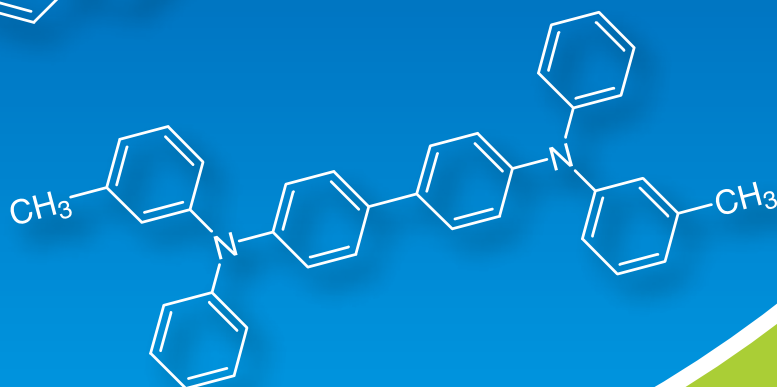
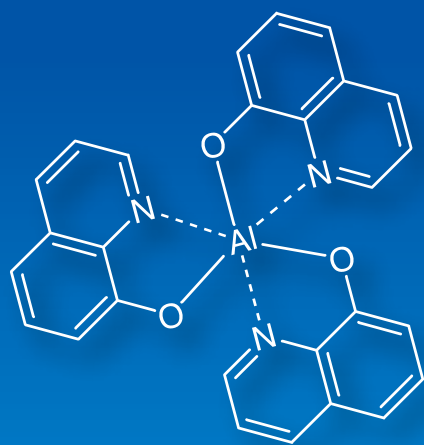


# 有機エレクトロルミネッセンス材料

Organic Light-Emitting Diode (OLED) Materials



ホスト材料

ホール輸送材料(HTM)

電子輸送材料(ETM)

青色ドーパント

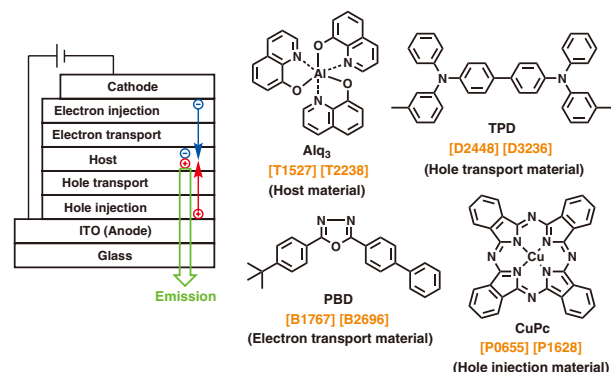
緑色ドーパント

赤色ドーパント

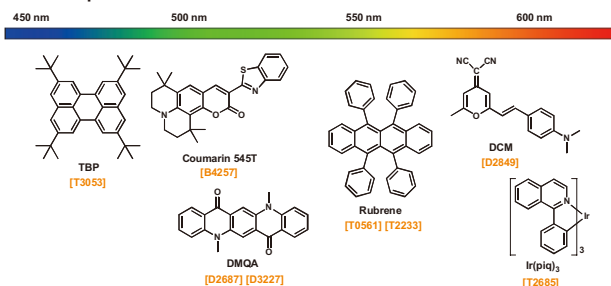
# 有機エレクトロルミネッセンス材料

有機EL素子は環境負荷が小さく、軽量かつフレキシブルな有機材料を用いているため、次世代のディスプレイや照明用光源として注目されています。1987年にTangらは、有機超薄膜の2層構造を採用した有機EL素子を報告し<sup>1)</sup>、応用可能な素子として注目されるようになりました。その後、安達らにより、発光層を電子輸送層とホール輸送層で挟んだ3層構造の素子や発光層とホール輸送層を兼ねた2層構造の素子が報告されました<sup>2,3)</sup>。さらに、キャリア注入特性を改善するために、電子注入層やホール注入層を加えた5層構造以上の有機EL素子も開発されてきています。発光層にドーパントを加えることで、RGBの発光色を制御可能で、これらのドーパントを組合せることで、白色の素子を作成することができます<sup>4,5)</sup>。白色の有機EL素子(WOLED)の応用例として、有機EL照明パネルがあります<sup>6)</sup>。

透明性、均質性、等方的性質、優れた成形加工性などの特徴を有するアモルファス物質は、有機EL素子向けの材料の有力な候補となります。また、有機EL素子の実用化の観点からは、耐熱性・耐久性に優れた素子の開発が求められます。トリフェニルアミン系(TPD)のホール輸送材料は、耐熱性の高いアモルファス物質が多く知られており<sup>7,8)</sup>、有機EL素子には最も汎用的に用いられています。その他、電子輸送材料であるオキサジアゾール誘導体(PBD)<sup>9)</sup>、発光材料(ホスト材料)であるAlq<sub>3</sub><sup>1)</sup>、青色発光材料であるジスチリル誘導体<sup>10)</sup>がアモルファス有機EL材料の基本骨格となっています。



## OLED Dopants



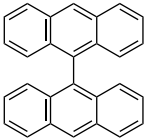
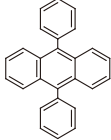
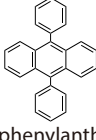
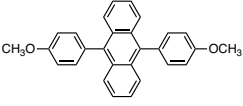
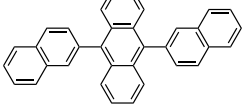
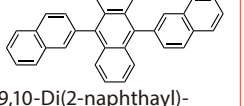
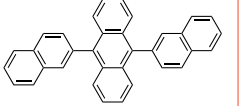
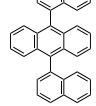
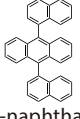
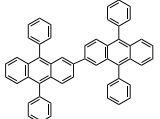
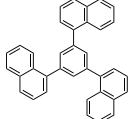
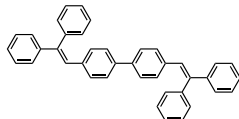
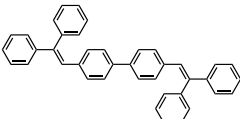
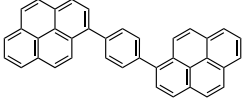
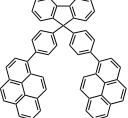
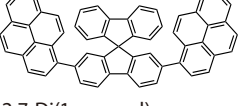
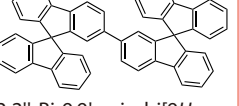
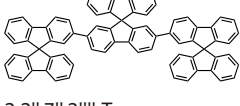
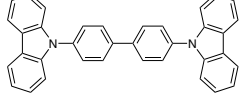
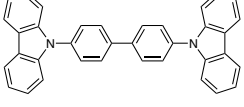
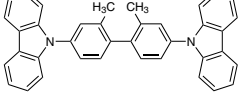
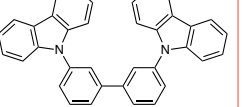
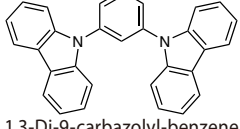
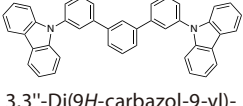
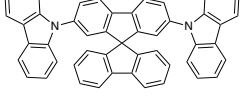
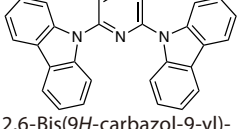
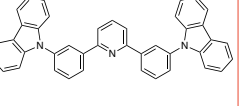
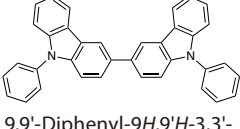
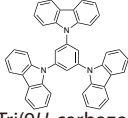
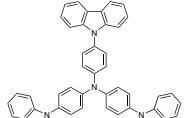
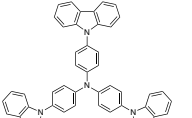
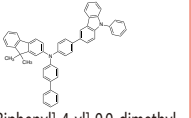
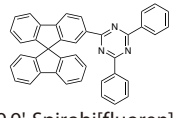
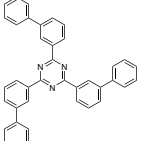
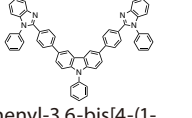
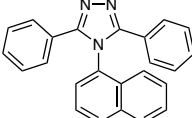
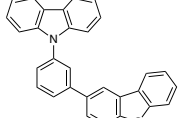
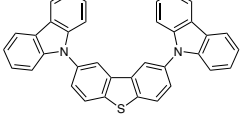
従来から良く知られている蛍光材料は、優れた高電流密度特性などいくつかの利点を有するものの、75%の三重項励起子は熱失活してしまい、25%の一重項励起子しかEL発光には利用できません。一方、三重項励起状態から発光するりん光材料を用いることで、一重項から三重項への項間交差により、100%のEL量子効率を得ることは可能です。これまでにIr(ppy)<sub>3</sub>を基本構造

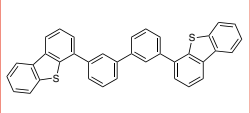
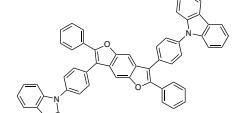
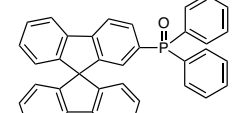
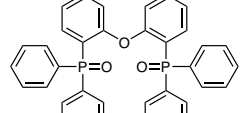
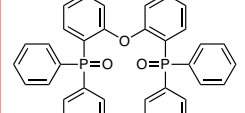
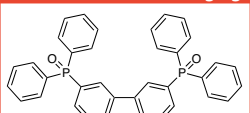
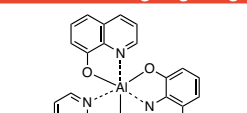
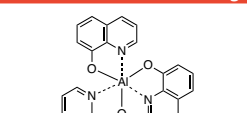
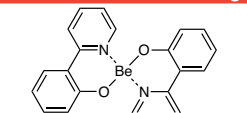
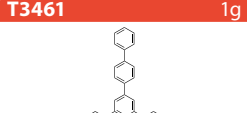
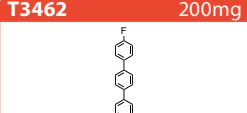
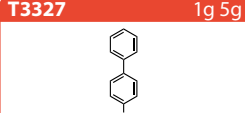
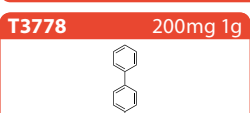
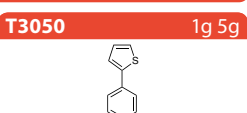
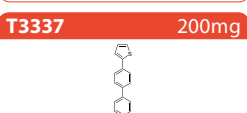
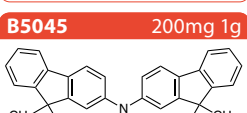
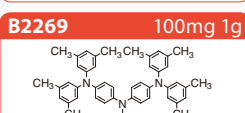
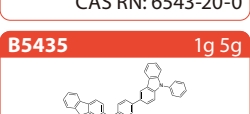
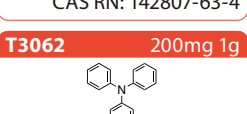
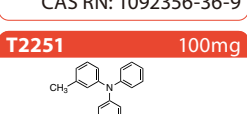
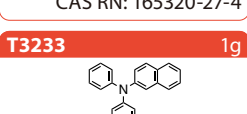
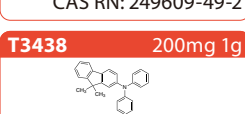
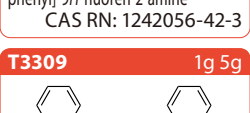
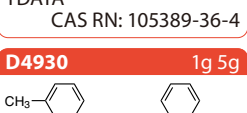

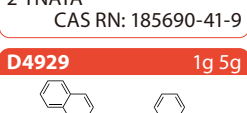
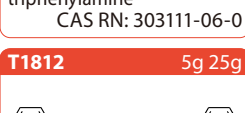

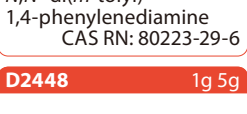
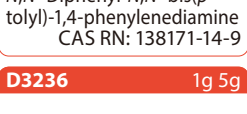


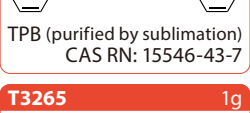


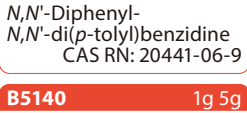

とする様々なりん光材料が報告されています<sup>11)</sup>。貴金属などの重原子を用いない、熱活性型遅延蛍光(TADF)を示す発光材料が近年注目されています。安達らによると、一重項励起状態と三重項励起状態のエネルギー差が小さい材料を用いることで、三重項から一重項励起状態への逆エネルギー移動を高効率で可能にし、原理的には蛍光過程であっても25%以上の励起子生成効率を実現することができます<sup>12,13)</sup>。

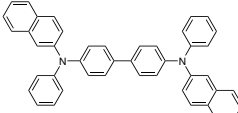
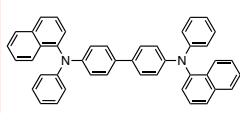
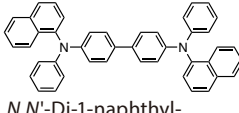
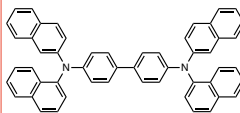
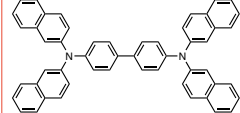
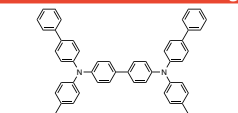
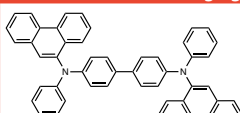
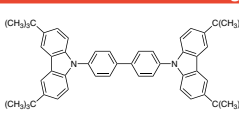
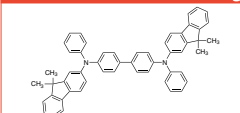
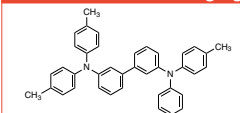
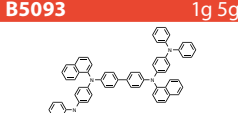
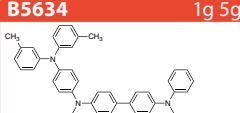
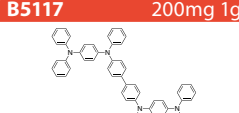
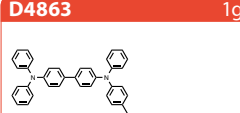
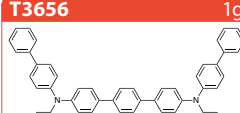
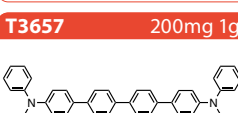
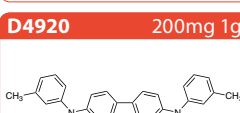
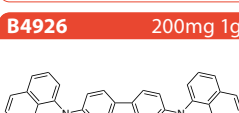
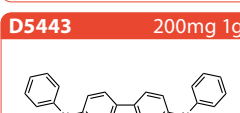
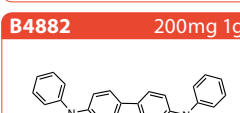
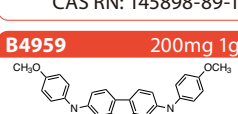
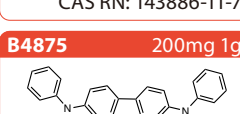
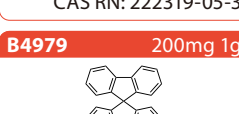
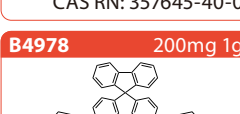
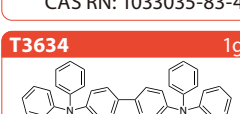
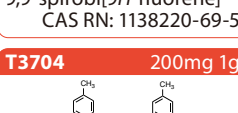
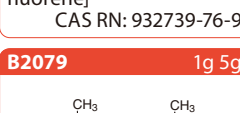
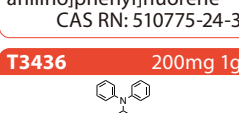
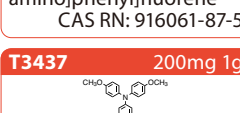
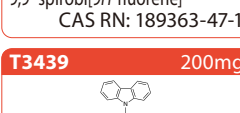


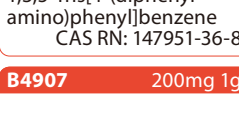


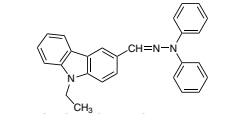
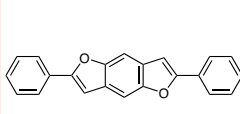
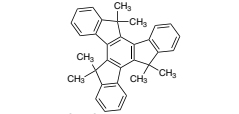
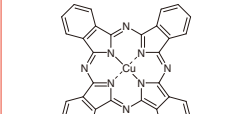
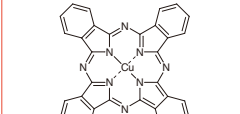
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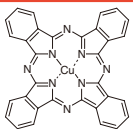
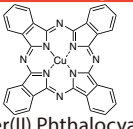
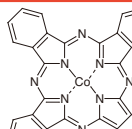
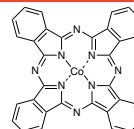
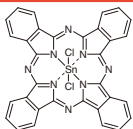
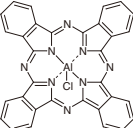
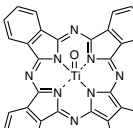
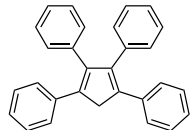
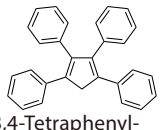
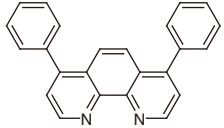
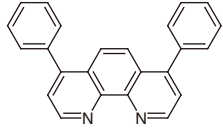
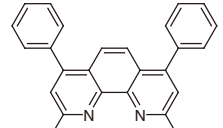
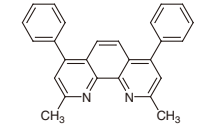
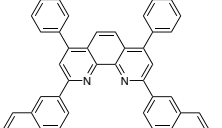
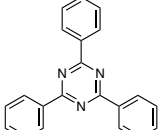
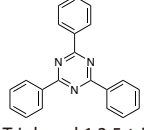
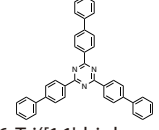
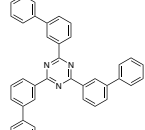
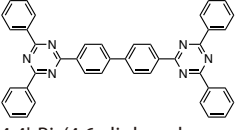
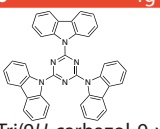
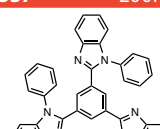
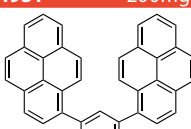
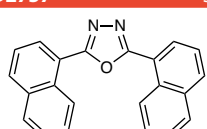
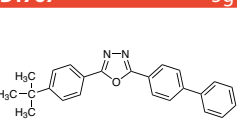
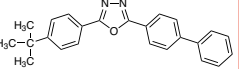
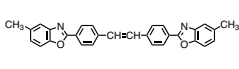
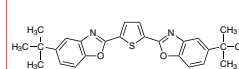
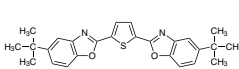
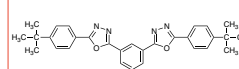
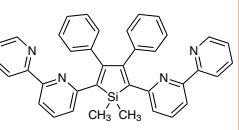
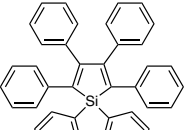

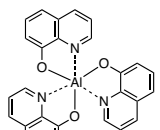
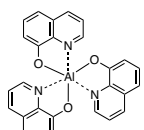
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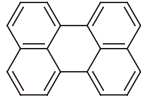
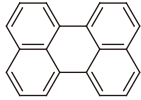
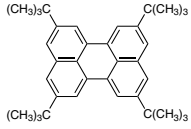
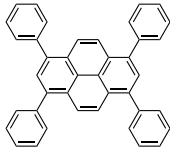
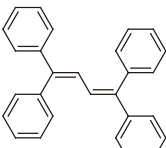
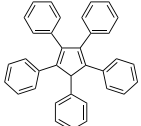
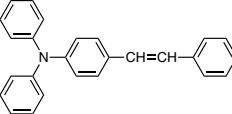
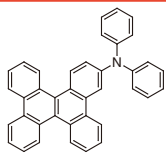
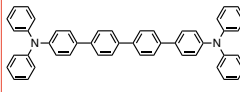
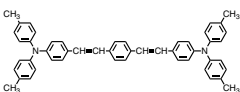
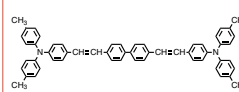
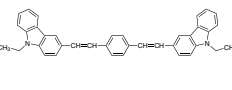
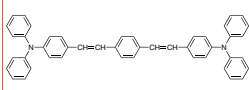
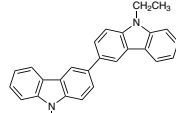
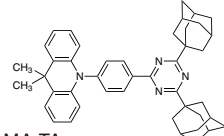
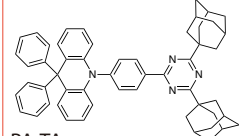
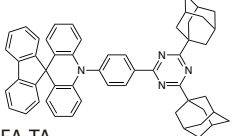
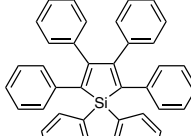
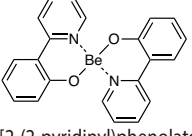
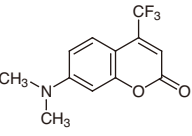
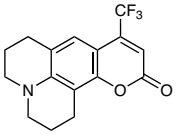
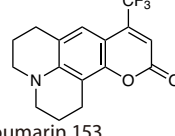
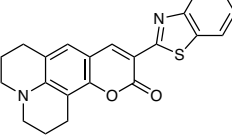
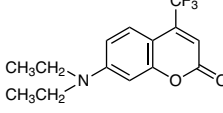
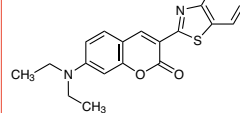
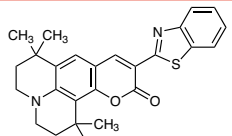
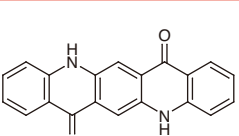
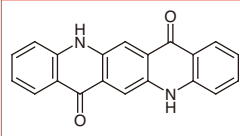
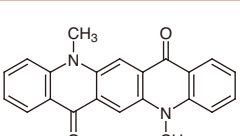
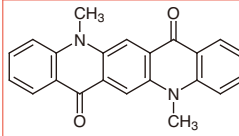
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<b>B5022</b> 200mg 1g  9,10-Bis(4-methoxyphenyl)- anthracene CAS RN: 24672-76-2	<b>D4127</b> 1g  9,10-Di(2-naphthyl)- anthracene CAS RN: 122648-99-1	<b>D5066</b> 200mg  9,10-Di(2-naphthyl)- anthracene (purified by sublimation) CAS RN: 122648-99-1	<b>M2821</b> 200mg 1g  2-Methyl-9,10-di(2-naphthyl)- anthracene CAS RN: 804560-00-7	<b>D3975</b> 1g 5g  9,10-Di(1-naphthyl)- anthracene CAS RN: 26979-27-1
<b>D5065</b> 1g  9,10-Di(1-naphthyl)- anthracene (purified by sublimation) CAS RN: 26979-27-1	<b>T3336</b> 200mg 1g  9,9',10,10'-Tetraphenyl- 2,2'-bianthracene CAS RN: 172285-72-2	<b>T3193</b> 200mg 1g  1,3,5-Tri(1-naphthyl)- benzene CAS RN: 7059-70-3	<b>B2737</b> 5g  DPVBi CAS RN: 142289-08-5	<b>B5139</b> 200mg 1g  DPVBi (purified by sublimation) CAS RN: 142289-08-5
<b>D4922</b> 200mg 1g  1,4-Di(1-pyrenyl)benzene CAS RN: 475460-77-6	<b>B4980</b> 200mg 1g  9,9-Bis[4-(1-pyrenyl)- phenyl]fluorene CAS RN: 1174006-47-3	<b>D4932</b> 200mg 1g  2,7-Di(1-pyrenyl)- 9,9'-spirobi[9H-fluorene] CAS RN: 886456-80-0	<b>B4964</b> 200mg 1g  2,2''-Bi-9,9'-spirobi[9H- fluorene] CAS RN: 664345-18-0	<b>T3433</b> 200mg 1g  2,2''-7''',2''''-Ter- 9,9'-spirobi[9H-fluorene] CAS RN: 518997-91-6
<b>B2713</b> 1g 5g  CBP CAS RN: 58328-31-7	<b>B4219</b> 1g  CBP (purified by sublimation) CAS RN: 58328-31-7	<b>B4910</b> 200mg  CDBP CAS RN: 604785-54-8	<b>D4772</b> 200mg  mCBP CAS RN: 342638-54-4	<b>D4087</b> 1g  1,3-Di-9-carbazolyl-benzene (purified by sublimation) CAS RN: 550378-78-4
<b>D4904</b> 200mg 1g  3,3''-Di(9H-carbazol-9-yl)- 1,1':3',1''-terphenyl CAS RN: 1116499-73-0	<b>D5442</b> 1g  Spiro-2CBP CAS RN: 924899-38-7	<b>B4961</b> 200mg 1g  2,6-Bis(9H-carbazol-9-yl)- pyridine CAS RN: 168127-49-9	<b>B4702</b> 200mg  DCzPPy CAS RN: 1013405-24-7	<b>D4903</b> 1g 5g  9,9'-Diphenyl-9H,9'H-3,3'- bicarbazole CAS RN: 57102-62-2
<b>T1934</b> 1g  1,3,5-Tri(9H-carbazol- 9-yl)benzene (purified by sublimation) CAS RN: 148044-07-9	<b>T2616</b> 1g 5g  TCTA CAS RN: 139092-78-7	<b>T2274</b> 200mg 1g  TCTA (purified by sublimation) CAS RN: 139092-78-7	<b>B5435</b> 1g 5g  N-[[1,1'-Biphenyl]-4-yl]-9,9-dimethyl- N-[4-(9-phenyl-9H-carbazol-3-yl)- phenyl]-9H-fluoren-2-amine CAS RN: 1242056-42-3	<b>P2512</b> 200mg 1g  2-(9,9'-Spirobi[fluorene]- 2-yl)-4,6-diphenyl- 1,3,5-triazine CAS RN: 1207176-84-8
<b>T3997</b> 200mg 1g  T2T CAS RN: 1201800-83-0	<b>P2330</b> 200mg 1g  9-Phenyl-3,6-bis[4-(1- phenylbenzimidazol-2-yl)phenyl]carbazole CAS RN: 1258780-50-5	<b>N1139</b> 200mg 1g  4-(1-Naphthyl)-3,5- diphenyl-1,2,4-triazole CAS RN: 16152-10-6	<b>D4919</b> 200mg 1g  9-[3-(Dibenzofuran-2-yl)- phenyl]-9H-carbazole CAS RN: 1338446-77-7	<b>B4942</b> 200mg 1g  DCzDBT CAS RN: 913738-04-2

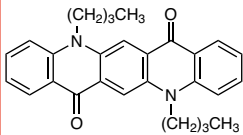
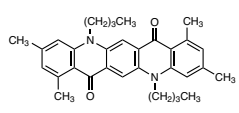
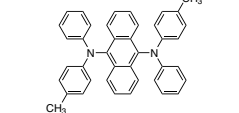
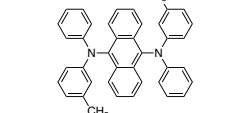
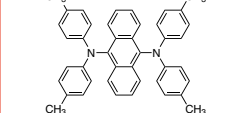
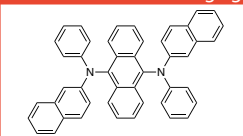
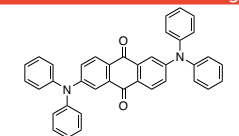
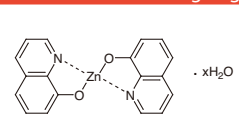
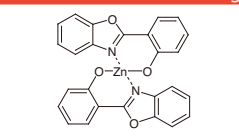
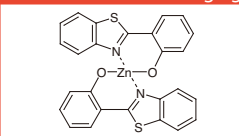
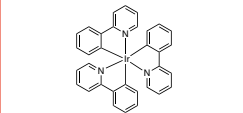
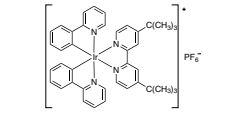
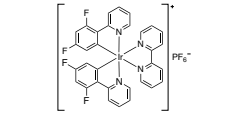
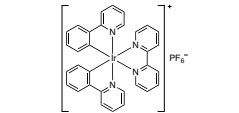
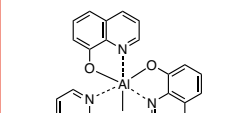
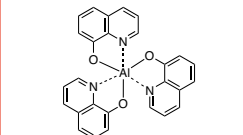
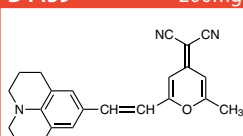
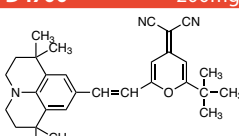
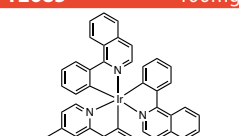
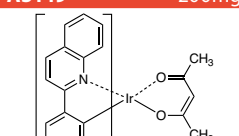
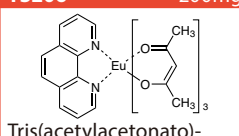
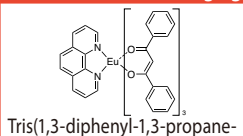
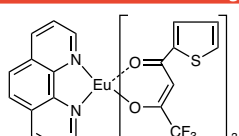
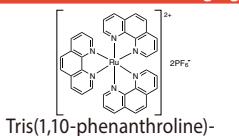
<p><b>D5473</b> 1g</p>  <p>3,3'-Di(dibenzothiophen-4-yl)-1,1'-biphenyl CAS RN: 1128045-14-6</p>	<p><b>C2780</b> 200mg 1g</p>  <p>CZBDF CAS RN: 1092578-51-2</p>	<p><b>D4921</b> 200mg</p>  <p>SPPO1 CAS RN: 1125547-88-7</p>	<p><b>B5240</b> 1g</p>  <p>DPEPO CAS RN: 808142-23-6</p>	<p><b>B5448</b> 200mg 1g</p>  <p>DPEPO (purified by sublimation) CAS RN: 808142-23-6</p>
<p><b>B5822</b> 200mg 1g</p>  <p>2,8-Bis(diphenylphosphoryl)-dibenzo[b,d]furan CAS RN: 911397-27-8</p>	<p><b>T1527</b> 5g 25g 250g</p>  <p>Alq<sub>3</sub> CAS RN: 2085-33-8</p>	<p><b>T2238</b> 5g</p>  <p>Alq<sub>3</sub> (purified by sublimation) CAS RN: 2085-33-8</p>	<p><b>B4720</b> 200mg</p>  <p>Bis[2-(2-pyridinyl)phenolato]beryllium(II) CAS RN: 220694-90-6</p>	
<p><b>ホール輸送材料(HTM)</b></p>				
		<p><b>T3461</b> 1g</p>  <p>1,3,5-Tris(4-biphenyl)benzene CAS RN: 6326-64-3</p>	<p><b>T3462</b> 200mg</p>  <p>1,3,5-Tris(4'-fluoro-biphenyl-4-yl)benzene CAS RN: 372956-40-6</p>	<p><b>T3327</b> 1g 5g</p>  <p>Tris(4-biphenyl)amine CAS RN: 6543-20-0</p>
<p><b>T3778</b> 200mg 1g</p>  <p>Tris(4-biphenyl)amine (purified by sublimation) CAS RN: 6543-20-0</p>	<p><b>T3050</b> 1g 5g</p>  <p>Tris[4-(2-thienyl)phenyl]amine CAS RN: 142807-63-4</p>	<p><b>T3337</b> 200mg</p>  <p>Tris[4'-(2-thienyl)-4-biphenyl]amine CAS RN: 1092356-36-9</p>	<p><b>B5045</b> 200mg 1g</p>  <p>N,N-Bis(9,9-dimethyl-9H-fluoren-2-yl)aniline CAS RN: 165320-27-4</p>	<p><b>B2269</b> 100mg 1g</p>  <p>4,4'-Bis[di(3,5-xylyl)amino]-4''-phenyltriphenylamine CAS RN: 249609-49-2</p>
<p><b>B5435</b> 1g 5g</p>  <p>N-[[1,1'-Biphenyl]-4-yl]-9,9-dimethyl-N-[4-(9-phenyl-9H-carbazol-3-yl)-phenyl]-9H-fluoren-2-amine CAS RN: 1242056-42-3</p>	<p><b>T3062</b> 200mg 1g</p>  <p>TDATA CAS RN: 105389-36-4</p>	<p><b>T2251</b> 100mg</p>  <p>m-MTDATA CAS RN: 124729-98-2</p>	<p><b>T3233</b> 1g</p>  <p>2-TNATA CAS RN: 185690-41-9</p>	<p><b>T3438</b> 200mg 1g</p>  <p>4,4',4''-Tris[9,9-dimethyl-fluoren-2-yl(phenyl)-amino]-triphenylamine CAS RN: 303111-06-0</p>
<p><b>T3309</b> 1g 5g</p>  <p>N,N,N',N'-Tetraphenyl-1,4-phenylenediamine CAS RN: 14118-16-2</p>	<p><b>D4930</b> 1g 5g</p>  <p>N,N'-Diphenyl-N,N'-di(p-tolyl)-1,4-phenylenediamine CAS RN: 80223-29-6</p>	<p><b>D4905</b> 1g 5g</p>  <p>N,N'-Diphenyl-N,N'-bis(p-tolyl)-1,4-phenylenediamine CAS RN: 138171-14-9</p>	<p><b>D4929</b> 1g 5g</p>  <p>N,N'-Di(2-naphthyl)-N,N'-diphenyl-1,4-phenylenediamine CAS RN: 139994-47-1</p>	<p><b>T1812</b> 5g 25g</p>  <p>TPB CAS RN: 15546-43-7</p>
<p><b>T3266</b> 1g 5g</p>  <p>TPB (purified by sublimation) CAS RN: 15546-43-7</p>	<p><b>D2448</b> 1g 5g</p>  <p>TPD CAS RN: 65181-78-4</p>	<p><b>D3236</b> 1g 5g</p>  <p>TPD (purified by sublimation) CAS RN: 65181-78-4</p>	<p><b>D4834</b> 200mg 1g</p>  <p>N,N'-Diphenyl-N,N'-di(p-tolyl)benzidine CAS RN: 20441-06-9</p>	<p><b>T2269</b> 5g</p>  <p>N,N,N',N'-Tetrakis(p-tolyl)-benzidine CAS RN: 76185-65-4</p>
<p><b>T3265</b> 1g</p>  <p>N,N,N',N'-Tetrakis(p-tolyl)-benzidine (purified by sublimation) CAS RN: 76185-65-4</p>	<p><b>T3290</b> 200mg 1g</p>  <p>MeO-TPD CAS RN: 122738-21-0</p>	<p><b>B4470</b> 5g 25g</p>  <p>N,N'-Bis(4-methoxy-2-methylphenyl)-N,N'-diphenylbenzidine CAS RN: 169685-34-1</p>	<p><b>B5140</b> 1g 5g</p>  <p>N,N'-Bis(4-methoxy-2-methylphenyl)-N,N'-diphenylbenzidine (purified by sublimation) CAS RN: 169685-34-1</p>	<p><b>D4928</b> 1g 5g</p>  <p>N,N'-Di(4-biphenyl)-N,N'-diphenylbenzidine CAS RN: 134008-76-7</p>

<b>D4253</b> 1g  <i>N,N'</i> -Di-2-naphthyl- <i>N,N'</i> -diphenylbenzidine CAS RN: 139255-17-7	<b>D5126</b> 1g 5g  <i>N,N'</i> -Di-1-naphthyl- <i>N,N'</i> -diphenylbenzidine CAS RN: 123847-85-8	<b>D3970</b> 1g 5g  <i>N,N'</i> -Di-1-naphthyl- <i>N,N'</i> -diphenylbenzidine (purified by sublimation) CAS RN: 123847-85-8	<b>D4855</b> 200mg 1g  <i>N,N'</i> -Di-1-naphthyl- <i>N,N'</i> -di-2-naphthylbenzidine CAS RN: 374592-88-8	<b>T3288</b> 1g  <i>N,N,N',N'</i> -Tetra(2-naphthyl)-benzidine CAS RN: 141752-82-1
<b>T3054</b> 1g  <i>N,N,N',N'</i> -Tetrakis(4-biphenyl)benzidine CAS RN: 164724-35-0	<b>D5177</b> 200mg 1g  <i>N,N'</i> -Di(9-phenanthrenyl)- <i>N,N'</i> -diphenylbenzidine CAS RN: 182507-83-1	<b>B5675</b> 1g  4,4'-Bis(3,6-di- <i>tert</i> -butyl-9 <i>H</i> -carbazol-9-yl)-1,1'-biphenyl CAS RN: 838862-47-8	<b>B4962</b> 1g  <i>N,N'</i> -Bis(9,9-dimethyl-9 <i>H</i> -fluoren-2-yl)- <i>N,N'</i> -diphenylbenzidine CAS RN: 361486-60-4	<b>B4874</b> 1g 5g  3,3'-Bis(di( <i>p</i> -tolyl)amino)-biphenyl CAS RN: 161485-60-5
<b>B5093</b> 1g 5g  <i>N,N'</i> -Bis[4-(diphenylamino)phenyl]- <i>N,N'</i> -di(1-naphthyl)-benzidine CAS RN: 910058-11-6	<b>B5634</b> 1g 5g  DNTPD CAS RN: 199121-98-7	<b>B5117</b> 200mg 1g  <i>N,N'</i> -Bis[4-(diphenylamino)phenyl]- <i>N,N'</i> -diphenylbenzidine CAS RN: 209980-53-0	<b>D4863</b> 1g  TPTE CAS RN: 167218-46-4	<b>T3656</b> 1g  TaTm CAS RN: 952431-34-4
<b>T3657</b> 200mg 1g  <i>N,N,N',N'</i> -Tetraphenyl[1,1':4',1'':4'':1''':1''''-quaterphenyl]-4,4''-diamine CAS RN: 145898-89-1	<b>D4920</b> 200mg 1g  DMFL-TPD CAS RN: 143886-11-7	<b>B4926</b> 200mg 1g  DMFL-NPB CAS RN: 222319-05-3	<b>D5443</b> 200mg 1g  DPFL-NPB CAS RN: 357645-40-0	<b>B4882</b> 200mg 1g  2,7-Bis[ <i>N</i> -( <i>m</i> -tolyl)anilino]-9,9'-spirobi[9 <i>H</i> -fluorene] CAS RN: 1033035-83-4
<b>B4959</b> 200mg 1g  2,7-Bis[ <i>N,N</i> -bis(4-methoxyphenyl)amino]-9,9'-spirobi[9 <i>H</i> -fluorene] CAS RN: 1138220-69-5	<b>B4875</b> 200mg 1g  2,7-Bis[ <i>N</i> -(1-naphthyl)anilino]-9,9'-spirobi[9 <i>H</i> -fluorene] CAS RN: 932739-76-9	<b>B4979</b> 200mg 1g  9,9-Bis[4-[ <i>N</i> -(1-naphthyl)anilino]phenyl]fluorene CAS RN: 510775-24-3	<b>B4978</b> 200mg 1g  9,9-Bis[4-[di(2-naphthyl)amino]phenyl]fluorene CAS RN: 916061-87-5	<b>T3634</b> 1g  2,2',7',7'-Tetrakis(diphenylamino)-9,9'-spirobi[9 <i>H</i> -fluorene] CAS RN: 189363-47-1
<b>T3704</b> 200mg 1g  Spiro-TTB CAS RN: 515834-67-0	<b>B2079</b> 1g 5g  TAPC CAS RN: 58473-78-2	<b>T3436</b> 200mg 1g  1,3,5-Tris[4-(diphenylamino)phenyl]benzene CAS RN: 147951-36-8	<b>T3437</b> 200mg 1g  1,3,5-Tris[4-[bis(4-methoxyphenyl)amino]phenyl]benzene CAS RN: 142894-38-0	<b>T3439</b> 200mg  1,3,5-Tris[4-(9-carbazolyl)phenyl]benzene CAS RN: 160780-82-5
<b>B5672</b> 1g 5g 25g  TOP-HTM-α1 CAS RN: 872466-50-7	<b>B4908</b> 200mg 1g  HN-D1 CAS RN: 1395881-55-6	<b>B4907</b> 200mg 1g  HN-D2 CAS RN: 1395881-58-9	<b>E0570</b> 1g  9-Ethyl-3-( <i>N</i> -methyl- <i>N</i> -phenylhydrazonomethyl)-carbazole CAS RN: 75232-44-9	<b>E0574</b> 1g  9-Ethylcarbazole-3-carboxaldehyde <i>N</i> -Benzyl- <i>N</i> -phenylhydrazone CAS RN: 75238-79-8
<b>E0571</b> 1g  9-Ethylcarbazole-3-carboxaldehyde Diphenylhydrazone CAS RN: 73276-70-7	<b>D4633</b> 200mg 1g  2,6-Diphenylbenzo[1,2- <i>b</i> :4,5- <i>b'</i> ]difuran CAS RN: 5379-77-1	<b>D4753</b> 200mg  10,15-Dihydro-5,5,10,10,15,15-hexamethyl-5 <i>H</i> -tribenzo[ <i>a,f,k</i> ]-trindene CAS RN: 597554-76-2	<b>P1005</b> 25g 250g  Copper(II) Phthalocyanine (α-form) CAS RN: 147-14-8	<b>P1006</b> 25g 100g 500g  Copper(II) Phthalocyanine (β-form) CAS RN: 147-14-8

<p><b>P1628</b> 1g</p>  <p>Copper Phthalocyanine (purified by sublimation) CAS RN: 147-14-8</p>	<p><b>C3645</b> 100mg 500mg</p>  <p>Copper(II) Phthalocyanine (purified by sublimation) [for organic electronics] CAS RN: 147-14-8</p>	<p><b>P0887</b> 5g 25g</p>  <p>Cobalt(II) Phthalocyanine CAS RN: 3317-67-7</p>	<p><b>C3252</b> 200mg</p>  <p>Cobalt(II) Phthalocyanine (purified by sublimation) CAS RN: 3317-67-7</p>	<p><b>P0997</b> 1g</p>  <p>Tin(IV) Phthalocyanine Dichloride CAS RN: 18253-54-8</p>
<p><b>C1167</b> 1g</p>  <p>Phthalocyanine Chloroaluminum CAS RN: 14154-42-8</p>	<p><b>T2272</b> 200mg 1g</p>  <p>TiOPc (purified by sublimation) CAS RN: 26201-32-1</p>	<p><b>電子輸送材料(ETM)</b></p>		
<p><b>T1333</b> 1g 5g</p>  <p>1,2,3,4-Tetraphenyl- 1,3-cyclopentadiene CAS RN: 15570-45-3</p>	<p><b>T3771</b> 1g</p>  <p>1,2,3,4-Tetraphenyl- 1,3-cyclopentadiene (purified by sublimation) CAS RN: 15570-45-3</p>			
<p><b>D0905</b> 1g 5g</p>  <p>Bathophenanthroline CAS RN: 1662-01-7</p>	<p><b>B2695</b> 1g</p>  <p>Bathophenanthroline (purified by sublimation) CAS RN: 1662-01-7</p>	<p><b>D0711</b> 1g 5g</p>  <p>Bathocuproine CAS RN: 4733-39-5</p>	<p><b>B2694</b> 1g 5g</p>  <p>Bathocuproine (purified by sublimation) CAS RN: 4733-39-5</p>	<p><b>D5581</b> 200mg 1g</p>  <p>NBPben CAS RN: 1174006-43-9</p>
<p><b>T2785</b> 1g 5g</p>  <p>2,4,6-Triphenyl-1,3,5-triazine CAS RN: 493-77-6</p>	<p><b>T3268</b> 1g</p>  <p>2,4,6-Triphenyl-1,3,5-triazine (purified by sublimation) CAS RN: 493-77-6</p>	<p><b>T3539</b> 200mg 1g</p>  <p>2,4,6-Tri([1,1'-biphenyl]- 4-yl)-1,3,5-triazine CAS RN: 31274-51-8</p>	<p><b>T3997</b> 200mg 1g</p>  <p>T2T CAS RN: 1201800-83-0</p>	<p><b>B4977</b> 200mg 1g</p>  <p>4,4'-Bis(4,6-diphenyl- 1,3,5-triazin-2-yl)biphenyl CAS RN: 266349-83-1</p>
<p><b>T2700</b> 1g 5g</p>  <p>2,4,6-Tri(9H-carbazol-9-yl)- 1,3,5-triazine (purified by sublimation) CAS RN: 134984-37-5</p>	<p><b>T3537</b> 200mg 1g</p>  <p>TPBi CAS RN: 192198-85-9</p>	<p><b>D4931</b> 200mg 1g</p>  <p>3,5-Di(1-pyrenyl)pyridine CAS RN: 1246467-58-2</p>	<p><b>D2757</b> 5g</p>  <p>2,5-Di(1-naphthyl)- 1,3,4-oxadiazole CAS RN: 905-62-4</p>	<p><b>B1767</b> 5g</p>  <p>PBD CAS RN: 15082-28-7</p>
<p><b>B2696</b> 1g 5g</p>  <p>PBD (purified by sublimation) CAS RN: 15082-28-7</p>	<p><b>B2676</b> 1g</p>  <p>4,4'-Bis(5-methyl- 2-benzoxazolyl)stilbene (purified by sublimation) CAS RN: 2397-00-4</p>	<p><b>B1554</b> 5g 25g</p>  <p>BBOT CAS RN: 7128-64-5</p>	<p><b>B4221</b> 1g 5g</p>  <p>BBOT (purified by sublimation) CAS RN: 7128-64-5</p>	<p><b>B4252</b> 200mg 1g</p>  <p>OXD-7 CAS RN: 138372-67-5</p>
<p><b>B4233</b> 200mg</p>  <p>2,5-Bis(2,2'-bipyridin-6-yl)- 1,1-dimethyl-3,4-diphenylsilole CAS RN: 350042-00-1</p>	<p><b>H1413</b> 1g</p>  <p>HPS CAS RN: 752-28-3</p>	<p><b>Q0100</b> 1g 5g</p>  <p>(8-Quinololato)lithium CAS RN: 25387-93-3</p>	<p><b>T1527</b> 5g 25g 250g</p>  <p>Alq<sub>3</sub> CAS RN: 2085-33-8</p>	<p><b>T2238</b> 5g</p>  <p>Alq<sub>3</sub> (purified by sublimation) CAS RN: 2085-33-8</p>

## 青色ドーパント

青色ドーパント		<b>P0078</b> 1g 5g 25g  Perylene CAS RN: 198-55-0	<b>P1629</b> 1g  Perylene (purified by sublimation) CAS RN: 198-55-0	<b>T3053</b> 100mg  2,5,8,11-Tetra- <i>tert</i> -butylperylene CAS RN: 80663-92-9
		<b>T3042</b> 50mg 200mg  1,3,6,8-Tetraphenylpyrene CAS RN: 13638-82-9	<b>T0168</b> 1g 5g  TPB CAS RN: 1450-63-1	<b>P1633</b> 100mg  1,2,3,4,5-Pentaphenyl-1,3-cyclopentadiene CAS RN: 2519-10-0
<b>S0924</b> 1g 5g  4-Styryltriphenylamine CAS RN: 89114-74-9	<b>D3739</b> 200mg  3-DPADBC CAS RN: 1397202-77-5	<b>T3657</b> 200mg 1g  <i>N,N,N',N'</i> -Tetraphenyl[1,1':4,1'':4'':1''']-quaterphenyl-4,4''-diamine CAS RN: 145898-89-1	<b>B2080</b> 1g  1,4-Bis[4-( <i>di-p</i> -tolylamino)-styryl]benzene CAS RN: 55035-43-3	<b>B4682</b> 200mg  4,4'-Bis[4-( <i>di-p</i> -tolylamino)-styryl]biphenyl CAS RN: 119586-44-6
<b>B4792</b> 200mg  1,4-Bis[2-(9-ethylcarbazol-3-yl)vinyl]benzene CAS RN: 62608-15-5	<b>B5820</b> 200mg 1g  DSA-Ph CAS RN: 55035-42-2	<b>D5387</b> 1g 5g  9,9'-Diethyl-9 <i>H</i> ,9' <i>H</i> -3,3'-bicarbazole CAS RN: 20466-00-6	<b>D5745</b> 200mg  MA-TA (purified by sublimation) CAS RN: 2250187-15-4	<b>D5746</b> 200mg  PA-TA (purified by sublimation) CAS RN: 2250187-17-6
<b>D5747</b> 200mg  FA-TA (purified by sublimation) CAS RN: 2250187-16-5	<b>H1413</b> 1g  HPS CAS RN: 752-28-3	<b>B4720</b> 200mg  Bis[2-(2-pyridinyl)phenolato]beryllium(II) CAS RN: 220694-90-6		
緑色ドーパント		<b>D3356</b> 5g  Coumarin 152 CAS RN: 53518-14-2	<b>C2858</b> 200mg 1g  Coumarin 153 CAS RN: 53518-18-6	<b>C3640</b> 200mg  Coumarin 153 (purified by sublimation) CAS RN: 53518-18-6
		<b>C2900</b> 200mg  Coumarin 545 CAS RN: 85642-11-1	<b>D4466</b> 200mg  Coumarin 481 CAS RN: 41934-47-8	<b>B2088</b> 1g 5g  Coumarin 6 CAS RN: 38215-36-0
<b>B4257</b> 200mg  Coumarin 545T CAS RN: 155306-71-1	<b>Q0057</b> 5g 25g  Quinacridone CAS RN: 1047-16-1	<b>Q0083</b> 1g  Quinacridone (purified by sublimation) CAS RN: 1047-16-1	<b>D2687</b> 1g 5g  DMQA CAS RN: 19205-19-7	<b>D3227</b> 1g  DMQA (purified by sublimation) CAS RN: 19205-19-7

<p><b>D4780</b> 200mg 1g</p>  <p><i>N,N'</i>-Dibutylquinacridone CAS RN: 99762-80-8</p>	<p><b>D4697</b> 200mg 1g</p>  <p>5,12-Dibutyl-1,3,8,10-tetramethylquinacridone CAS RN: 850815-10-0</p>	<p><b>B5149</b> 200mg 1g</p>  <p>9,10-Bis[<i>N</i>-(<i>p</i>-tolyl)anilino]anthracene CAS RN: 190974-21-1</p>	<p><b>B4965</b> 200mg 1g</p>  <p>9,10-Bis[<i>N</i>-(<i>m</i>-tolyl)anilino]anthracene CAS RN: 189263-81-8</p>	<p><b>B4966</b> 200mg 1g</p>  <p>9,10-Bis[<i>N,N</i>-di(<i>p</i>-tolyl)amino]anthracene CAS RN: 177799-16-5</p>
<p><b>B5023</b> 200mg 1g</p>  <p>9,10-Bis[<i>N</i>-(2-naphthyl)anilino]anthracene CAS RN: 473717-08-7</p>	<p><b>B5092</b> 200mg</p>  <p>2,6-Bis(diphenylamino)anthraquinone CAS RN: 868850-50-4</p>	<p><b>B1678</b> 5g 25g</p>  <p>Bis(8-quinolinolato)zinc(II) Hydrate CAS RN: 13978-85-3</p>	<p><b>B2078</b> 5g</p>  <p>Bis[2-(2-benzoxazolyl)phenolato]zinc(II) CAS RN: 23467-27-8</p>	<p><b>B2077</b> 1g 5g</p>  <p>Bis[2-(2-benzothiazolyl)phenolato]zinc(II) CAS RN: 58280-31-2</p>
<p><b>T1946</b> 200mg</p>  <p>Ir(ppy)<sub>3</sub> (purified by sublimation) CAS RN: 94928-86-6</p>	<p><b>D4887</b> 200mg</p>  <p>Ir[(ppy)<sub>2</sub>(dtbbpy)]PF<sub>6</sub> CAS RN: 676525-77-2</p>	<p><b>B4944</b> 200mg</p>  <p>Ir[(dFppy)<sub>2</sub>(bpy)]PF<sub>6</sub> CAS RN: 864163-80-4</p>	<p><b>B4893</b> 200mg</p>  <p>[Ir(ppy)<sub>2</sub>(bpy)]PF<sub>6</sub> CAS RN: 106294-60-4</p>	<p><b>T1527</b> 5g 25g 250g</p>  <p>Alq<sub>3</sub> CAS RN: 2085-33-8</p>
<p><b>T2238</b> 5g</p>  <p>Alq<sub>3</sub> (purified by sublimation) CAS RN: 2085-33-8</p>	<p><b>赤色ドーパント</b></p>			
<p><b>D4459</b> 200mg</p>  <p>DCM 2 CAS RN: 51325-95-2</p>	<p><b>D4700</b> 200mg</p>  <p>DCJTb CAS RN: 200052-70-6</p>	<p><b>T2685</b> 100mg</p>  <p>Ir(piqa)<sub>3</sub> (purified by sublimation) CAS RN: 435293-93-9</p>	<p><b>A3149</b> 200mg</p>  <p>PQIr CAS RN: 1173886-71-9</p>	<p><b>T3206</b> 200mg</p>  <p>Tris(acetylacetonato)-(1,10-phenanthroline)-europium(III) CAS RN: 17568-09-1</p>
<p><b>T1735</b> 1g 5g</p>  <p>Tris(1,3-diphenyl-1,3-propanedionato)(1,10-phenanthroline)-europium(III) CAS RN: 17904-83-5</p>	<p><b>P1766</b> 1g</p>  <p>Eu(TTA)<sub>3</sub>phen CAS RN: 17904-86-8</p>	<p><b>T3208</b> 200mg 1g</p>  <p>Tris(1,10-phenanthroline)-ruthenium(II) Bis(hexafluorophosphate) CAS RN: 60804-75-3</p>		



# 東京化成工業株式会社

## 試薬製品について

■本社営業部 〒103-0023 東京都中央区日本橋本町4-10-1  
Tel: 03-3668-0489 Fax: 03-3668-0520 E-mail: Sales-JP@TCIchemicals.com

■大阪営業部 〒541-0041 大阪府大阪市中央区北浜1-1-21 第2中井ビル1階  
Tel: 06-6228-1155 Fax: 06-6228-1158 E-mail: osaka-s@TCIchemicals.com

## スケールアップ、受託サービス(合成・開発・製造)について

□化成品部 〒103-0023 東京都中央区日本橋本町4-10-1  
Tel: 03-5651-5171 Fax: 03-5640-8021 E-mail: finechemicals@TCIchemicals.com

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