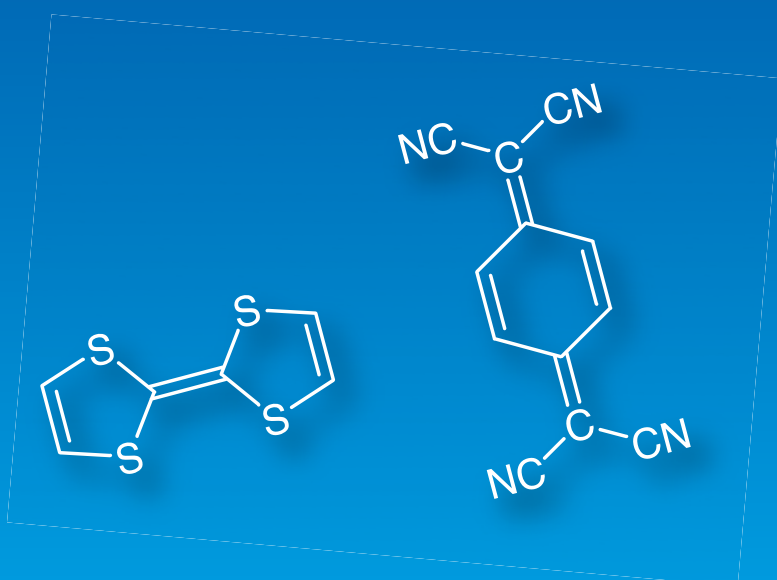


Charge Transfer Complexes for Organic Metals



Donors

TTF Derivatives

Acceptors

TCNQ Derivatives
Metal Dithiolenes

Other Donors & Acceptors

Synthetic Intermediates

Charge Transfer Complexes for Organic Metals

The discovery in 1973 of the metal-like electronic behavior of charge transfer complexes, consisting of an electron donor, Tetrathiafulvalene (TTF) and an electron acceptor, 7,7,8,8-Tetracyanoquinodimethane (TCNQ)¹⁾ has led to intensive studies of the organic metals.

In 1980 Jérôme²⁾, Bechgaard³⁾ and their co-workers have found that each complex of (TMTSF)₂PF₆ or (TMTSF)₂ClO₄ using TMTSF analogue of TTF, becomes a superconductor at very low temperatures. Afterwards, organic superconductors utilizing BEDT-TTF⁴⁾, M(dmit)₂⁵⁾ (M=Ni, Pd), etc. have successively been designed one after another. Moreover, the complexes κ-(BEDT-TTF)₂Cu[N(CN)₂]Br (Tc=11.6K)⁶⁾, and κ-(BEDT-TTF)₂Cu[N(CN)₂]Cl (0.3kbar; Tc=12.8K)⁷⁾ having higher Tc have been found and vigorous studies have been conducted toward the development of still higher Tc organic superconductor.⁸⁾

References

1) (a) J. Ferraris, D. O. Cowan, V. Jr. Walatka, J. H. Perlstein, *J. Am. Chem. Soc.* **1973**, *95*, 948; (b) L. B. Coleman, M. J. Cohen, D. J. Sandman, F. G. Yamagishi, A. F. Garito, A.

J. Heeger, *Solid State Commun.* **1973**, *12*, 1125.

2) D. Jérôme, A. Mazaud, M. Ribault, K. Bechgaard, *J. Physique Lett.* **1980**, *41*, L-95.

3) K. Bechgaard, K. Carneiro, M. Olsen, F. B. Rasmussen, C. S. Jacobsen, *Phys. Rev. Lett.* **1981**, *46*, 852.

4) S. S. P. Parkin, E. M. Engler, R. R. Schumaker, R. Lagier, V. Y. Lee, J. C. Scott, R. L. Greene, *Phys. Rev. Lett.* **1983**, *50*, 270.

5) M. Bousseau, L. Valade, J.-P. Legros, P. Cassoux, M. Garbaskas, L. V. Interrante, *J. Am. Chem. Soc.* **1986**, *108*, 1908.

6) A. M. Kini, U. Geiser, H. H. Wang, K. D. Carlson, J. M. Williams, W. K. Kwok, K. G. Vandervoort, J. E. Thompson, D. L. Stupka, D. Jung, M.-H. Whangbo, *Inorg. Chem.* **1990**, *29*, 2555.

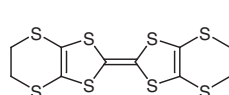
7) J. M. Williams, A. M. Kini, H. H. Wang, K. D. Carlson, U. Geiser, L. K. Montgomery, G. J. Pyrka, D. M. Watkins, J. M. Kommers, S. J. Boryschuk, A. V. S. Crouch, W. K. Kwok, J. E. Schirber, D. L. Overmyer, D. Jung, M.-H. Whangbo, *Inorg. Chem.* **1990**, *29*, 3272.

8) H. Kobayashi, T. Udagawa, H. Tomita, K. Bun, T. Naito, A. Kobayashi, *Chem. Lett.* **1993**, 1559; H. Kobayashi, H. Tomita, T. Naito, H. Tanaka, A. Kobayashi, T. Saito, *J. Chem. Soc., Chem. Commun.* **1995**, 1225; K. Takimiya, Y. Kataoka, Y. Aso, T. Otsubo, H. Fukuoka, S. Yamanaka, *Angew. Chem. Int. Ed.* **2001**, *40*, 1122; J. Yamada, M. Watanabe, H. Akutsu, S. Nakatsuji, H. Nishikawa, I. Ikemoto, K. Kikuchi, *J. Am. Chem. Soc.* **2001**, *123*, 4174.

Donors

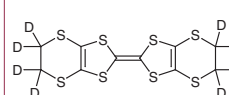
TTF Derivatives

B1200 100mg 1g 5g



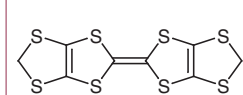
Bis(ethylenedithio)-tetrathiafulvalene (BEDT-TTF) [66946-48-3]

B1299 100mg



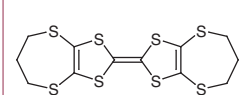
Bis(ethylenedithio)-tetrathiafulvalene-d₈ (BEDT-TTF-d₈) [101751-48-8]

B1218 100mg



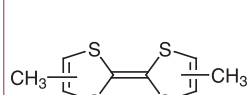
Bis(methylenedithio)-tetrathiafulvalene (BMDT-TTF) [68550-20-9]

B1244 100mg



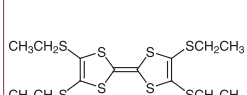
Bis(trimethylenedithio)-tetrathiafulvalene (BPDT-TTF) [66946-49-4]

D2067 100mg 1g



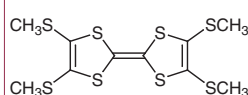
Dimethyltetrathiafulvalene (SDM-TTF)

T1571 100mg



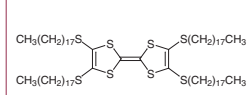
Tetrakis(ethylthio)tetrathiafulvalene [104515-79-9]

T1119 100mg



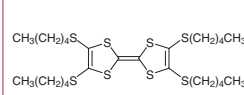
Tetrakis(methylthio)-tetrathiafulvalene (TMT-TTF) [51501-77-0]

T1143 100mg



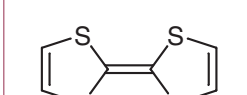
Tetrakis(octadecylthio)-tetrathiafulvalene (TODT-TTF) [105782-53-4]

T1205 100mg



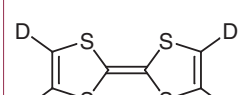
Tetrakis(pentylthio)-tetrathiafulvalene (TPT-TTF) [106920-29-0]

T0980 1g 5g 25g



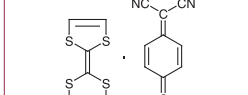
Tetrathiafulvalene (TTF) [31366-25-3]

T1377 100mg



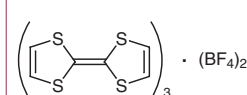
Tetrathiafulvalene-d₄ (TTF-d₄) [51751-16-7]

T2468 1g



Tetrathiafulvalene - 7,7,8,8-Tetracyanoquinodimethane Complex [40210-84-2]

T1282 1g

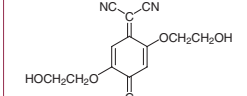


Tris(tetrathiafulvalene) Bis(tetrafluoroborate) Complex [55492-86-9]

Acceptors

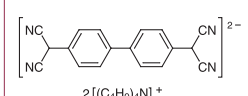
TCNQ Derivatives

B2309 1g 5g



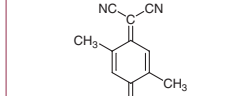
2,5-Bis(2-hydroxyethoxy)-7,7,8,8-tetracyanoquinodimethane [58268-29-4]

B1466 100mg



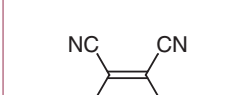
Bis(tetrabutylammonium) Tetracyanodiphenylmethane [68271-98-7]

D2021 100mg



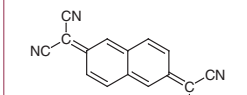
2,5-Dimethyl-7,7,8,8-tetracyanoquinodimethane [1487-82-7]

T0077 5g 25g



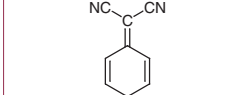
Tetracyanoethylene [670-54-2]

T1246 100mg



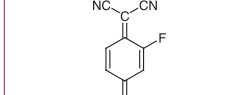
11,11,12,12-Tetracyanonaphtho-2,6-quinodimethane [6251-01-0]

T0078 5g 25g



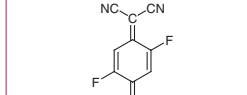
7,7,8,8-Tetracyanoquinodimethane (TCNQ) [1518-16-7]

F0509 100mg

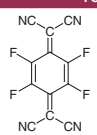
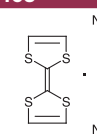
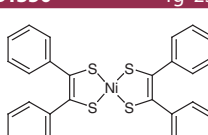
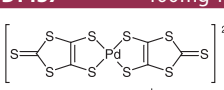
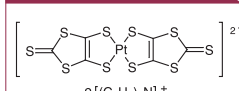
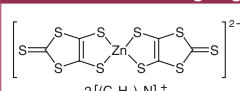
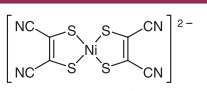
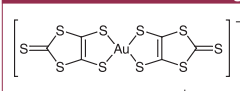
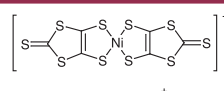
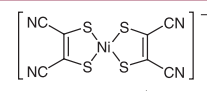
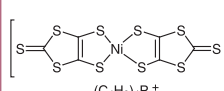
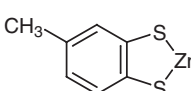
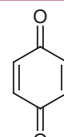
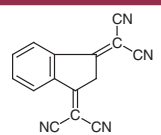
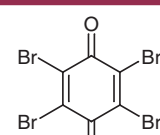
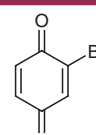
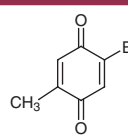
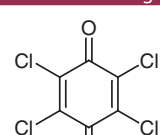
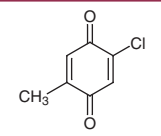
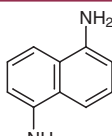
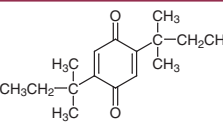
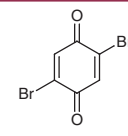
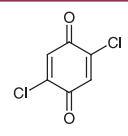
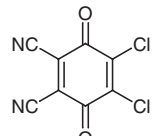
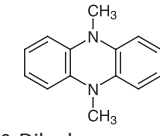
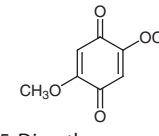
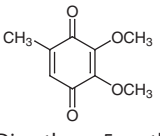
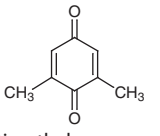
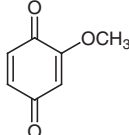
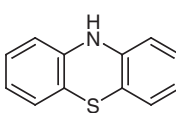
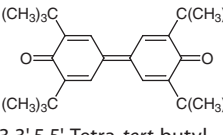
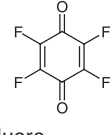
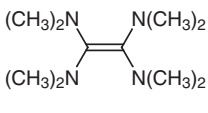
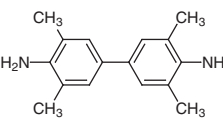
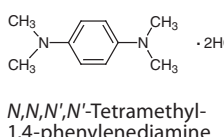
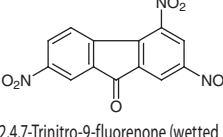
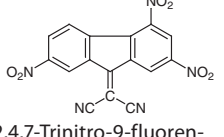


2-Fluoro-7,7,8,8-tetracyanoquinodimethane [69857-37-0]

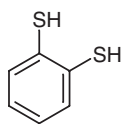
D3200 100mg



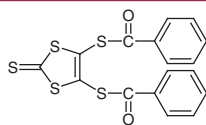
2,5-Difluoro-7,7,8,8-tetracyanoquinodimethane [73318-02-2]

<p>T1131 100mg 1g</p>  <p>Tetrafluorotetracyanoquinodimethane sublimed [29261-33-4]</p>	<p>T2468 1g</p>  <p>Tetrathiafulvalene - 7,7,8,8-Tetracyanoquinodimethane Complex [40210-84-2]</p>	<p>Metal Dithiolenes</p>		<p>B1350 1g 25g</p>  <p>Bis(dithiobenzil)nickel(II) [28984-20-5]</p>	<p>B1437 100mg 1g</p>  <p>Bis(tetrabutylammonium) Bis(1,3-dithiole-2-thione-4,5-dithiolato)palladium(II) [72688-90-5]</p>
<p>B1438 100mg</p>  <p>Bis(tetrabutylammonium) Bis(1,3-dithiole-2-thione-4,5-dithiolato)platinum(II) [72688-91-6]</p>	<p>B1221 5g 25g</p>  <p>Bis(tetrabutylammonium) Bis(1,3-dithiole-2-thione-4,5-dithiolato)zinc Complex [68449-38-7]</p>	<p>B1371 1g</p>  <p>Bis(tetrabutylammonium) Bis(maleonitriledithiolato)nickel(II) Complex [18958-57-1]</p>	<p>D2134 100mg</p>  <p>Dioctadecyldimethylammonium Bis(1,3-dithiole-2-thione-4,5-dithiolato)aurate(III) [120141-26-6]</p>	<p>T1272 100mg</p>  <p>Tetrabutylammonium Bis(1,3-dithiole-2-thione-4,5-dithiolato)nickel(III) Complex [68401-87-6]</p>	
<p>T1415 1g</p>  <p>Tetrabutylammonium Bis(maleonitriledithiolato)nickel(III) Complex [18958-62-8]</p>	<p>T1416 1g</p>  <p>Tetrabutylphosphonium Bis(1,3-dithiole-2-thione-4,5-dithiolato)nickel(III) Complex [105029-70-7]</p>	<p>T0279 1g 5g</p>  <p>(Toluene-3,4-dithiolato)zinc(II) [29726-21-4]</p>	<p>Other Donors & Acceptors</p>		<p>B0089 25g 500g</p>  <p>1,4-Benzoquinone [106-51-4]</p>
<p>B1416 5g</p>  <p>1,3-Bis(dicyanomethylidene)indan [38172-19-9]</p>	<p>T0617 5g 25g</p>  <p>Bromanil [488-48-2]</p>	<p>B1601 1g</p>  <p>2-Bromo-1,4-benzoquinone [3958-82-5]</p>	<p>B1595 5g</p>  <p>2-Bromo-5-methyl-1,4-benzoquinone [13070-25-2]</p>	<p>T0061 25g 500g</p>  <p>Chloranil [118-75-2]</p>	
<p>C1336 5g</p>  <p>2-Chloro-5-methyl-1,4-benzoquinone [19832-87-2]</p>	<p>D0101 25g 500g</p>  <p>1,5-Diaminonaphthalene [2243-62-1]</p>	<p>D2152 5g</p>  <p>2,5-Di-tert-amylbenzoquinone [4584-63-8]</p>	<p>D2249 1g 5g</p>  <p>2,5-Dibromo-1,4-benzoquinone [1633-14-3]</p>	<p>D0343 1g 5g</p>  <p>2,5-Dichloro-1,4-benzoquinone [615-93-0]</p>	
<p>D1070 25g 250g</p>  <p>2,3-Dichloro-5,6-dicyano-1,4-benzoquinone [84-58-2]</p>	<p>D3392 1g</p>  <p>5,10-Dihydro-5,10-dimethylphenazine [15546-75-5]</p>	<p>D2250 5g 25g</p>  <p>2,5-Dimethoxy-1,4-benzoquinone [3117-03-1]</p>	<p>D1956 1g 5g</p>  <p>2,3-Dimethoxy-5-methyl-1,4-benzoquinone [605-94-7]</p>	<p>D2234 1g 5g 25g</p>  <p>2,6-Dimethyl-1,4-benzoquinone [527-61-7]</p>	
<p>M1045 1g 5g</p>  <p>Methoxybenzoquinone [2880-58-2]</p>	<p>P0106 25g 500g</p>  <p>Phenothiazine [92-84-2]</p>	<p>T1503 1g</p>  <p>3,3',5,5'-Tetra-tert-butyl-4,4'-diphenquinone [2455-14-3]</p>	<p>T0790 1g 5g</p>  <p>Tetrafluoro-1,4-benzoquinone [527-21-9]</p>	<p>T1221 5g</p>  <p>Tetrakis(dimethylamino)ethylene [996-70-3]</p>	
<p>T1023 1g 5g 25g</p>  <p>3,3',5,5'-Tetramethylbenzidine [54827-17-7]</p>	<p>T0151 1g 25g</p>  <p>N,N,N',N'-Tetramethyl-1,4-phenylenediamine Dihydrochloride [637-01-4]</p>	<p>T0499 5g</p>  <p>2,4,7-Trinitro-9-fluorenone (wetted with ca. 20% Water, containing 5g on a dry weight basis) [129-79-3]</p>	<p>T0875 1g 5g</p>  <p>2,4,7-Trinitro-9-fluorenylidene malononitrile [1172-02-7]</p>		

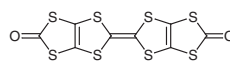
Synthetic Intermediates

B1322 1g 5g


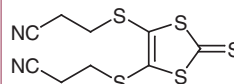
1,2-Benzenedithiol
[17534-15-5]

B1199 1g 5g


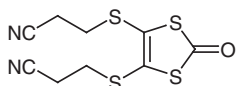
4,5-Bis(benzoylthio)-1,3-dithiole-2-thione
[68494-08-6]

B1272 1g


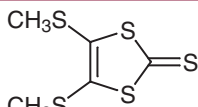
Bis(carbonyldithio)-tetrathiafulvalene
[64394-47-4]

B2228 1g


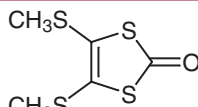
4,5-Bis(2-cyanoethylthio)-1,3-dithiole-2-thione
[132765-35-6]

B2233 1g


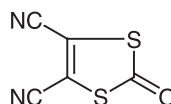
4,5-Bis(2-cyanoethylthio)-1,3-dithiol-2-one
[158871-28-4]

B1778 1g


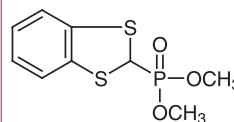
4,5-Bis(methylthio)-1,3-dithiole-2-thione
[49638-64-4]

B1777 1g


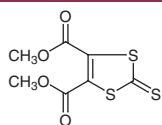
4,5-Bis(methylthio)-1,3-dithiol-2-one
[61485-46-9]

D3252 1g


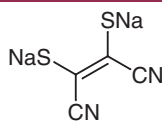
4,5-Dicyano-1,3-dithiol-2-one
[934-31-6]

D3992 1g


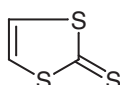
Dimethyl 1,3-Benzodithiol-2-ylphosphonate
[62217-35-0]

D2127 10g


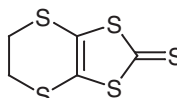
Dimethyl 1,3-Dithiole-2-thione-4,5-dicarboxylate
[7396-41-0]

D1930 1g 5g


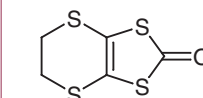
Disodium Dimercaptomaleonitrile
[5466-54-6]

D2133 5g


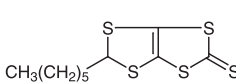
1,3-Dithiole-2-thione
[930-35-8]

E0429 5g 25g


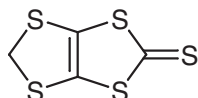
4,5-Ethylenedithio-1,3-dithiole-2-thione
[59089-89-3]

E0460 1g 5g


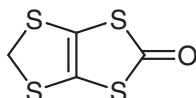
4,5-Ethylenedithio-1,3-dithiol-2-one
[74962-29-1]

H1163 1g


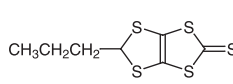
5-Hexyl-1,3-dithiole[4,5-d][1,3]dithiole-2-thione
[202126-51-0]

M1112 1g


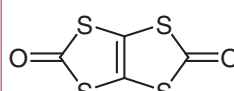
4,5-Methylenedithio-1,3-dithiole-2-thione
[70800-59-8]

M1154 100mg 1g


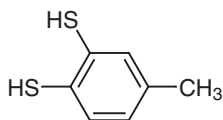
4,5-Methylenedithio-1,3-dithiol-2-one
[85720-62-3]

P1635 250mg 1g


5-Propyl-1,3-dithiole[4,5-d][1,3]dithiole-2-thione
[202126-48-5]

T1132 1g 5g 25g


1,3,4,6-Tetrathiapentalene-2,5-dione
[64394-45-2]

T0266 1g 5g 25g


Toluene-3,4-dithiol
[496-74-2]

TCI Ordering and Customer Service

TCI AMERICA

Tel : 800-423-8616 • 503-283-1681
Fax : 888-520-1075 • 503-283-1987
E-mail : sales@tciamerica.com
Website: www.tciamerica.com

TCI EUROPE N.V.

Tel : +32 (0)3 735 07 00
Fax : +32 (0)3 735 07 01
E-mail : sales@tcieurope.eu
Website: www.tcieurope.eu

TCI Deutschland GmbH

Tel : +49 (0)6196 998678-0
Fax : +49 (0)6196 998678-1
E-mail : sales@tcideutschland.de
Website: www.tcieurope.eu/de/

Tokyo Chemical Industry UK Ltd.

Tel : +44 (0)1865 784560
Fax : +44 (0)1865 784561
E-mail : sales@tci-uk.co.uk
Website: www.tci-uk.co.uk

TOKYO CHEMICAL INDUSTRY CO., LTD.

Tel : +81-3-5640-8878
Fax : +81-3-5640-8902
E-mail : globalbusiness@tokyokasei.co.jp
Website: www.tci-asiapacific.com

TCI Chemicals (India) Pvt. Ltd.

Tel : 044-4261 2444
Fax : 044-4261 1065
E-mail : sales@tci-india.com
[EOU Customers] india-eou@tokyokasei.co.jp
Website: www.tci-india.com

梯希爱(上海)化成工业发展有限公司

Tel : 800-988-0390 • 021-6712-1386
Fax : 021-6712-1385
E-mail : sales@tcishanghai.com.cn
Website: www.tcishanghai.com.cn