

# Молекулярные проводники

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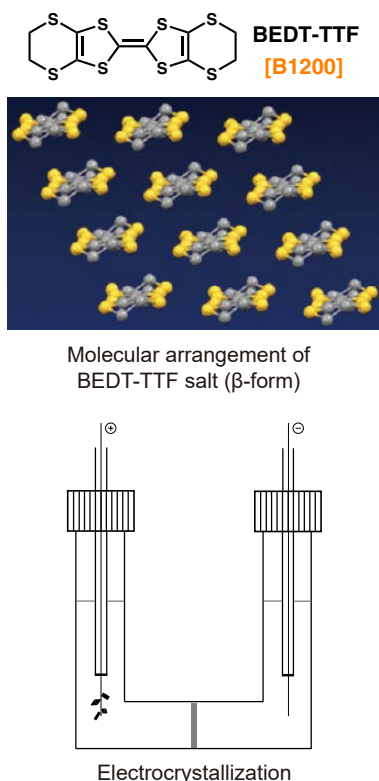
Киргизия +996(312)96-26-47

Адрес: <https://tci.nt-rt.ru/> || эл.почта: [tic@nt-rt.ru](mailto:tic@nt-rt.ru)

# Molecular Conductors

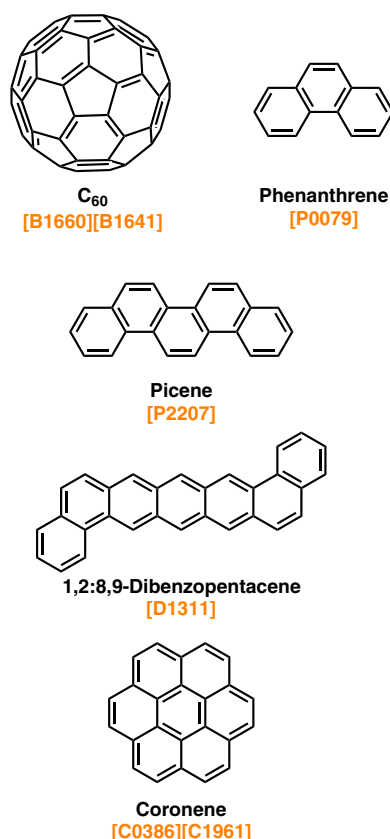
A molecular conductor is an electrical conductor based on a molecular component. A chemical modification of the molecule can control the electronic structure and physical properties. We can synthesize an opened-shell molecular conductor by chemical or electrochemical doping of a carrier, although an organic molecule is usually an insulator with a closed-shell structure. The first example of an organic conductor was observed from a bromine-doped perylene.<sup>1)</sup> After this observation, a molecular conductor based on tetrathiafulvalene (TTF) was reported in the 1970s,<sup>2)</sup> and the first case of an organic molecular superconductor was observed from the organic salt of tetraselenafulvalene, (TMTSF)<sub>2</sub>X in the 1980s.<sup>3)</sup> These TTF and TMTSF salts form a one-dimensional or pseudo one-dimensional molecular arrangement. On the other hand, bis(ethylenedithio)-tetrathiafulvalene (BEDT-TTF) favors forming a two-dimensional molecular arrangement, which is a relatively stable molecular metal toward temperature.<sup>4-6)</sup>

Conducting salts of TTF derivatives can be normally obtained by an electrochemical oxidation (electrocrystallization).<sup>7)</sup> These TTF derivatives can function as donor molecules with a hole carrier. Metal dithiolene complexes (M(dmit)<sub>2</sub>), 7,7,8,8-Tetracyanoquinodimethane (TCNQ) and fullerene (C<sub>60</sub>) are acceptor molecules with an electron carrier. An M(dmit)<sub>2</sub> salt produced the first example of an acceptor-based organic superconductor.<sup>8)</sup> Chemical modifications of the M(dmit)<sub>2</sub> salt produced plenty of those organic superconductors by changing the central metal atom and counter cation.<sup>9)</sup>



Several alkali-doped nanocarbon and nanographene compounds have shown superconductivity. It is well known that rubidium- and cesium-doped fullerenes have demonstrated superconductivity at more than 30 K.<sup>10)</sup> Recently, superconductivity of Cs<sub>3</sub>C<sub>60</sub> at 38 K was reported.<sup>11)</sup> Although the molecular conductors synthesized from TTF and M(dmit)<sub>2</sub> exhibit low-dimensional molecular arrangements, these fullerene salts can form three-dimensionality.<sup>12)</sup> Kubozono *et al.* reported that an alkali-doped picene demonstrated superconductivity at 18 K.<sup>13)</sup> This result indicates that one can observe superconductivity from a planar nanocarbon material as well. In addition to the picene-based superconductor, an alkali-doped phenanthrene ( $T_c = 5$  K),<sup>14)</sup> alkali-doped coronene ( $T_c = 15$  K),<sup>15)</sup> and alkali-doped 1,2:8,9-dibenzopentacene ( $T_c = 33$  K)<sup>16)</sup> have also shown superconductivity.

## Superconducting materials by alkali metal doping

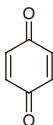
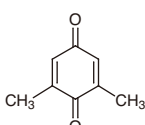
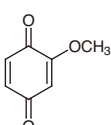
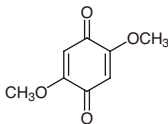
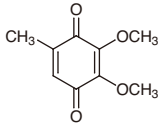
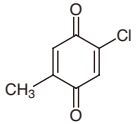
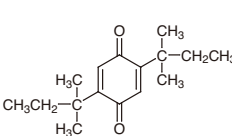
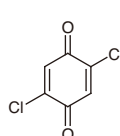
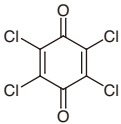
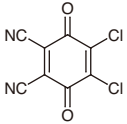
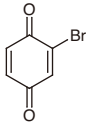
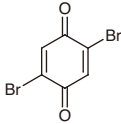
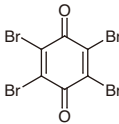
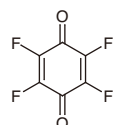
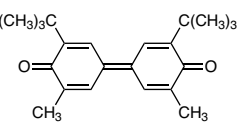
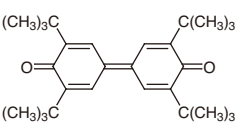
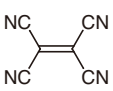
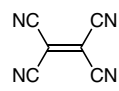
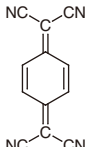
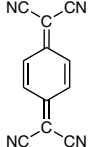
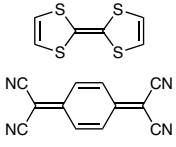
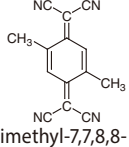
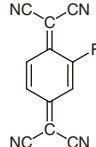
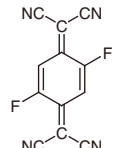
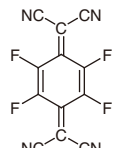
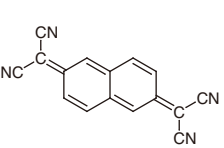
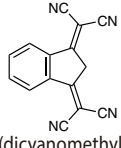
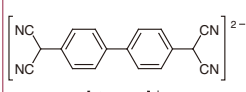


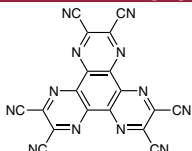
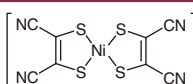
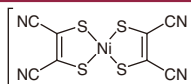
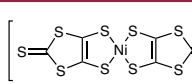
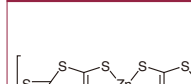
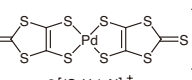
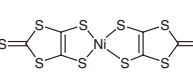
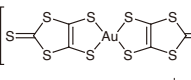
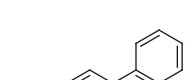
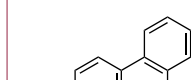
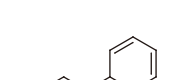
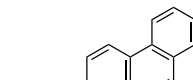
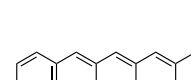
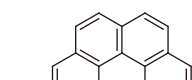
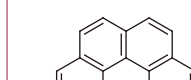
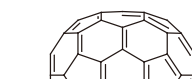
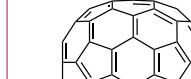
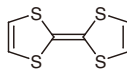
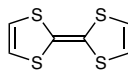
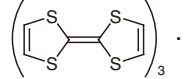
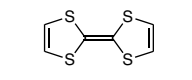
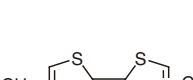
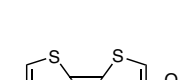
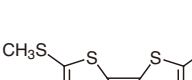
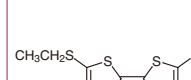
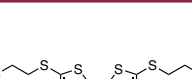
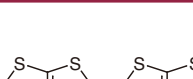
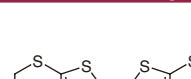
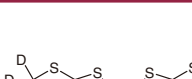
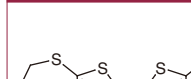
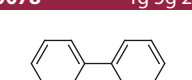
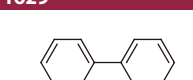
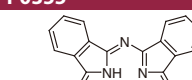
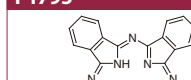
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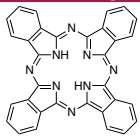
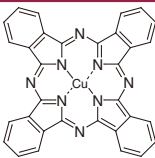
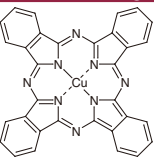
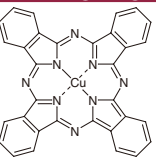
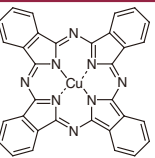
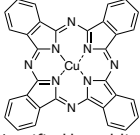
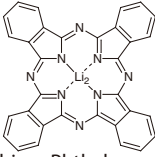
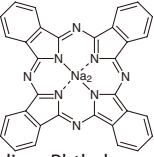
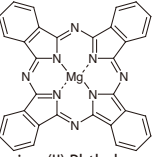
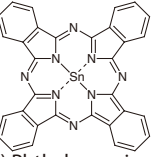
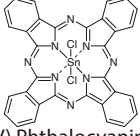
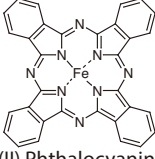
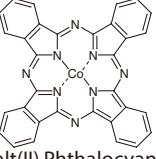
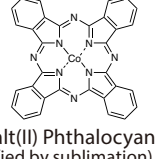
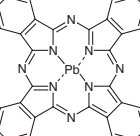
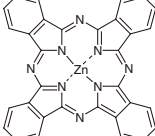
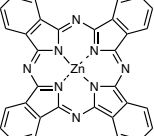
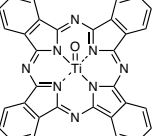
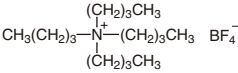
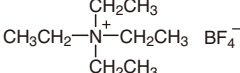
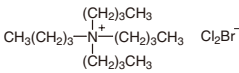
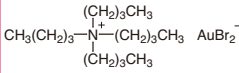
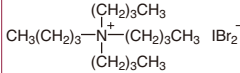
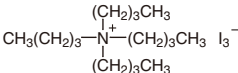
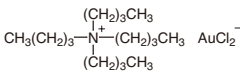
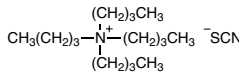
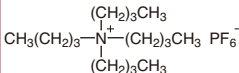
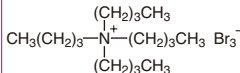
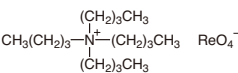
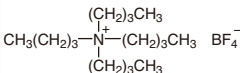
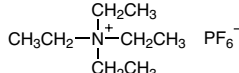
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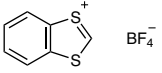
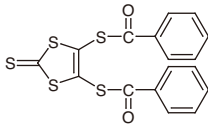
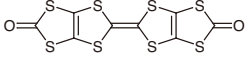
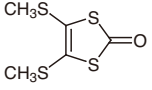
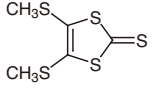
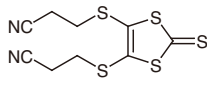
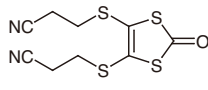
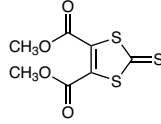
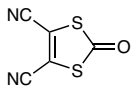
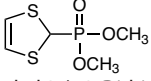
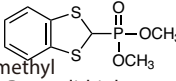
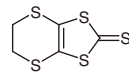
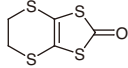
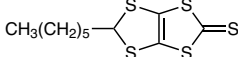
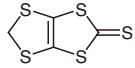
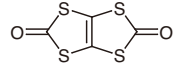
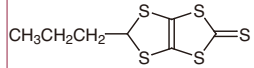
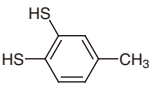
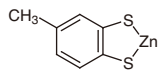
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## Acceptor Molecules

|                                                                                                                                                                  |                                                                                                                                                                                     |                                                                                                                                                                                |                                                                                                                                                                                         |                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acceptor Molecules                                                                                                                                               |                                                                                                                                                                                     | <b>B0089</b> 25g 100g 500g<br><br>1,4-Benzoquinone<br>CAS RN: 106-51-4                        | <b>D2234</b> 1g 5g 25g<br><br>2,6-Dimethyl-1,4-benzoquinone<br>CAS RN: 527-61-7                      | <b>M1045</b> 1g 5g<br><br>Methoxybenzoquinone<br>CAS RN: 2880-58-2                                         |
| <b>D2250</b> 5g 25g<br><br>2,5-Dimethoxy-1,4-benzoquinone<br>CAS RN: 3117-03-1 | <b>D1956</b> 1g 5g<br><br>2,3-Dimethoxy-5-methyl-1,4-benzoquinone<br>CAS RN: 605-94-7             | <b>C1336</b> 5g<br><br>2-Chloro-5-methyl-1,4-benzoquinone<br>CAS RN: 19832-87-2              | <b>D2152</b> 5g<br><br>2,5-Di-tert-amylbenzoquinone<br>CAS RN: 4584-63-8                             | <b>D0343</b> 1g 5g<br><br>2,5-Dichloro-1,4-benzoquinone<br>CAS RN: 615-93-0                               |
| <b>T0061</b> 25g 500g<br><br>Chloranil<br>CAS RN: 118-75-2                    | <b>D1070</b> 25g 250g<br><br>DDQ<br>CAS RN: 84-58-2                                              | <b>B1601</b> 1g 5g<br><br>2-Bromo-1,4-benzoquinone<br>CAS RN: 3958-82-5                     | <b>D2249</b> 1g 5g<br><br>2,5-Dibromo-1,4-benzoquinone<br>CAS RN: 1633-14-3                        | <b>T0617</b> 5g 25g<br><br>Bromanil<br>CAS RN: 488-48-2                                                  |
| <b>T0790</b> 1g 5g<br><br>Fluoranil<br>CAS RN: 527-21-9                       | <b>D4407</b> 1g<br><br>3,3'-Di-tert-butyl-5,5'-dimethyldiphenylquinone<br>CAS RN: 2417-00-7      | <b>T1503</b> 1g<br><br>3,3',5,5'-Tetra-tert-butyl-4,4'-diphenylquinone<br>CAS RN: 2455-14-3 | <b>T0077</b> 5g 25g<br><br>TCNE<br>CAS RN: 670-54-2                                                | <b>T3264</b> 1g 5g<br><br>TCNE (purified by sublimation)<br>CAS RN: 670-54-2                             |
| <b>T0078</b> 5g 25g<br><br>TCNQ<br>CAS RN: 1518-16-7                          | <b>T3034</b> 1g 5g<br><br>TCNQ (purified by sublimation)<br>CAS RN: 1518-16-7                    | <b>T2468</b> 1g<br><br>TTF - TCNQ Complex<br>CAS RN: 40210-84-2                             | <b>D2021</b> 100mg 500mg<br><br>2,5-Dimethyl-7,7,8,8-tetracyanoquinodimethane<br>CAS RN: 1487-82-7 | <b>F0509</b> 100mg<br><br>FTCNQ<br>CAS RN: 69857-37-0                                                    |
| <b>D3200</b> 100mg<br><br>2,5-TCNQF <sub>2</sub><br>CAS RN: 73318-02-2        | <b>T1131</b> 100mg 1g<br><br>F <sub>4</sub> TCNQ (purified by sublimation)<br>CAS RN: 29261-33-4 | <b>T1246</b> 100mg<br><br>TCNNO<br>CAS RN: 6251-01-0                                        | <b>B1416</b> 1g 5g<br><br>1,3-Bis(dicyanomethylidene)-indan<br>CAS RN: 38172-19-9                  | <b>B1466</b> 100mg<br><br>Bis(tetrabutylammonium) Tetracyanodiphenylquinodimethane<br>CAS RN: 68271-98-7 |

|                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>D5248</b> 200mg 1g 5g<br><br>HAT-CN 6<br>CAS RN: 105598-27-4                                                                                                                                              | <b>T1415</b> 1g<br><br>(C <sub>4</sub> H <sub>9</sub> ) <sub>4</sub> N <sup>+</sup><br>Tetrabutylammonium<br>Bis(maleonitriledithiolato)-<br>nickel(III) Complex<br>CAS RN: 55401-12-2                  | <b>B1371</b> 1g<br><br>2 [(C <sub>4</sub> H <sub>9</sub> ) <sub>4</sub> N] <sup>+</sup><br>Bis(tetrabutylammonium)<br>Bis(maleonitriledithiolato)-<br>nickel(II) Complex<br>CAS RN: 18958-57-1                                             | <b>T1272</b> 100mg<br><br>(C <sub>4</sub> H <sub>9</sub> ) <sub>4</sub> N <sup>+</sup><br>Tetrabutylammonium<br>Bis(1,3-dithiole-2-thione-4,5-<br>dithiolato)nickel(III) Complex<br>CAS RN: 68401-88-7 | <b>B1221</b> 5g 25g<br><br>2 [(C <sub>4</sub> H <sub>9</sub> ) <sub>4</sub> N] <sup>+</sup><br>BTBA-BDTD Zn Complex<br>CAS RN: 68449-38-7 |
| <b>B1437</b> 100mg 1g<br><br>2 [(C <sub>4</sub> H <sub>9</sub> ) <sub>4</sub> N] <sup>+</sup><br>Bis(tetrabutylammonium)<br>Bis(1,3-dithiole-2-thione-<br>4,5-dithiolato)palladium(II)<br>CAS RN: 72688-90-5 | <b>T1416</b> 1g<br><br>(C <sub>4</sub> H <sub>9</sub> ) <sub>4</sub> P <sup>+</sup><br>Tetrabutylphosphonium<br>Bis(1,3-dithiole-2-thione-4,5-<br>dithiolato)nickel(III) Complex<br>CAS RN: 105029-70-7 | <b>D2134</b> 100mg<br><br>(C <sub>18</sub> H <sub>37</sub> ) <sub>2</sub> (CH <sub>3</sub> ) <sub>2</sub> N <sup>+</sup><br>Dioctadecyldimethylammonium<br>Bis(1,3-dithiole-2-thione-<br>4,5-dithiolato)aurate(III)<br>CAS RN: 120141-26-6 | <b>P0079</b> 25g 500g<br><br>Phenanthrene<br>CAS RN: 85-01-8                                                                                                                                           | <b>P2877</b> 5g 25g<br><br>Phenanthrene<br>(purified by sublimation)<br>CAS RN: 85-01-8                                                   |
| <b>P0331</b> 1sample<br><br>Phenanthrene Zone Refined<br>(number of passes:30)<br>CAS RN: 85-01-8                                                                                                            | <b>P2207</b> 100mg 500mg<br><br>Picene (purified by<br>sublimation) (>99.9%)<br>CAS RN: 213-46-7                                                                                                        | <b>D5488</b> 100mg<br><br>Dibenzo[a,l]pentacene<br>CAS RN: 227-09-8                                                                                                                                                                        | <b>C0386</b> 1g 5g<br><br>Coronene<br>CAS RN: 191-07-1                                                                                                                                                 | <b>C1961</b> 100mg<br><br>Coronene (purified by sublimation)<br>CAS RN: 191-07-1                                                          |
| <b>B1660</b> 100mg 1g<br><br>Fullerene C <sub>60</sub><br>CAS RN: 99685-96-8                                                                                                                                 | <b>B1641</b> 100mg 500mg 1g<br><br>Fullerene C <sub>60</sub> (pure)<br>CAS RN: 99685-96-8                                                                                                               | <b>F1232</b> 100mg<br><br>Fullerene C <sub>60</sub><br>[for organic electronics]<br>CAS RN: 99685-96-8                                                                                                                                     | <b>B1694</b> 100mg<br><br>Fullerene C <sub>70</sub><br>CAS RN: 115383-22-7                                                                                                                             | <b>F1233</b> 100mg<br><br>Fullerene C <sub>70</sub><br>[for organic electronics]<br>CAS RN: 115383-22-7                                   |
| <b>Donor Molecules</b>                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                               | <b>T0980</b> 1g 5g 25g<br><br>TTF<br>CAS RN: 31366-25-3                                                                                                                                               | <b>T3380</b> 200mg 1g<br><br>TTF (purified by sublimation)<br>CAS RN: 31366-25-3                                                                                                                                                        | <b>T1282</b> 1g<br><br>Tetrathiafulvalene<br>Fluoroborate<br>CAS RN: 55492-86-9                                                                                                                     |                                                                                                                                                                                                                              |
| <b>T2468</b> 1g<br><br>TTF-TCNQ Complex<br>CAS RN: 40210-84-2                                                                                                                                              | <b>D2067</b> 100mg 1g<br><br>SDM-TTF                                                                                                                                                                  | <b>F0285</b> 1g<br><br>Formyl-TTF<br>CAS RN: 68128-94-9                                                                                                                                                                                  | <b>T1119</b> 100mg<br><br>TMT-TTF<br>CAS RN: 51501-77-0                                                                                                                                              | <b>T1571</b> 100mg<br><br>TET-TTF<br>CAS RN: 104515-79-9                                                                                |
| <b>T2806</b> 100mg<br><br>2,3,6,7-Tetrakis(2-<br>cyanoethylthio)-<br>tetrathiafulvalene<br>CAS RN: 132765-36-7                                                                                             | <b>B1218</b> 100mg<br><br>BMDT-TTF<br>CAS RN: 68550-20-9                                                                                                                                              | <b>B1200</b> 100mg 1g 5g<br><br>BEDT-TTF<br>CAS RN: 66946-48-3                                                                                                                                                                           | <b>B1299</b> 100mg<br><br>BEDT-TTF-d <sub>8</sub><br>CAS RN: 101751-48-8                                                                                                                             | <b>B1244</b> 100mg<br><br>BPDT-TTF<br>CAS RN: 66946-49-4                                                                                |
| <b>P0078</b> 1g 5g 25g<br><br>Perylene<br>CAS RN: 198-55-0                                                                                                                                                 | <b>P1629</b> 1g<br><br>Perylene<br>(purified by sublimation)<br>CAS RN: 198-55-0                                                                                                                      | <b>T1221</b> 5g 25g<br><br>TDAE<br>CAS RN: 996-70-3                                                                                                                                                                                      | <b>P0355</b> 25g<br><br>Phthalocyanine<br>CAS RN: 574-93-6                                                                                                                                           | <b>P1795</b> 1g<br><br>Phthalocyanine<br>(purified by sublimation)<br>CAS RN: 574-93-6                                                  |

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| <b>P2734</b> 100mg 500mg<br><br>Phthalocyanine (purified by sublimation) [for organic electronics]<br>CAS RN: 574-93-6 | <b>P0655</b> 25g<br><br>CuPc<br>CAS RN: 147-14-8                                      | <b>P1005</b> 25g 250g<br><br>CuPc (α-form)<br>CAS RN: 147-14-8                                     | <b>P1006</b> 25g 100g 500g<br><br>CuPc (β-form)<br>CAS RN: 147-14-8                       | <b>P1628</b> 1g<br><br>CuPc (purified by sublimation)<br>CAS RN: 147-14-8                          |
| <b>C3645</b> 100mg 500mg<br><br>CuPc (purified by sublimation) [for organic electronics]<br>CAS RN: 147-14-8           | <b>P1049</b> 1g<br><br>Dilithium Phthalocyanine<br>CAS RN: 25510-41-2                 | <b>P0973</b> 1g 5g<br><br>Disodium Phthalocyanine<br>CAS RN: 25476-27-1                            | <b>P1018</b> 1g<br><br>Magnesium(II) Phthalocyanine<br>CAS RN: 1661-03-6                  | <b>P1024</b> 1g 5g<br><br>Tin(II) Phthalocyanine<br>CAS RN: 15304-57-1                             |
| <b>P0997</b> 1g<br><br>Tin(IV) Phthalocyanine Dichloride<br>CAS RN: 18253-54-8                                         | <b>P0774</b> 5g 25g<br><br>Iron(II) Phthalocyanine<br>CAS RN: 132-16-1                | <b>I0783</b> 200mg 1g<br><br>Iron(II) Phthalocyanine (purified by sublimation)<br>CAS RN: 132-16-1 | <b>P0887</b> 5g 25g<br><br>Cobalt(III) Phthalocyanine<br>CAS RN: 3317-67-7                | <b>C3252</b> 200mg<br><br>Cobalt(II) Phthalocyanine (purified by sublimation)<br>CAS RN: 3317-67-7 |
| <b>P0766</b> 1g 25g<br><br>Lead(II) Phthalocyanine<br>CAS RN: 15187-16-3                                              | <b>P0767</b> 1g 5g 25g<br><br>Zinc Phthalocyanine<br>CAS RN: 14320-04-8              | <b>Z0037</b> 500mg<br><br>ZnPc (purified by sublimation)<br>CAS RN: 14320-04-8                    | <b>T2272</b> 200mg 1g<br><br>TiOPc (purified by sublimation)<br>CAS RN: 26201-32-1       | <b>P0660</b> 25g<br><br>Pigment Green 7<br>CAS RN: 1328-53-6                                      |
| <b>Electrocrystallization Supporting Electrolytes</b>                                                                                                                                                   |                                                                                                                                                                        |                                                                                                                                                                                     |                                                                                                                                                                              |                                                                                                                                                                                       |
| <b>T0914</b> 25g 100g 500g<br><br>Tetrabutylammonium Tetrafluoroborate<br>CAS RN: 429-42-5                           | <b>T0983</b> 5g 25g<br><br>Tetraethylammonium Tetrafluoroborate<br>CAS RN: 429-06-1 | <b>T1186</b> 25g<br><br>Tetrabutylammonium Dichlorobromide<br>CAS RN: 13053-75-3                 | <b>T1261</b> 1g<br><br>Tetrabutylammonium Dibromaurate<br>CAS RN: 50481-01-1             | <b>T1269</b> 1g 10g<br><br>Tetrabutylammonium Dibromiodide<br>CAS RN: 15802-00-3                 |
| <b>T1271</b> 5g 25g<br><br>Tetrabutylammonium Triiodide<br>CAS RN: 13311-45-0                                        | <b>T1273</b> 100mg<br><br>Tetrabutylammonium Dichloraurate<br>CAS RN: 50480-99-4    | <b>T1278</b> 25g 250g<br><br>Tetrabutylammonium Thiocyanate<br>CAS RN: 3674-54-2                 | <b>T1279</b> 25g 250g<br><br>Tetrabutylammonium Hexafluorophosphate<br>CAS RN: 3109-63-5 | <b>T1284</b> 25g 100g 500g<br><br>Tetrabutylammonium Tribromide<br>CAS RN: 38932-80-8            |
| <b>T1803</b> 1g 5g<br><br>Tetrabutylammonium Perrhenate<br>CAS RN: 16385-59-4                                        | <b>T2648</b> 25g<br><br>Tetrabutylammonium Tetrafluoroborate<br>CAS RN: 429-42-5    | <b>T3659</b> 5g 25g<br><br>Tetraethylammonium Hexafluorophosphate<br>CAS RN: 429-07-2            |                                                                                                                                                                              |                                                                                                                                                                                       |

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| <b>Tetrathiafulvalene (TTF)<br/>Precursors</b>                                                                                                                             |                                                                                                                                                                                                 | <b>B1151</b> 5g<br><br>1,3-Benzodithiolium<br>Tetrafluoroborate<br>CAS RN: 57842-27-0             | <b>B1199</b> 1g 5g<br><br>4,5-Bis(benzoylthio)-<br>1,3-dithiole-2-thione<br>CAS RN: 68494-08-6 | <b>B1272</b> 1g<br><br>Bis(carbonyldithio)-<br>tetrathiafulvalene<br>CAS RN: 64394-47-4                               |
| <b>B1777</b> 1g<br><br>4,5-Bis(methylthio)-<br>1,3-dithiol-2-one<br>CAS RN: 61485-46-9    | <b>B1778</b> 1g<br><br>4,5-Bis(methylthio)-<br>1,3-dithiole-2-thione<br>CAS RN: 49638-64-4                     | <b>B2228</b> 1g<br><br>4,5-Bis(2-cyanoethylthio)-<br>1,3-dithiole-2-thione<br>CAS RN: 132765-35-6 | <b>B2233</b> 1g<br><br>4,5-Bis(2-cyanoethylthio)-<br>1,3-dithiol-2-one<br>CAS RN: 158871-28-4  | <b>D2127</b> 10g 25g<br><br>Dimethyl 1,3-Dithiole-<br>2-thione-4,5-dicarboxylate<br>CAS RN: 7396-41-0                 |
| <b>D2133</b> 1g 5g<br><br>1,3-Dithiole-2-thione<br>CAS RN: 930-35-8                       | <b>D3252</b> 1g<br><br>4,5-Dicyano-1,3-dithiol-2-one<br>CAS RN: 934-31-6                                       | <b>D3981</b> 1g 5g<br><br>Dimethyl 2-(1,3-Dithiole)-<br>phosphonate<br>CAS RN: 133113-76-5        | <b>D3992</b> 1g<br><br>Dimethyl<br>1,3-Benzodithiol-<br>2-ylphosphonate<br>CAS RN: 62217-35-0  | <b>E0429</b> 1g 5g 25g<br><br>4,5-Ethylenedithio-<br>1,3-dithiole-2-thione<br>CAS RN: 59089-89-3                      |
| <b>E0460</b> 1g 5g<br><br>4,5-Ethylenedithio-<br>1,3-dithiol-2-one<br>CAS RN: 74962-29-1 | <b>H1163</b> 1g<br><br>5-Hexyl-1,3-dithiole[4,5- <i>d</i> ]-<br>[1,3]dithiole-2-thione<br>CAS RN: 202126-51-0 | <b>M1112</b> 1g<br><br>4,5-Methylenedithio-<br>1,3-dithiole-2-thione<br>CAS RN: 70800-59-8       | <b>T1132</b> 1g 5g 25g<br><br>1,3,4,6-Tetrathiapentalene-<br>2,5-dione<br>CAS RN: 64394-45-2  | <b>P1635</b> 250mg 1g<br><br>5-Propyl-1,3-dithiole[4,5- <i>d</i> ]-<br>[1,3]dithiole-2-thione<br>CAS RN: 202126-48-5 |
| <b>B1322</b> 1g 5g<br><br>Benzene-1,2-dithiol<br>CAS RN: 17534-15-5                     | <b>T0266</b> 1g 5g 25g<br><br>Toluene-3,4-dithiol<br>CAS RN: 496-74-2                                        | <b>T0279</b> 1g 5g<br><br>Zinc Dithiol<br>CAS RN: 29726-21-4                                    |                                                                                                                                                                                  |                                                                                                                                                                                                          |

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Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

Адрес: <https://tci.nt-rt.ru/> || эл.почта: [tic@nt-rt.ru](mailto:tic@nt-rt.ru)