TAPC****Di-[4-(N,N-ditolyl-amino)-phenyl]cyclohexane**

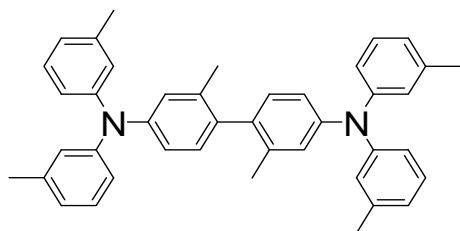
Formula : $C_{46}H_{46}N_2$
 Molecular Weight : 626.87 g/mole
 Glass Transition Temperature : 89°C
 Thermal Gravimetric Analysis : 310°C (0.5% weight loss)
 Absorption : 305nm (in THF)
 Photoluminescence : 414nm (in THF)
 Reference : *Journal of Applied Physics*, Vol. 95, No.12, 7798

LT-N138**Spiro-TTB****2,2',7,7'-tetra(N, N-di-tolyl)amino-9,9-spiro-bifluorene**

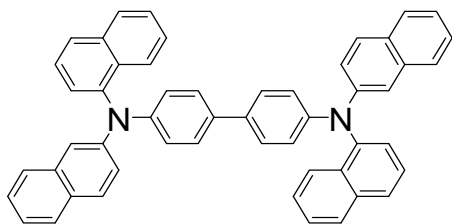
Formula : $C_{81}H_{68}N_4$
 Molecular Weight : 1097.43 g/mole
 Glass Transition Temperature : 149°C
 Thermal Gravimetric Analysis : 390°C (0.5% weight loss)
 Absorption : 385nm (in THF)
 Photoluminescence : 418nm (in THF)
 Reference : *Adv. Funct. Mater.* 2006, 16, 966-974.

LT-N139 **β -TNB****N, N,N',N'-tetra-naphthalen-2-yl-benzidine**

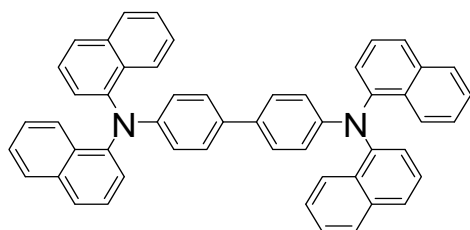
Formula : $C_{52}H_{36}N_2$
 Molecular Weight : 688.86 g/mole
 Glass Transition Temperature : 139°C
 Thermal Gravimetric Analysis : 440°C (0.5% weight loss)
 Absorption : 354nm (in THF)
 Photoluminescence : 429nm (in THF)

LT-N140**HMTPD****N, N,N',N'-tetra-(3-methylphenyl)-2,2'-dimethylbenzidine**

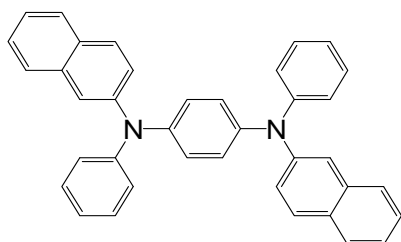
Formula : $C_{42}H_{40}N_2$
 Molecular Weight : 572.78 g/mole
 Thermal Gravimetric Analysis : 260°C (0.5% weight loss)
 Absorption : 302nm (in THF)
 Photoluminescence : 399nm (in THF)

LT-N141 **α, β -TNB****N,N'-di(naphthalenyl)-N,N'-di(naphthalen-2-yl)-benzidine**

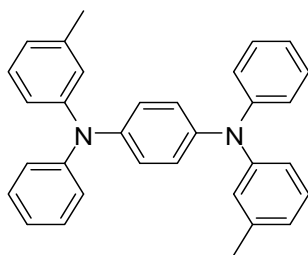
Formula : $C_{52}H_{36}N_2$
 Molecular Weight : 688.86 g/mole
 Glass Transition Temperature : 140°C
 Thermal Gravimetric Analysis : 400°C (0.5% weight loss)
 Absorption : 345nm (in CH_2Cl_2)
 Photoluminescence : 462nm (in CH_2Cl_2)

LT-N142 **α -TNB****N, N,N',N'-tetra-naphthalenyl-benzidine**

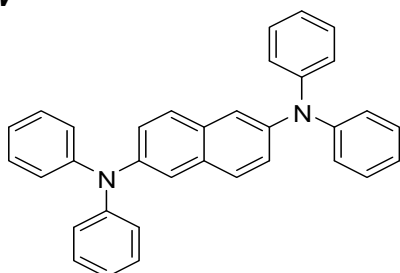
Formula : $C_{52}H_{36}N_2$
 Molecular Weight : 688.86 g/mole
 Thermal Gravimetric Analysis : 390°C (0.5% weight loss)
 Absorption : 297, 362nm (in CH_2Cl_2)
 Photoluminescence : 462nm (in CH_2Cl_2)

LT-N143 **β -NPP****N, N'-di(naphthalen-2-yl)-N,N'-diphenylbenzene-1,4-diamine**

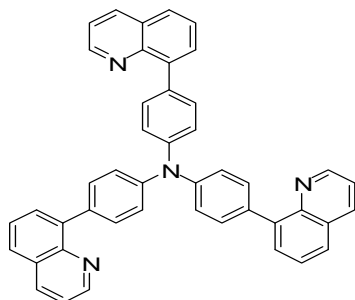
Formula : $C_{38}H_{28}N_2$
 Molecular Weight : 512.64 g/mole
 Thermal Gravimetric Analysis : 290°C (0.5% weight loss)
 Absorption : 323nm (in THF)
 Photoluminescence : 466nm (in THF)

LT-N144**TTP****N1,N4-diphenyl-N1,N4-dim-tolylbenzene-1,4-diamine****New**

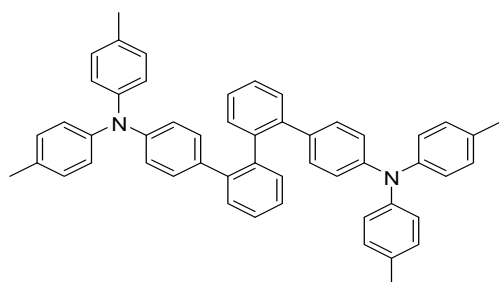
Formula : $C_{32}H_{28}N_2$
 Molecular Weight : 440.58 g/mole
 Thermal Gravimetric Analysis : 293°C (0.5% weight loss)
 Absorption : 314nm (in CH_2Cl_2)
 Photoluminescence : 415, 439nm (in CH_2Cl_2)

LT-N145**NDDP****N2,N2,N6,N6-tetraphenylnaphthalene-2,6-diamine****New**

Formula : $C_{34}H_{26}N_2$
 Molecular Weight : 462.58 g/mole
 Thermal Gravimetric Analysis : 329°C (0.5% weight loss)
 Absorption : 312, 341nm (in CH_2Cl_2)
 Photoluminescence : 438nm (in CH_2Cl_2)

LT-N146**TQTPA****tris(4-(quinolin-8-yl)phenyl)amine****New**

Formula : $C_{45}H_{30}N_4$
 Molecular Weight : 626.75 g/mole
 Thermal Gravimetric Analysis : 420°C (0.5% Weight loss)
 Photoluminescence : 431nm (in CH_2Cl_2)
 Reference : *Chem. Mater.* 2009, 21, 1284–1287

LT-N147**3DTAPBP****2,2'-bis(4-(N,N-di-p-tolylamino)phenyl)biphenyl****New**

Formula : $C_{52}H_{44}N_2$
 Molecular Weight : 696.92 g/mole
 Reference : *J. Light & Vis. Env.* Vol.32, No.2, 2008, 75