Table 1 Conductive LB films based on anion radical salts

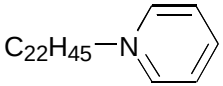
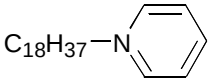
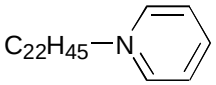
Material	Matrix molecule	Dopant	Conductivity (S/cm) [Activation energy]	References
 TCNQ	none	I_2	0.1 [0.15 eV]	1, 82
 TCNQ	none	I_2	0.02 [0.13 eV]	2
$P(C_{18}H_{37})(CH_3)_3$ TCNQ	none	I_2	40 (optical conductivity)	3
$P(C_{18}H_{37})(CH_3)_3$ TCNQ	none	I_2	40 (optical conductivity)	4
$P(C_{18}H_{37})(C_2H_5)(CH_3)_2$ TCNQ	none	I_2	40 (optical conductivity)	5
NaTCNQ	p-t-butylethylacetoxy-calix[4]arene	I_2	0.1	6
 $(TCNQ)_2$	none	none	0.01 [0.3 eV]	7, 8

Table 1 Continued

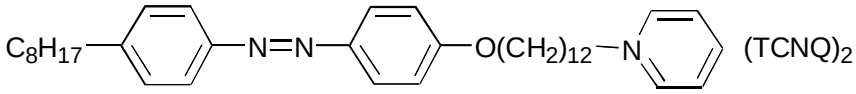
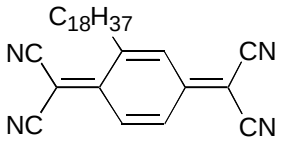
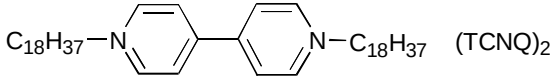
	$(TCNQ)_2$	none	0.01	9,10
$S(CH_3)_3(C_{18}H_{37})$	TCNQ 	none	0.01	11
	$(TCNQ)_2$	none	10^{-8}	12, 83

Table 2 Conductive LB films based on cation radical salts

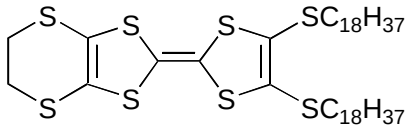
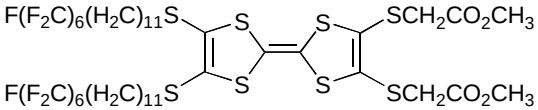
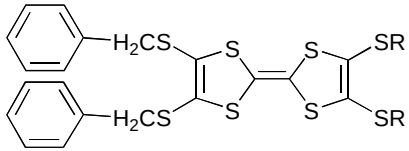
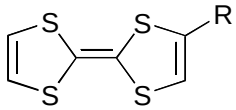
Material	Matrix molecule	Dopant	Conductivity (S/cm) [Activation energy]	References
 EDT-TTF(SC_{18})$_2$	behenic acid	I_2	1 [0.02 eV]	13
	none	I_2	10^{-2}	14, 15
				
R = CH_3	arachidic acid	I_2	2.5 x 10^{-3}	16, 17
R = $C_{10}H$	arachidic acid	I_2	2.7 x 10^{-6}	16, 17
R = $C_{16}H_{33}$	arachidic acid	I_2	2.3 x 10^{-1}	16, 17, 18
				
R= -CO-$C_{15}H_{31}$ (HDTTF)	none	I_2	10^{-2} [0.19 eV]	19,20
-CS-$C_{15}H_{31}$ (HDTTTF)	none	I_2	1 [0.09 eV]	21,22
-CO-$C_{18}H_{37}$ (ODTTF)	stearic acid	I_2	0.02	23
	pentacosa-10,12-dynoic acid	I_2	3 x 10^{-3}	24

Table 2 Continued

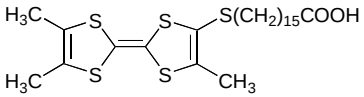
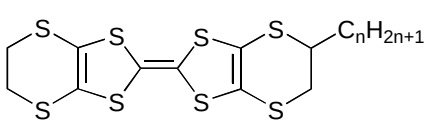
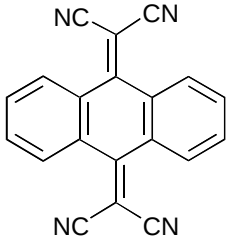
-S-$C_{18}H_{37}$	stearic adid	I_2	6 x 10^{-3}	25
-Se-$C_{18}H_{37}$	stearic adid	I_2	10^{-3}	25
-Te-$C_{18}H_{37}$	stearic adid	I_2	10^{-7}	25
-S-$(CH_2)_2$-$OC_{18}H_{37}$	none	I_2	10^{-5}	26
-S-$(CH_2)_2$-$OCOC_{15}H_{31}$	none	I_2	10^{-5}	26
-S-$COC_{15}H_{31}$	none	I_2	10^{-2}	26
-COO-$C_{16}H_{33}$	none	I_2	[0.17 eV]	26
			10^{-4}	26
-CS-NH-$C_{18}H_{37}$	none	I_2		26
	stearic acid	I_2	8 x 10^{-3}	25, 27, 28
 C_nBEDTTTF n = 16	 ($C_{17}H_{35}$-OC-TCNAQ)	I_2	1	29
		$FeCl_3$	2	30
n = 18	tricosanoic acid	I_2	1	31

Table 2 Continued

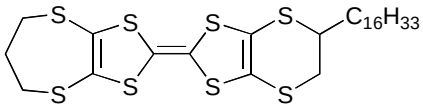
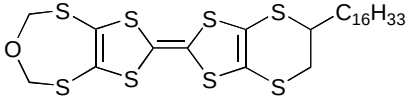
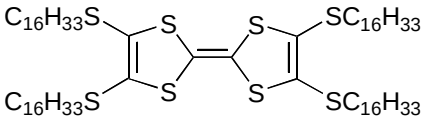
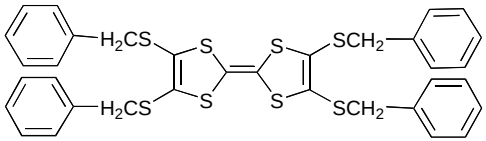
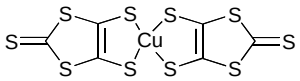
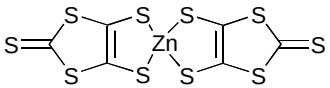
 C_{18}EDT-PDT-TTF	$C_{17}H_{35}$-OC-TCNAQ	I	0.3	29
 C_{18}-EDT-OPDT-TTF	$C_{17}H_{35}$-OC-TCNAQ	I_2	0.1	29
	straric acid	I_2	0.9	32
 TBTTTF	stearic acid	I_2	5×10^{-2}	33,34
	 and stearic acid	I_2	1.1	35
	 and stearic acid	I_2	0.4	36

Table 2 Continued

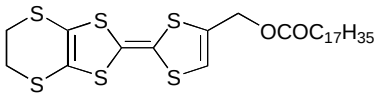
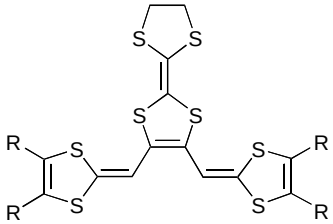
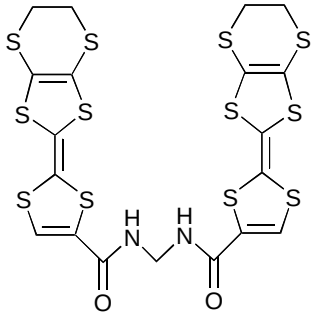
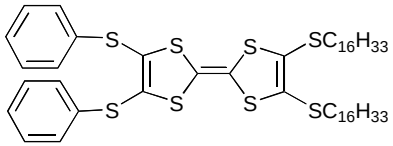
	none	none	10^{-2}	37
				
R = $CO_2C_2H_5$	none	I_2	4×10^{-4}	38
$CO_2C_4H_9$	none	I_2	4×10^{-7}	38
	none	I_2	6×10^{-3}	39
	arachidic acid	I_2	0.23	95, 97

Table 2 Continued

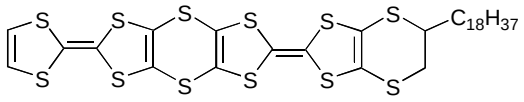
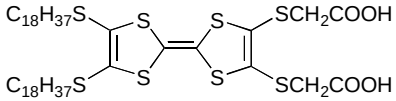
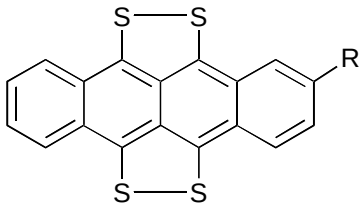
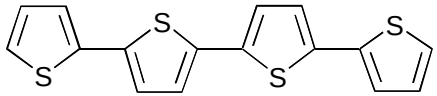
	tricosanoic acid	I_2	10^{-3}	40
	none	I_2	10^{-5}	41
	$EDT\text{-}TTF(SC_{18})_2$	I_2	10^{-2}	42
				
$R = CF_3$	methyl arachidate	I_2	10^{-4}	43, 44
$R = OC_8H_{17}$	methyl arachidate	I_2	10^{-2}	44, 45, 46
	cadmium stearirate	I_2	10^{-1}	47

Table 2 Continued

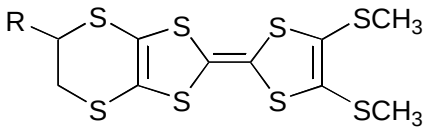
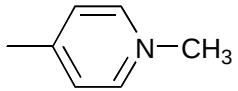
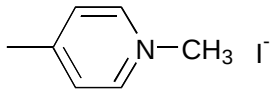
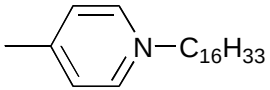
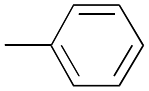
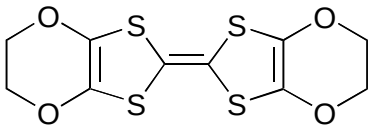
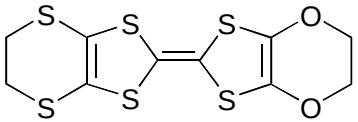
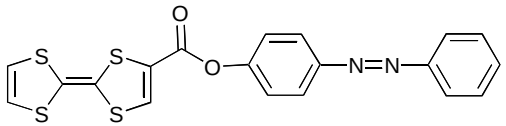
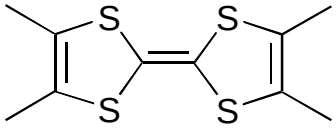
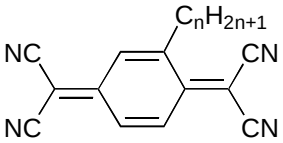
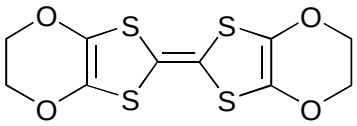
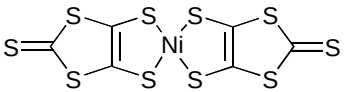
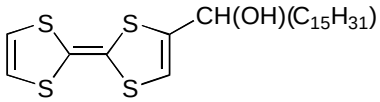
				
R= 	tricosanoic acid	I_2	10^{-3}	48
	tricosanoic acid	I_2	10^{-3}	48
	none	I_2	10^{-6}	49
	tricosanoic acid	I_2	10^{-5}	49
	behnic acid	I_2	40 metallic	50, 51, 88, 90, 91, 93, 94
	behnic acid	I_2	2	50, 89, 91 94
	none	I_2	2×10^{-2}	52

Table 3 Conductive LB films based on charge transfer complexes

Donor	Acceptor	Conductivity (S/cm) [Activation energy]	Refernces
			
TMTTF	C_nTCNQ		
	n = 18	0.1 [0.08 eV]	53
	n = 14	1	54, 55
	$C_{18}TCNQ$	0.01	56
	$C_{14}TCNQ$	1	56
	$C_{10}TCNQ$	10	56
BEDOTTF			87, 92, 96
TBTTTF	TCNQ	0.01	57
		40	58
TTF	TCNQ	5.5	59
	TCNQ	10^{-3} [0.27 eV]	25

Taable 3 Continued

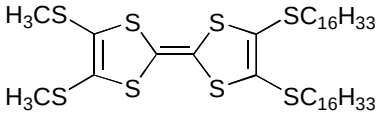
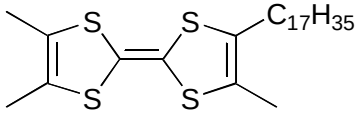
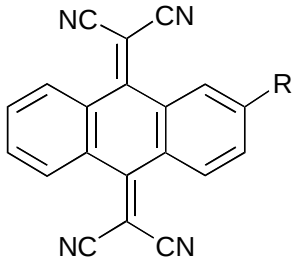
EDT-TTF(SC_{18})$_2$	F_4TCNQ (I_2 doping)	0.05	60,61
EDT-TTF(SC_{16})$_2$	F_4TCNQ (I_2 doping)	8×10^{-3}	61
	F_4TCNQ (I_2 doping)	0.25	61
 C_{17}DMTTF	$C_{16}TCNQ$	0.5 [0.11-0.17 eV]	62,63
C_{16}BEDTTTF	$C_{16}TCNQ$	2.5 [0.05-0.08 eV]	64,65
C_{16}BEDTTTF	 R = $CONHC_{18}H_{37}$ R = $CO_2C_{17}H_{35}$	0.5	66
C_{16}EDT-PDT-TTF	R = $SO_2NHC_{18}H_{37}$	5	66

Table 3 Continued

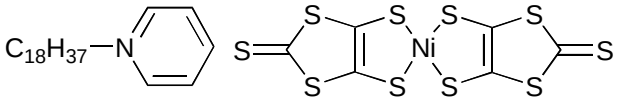
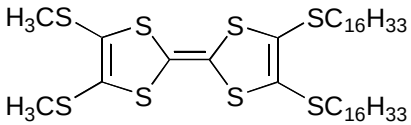
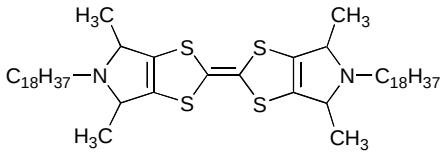
HDTTF	$C_{16}TCNQ$	5×10^{-3} [0.26 eV] alternate layer	67
	(I_2 doping)	0.1 alternete layer	68
	$C_{18}TCNQ$	1 mixed layer	69
		150 alternate layer (conductivity of Al?)	
BEDO-TTF	CF_3TCNQ	3.7	70
	DDQ	10^{-4}	71

Table 4 Conductive LB films based on transition metal complexes

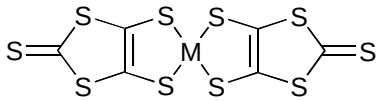
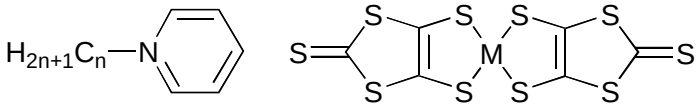
Material	Matrix molecule	Doping method	Conductivity (S/cm)	Refernces
$(C_nH_{2n-1})N(CH_3)_{4-m}$ 				
1C18-Ni	arachidic acid	E [a)]	0.9	72
2C10-Ni	arachidic acid	Br_2	1.0	72
2C12-N	arachidic acid	Br_2	0.03	72
2C12-Ni	none	Br_2	0.28	73
2C14-Ni	arachidic acid	Br_2	0.09	72
2C16-Ni	arachidic acid	Br_2	0.05	72
2C18-Ni	arachidic acid	Br_2	9×10^{-3}	72
2C22-Ni	arachidic acid	Br_2	2×10^{-3}	72
2C10-Au	arachidic acid	E [a)]	1.4	72
2C12-Au	arachidic acid	Br_2	0.15	72
2C12-Au	arachidic acid	Br_2	0.05	72
2C12-Au	arachidic acid	Br_2	$<10^{-3}$	72
3C10-Ni	arachidic acid	E [a)]	1.4	72
3C14-Ni	arachidic acid	E [a)]	0.87	72

Table 4 Continued

2C14-Au	none	E [a)]	40 (metallic)	74
2C18-Au	none	E [a)]	10	84, 85
2C18-Au	arachidic acid	E [a)]	$10^{-1} \sim 10^{-2}$	84, 85
3C10-Au	arachidic acid	E [a)]	40 (metallic)	75
3C14Au	arachidic acid	E [a)]	19	72
3C16-Au	arachidic acid	E [a)]	0.46	72
3C18-Au	arachidic acid	E[a)]	0.12	72
4C10-Ni	arachidic acid	Br_2	1.6	72
2C10-Pd	none	E [a)]	1.0	72
2C18-Pd	arachidic acid	E [a)]	0.01	76
2C10-Pt	none	Br_2	1×10^{-3}	72
3C10-Pd	arachidic acid	E [a)]	2.8×10^{-4}	76
3C12-Pd	arachidic acid	E [a)]	8.3×10^{-3}	76
3C16-Pd	arachidic acid	E [a)]	6.1×10^{-3}	76
3C16-Pd	arachidic acid	E [a)]	0.13	76
3C18-Pd	arachidic acid	E [a)]	9.1×10^{-3}	76
$(2C12)_2$-Ni	none	Br_2	0.02	73
$(2C10)_2$-Pd	none	E [a)]	5.1	77
$(2C12)_2$-Pd	arachidic acid	E [a)]	0.45	77
$(2C14)_2$-Pd	arachidic acid	E [a)]	0.08	77
$(2C12)_2$-Pt	none	Br_2	$8x10^{-4}$	78

Table 4 Continued



CnPy-M

$C14PyNi(dmit)_2$	arachidic acid	E [a)]	1.2	72
$C18PyNi(dmit)_2$	none	I_2	0.2	79
$C22PyNi(dmit)_2$	arachidic acid	E [a)]	0.32	72
$C18PyAu(dmit)_2$	none	I_2	$6x10^{-4}$	80
$(C18Py)_2Ni(dmit)_2$	none	I_2	0.8	68
$(C18Py)_2Pd(dmit)_2$	none	I_2	$6x10^{-4}$	80, 86
$(C18Py)_2Pt(dmit)_2$	none	I_2	$6x10^{-4}$	80, 86
$TBANi(dmit)_2$	tricosanoic acid		10^{-7}	81
$(2C12)_2$-$Ni(mnt)_2$	none	Br_2	$1x10^{-3}$	73
$(2C12)_2$-$Pt(mnt)_2$	none	Br_2	$3x10^{-5}$	80

a) E: Electrochemical oxidation in aqueous $LiClO_4$ solution