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Thermal Properties of Binary Mixtures of Liquid Crystals. A Review

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Thermal Properties of Binary Mixtures of Liquid Crystals. A Review

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Owing to their wide range of industrial utility, binary systems of liquid crystals are currently a topic of extensive studies. This paper is a comprehensive review of the literature from 1973, where the review of Hsu *et al.*[95] ended, through mid-1981. For simplification, the organization used here is similar to that incorporated in the previous review.

Because of the volumes of literature on mesophase systems, this study includes only binary mesophase systems in which both components are thermotropic mesogens. Included here are only those systems for which phase diagrams have been constructed or systems which are similar to those whose phase diagrams have been constructed.

Much of the work on binary mixtures is done by industrial applications specialists and thus was not available for this review. Inevitably, there will be omissions from published work, although every attempt was made to include all of the available literature.

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TABULATION PROCEDURES

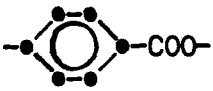
Table I lists the compound numbers, structures, transition temperatures, and binary systems studied for each compound.

a) Column 1 of Table I: "Compound Number"

This column lists the order numbers which represent each compound.

b) Column 2 of Table I: "Structure"

The structural formula for each compound is given here. These are presented in subgroups, organized by the type of functional group which composes the central core of the molecule. These are:

I) Aromatic carboxylic acids and derivatives (other than Schiff's bases and azoxy compounds) 

II) Schiff's base derivatives (with only one azomethine group), —CH=N—

III) Schiff's base derivatives (with two azomethine groups)

IV) Azine compounds (—CH=N—N=CH—)

V) Azo compounds (—N=N—)

VI) Schiff's base, azo compounds (—CH=N— and —N=N—)

VII) Azoxy compounds (—N=N—)
↓
O

VIII) Schiff's base, azoxy compounds (—CH=N— and —N=N—)
↓
O

IX) Biphenyls  , terphenyls  and fused-ring systems

TABLE I

Compound numbers, structures, transition temperatures, and binary system studied

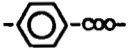
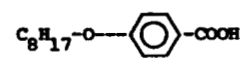
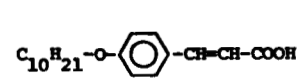
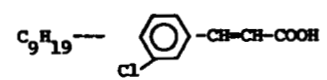
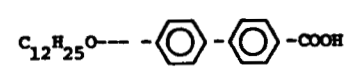
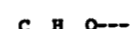
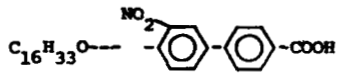
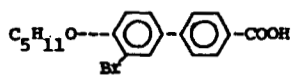
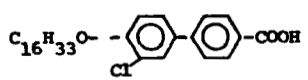
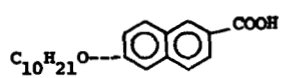
Compound number	Structure	Transition temperature, °C	Binary systems studied
I. Aromatic carboxylic acids and derivatives (other than Schiff's bases and azoxy compounds), 			
1		K $\xrightarrow{102.7}$ S_C $\xrightarrow{107.5}$ N $\xrightarrow{147.3}$ I	49(6–42) 142(6–118)
2		K $\xrightarrow{88.5}$ S_C $\xrightarrow{131.1}$ N $\xrightarrow{138.3}$ I	3(6–5) 5(6–7) 18(6–9) 4(6–6) 16(6–8) 8(6–94) 9(6–95) 14(6–99) 12(6–100)
3		K $\xrightarrow{135.5}$ S_C $\xrightarrow{143}$ N $\xrightarrow{166}$ I	2(6–5)
4		K $\xrightarrow{124}$ S_C $\xrightarrow{128.2}$ N $\xrightarrow{136}$ I	2(6–6)
5		K $\xrightarrow{118}$ S_C $\xrightarrow{120.5}$ I	2(6–7)
6		K_{II} $\xrightarrow{64.5}$ K_I $\xrightarrow{164.4}$ S_C $\xrightarrow{249}$ I	216(3–53) 7(3–54)
7		K_{II} $\xrightarrow{153.2}$ K_I $\xrightarrow{156.9}$ S_C $\xrightarrow{244}$ I	6(3–54) 216(3–58)
8		K $\xrightarrow{154.9}$ S_C $\xrightarrow{241}$ I	2(6–94) 12(3–60) 14(3–54)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
9		K 126.8 S_C 171.0 S_D 197.2 S_C 201.9 I	65(3–81) 226(3–42) 2(6–95) 12(3–55) 199(6–96) 149(6–97) 105(6–98) 226(3–56)
10		K 124.6 S_C 158.9 S_D 195.0 I	65(3–82) 66(3–74)
11		K 191 S_C 193 N 233 I	2(6–127) 173(6–129)
12		K 124.6 S_C 201 I	9(3–55) 8(3–60) 2(6–100)
13		K 119.5 S_C 193.5 I	2(6–128)
14		K 117.9 S_C 208 I	8(3–59) 2(6–49)
15		K 139.8 S_C 147.1 N 179.8 I	2(6–121)
16		K 107.5 S_C 157.5 I	2(6–8)

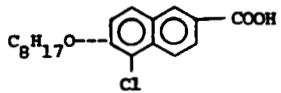
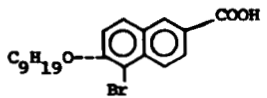
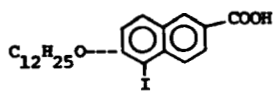
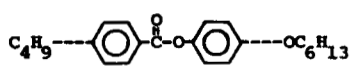
17		$K \xrightarrow{167.6} S_C \xrightarrow{181.3} N \xrightarrow{197} I$	2(6–122)
18	$C_{16}H_{33}O$---	$K \xrightarrow{141} S_C \xrightarrow{176} I$	2(6–9)
19		$K \xrightarrow{166.5} S_C \xrightarrow{197} N \xrightarrow{189.8} I$	2(6–123)
20	$C_{16}H_{33}O$---	$K \xrightarrow{137.5} S_C \xrightarrow{169.5} I$	2(6–124)
21		$K \xrightarrow{147} S_C \xrightarrow{167.5} N \xrightarrow{171.2} I$	2(6–125)
22	$C_{18}H_{37}O$---	$K \xrightarrow{126} S_C \xrightarrow{161.5} I$	2(6–126)
23		$K \xrightarrow{29} N \xrightarrow{48} I$	40(4–36) 30(4–39) 39(4–38) 229(6–64) 239(6–65) 28(4–86) 43(4–87) 42(4–88) 30(4–89) 29(4–90) 41(4–91)
24	C_6H_{13}--- ---OC_4H_9	$K \xrightarrow{\sim 40} N \xrightarrow{\sim 50} I$	75(4–59)
25	C_4H_9--- ---CN	$K \xrightarrow{67.1} I$, $N \xrightarrow{42.6} I$	26(4–25) 27(4–26)
26	C_6H_{13}--- ---CN	$K \xrightarrow{44.5} N \xrightarrow{47.0} I$	25(4–25) 27(4–27)

TABLE I (*continued*)

Compound number	Structure		Transition temperature, °C	Binary systems studied
27	C_7H_{15}---	---CN	K 44.6 N 56.0 I	25(4–26) 229(4–49) 26(4–27)
28	CH_3O---	---C_5H_{11}-n	K 28.3 N 41.2 I	23(4–86) 42(4–83) 30(4–84)
29		---OC_6H_{13}-n	K 56.0 N 78.5 I	23(4–90)
30	$C_6H_{13}O$---	---C_4H_9	K 48 N 50 I	40(4–35) 23(4–39) 39(4–37) 28(4–84) 42(4–85) 23(4–89)
31	$C_7H_{15}O$---	---C_5H_{11}	K 43.5 N 61 I; S$_A$ 41	236(6–82)
32	$C_8H_{17}O$---	---C_5H_{11}	K → S$_A$ → I	254(3–13) 142(6–142)
33	$C_{10}H_{21}O$---	---CH_3	K 35 N 59 I; S 30.5	38(6–55)
34	$C_{10}H_{21}O$---	---OCH_3	K 86 I; S 46 N 76.5	38(6–56)
35	$C_{10}H_{21}O$---	---OC_6H_{13}	K 61 S$_C$ 78 S$_A$ 81 N 89 I	239(6–117)

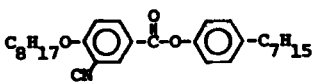
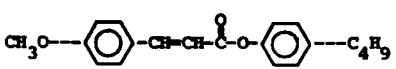
36	$C_{10}H_{21}O$---	---CF_3	$K \xrightarrow{72} I$, $K \xrightarrow{} S \xrightarrow{72} I$	38(3–37)
37	$C_{10}H_{21}O$---	---CN	$K_I \xrightarrow{39} K_{II} \xrightarrow{78} N \xrightarrow{84.5} I$, $N \xrightarrow{} S \xrightarrow{77.5} I$	38(6–57)
38	$C_{10}H_{21}O$---	---NO_2	$K_I \xrightarrow{48.5} K_{II} \xrightarrow{55} S_A \xrightarrow{77} I$	112(6–47) 36(3–37) 126(3–35) 33(6–55) 122(3–36) 34(6–56) 121(6–54) 37(6–57)
39	C_3H_7CO---	---OCH_3	$K \xrightarrow{78} N \xrightarrow{84} I$	40(4–34) 23(4–38) 30(4–37)
40	C_4H_9CO---	---OC_6H_{13}	$K \xrightarrow{52} N \xrightarrow{87} I$	137(4–34) 23(4–36) 30(4–35)
41	n-C_4H_9OCO---	---OC_2H_5	$K \xrightarrow{63.0} N \xrightarrow{80.0} I$	23(4–91)
42	n-C_4H_9OCO---	---OC_6H_{13}-n	$K \xrightarrow{43.0} N \xrightarrow{81.2} I$	23(4–88) 28(4–83) 30(4–85)
43	n-$C_5H_{11}OCO$---	---C_9H_{19}-n	$K \xrightarrow{36.0} N \xrightarrow{46.0} I$	23(4–87)
44			$K \xrightarrow{47} S_A \xrightarrow{57} I$	255(3–1)
45			$K \xrightarrow{81.8} N \xrightarrow{93.0} I$	48(4–31)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
46	C_4H_9------C_4H_9	K 53.6 N 61.3 I	47(4–32)
47	$C_5H_{11}O$------C_4H_9	K 69.2 N 102.0 I	46(4–32)
48	C_5H_{11}O------OCH_3	K 69.3 N 136.6 I	45(4–31)
49	$C_8H_{17}O$$C_4H_9$	K 56 S$_C$ S$_A$ 56 86 I	1(6–42) 51(3–43) 50(3–34) 53(3–45) 50(3–46)
50	$C_{10}H_{21}O$------C_6H_{13}	K 58 S$_C$ S$_A$ 64 80 I	49(3–34) 49(3–46) 51(3–44)
51	$C_{16}H_{33}O$------C_7H_{15}	K 77 S$_H$ S$_A$ 70 72 80 I	49(3–43) 50(3–44)
52	$C_{18}H_{37}O$------C_9H_{19}	K 80 I 75 S$_H$ S$_A$ 77 78	168(6–78)

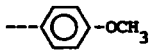
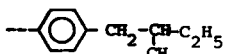
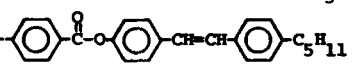
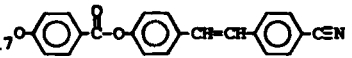
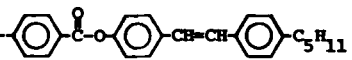
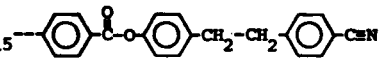
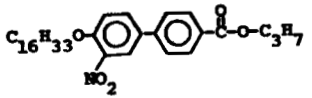
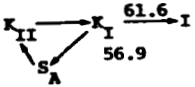
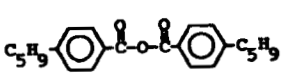
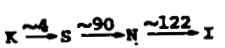
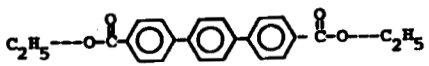
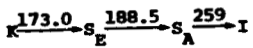
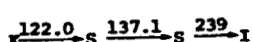
53	$C_8H_{17}O$--- 	K → S_C ~29 → S_A ~73 → I	49(3–45)
54	$C_8H_{17}O$--- 	K 122 → S_A 187 → N 211 → I; K → S_B 110	152(6–43)
55	$C_8H_{17}O$--- 	K → S_G 59 → S_H 76 → S_F 81 → S_C 132 → S_A 170 → N 193 → I	169(6–40)
56	C_5H_{11}--- 	K 100 → S_B 118 → S_F 120 → S_C 136 → N 228 → I	58(6–133)
57	n-$C_8H_{17}O$ 	K 60 → K 95.5 → S_A [94.1] → N 137.8 → S_A 248.5 → N 282.5 → I	166(6–149) 81(6–145) 167(6–146)
58	C_6H_{13}--- 	K 99 → S_B 114 → S_F 120 → S_C 192 → N 219 → I	152(3–3) 59(6–134) 179(6–132) 60(6–135) 56(6–133)
59	C_7H_{15}---	K 107 → S_F 116.5 → S_C 149 → N 216 → I; K → S_B 105	58(6–134)
60	C_8H_{17}---	K 100 → S_F 118 → S_C 155 → N 210 → I; K → S_B 100	58(6–135)
61	n-C_7H_{15}--- 	K 89 → N 150 → I	167(6–147)
62	n-C_8H_{17}---	K 92 → N [72] → S_A 96 → N 144 → I	167(6–148)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
63			221(3–57)
64			229(4–67)
65			188(3–29) 149(6–102) 66(3–68) 105(6–103) 10(3–82) 9(3–81)
66			2(6–101) 240(6–31) 187(3–49) 69(3–70) 242(3–17) 248(3–20) 10(3–74) 245(3–18) 9(3–73) 217(3–80) 244(3–19) 65(3–68) 176(3–71) 70(3–79) 67(3–69)
67			68(3–65) 72(3–66) 66(3–69)
68			217(3–61) 67(3–65) 69(3–67)
69			217(3–62) 70(3–76) 68(3–67) 10(3–77) 66(3–70)
70			217(3–63) 66(3–79) 69(3–76) 178(3–64) 71(3–78)

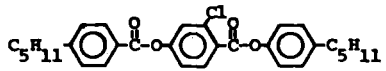
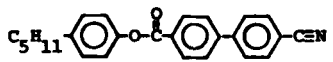
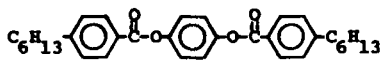
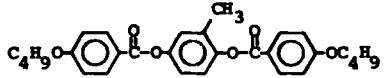
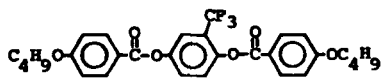
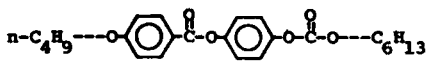
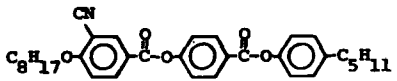
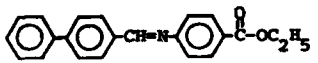
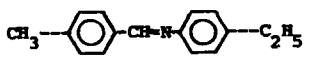
71	C_8H_{17}--- ---C_8H_{17}	$K \xrightarrow{135.1} S_C \xrightarrow{150.9} S_A \xrightarrow{169.7} I$	217(2–75) 69(3–77) 70(3–78)
72	$C_{16}H_{33}$--- ---$C_{16}H_{33}$	$K \xrightarrow{134.1} I$, $K \xrightarrow{132.6} S_A$	67(3–66)
73		$K \xrightarrow{39.6} N \xrightarrow{123.0} I$	251(4–68)
74		$K \rightarrow S_A \xrightarrow{\sim 139} N \rightarrow I$	168(6–136)
75		$K \xrightarrow{\sim 128} N \xrightarrow{\sim 170} I$	24(4–59)
76		$K_I \xrightarrow{50.7} K_{II} \xrightarrow{115.3} N \xrightarrow{206.0} I$	77(4–16)
77		$K_I \xrightarrow{95.6} K_{II} \xrightarrow{102.1} N \xrightarrow{151.8} I$	76(4–16)
78		$K \xrightarrow{73.8} N \xrightarrow{83.2} I$	79(4–28) 80(4–29)
79	$n\text{-}C_4H_9$--- ---C_7H_{15}	$K \xrightarrow{85.8} I$, $K \xrightarrow{81.0} N$	78(4–28) 80(4–30)
80	$n\text{-}C_4H_9$--- ---C_8H_{17}	$K \xrightarrow{82.0} I$, $K \xrightarrow{79.0} N$	78(4–20) 79(4–30)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
81		K 82 S_C 100 S_A 107 I	216(3–2) 57(6–145)
II. Schiff's base derivatives (with only one azomethine group), —CH=N—			
82		K 121.6 S_A 131.0 I	171(6–110)
83		K 56.5 I / N 32.5	97(4–65)
84		K 41.6 N 61.2 I	97(4–64)
85		K 21 N 45 I	129(4–40) 229(6–119) 90(4–50) 97(4–63) 228(4–53) 98(4–66) 102(4–51)
86		K 34.0 N 63.2 I	88(4–44)
87		K 22.6 N 46.0 I	202(4–69) 101(4–70) 103(4–71) 90(4–72) 193(4–73)

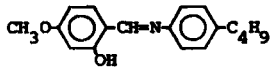
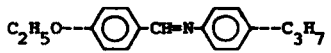
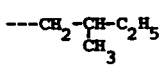
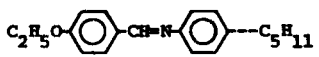
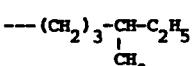
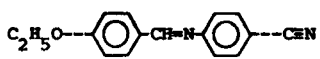
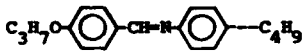
88		K $\xrightarrow{44.7}$ N $\xrightarrow{64.5}$ I	90(4–43) 85(4–44)
89		K → N → I	118(6–39)
90		K $\xrightarrow{36}$ N $\xrightarrow{79}$ I	206(4–21) 58(4–43) 85(4–50) 87(4–72) 144(4–74) 92(4–75) 96(4–76) 103(4–77) 144(4–78)
91		K $\xrightarrow{27.8}$ Ch $\xrightarrow{60.0}$ I	93(4–22)
92		K → N → I	90(4–75)
93		K $\xrightarrow{\sim 9}$ Ch $\xrightarrow{51.0}$ I; S$_{II}$ $\xrightarrow{-9.5}$ S$_I$; S$_I$ $\xrightarrow{8.5}$ I	92(4–22) 94(4–23) 98(4–24)
		K $\xrightarrow{\sim 8}$ N $\xrightarrow{51.2}$ I; S$_{II}$ $\xrightarrow{-9.5}$ S$_I$; S$_I$ $\xrightarrow{8.5}$ I	
94		K $\xrightarrow{51.5}$ N $\xrightarrow{86}$ I	93(4–23)
95		K $\xrightarrow{\sim 104}$ N $\xrightarrow{\sim 128}$ I	211(6–22)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
96		K → N → I	90(4–76)
97		K $\xrightarrow{32.6}$ N $\xrightarrow{71.6}$ I	85(4–63) 84(4–64) 83(4–65)
98		K $\xrightarrow{29.2}$ N $\xrightarrow{69}$ I	93(4–24) 85(4–66)
99		K $\xrightarrow{94.4}$ I $_{78.5}$ N	139(4–47)
100		K $\xrightarrow{40}$ S$_H$ $\xrightarrow{50}$ N $\xrightarrow{64}$ I; K $\xrightarrow{38.7}$ S$_G$ $\xrightarrow{50.5}$ N $\xrightarrow{64.8}$ I	126(6–48) 122(6–50) 121(6–52) 174(6–66) 168(6–69) 161(6–70) 243(6–71)
101		K → N → I	87(4–70)
102		K → S $\xrightarrow{\sim 44}$ Ch $\xrightarrow{\sim 76}$ I; K $\xrightarrow{46}$ N $\xrightarrow{75}$ I	271(6–59) 85(4–51)
103		K → N → I	87(4–71) 90(4–77)

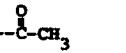
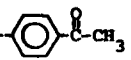
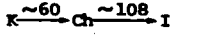
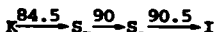
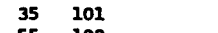
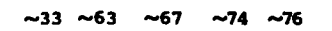
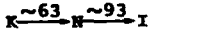
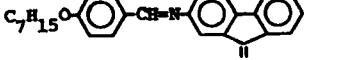
104				108(6–19) 157(6–25) 156(6–20)
105				9(6–98) 65(6–103)
106		---C≡N		271(5–2)
107		---Cl		147(3–5) 257(3–10) 108(3–6)
108	$C_5H_{11}O$---	---Cl		107(3–6) 104(6–19) 110(3–7)
109	$C_6H_{13}O$---	---C≡N		140(4–42) 142(6–24)
110		---Cl		108(3–7) 111(6–21) 258(3–11)
111		---F		110(6–21)
112	$C_7H_{15}O$---	---C_4H_9		113(6–18) 38(6–47)
113		---C_5H_{11}		115(6–17) 112(6–18)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
114			169(6–76) 115(6–77)
115			212(6–15) 114(6–77) 175(6–16) 113(6–17) 169(6–75)
116			194(4–54)
117			239(6–79) 283(6–80) 119(6–81)
118			89(6–39)
119			117(6–81)
120			152(3–87)
121			100(6–52) 38(6–54) 239(6–53)

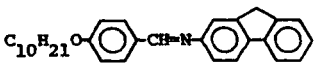
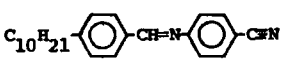
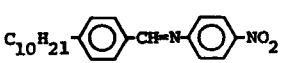
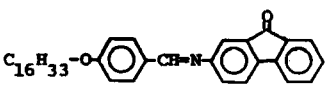
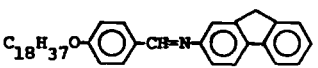
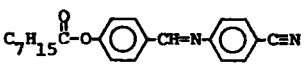
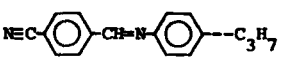
122		$K \xrightarrow{66} S \xrightarrow{77.5} I$	100(6–50) 239(6–51) 38(3–36)
123		$K \xrightarrow{122} S_B \xrightarrow{139.8} S_A \xrightarrow{156.5} N \xrightarrow{157.5} I$	199(6–10) 124(6–11)
124		$K \xrightarrow{113.5} S_A \xrightarrow{167} N \xrightarrow{175.5} I$	123(6–11) 153(6–26)
125		$K \rightarrow S \xrightarrow{\sim 88} Ch \xrightarrow{\sim 92} I$	271(6–60)
126		$K \xrightarrow{\sim 59} S_A \xrightarrow{\sim 93} I$	100(6–48) 239(6–49) 38(3–35)
127		$K \xrightarrow{91.5} S_A \xrightarrow{115} N \xrightarrow{126} I$	217(6–12)
128		$K \xrightarrow{\sim 115} S_A \xrightarrow{\sim 152} I$	239(6–61)
129		$K \xrightarrow{60} N \xrightarrow{95} I$	85(4–40)
130		$K \xrightarrow{67} N \xrightarrow{75} I$	132(4–46)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
131	---C_4H_9	K ~79 I; N 60	132(4–45)
132	---C_6H_{13}	K 65 I; N 65	131(4–45) 130(4–46)
133	---C_8H_{17}	K_I 66 N 72 I; N 63.3 S; K_{II} 43	134(6–84) 135(6–85)
134	---$C_{10}H_{21}$	K_I 72 S_C 78.5 I; K_{II} 56	133(6–84)
135	---$C_{11}H_{23}$	K_I 68 S_C 83.3 I; K_{II} 58	133(6–85)
136	C_4H_9–C6H4–CH=N–C6H4–OC_7H_{15}	K → S_F ~65 S_C ~68 S_A 80 I	191(3–30)
137	CH_3O–C6H4–CH=N–C6H4–OCH_3	K 146 I; 101 N	136(4–33)

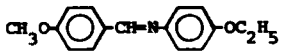
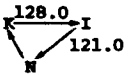
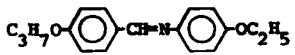
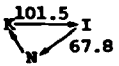
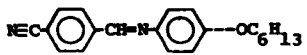
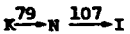
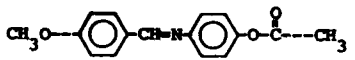
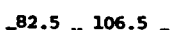
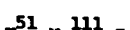
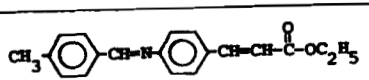
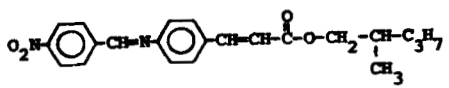
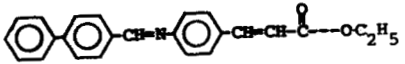
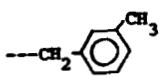
138			205(4–60)
139			99(4–47)
140			109(4–42)
141			212(6–83)
142			109(6–24) 212(6–116) 1(6–118) 32(6–142) 238(6–143)
143			206(4–20)
144			90(4–74) 90(4–78)
145			146(4–52)
146			145(4–52)

TABLE 1 (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
147		K 94 S_B 106.5 S_A 118 I	107(3–5) 256(3–12)
148		K 26.78 S_A 28.04 Ch 30.96 I	269(6–137) 280(6–138) 283(6–139) 285(6–140)
149		K 143.3 S_B 181.9 S_A 211.2 N 217 I	9(6–97) 65(6–102)
150	---OC_7H_{15}	K 81.9 S_C 94.4 S_B 160.8 S_A 198 I	152(3–4)
151	---OC_8H_{17}	K 73 S_E 93 S_B 160 S_A 194 I	154(3–14) 153(3–15)
152	---$OC_{10}H_{21}$	K 72.5 S_E 89.9 S_B 154 S_A 188.8 I	199(6–13) 228(3–26) 58(3–3) 150(3–4) 54(6–43)
153		K 175.0 I 169.9 S_B 132.4 S_E	151(3–15) 124(6–26)

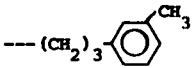
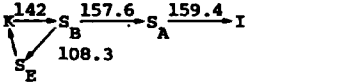
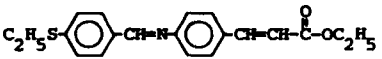
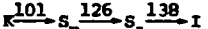
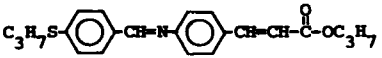
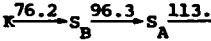
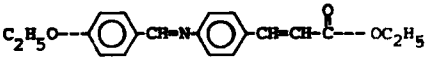
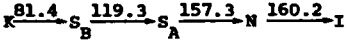
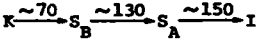
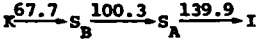
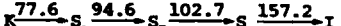
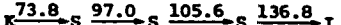
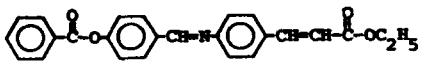
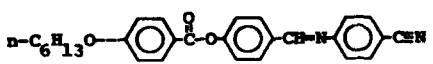
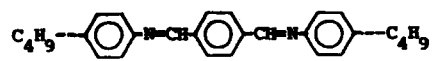
154			151(3–14)
155			224(3–39)
156			104(6–20) 157(6–104)
157			104(6–25) 168(6–67) 156(6–104) 168(6–144)
158			260(3–8) 257(3–9)
159			160(3–83)
160			159(3–83)
161			100(6–70)
162			213(3–27) 214(3–28)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
163		K 130.3 S_A 198.6 N 232 I	198(6–105) 215(6–106)
164		K 113.5 S_A [91] N 274.5 I	165(6–150)
165		K 114.5 S_A [70] N 263.5 I	164(6–150)
166		K 107.5 N 153 S_A 197.5 N 235 I	57(6–149)
167		K 96 S_A [40] N [92] S_A 228 N 251 I	62(6–148) 61(6–147) 57(6–146)

III. Schiff's base derivatives (with two azomethine groups)

168		K 113.0 S_B 144.5 S_C 172.0 S_A 190.0 N 235 I 63 (K ↔ S_V) 73–74 (K ↔ S_V) 74 87 (N → S_G) 89.2 (N → S_G) K → S_G → S_H ~144 S_C ~172 S_A 200 N ~237 I	169(6–41) 157(6–67) 174(6–68) 100(6–69) 169(6–73) 52(6–78) 74(6–136) 157(6–144)

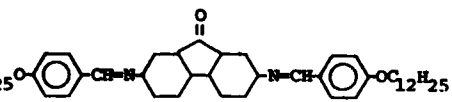
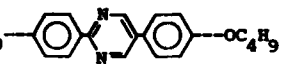
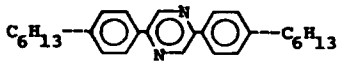
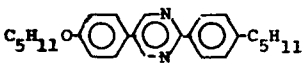
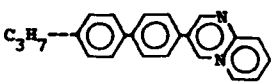
			$K \xrightarrow{113.0} S_G \xrightarrow{144.5} S_C \xrightarrow{172.0} S_A \xrightarrow{199.0} N \xrightarrow{235.0} I$	
169	C_5H_{11}---	---C_5H_{11}	$K \rightarrow S_G \xrightarrow{61} S_H \xrightarrow{140} S_F \xrightarrow{149} S_C \xrightarrow{179} S_A \xrightarrow{212} N \xrightarrow{233} I$ $K \xrightarrow{68} S_B \xrightarrow{140} S_{III} \xrightarrow{149} S_C \xrightarrow{179} S_A \xrightarrow{212} N \xrightarrow{233} I$ $\downarrow S_V\ 61$	55(6–40) 168(6–41) 168(6–73) 172(6–74) 115(6–75) 114(6–76)
170	CH_3O-CH_2O---	---OCH_2-OCH_3	$K \xrightarrow{136.2} S_B \xrightarrow{142.9} S_A \xrightarrow{147.1} N \xrightarrow{222} I$	171(6–111)
171	C_4H_9O-CH_2O---	---OCH_2- OC_4H_9	$K \xrightarrow{106.2} S_A \xrightarrow{118.7} I$	84(6–110) 195(6–112) 170(6–111) 195(6–112) 221(3–85)
172	$C_6H_{13}O$---	---OC_6H_{13}	$K \rightarrow ? \xrightarrow{\sim 150} S_B \xrightarrow{\sim 175} S_C \xrightarrow{\sim 225} S_A \xrightarrow{230} N \xrightarrow{\sim 250} I$	169(6–74)
173	$C_{12}H_{25}O$-  -$OC_{12}H_{25}$		$K \xrightarrow{130} S_C \xrightarrow{261} N \xrightarrow{226} I$	11(6–129)
174	C_4H_9-  -OC_4H_9		$K \xrightarrow{90.5} S_G \xrightarrow{113.7} S_C \xrightarrow{120.8} S_A \xrightarrow{214} I$	175(3–38) 100(6–66) 168(6–68)
175	C_5H_{11}---	---OC_5H_{11}	$K \xrightarrow{79} S_G \xrightarrow{103} S_F \xrightarrow{114} S_C \xrightarrow{145} S_A \xrightarrow{205} I$	115(6–16) 174(3–38)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
176		K $\xrightarrow{116.1}$ S_C $\xrightarrow{172.3}$ S_A $\xrightarrow{179.2}$ I	217(3–40) 66(3–71)
177		K $\xrightarrow{109.6}$ S_C $\xrightarrow{175.0}$ S_A $\xrightarrow{187.0}$ I	217(3–41)
178		K $\xrightarrow{104.6}$ S_C $\xrightarrow{178.0}$ S_A $\xrightarrow{187.0}$ I	70(3–64)
179		K $\xrightarrow{\sim 78}$ S_G $\xrightarrow{\sim 103}$ S_F $\xrightarrow{\sim 114}$ S_C $\xrightarrow{\sim 148}$ S_A $\xrightarrow{\sim 212}$ I	58(6–132)
180		K $\xrightarrow{121}$ S_A $\xrightarrow{175}$ I	215(3–52)
181		K $\xrightarrow{120}$ S_A $\xrightarrow{167}$ I	184(6–93)
182		K $\xrightarrow{112}$ S_A $\xrightarrow{171}$ I	186(3–48)
183		K $\xrightarrow{86}$ S_E $\xrightarrow{88}$ S_A $\xrightarrow{170}$ I	187(3–52)

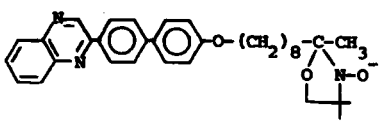
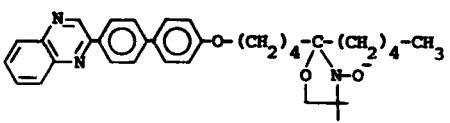
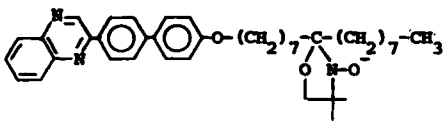
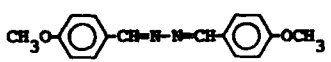
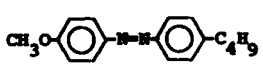
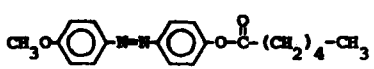
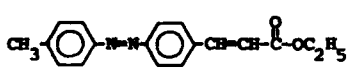
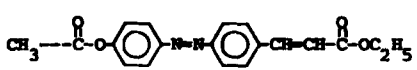
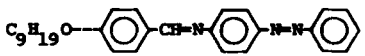
184	CH_3O---	K 169 N 203 I; N 163 S_A	215(6–91) 198(6–93)
185	H_5C_2O---	K 175 S_A 202 N 216 I	215(6–92)
186	$H_{11}C_5O$---	K 145 S_A 206 I; S_A 130 S_E	180(3–48) 215(3–51)
187	$H_{21}C_{10}O$---	K 98 S_E 119 S_A 191 I	66(3–49) 183(3–52)
188	$H_{33}C_{16}O$---	K 109 S_A 182.5 I; S_A 106 S_E	65(3–29) 191(3–31)
189		K 105 S_E 120 S_A 157 I	191(3–33)
190		K 117 I; I 106 N; N S_A; S_A S_C 101 K	191(3–32)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
191		K 73 S_E 98 S_C 118 S_A 132 I	136(3–30) 188(3–31) 190(3–32) 189(3–33)
IV. Azine compounds (—CH=N—N=CH—)			
192		K 171 N 183 I	206(4–18) 207(4–19)
V. Azo compounds (—N=N—)			
193		K — N — I	87(4–73)
194		K ~68 N ~109 I	116(4–54)
195		K 117.1 S_A 124.2 N 142.7 I	171(6–112)
196		K 138.3 S_A 153.2 N 162.2 I	197(6–107)

197	C_5H_{11}—	$K \xrightarrow{91.2} S_A \xrightarrow{154.3} I$	196(6–107) 215(6–108)
198		$K \xrightarrow{140.3} S_A \xrightarrow{178.0} N \xrightarrow{222} I$	163(6–105)

VI. Schiff's base, azo compounds (—CH=N— and —N=N—)

199		$K \xrightarrow{107.4} S_B \xrightarrow{124.4} S_A \xrightarrow{156.2} N \xrightarrow{162.1} I$	123(6–10) 9(6–96) 152(6–13) 200(6–109)
200	$C_{12}H_{25}O$—	$K \xrightarrow{101.1} S_B \xrightarrow{125.5} S_A \xrightarrow{159.1} I$	244(6–32) 236(3–24) 216(3–25) 199(6–109)

VII. Azoxy compounds (—N=N—, O)

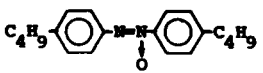
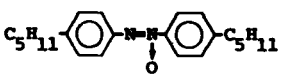
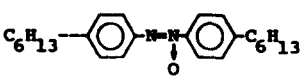
201		$K \xrightarrow{19.6} N \xrightarrow{32.5} I$	202(4–79) 203(4–80)
202		$K \xrightarrow{26.6} N \xrightarrow{67.9} I$	87(4–69) 201(4–79) 203(4–81)
203		$S_A \xrightarrow{21} N \xrightarrow{54} I$	204(6–3) 201(4–80) 202(4–81)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
204	C_7H_{15}---	$S_A \xrightarrow{53.9} N \xrightarrow{70.8} I$	203(6–3) 205(6–4)
205	C_8H_{17}---	$S_A \xrightarrow{64.4} N \xrightarrow{66.6} I$	204(6–4)
206	CH_3O---	$K \xrightarrow{118.2} N \xrightarrow{135.2} I$	207(4–1) 209(4–3) 208(4–17) 208(4–2) 210(4–4) 192(4–18) 211(4–5) 143(4–20) 90(4–21) 212(6–2)
207	C_2H_5O---	$K \xrightarrow{137} N \xrightarrow{167} I$	206(4–1) 210(4–8) 192(4–19) 208(4–6) 211(4–9) 209(4–7) 206(4–17)
208	C_3H_7O---	$K \xrightarrow{117} N \xrightarrow{124} I$	206(4–2) 207(4–6) 209(4–10) 210(4–11) 211(4–12)
209	C_4H_9O---	$K \xrightarrow{122.9} N \xrightarrow{136.7} I$	206(4–3) 207(4–7) 208(4–10) 210(4–13) 211(4–14)
210	$C_5H_{11}O$---	$K \xrightarrow{75.5} N \xrightarrow{123.2} I$	206(4–4) 207(4–8) 208(4–11) 209(4–13) 211(4–15)
211	$C_6H_{13}O$---	$K \xrightarrow{81.3} N \xrightarrow{129.1} I$	206(4–5) 207(4–9) 208(4–12) 209(4–14) 210(4–15) 95(6–22) 252(6–23)

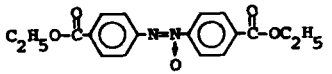
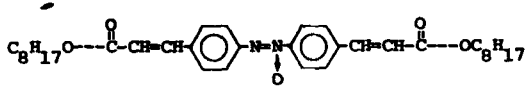
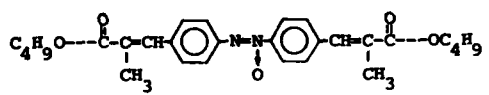
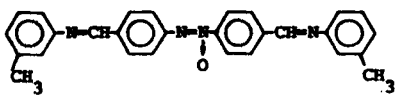
212	$C_7H_{15}O$---	---OC_7H_{15}	$K \xrightarrow{75.0} S_C \xrightarrow{93.8} N \xrightarrow{124.5} I$	206(6–2) 115(6–15) 252(6–58) 141(6–83) 210(6–90) 142(6–116)
213	$C_{16}H_{33}O$---	---$OC_{16}H_{33}$	$K \xrightarrow{89.5} S_B \xrightarrow{91.1} S_C \xrightarrow{115.5} I$	162(3–27)
214	$C_{18}H_{37}O$---	---$OC_{18}H_{37}$	$K \xrightarrow{94.2} S_B \xrightarrow{99} S_C \xrightarrow{115.3} I$	162(3–28)
215			$K \xrightarrow{113.7} S_A \xrightarrow{122.5} I$	184(6–91) 163(6–106) 185(6–92) 197(6–108) 180(3–50) 186(3–51) 171(3–84)
216			$K \xrightarrow{92.4} S_C \xrightarrow{962.3} S_A \xrightarrow{175.3} I$	81(3–2) 7(3–58) 6(3–53)
217	$C_9H_{19}O$---	---OC_9H_{19}	$K \xrightarrow{94.3} S_C \xrightarrow{161.6} S_A \xrightarrow{170.7} I$	127(6–12) 68(3–61) 69(3–62) 70(3–63) 71(3–75) 66(3–80) 176(3–40) 177(3–41)
218	$C_{16}H_{33}O$---	---$OC_{16}H_{33}$	$K \xrightarrow{107.1} S_C \xrightarrow{134.5} S_A \xrightarrow{136.9} I$	222(3–86)
219			$K \xrightarrow{62} S_A \xrightarrow{102.3} I$	220(3–47)
220	$C_6H_{13}O$---	---OC_6H_{13}	$K \xrightarrow{54} S_A \xrightarrow{90.7} I$	219(3–47)

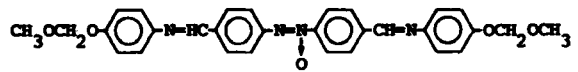
TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
221	$C_8H_{17}O$---	K $\xrightarrow{63.0}$ S_A $\xrightarrow{66.1\ \ 67.3\ \ 88.4}$ I	63(3–57) 171(3–85)
222	$C_{11}H_{23}O$---	K $\xrightarrow{73.0}$ S_C $\xrightarrow{78.3}$ S_A $\xrightarrow{88.7}$ I	218(3–86)
223	$C_{12}H_{25}O$--- 	K $\xrightarrow{79.0}$ S_C $\xrightarrow{83.7}$ S_A $\xrightarrow{87.9}$ I	225(6–113) 283(6–114)
224	$C_{16}H_{33}O$---	K $\xrightarrow{75.6}$ S_C $\xrightarrow{84.4}$ I	155(3–39)

VIII. Schiff's base, azoxy compounds (—CH=N— and —N=N(O)—)

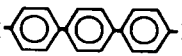
225 

K $\xrightarrow{143.0}$ S_A $\xrightarrow{167.2}$ N $\xrightarrow{169.8}$ I — 223(6–113)

226 

K $\xrightarrow{136.4}$ S_B $\xrightarrow{153.3}$ S_C $\xrightarrow{207}$ S_A $\xrightarrow{290}$ I

K $\xrightarrow{136.9}$ S_B $\xrightarrow{153.3}$ S_C $\xrightarrow{209.3}$ S_A $\xrightarrow{290}$ N $\xrightarrow{290}$ I — 9(3–42) 9(3–56)

IX. Biphenyls (), terphenyls () and fused-ring systems

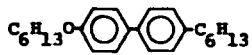
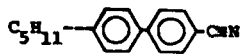
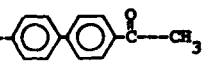
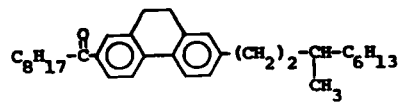
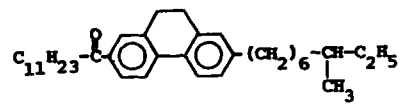
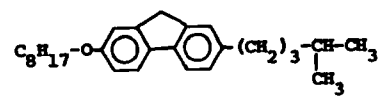
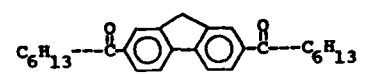
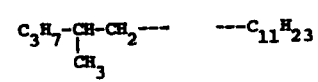
227		$K \xrightarrow{24} S_E \xrightarrow{47} S_B \xrightarrow{52} I$	238(6–120)
228		$K \xrightarrow{9.0} S_E \xrightarrow{68.0} S_B \xrightarrow{83.9} I$	200(3–25) 152(3–26)
229		$K \xrightarrow{22.5} N \xrightarrow[\sim 23]{35} I$; $K \xrightarrow{\sim 6} S \xrightarrow[\sim 23]{} N \xrightarrow[\sim 36]{} I$	249(6–27) 230(4–41) 232(6–86) 23(6–64) 27(4–49) 231(4–55) 85(4–53) 85(6–119) 64(4–67) 251(6–141) 290(4–82)
230	C_6H_{13}---	$K \xrightarrow{14.25} N \xrightarrow{26.08} I$	229(4–41) 232(6–29) 233(6–14)
231	C_7H_{15}---	$K \xrightarrow{29.32} N \xrightarrow{42.05} I$	232(6–28) 229(4–55) 233(6–87)
232	C_8H_{17}---	$K \xrightarrow{19.48} S_A \xrightarrow{32.60} N \xrightarrow{39.54} I$	231(6–28) 229(6–86) 230(6–29) 234(6–30) 234(3–87)
233	C_9H_{19}---	$K \xrightarrow{40.97} S_A \underset{41.05}{\overset{46.77}{\rightleftarrows}} N \xrightarrow[46.95]{58.86} I$	230(6–14) 231(6–86)
234	$C_{10}H_{21}$---	$K \xrightarrow{41.46} S_A \xrightarrow{49.32} I$	232(6–30) 235(3–16) 232(3–87)
235	$C_{11}H_{23}$---	$K \xrightarrow{50.92} S_A \xrightarrow{55.35} I$	234(3–16)

TABLE I (*continued*)

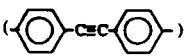
Compound number	Structure	Transition temperature, °C	Binary systems studied
236	$C_5H_{11}O$---	K $\xrightarrow{\sim 47}$ N $\xrightarrow{\sim 68}$ I	29(6–82)
237	$C_6H_{13}O$---	$K_I \xrightarrow{55.57} N \xrightarrow{73.71} I$ $K_{II} \xrightarrow{42.30} N$	239(6–89)
238	$C_7H_{15}O$---	K $\xrightarrow{51}$ N $\xrightarrow{75}$ I	227(6–120)
239	$C_8H_{17}O$---	K $\xrightarrow{53}$ S_A $\xrightarrow{66}$ N $\xrightarrow{79}$ I	126(6–49) 117(6–79) 121(6–53) 35(6–117) 122(6–51) 128(6–61) 23(6–65) 142(6–143)
240	C_2H_5O---  ---CH_3	K $\xrightarrow{96.0}$ S_E $\xrightarrow{156.2}$ I	113(6–31)
241	C_2H_5O---	---C_3H_7	K $\xrightarrow{123.0}$ S_E $\xrightarrow{156.2}$ I	244(3–22)
242	C_2H_5O---	---C_8H_{17}	K $\xrightarrow{108.0}$ S_E $\xrightarrow{120.2}$ S_A $\xrightarrow{144.8}$ I	66(3–17) 244(3–21) 247(3–23)
243	C_3H_7O---	---CH_3	K $\xrightarrow{107.0}$ S_E $\xrightarrow{156.5}$ I	100(6–71)

244	C_3H_7O---	---C_2H_5	K $\xrightarrow{119.0}$ S_E $\xrightarrow{177.3}$ I	66(3–19) 200(6–32) 242(3–21) 241(3–22)
245	C_4H_9O---	---C_3H_7	K $\xrightarrow{101.5}$ S_E $\xrightarrow{145.7}$ S_A $\xrightarrow{155.9}$ I	66(3–18)
246	C_8H_{17}---	---C_5H_{11}	K $\xrightarrow{87.5}$ S_B $\xrightarrow{92.2}$ S_A $\xrightarrow{101.3}$ I	200(3–24)
247	$C_9H_{19}O$---	---C_4H_9	K $\xrightarrow{101.0}$ S_E $\xrightarrow{106.4}$ S_A $\xrightarrow{143.9}$ I	242(3–23)
248	$C_{10}H_{21}O$---	---CH_3	K $\xrightarrow{103.0}$ S_E $\xrightarrow{132.0}$ I	66(3–20)
249	$C_7H_{15}O$-⟨⟩-$(CH_2)_2$-⟨⟩-C≡N		K $\xrightarrow{83.5}$ S_A $\xrightarrow{85.1}$ N $\xrightarrow{157.4}$ I	229(6–27)
250	C_5H_{11}-⟨⟩-⟨⟩-NH-C_4H_9		K $\xrightarrow{\sim 46}$ S_A $\xrightarrow{\sim 79}$ I	229(6–141)
251	C_5H_{11}-⟨⟩-⟨⟩-⟨⟩-C≡N		K $\xrightarrow{130.1}$ N $\xrightarrow{239.0}$ I	73(4–68)
252	C_4H_9---C(=O)-⟨⟩-⟨⟩-⟨⟩---C_7H_{15}		K $\xrightarrow{44}$ I; K $\rightarrow$ S_A 31; I $\rightarrow$ N 34; S_A $\rightarrow$ N	253(6–1) 239(6–88) 211(6–23) 211(6–58)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
253		$K \xrightarrow{30} S_A \xrightarrow{56} I$	252(6–1)
254		$K \xrightarrow{21} S_A \xrightarrow{37.5} I$	32(3–13)
255		$K \xrightarrow{31} S_A \xrightarrow{62} I$	44(3–1)
256		$K \xrightarrow{80.5} S_A \xrightarrow{100.5} I$	147(3–12)
257		$K \xrightarrow{141.5} S_B \xrightarrow{149.5} S_A \xrightarrow{159.5} I$	158(3–9)
258		$K \rightarrow ? \xrightarrow{78} S_C \xrightarrow{92.5} S_A \xrightarrow{102} I$	107(3–10)
259		$K \rightarrow S \xrightarrow{133} S_A \xrightarrow{148.5} I$	110(3–11)

260	$C_{15}H_{31}$--- ---$C_{15}H_{31}$	K 133.5 S_B 139 I	158(3–8)

X. Diphenylacetylenes ()

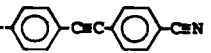
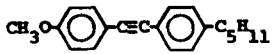
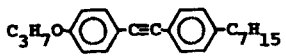
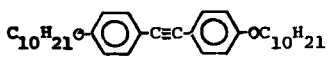
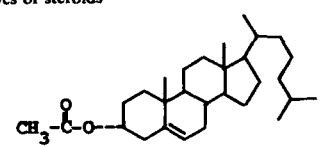
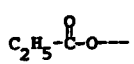
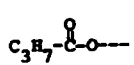
261	C_5H_{11}--- 	K 76.5 I; K N 58.5	262(4–56) 263(4–57) 264(4–58)
262	C_6H_{13}---	K 62.4 I; K N 57.1	261(4–56)
263	C_7H_{15}---	K_I 54.9 N 64.6 I; K_{II} 56.6 N 64.6 I	261(4–57)
264	C_9H_{19}---	K_I 57.8 N 63.8 I; K_{II} 54.0	261(4–58)
265	$C_2H_5CH(CH_3)(CH_2)_2$---	K 80.0 I; Ch 23.3	266(5–1)
266	$C_2H_5CH(CH_3)(CH_2)_4$---	K 59 I; Ch 26	265(5–1)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
267		$K \xrightarrow{43} N \xrightarrow{55} I$	268(4–48)
268		$K \xrightarrow{41} N \xrightarrow{63} I$	267(4–48)
269		$K \rightarrow S_C \rightarrow S_A \rightarrow N \rightarrow I$	148(6–137)
XI. Derivatives of steroids			
270		$K \xrightarrow{\sim 20} Ch \xrightarrow{\sim 113} I$	280(5–7)
271		$K \xrightarrow{\sim 85} Ch \xrightarrow{\sim 113} I$	102(6–59) 125(6–60) 106(5–2)
272		$K \xrightarrow{97} Ch \xrightarrow{108} I$	283(6–35)

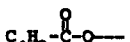
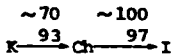
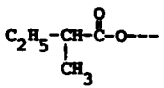
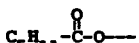
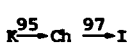
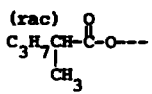
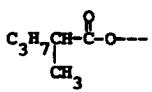
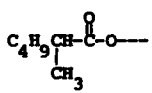
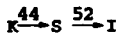
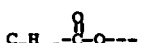
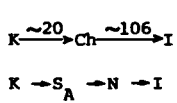
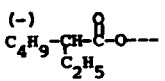
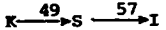
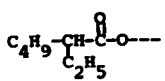
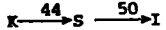
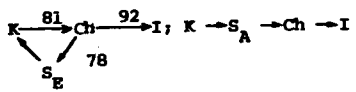
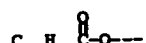
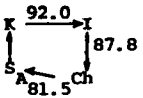
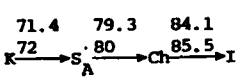
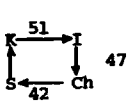
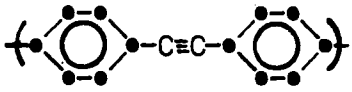
273			283(6–34) 289(5–8)
274			283(6–72)
275			283(5–4)
276			283(6–44)
277			283(6–45)
278			283(6–36)
279			283(6–38)
280			270(5–7) 148(6–138)

TABLE I (*continued*)

Compound number	Structure	Transition temperature, °C	Binary systems studied
281			283(6–46)
282			283(6–37)
283			287(6–33) 282(6–37) 273(6–34) 279(6–38) 272(6–35) 276(6–44) 278(6–36) 277(6–45) 281(6–46) 274(6–72) 117(6–80) 148(6–139)
284			285(6–115)
285			288(6–62) 225(6–114) 284(6–115) 285(6–140)
286			288(6–63)

287	$C_{22}H_{45}O$---	K → S ~34 Ch ~40 I	283(6–33)
288	$C_{13}H_{27}$-C(=O)-O---	K 91 I; I 72 Ch; Ch 67 S; S K	285(6–62) 145(6–63)
289	$C_{29}H_{59}$-C(=O)-O---	K ~52 Ch ~87 I	273(5–8)
XII. Others			
290	C_5H_{11}-Ph-Ph-NH-C_4H_9	K ~28 N ~34 I	229(4–82)

X) Diphenylacetylenes 

XI) Derivatives of steroids

XII) Others

Within each of these subgroups, the compounds are further organized by terminal chain length and functionality.

c) Column 3 of Table I: "Transition Temperatures, °C"

All of the transition temperatures cited by the references are given here along with their corresponding phase types. Unfortunately, not all authors tabulated these values, so some are estimates from their phase diagrams. The symbols used to identify the phase types are:

K_I, K_{II}: solid phases I and II
Ch: cholesteric mesophase
N: nematic mesophase
S_A, S_B, S_C, S_D, S_E, S_F, S_G, S_H; S_I, S_{II}, S_{III}, S_{IV}, S_V:

smectic mesophases with special textures, presented as identified by individual authors.

d) Column 4 of Table I: "Binary Systems Studied"

This column lists the compound numbers used for binary systems studied. This is followed by a corresponding number in parentheses which gives the table number followed by the system number for the binary system studied. For example, 49(6–42) represents compound 49, Table VI, system 42.

Table II gives the compound names and compound numbers, corresponding to those in Table I. They are arranged in alphabetic order, using Chemical Abstracts nomenclature rules when convenient.

Tables III–VI are organized by the type of mesophase of each pure component. Within these, the method of measurement, information on the existence of phase diagrams, the purpose of the study or other relevant comments, and the reference numbers are tabulated.

TABLE II

Names and compound numbers

Name	Compound number
Acetic acid, 4-[(4-methoxybenzylidene)amino] phenyl ester	143
Acetophenone, 4-[[(4-butoxy)phenyl]methylene]amino-	104
Acetophenone, 4-[[(4-butoxy)phenyl]methylene]amino-phenyl	105
4-Anisalazine	192
Aniline, N-butyl-4-(4-pentyl)cyclohexyl-	290
Aniline, N-[4-(dodecyloxy)benzylidene]-4-(phenylazo)-	200
Aniline, N-[4-(nonyloxy)benzylidene]-4-(phenylazo)-	199
Azobenzene, 4-methoxy-4-butyl	193
4,4′-Azoxy-α-methylcinnamic acid, dibutyl ester	219
4,4′-Azoxy-α-methylcinnamic acid, didodecyl ester	223
4,4′-Azoxy-α-methylcinnamic acid, dihexadecyl ester	224
4,4′-Azoxy-α-methylcinnamic acid, dihexyl ester	220
4,4′-Azoxy-α-methylcinnamic acid, dioctyl ester	221
4,4′-Azoxy-α-methylcinnamic acid, diundecyl ester	222
4,4′-Azoxybenzene, bis(butoxy)-	209
4,4′-Azoxybenzene, bis(butyl)-	201
4,4′-Azoxybenzene, bis(ethoxy)-	207
4,4′-Azoxybenzene, bis(heptyl)-	204
4,4′-Azoxybenzene, bis(heptyloxy)-	212
4,4′-Azoxybenzene, bis(hexadecyloxy)-	213
4,4-Azoxybenzene, bis(hexyl)-	203
4,4′-Azoxybenzene, bis(hexyloxy)-	211
4,4′-Azoxybenzene, bis(methoxy)-	206
4,4′-Azoxybenzene, bis(octadecyloxy)-	214
4,4′-Azoxybenzene, bis(octyl)-	205
4,4′-Azoxybenzene, bis(pentoxy)-	210
4,4′-Azoxybenzene, bis(pentyl)-	202
4,4′-Azoxybenzene, bis(propyloxy)-	208
4,4′-Azoxybenzoic acid, diethyl ester	215
N,N-[Azoxybis(4-phenylenemethylene)]-bis(4′-methoxy-4-methoxyaniline)	226
N,N-[Azoxybis(4-phenylenemethylene)]-bis(4-methylaniline)	225
4,4′-Azoxycinnamic acid, dihexadecyl ester	218
4,4′-Azoxycinnamic acid, dinonyl ester	217
4,4′-Azoxycinnamic acid, dioctyl ester	216
Benzenamine, N-[(4-butoxyphenyl)methylene]-4-butyl-	102
Benzenamine, N-[(4-butoxyphenyl)methylene]-4-chloro-	107
Benzenamine, N-[(4-butoxyphenyl)methylene]-4-cyano-	106
Benzenamine, N-[(4-butoxyphenyl)methylene]-4-ethyl-	100
Benzenamine, N-[(4-butylphenyl)methylene]-4-heptoxy-	136
Benzenamine, N-[(4-butoxyphenyl)methylene]-4-pentyl-	103
Benzenamine, N-[(4-butoxyphenyl)methylene]-4-propyl-	101
Benzenamine, N-[(4-cyanophenyl)methylene]-4-butyl	185
Benzenamine, N-[(4-cyanophenyl)methylene]-4-decyl-	134
Benzenamine, N-[(4-cyanophenyl)methylene]-4-heptyloxy-	141
Benzenamine, N-[(4-cyanophenyl)methylene]-4-hexyl-	132
Benzenamine, N-[(4-cyanophenyl)methylene]-4-hexyloxy-	140
Benzenamine, N-[(4-cyanophenyl)methylene]-4-octyl-	133
Benzenamine, N-[(4-cyanophenyl)methylene]-4-octyloxy-	142

TABLE II (*continued*)

Name	Compound number
Benzenamine, N-[(4-cyanophenyl)methylene]-4-propyl-	130
Benzenamine, N-[(4-cyanophenyl)methylene]-4-undecyl-	135
Benzenamine, N-[(4-decyloxyphenyl)methylene]-4-cyano-	125
Benzenamine, N-[(4-decyloxyphenyl)methylene]-4-methyl-	121
Benzenamine, N-[(4-decyloxyphenyl)methylene]-4-nitro-	126
Benzenamine, N-[(4-decyloxyphenyl)methylene]-4-phenyl-	123
Benzenamine, N-[(4-decyloxyphenyl)methylene]-4-trifluoromethyl-	122
Benzenamine, N-[(4-ethoxyphenyl)methylene]-4-cyano-	95
Benzenamine, N-[(4-ethoxyphenyl)methylene]-4-butyl-	90
Benzenamine, N-[(4-ethoxyphenyl)methylene]-4-heptyl-	93, 94
Benzenamine, N-[(4-ethoxyphenyl)methylene]-4-pentyl-	92
Benzenamine, N-[(4-ethoxyphenyl)methylene]-4-propyl-	89
Benzenamine, N-[(4-heptyloxyphenyl)methylene]-4-butyl-	112
Benzenamine, N-[(4-heptyloxyphenyl)methylene]-4-cyano-	116
Benzenamine, N-[(4-heptyloxyphenyl)methylene]-4-heptyl-	115
Benzenamine, N-[(4-heptyloxyphenyl)methylene]-4-hexyl-	114
Benzenamine, N-[(4-heptyloxyphenyl)methylene]-4-pentyl-	113
Benzenamine, N-[(4-hexyloxyphenyl)methylene]-4-chloro-	110
Benzenamine, N-[(4-hexyloxyphenyl)methylene]-4-cyano-	109
Benzenamine, N-[(4-hexyloxyphenyl)methylene]-4-fluoro-	111
Benzenamine, N-[(2-hydroxy-4-methoxyphenyl)methylene]-4-butyl	88
Benzenamine, N-[(4-methoxyphenyl)methylene]-4-butyl-	87
Benzenamine, N-[(4-methoxyphenyl)methylene]-4-ethoxy-	138
Benzenamine, N-[(4-methoxyphenyl)methylene]-4-methoxy-	137
Benzenamine, N-[(4-methylphenyl)methylene]-4-butyl-	85
Benzenamine, N-[(4-methylphenyl)methylene]-4-ethyl-	83
Benzenamine, N-[(4-methylphenyl)methylene]-4-pentyl-	86
Benzenamine, N-[(4-methylphenyl)methylene]-4-propyl-	84
Benzenamine, N-[(4-nonyloxyphenyl)methylene]-4-chlorophenyl-	120
Benzenamine, N-[(4-octyloxyphenyl)methylene]-4-butyl-	119
Benzenamine, N-[(4-octyloxyphenyl)methylene]-4-propyl-	118
Benzenamine, N-[(4-pentyloxyphenyl)methylene]-4-chloro-	108
Benzenamine, N-[(4-propyloxyphenyl)methylene]-4-butyl-	96
Benzenamine, N-[(4-propyloxyphenyl)methylene]-4-chloro-	99
Benzenamine, N-[(4-propyloxyphenyl)methylene]-4-ethoxy-	139
Benzenamine, N-[(4-propyloxyphenyl)methylene]-4-heptyl-	98
Benzenamine, N-[(4-propyloxyphenyl)methylene]-4-pentyl-	97
Benzoic acid, 4-butoxy-4[[(butoxyphenyl)carbonyl]oxy](2-methyl)phenyl ester	76
Benzoic acid, 4-butoxy-4[[(butoxyphenyl)carbonyl]oxy](2-trifluro-methyl)phenyl ester	77
Benzoic acid, 4-butoxy-4[[(heptyloxy)carbonyl]oxy]phenyl ester	79
Benzoic acid, 4-butoxy-4[[(hexyloxy)carbonyl]oxy]phenyl ester	78
Benzoic acid, 4-butoxy-4[[(octyloxy)carbonyl]oxy]phenyl ester	80
Benzoic acid, 4-[(butoxycarbonyl)oxy]-4-ethoxyphenyl ester	41
Benzoic acid, 4-[(butoxycarbonyl)oxy]-4-hexyloxyphenyl ester	42
Benzoic acid, 4-butyl-4-cyanophenyl ester	25
Benzoic acid, 4-butyl-4-(hexyloxy)phenyl ester	23
Benzoic acid, 3-cyano-4-(octyloxy)-4-heptylphenyl ester	44

TABLE II (*continued*)

Name	Compound number
Benzoic acid, 2-cyano-4-octyloxy-4[[(pentyphenyl)carbonyl]oxy]phenyl ester	81
Benzoic acid, 4-(cyanophenyl)-4-pentylphenyl ester	74
Benzoic acid, 4-(decyloxy)-4-cyanophenyl ester	37
Benzoic acid, 4-(decyloxy)-4-(hexyloxy)phenyl ester	35
Benzoic acid, 4-(decyloxy)-4-(methoxy)phenyl ester	34
Benzoic acid, 4-(decyloxy)-4-methylphenyl ester	33
Benzoic acid, 4-(decyloxy)-4-nitrophenyl ester	38
Benzoic acid, 4-(decyloxy)-4-trifluoromethylphenyl ester	36
Benzoic acid, 4-n-dodecyloxy-	2
Benzoic acid, 4-heptyl-4-cyanophenyl ester	27
Benzoic acid, 4-heptyl-4-[2-(4-cyanophenyl)ethyl)phenyl ester	61
Benzoic acid, 4-(heptyloxy)-4-[[(4-cyanophenyl)imino]methyl]phenyl ester	165
Benzoic acid, 4-heptyl-4-[2-(4-pentylphenyl)ethenyl]phenyl ester	59
Benzoic acid, 4-(heptyloxy)-4-pentylphenyl ester	31
Benzoic acid, 4-hexyl-4-(butyloxy)phenyl ester	24
Benzoic acid, 4-hexyl-4-cyanophenyl ester	26
Benzoic acid, 4-hexyl-4[[(hexylphenyl)carbonyl]oxy]phenyl ester	75
Benzoic acid, 4-hexyl-4-[2-(4-pentylphenyl)ethenyl]phenyl ester	58
Benzoic acid, 4-(hexyloxy)-4-butylphenyl ester	30
Benzoic acid, 4-(hexyloxy)-4-[[4-cyanophenyl)imino]methyl]phenyl ester	164
Benzoic acid, 4-(methoxy)-4-pentylphenyl ester	28
Benzoic acid, 4-(methoxy)-4-hexyloxyphenyl ester	29
Benzoic acid, 4-(nonyloxy)-4-[[(4-cyanophenyl]imino]methyl]phenyl ester	167
Benzoic acid, 4-octyl-4-[2-(4-cyanophenyl)ethyl]phenyl ester	62
Benzoic acid, 4-octyl-4-[2-(4-pentylphenyl)ethenyl]phenyl ester	60
Benzoic acid, 4-n-octyloxy-	1
Benzoic acid, 4-octyloxy-4-[2-(4-cyanophenyl)ethenyl]phenyl ester	57
Benzoic acid, 4-(octyloxy)-4-pentylphenyl ester	32
Benzoic acid, 4-(octyloxy)-4-[[(4-cyanophenyl)imino]methyl]phenyl ester	166
Benzoic acid, 4-(1-oxobutoxy)-4-(hexyloxy)phenyl ester	40
Benzoic acid, 4-(1-oxopentoxy)-4-(methoxy)phenyl ester	39
Benzoic acid, 4-pentyl-	64
Benzoic acid, 4-pentyl-4-[(2-chloro-4-pentylbenzoyl)oxy]phenyl ester	73
Benzoic acid, 4-pentyl-4-[2-(4-pentylphenyl)ethenyl]phenyl ester	56
Benzoic acid, 4-[(pentyloxycarbonyl)oxy]-4-nonyloxyphenyl ester	43
Benzoic acid, 4-[(4-phenylbenzylidene)amino]-4-ethyl ester	82
Biphenyl, 4-butoxy-4′-butanoyl-	245
4-Biphenyl carboxylic acid, 4′-n-dodecyloxy-	6
4-Biphenyl carboxylic acid, 4′-n-hexadecyloxy-	8
4-Biphenyl carboxylic acid, 4′-tetradecyloxy-	7
Biphenyl, 4-(4-cyanophenyl)ethyl-4′-heptyloxy-	249
Biphenyl, 4-decyl-4′-cyano-	234
Biphenyl-4-decyloxy-4′-ethanoyl-	248
Biphenyl, 4,4′-dihexyloxy-	228
Biphenyl, 4,4′-dipentyl-	227
Biphenyl, 4-ethoxy-4′-butanoyl-	241

TABLE II (*continued*)

Name	Compound number
Biphenyl, 4-ethoxy-4′-ethanoyl-	240
Biphenyl, 4-ethoxy-4′-nonanoyl-	242
Biphenyl, 4-heptyl-4′-cyano-	231
Biphenyl, 4-heptyloxy-4′-cyano-	238
Biphenyl, 4-hexyl-4′-cyano-	230
Biphenyl, 4-hexyloxy-4′-cyano-	237
Biphenyl, 4-nonyl-4′-cyano-	233
Biphenyl, 4-nonyloxy-4′-pentanoyl-	247
Biphenyl, 4-octyl-4′-cyano-	232
Biphenyl, 4-octyl-4′-hexanoyl-	247
Biphenyl, 4-octyloxy-4′-cyano-	239
Biphenyl, 4-pentoxy-4′-cyano-	236
Biphenyl, 4-pentyl-4′-butylamino-	250
Biphenyl, 4-pentyl-4′-cyano-	229
Biphenyl, 4-propyloxy-4′-ethanoyl-	243
Biphenyl, 4-propyloxy-4′-propanoyl-	244
Biphenyl, 4-undecyl-4′-cyano-	235
Butyric acid, 4-[(4-methoxybenzylidene)amino]phenyl ester	144
4-Carboxylic acid, 4′-hexadecyloxy-3′-bromophenyl-	12
4-Carboxylic acid, 4′-hexadecyloxy-3′-chlorobiphenyl-	14
4-Carboxylic acid, 4′-hexadecyloxy-3′-nitrobiphenyl-	9
4-Carboxylic acid, 4′-octadecyloxy-3′-bromobiphenyl-	13
4-Carboxylic acid, 4′-octadecyloxy-3′-nitrobiphenyl-	10
4-Carboxylic acid, 4′-pentyloxy-3′-bromobiphenyl-	11
Cholesteryl butyrate	272
Cholesteryl erucylcarbonate	287
Cholesteryl 2-ethylbutyrate	278
Cholesteryl 2-ethylhexanoate	282
Cholesteryl (-)-2-ethylhexanoate	281
Cholesteryl heptanoate	280
Cholesteryl hexanoate	275
Cholesteryl laurate	284
Cholesteryl 2(s)-methylbutyrate	274
Cholesteryl 2-methylhexanoate	279
Cholesteryl 2-methylpentanoate	277
Cholesteryl (rac)-2-methylpentanoate	276
Cholesteryl myristate	285, 288
Cholesteryl nonanoate	283
Cholesteryl oleate	286
Cholesteryl pentanoate	273
Cholesteryl tridecanoate	289
Cinnamic acid, 4-[(4-benzoyloxybenzylidene)amino]-4-ethyl ester	163
Cinnamic acid, 4-[(4-decyloxybenzylidene)amino]-4-pentyl ester	161
Cinnamic acid, 4-[(4-dodecyloxybenzylidene)amino]-4-pentyl ester	162
Cinnamic acid, 4-[(4-ethoxybenzylidene)amino]-4-ethyl ester	157
Cinnamic acid, 4-[[(4-ethylthio)benzylidene]amino]-4-ethyl ester	155
Cinnamic acid, 4-[(4-hydroxyphenyl)azo]acetate-4-ethyl ester	196
Cinnamic acid, 4-[(4-hydroxyphenyl)azo]phenylcarbonate-4-ethyl ester	198
Cinnamic acid, 4-[(4-hydroxyphenyl)azo]pentyl carbonate-4-ethyl ester	197

TABLE II (*continued*)

Name	Compound number
Cinnamic acid, 4-[(4-methoxy)phenyl]azo-4-pentyl ester	195
Cinnamic acid, 4-[(4-methylbenzylidene)amino]-4-ethyl ester	147
Cinnamic acid, 4-[(4-nitrobenzylidene)amino]-4-hexyl ester	148
Cinnamic acid, 4-[(4-nonyloxybenzylidene)amino]-4-pentyl ester	160
Cinnamic acid, 4-[4-phenylbenzylidene)amino]-4-decyl ester	152
Cinnamic acid, 4-[(4-phenylbenzylidene)amino]-4-heptyl ester	150
Cinnamic acid, 4-[(4-phenylbenzylidene)amino[-4-[(3-methyl)phenyl]-methyl ester	153
Cinnamic acid, 4-[(4-phenylbenzylidene)amino]-4-[(3-methyl)phenyl]-propyl ester	154
Cinnamic acid, 4-[(4-phenylbenzylidene)amino]-4-octyl ester	151
Cinnamic acid, 4-[(4-phenylbenzylidene)amino]-4-ethyl ester	149
Cinnamic acid, 4-[(4-propyloxy benzylidene)amino]-4-ethyl ester	158
Cinnamic acid, 4-[(4-propyloxybenzylidene)amino]-4-pentyl ester	159
Cinnamic acid, 4-[[(4-propylthio)benzylidene]amino]-4-propyl ester	156
Cinnamic acid, trans-4-n-decyloxy-	3
Cinnamic acid, trans-4-n-nonyloxy-3-chloro-	4
Cinnamic acid, trans-4-n-octadecyloxy-3-chloro-	5
4′-Decyloxy-4-biphenyl carboxylic acid, hexyl ester	50
9,10-Dihydrophenanthrene, 2-heptanoyl-7-pentyl-	253
9,10-Dihydrophenanthrene, 2-isodecyl-7-dodecanoyl-	255
9,10-Dihydrophenanthrene, 2-isodecyl-7-nonanoyl-	254
9,10-Dihydrophenanthrene, 2-pentanoyl-7-heptyl-	252
Diphenylacetylene, 4,4′-didecyloxy-	269
Diphenylacetylene, 4-heptyl-4′-cyano-	263
Diphenylacetylene, 4-hexyl-4′-cyano-	262
Diphenylacetylene, 4-methoxy-4′-pentyl-	267
Diphenylacetylene, 4-(5-methyl)heptyl-4′-cyano-	266
Diphenylacetylene, 4-(3-methyl)pentyl-4′-cyano-	265
Diphenylacetylene, 4-nonyl-4′-cyano-	264
Diphenylacetylene, 4-pentyl-4′-cyano-	261
Diphenylacetylene, 4-propyloxy-4′-heptyl-	268
Fluorene, 7-[(4-decyloxyphenyl)methylene]amino-	124
Fluorene, 2,7-diheptanoyl-	257
Fluorene, 2,7-dipentadecyl-	260
Fluorene, 2,7-diundecyl-	259
Fluorene, 2-isohexyl-7-octyloxy-	256
Fluorene, 7-[(4-octadecyloxyphenyl)methylene]amino-	128
Fluorene, 2-undecyl-7-isohexyl-	258
Fluorenone, bis[(4-dodecyloxyphenyl)methylamino]-	173
Fluorenone, 2-[(4-heptyloxyphenyl)methylene]amino-	117
Fluorenone, 7-[(4-hexadecyloxyphenyl)methylene]amino-	127
Heptanoic acid, 4-[[(4-cyanophenyl)amino]methyl]phenyl ester	129
4′-Hexadecyloxy-4-biphenyl carboxylic acid, heptyl ester	51
4′-(Hexadecyloxy)-3′-nitro-4-biphenylcarboxylic acid, propyl ester	63
Hexanoic acid, 4-[[(4-methoxyphenyl)azo]phenyl ester	194
2-Naphthanoic acid, 5-decyloxy-	15
2-Naphthanoic acid, 6-dodecyloxy-5-iodo-	21
2-Naphthanoic acid, 6-hexadecyloxy-	16

TABLE II (*continued*)

Name	Compound number
2-Naphthanoic acid, 6-n-hexadecyloxy-5-chloro-	18
2-Naphthanoic acid, 6-hexadodecyloxy-5-bromo-	20
2-Naphthanoic acid, 6-nonyloxy-5-bromo-	19
2-Naphthanoic acid, 6-octyldecyloxy-5-iodo-	22
2-Naphthanoic acid, 6-octyloxy-5-chloro-	17
4'-Octadecyloxy-4-biphenyl carboxylic acid, nonyl ester	52
4'-Octyloxy-4-biphenyl carboxylic acid, ethyl ester	49
4'-Octyloxy-4-biphenyl carboxylic acid, 4-methoxyphenyl ester	54
4'-Octyloxy-4-biphenyl carboxylic acid, 4-(2-methyl) butyl ester	50
4'-Octyloxy-4-biphenyl carboxylic acid, phenyl ester	53
Pentanoic acid, 4-[(4-methoxybenzylidene)amino] phenyl ester	145
N,N'-(4-Phenylenedimethylene)bis(butoxy-4-methoxy aniline)	171
N,N'-(4-Phenylenedimethylene)bis(hexyloxyaniline)	172
N,N'-(4-Phenylenedimethylene)bis(methoxy-4-methoxyaniline)	170
2-Propenoic acid, 3-(4-butylphenyl)-4-butylphenyl ester	46
2-Propenoic acid, 3-(4-methoxyphenyl)-4-butylphenyl ester	45
2-Propenoic acid, 3-(4-(1-oxy)pentoxyphenyl)-4-methoxyphenyl ester	48
2-Propenoic acid, 3-(4-pentoxyphenyl)-4-butylphenyl ester	47
Propionic acid, 4-[(4-butoxybenzylidene)amino]phenyl ester	146
Pyrazine, 2,5-bis(4-heptyl)phenyl-	176
Pyrazine, 2,5-bis(4-hexyl)phenyl-	177
Pyrazine, 2,5-bis(4-octyl)phenyl-	178
Pyrimidine, 2(4-butylphenyl)-5-(4-butoxy)-	174
Pyrimidine, 2(4-pentylphenyl)-5-(4-pentoxy)-	175, 179
Quinoxaline, 2-(4'-butyl)biphenyl-	181
Quinoxaline, 2-(4'-decyloxy)biphenyl-	187
Quinoxaline, 2-(4'-ethoxy)biphenyl-	185
Quinoxaline, 2-(4'-heptyl)biphenyl-	183
Quinoxaline, 2-(4'-hexadecyloxy)biphenyl-	188
Quinoxaline, 2-(4'-methoxy)biphenyl-	184
Quinoxaline, 2-[4-(5-oxazalidinyl-N-oxy)decyloxy]biphenyl-	189
Quinoxaline, 2[4-(5-oxazalidinyl-N-oxy)hexyloxy]biphenyl-	190
Quinoxaline, 2[4-(5-oxazalidinyl-N-oxy)nonyloxy]biphenyl-	191
Quinoxaline, 2-(4'-pentoxy)biphenyl-	186
Quinoxaline, 2-(4'-pentyl)biphenyl-	182
Quinoxaline, 2-(4'-propyl)biphenyl	180
Terephthal-bis-butyl aniline	168
Terephthal-bis-pentyl aniline	169
Terphenyl-4,4"-dicarboxylic acid, dibutyl ester	67
Terphenyl-4,4"-dicarboxylic acid, diethyl ester	65
Terphenyl-4,4"-dicarboxylic acid, diheptyl ester	70
Terphenyl-4,4"-dicarboxylic acid, dihexadecyl ester	72
Terphenyl-4,4"-dicarboxylic acid, dihexyl ester	69
Terphenyl-4,4"-dicarboxylic acid, dioctyl ester	71
Terphenyl-4,4"-dicarboxylic acid, dipentyl ester	68
Terphenyl-4,4"-dicarboxylic acid, dipropyl ester	66
Terphenyl, 4-pentyl-4'-cyano-	251

TABLE III
Smectic-smectic binary systems

System	Measurement method	Phase diagram	Comments	References
1	microscopy	x	miscibility	3
2	microscopy	x	miscibility	3
3	microscopy	x	miscibility	16
4	microscopy	x	miscibility	16
5	microscopy, contact method	x	miscibility	19
6	microscopy, contact method	x	miscibility	19
7	microscopy, contact method	x	miscibility	19
8	microscopy, contact method	x	miscibility partially enhanced smectic	22
9	microscopy, contact method	x	partially enhanced smectic	22
10	microscopy, contact method	x	miscibility	22
11	microscopy, contact method	x	miscibility	22
12	microscopy, contact method	x	miscibility	22
13	microscopy, contact method	incomplete	miscibility	23
14	microscopy, contact method	incomplete	miscibility	23
15	microscopy, contact method	x	miscibility	23
16	microscopy, contact method	x		25
17	microscopy	x	miscibility	26
18	microscopy	x	miscibility	26
19	microscopy	x	miscibility	26
20	microscopy	x	miscibility	26
21	microscopy	x	miscibility	26
22	microscopy	x	miscibility	26
23	microscopy	x	miscibility	26
24	microscopy	x	miscibility	26
25	microscopy	x	miscibility	26
26	microscopy	x	miscibility	26
27	microscopy	x	miscibility	29
28	microscopy	x	miscibility	29
29	microscopy	x	miscibility ESR free-radical study	30
30	microscopy and ESR	x	ESR free-radical study	30
31	microscopy	x	ESR free-radical study	30
32	microscopy	x	ESR free-radical study	30
33	microscopy	x	ESR free-radical study	30

TABLE III (*continued*)

System	Measurement method	Phase diagram	Comments	References
34	microscopy	partial	miscibility	33
35	microscopy	x	study of nonlinear mesophase-isotropic transition temperatures	37
36	microscopy	x	study of nonlinear mesophase-isotropic transition temperatures	37
37	microscopy	x	study of nonlinear mesophase-isotropic transition temperatures	38
38	microscopy	x	miscibility	50
39	microscopy	x	miscibility	53
40	microscopy	x	miscibility	53
41	microscopy	x	miscibility	53
42	microscopy	partial	miscibility	53
43	microscopy & DTA	partial	miscibility	59
44	microscopy	x	miscibility	59
45	microscopy	x	miscibility	60
46	microscopy	x	miscibility	60
47	microscopy, contact method	x	refractive index study	67
48	microscopy	x	miscibility	68
49	microscopy	x	miscibility	68
50	microscopy	x	miscibility	68
51	microscopy	x	miscibility	68
52	microscopy	x	miscibility	68
53	microscopy	x	miscibility	69
54	microscopy	x	miscibility	69
55	microscopy	x	miscibility	69
56	microscopy	x	miscibility	69
57	microscopy	x	miscibility	69
58	microscopy	no, like system (3–53)	miscibility	69
59	microscopy	no, like system (3–54)	miscibility	69
60	microscopy	no, like system (3–54)	miscibility	69
61	microscopy	x	miscibility	70
62	microscopy	x	miscibility	70
63	microscopy	x	miscibility	70
64	microscopy	x	miscibility	70
65	microscopy	x	miscibility	70
66	microscopy	x	miscibility	70
67	microscopy	x	miscibility	70
68	microscopy	x	miscibility	70
69	microscopy	x	miscibility	70

TABLE III (*continued*)

System	Measurement method	Phase diagram	Comments	References
70	microscopy	x	miscibility	70
71	microscopy	x	miscibility	70
72	microscopy	x	miscibility	70
73	microscopy	x	miscibility	70
74	microscopy	no, like (3–63)	miscibility	70
75	microscopy	no, like (3–63)	miscibility	70
76	microscopy	no, like (3–63)	miscibility	70
77	microscopy	no, like (3–63)	miscibility	70
78	microscopy	no, like (3–70)	miscibility	70
79	microscopy	no, like (3–70)	miscibility	70
80	microscopy	no, like (3–73)	miscibility	70
81	microscopy	no, like (3–74)	miscibility	70
82	microscopy	x	miscibility	71
83	microscopy	x	miscibility	71
84	microscopy	x	miscibility	71
85	microscopy	x	miscibility	71
86	microscopy	x	miscibility	16
87	thermal optical analysis	x		90

TABLE IV
Nematic systems

System	Measurement method	Phase diagram	Comments	References
1	microscopy	x	eutectic calculated vs. experiments	2
		partial	thermodynamics	25
	DSC	x	metastable eutectic	54
	DSC	x	theromdynamic study	55
2	microscopy	x	calculated vs. experimental	64
		x	calculated vs. experimental	2
3	microscopy	x	calculated vs. experimental	2
		partial	calculated vs. experimental	64
4	microscopy	x	calculated vs. experimental	2
5	microscopy & DTA	x	calculated vs. experimental	2, 13
6	microscopy	x	calculated vs. experimental	2

TABLE IV (*continued*)

System	Measurement method	Phase diagram	Comments	References
7	microscopy	x	calculated vs. experimental	2
8	microscopy	x	calculated vs. experimental	2
9	microscopy	x	calculated vs. experimental	2
10	microscopy	x	calculated vs. experimental	2
		partial	thermodynamics; calculated vs. experimental	25 64
11	microscopy	x	calculated vs. experimental	2
12	microscopy	x	calculated vs. experimental	2
13	microscopy	x	calculated	2
		partial	thermodynamics	25
14	microscopy	x	calculated vs. experimental	64
15	microscopy	x	calculated vs. experimental	2
16	microscopy	x	miscibility	4
17	DSC	x	prediction of eutectic	6
18	DSC & DTA	x	prediction of eutectic	7
19	DSC & DTA	x	prediction of eutectic	7
20	DSC & DTA	x	prediction of eutectic	7
21	DSC & DTA	x	prediction of eutectic	7
22	microscopy & DSC	partial	prediction of eutectic	8
23	microscopy & DSC	partial	prediction of eutectic	8
24	microscopy & DTA	x	"Application of Schroder-Van Laar equations"	9
25	DTA	x	"Application of Schroder-Van Laar equations"	9
26	DTA	x	"Application of Schroder-Van Laar equations"	9
27	DTA	x	"Application of Schroder-Van Laar equations"	9
28	DTA	x	"Application of Schroder-Van Laar equations"	9
29	DTA	x	"Application of Schroder-Van Laar equations"	9
30	QDTA	x	broad nematic range	10
31	QDTA	x	broad nematic range	10

TABLE IV (*continued*)

System	Measurement method	Phase diagram	Comments	References
32	thermal optical analysis	x	thermodynamic study; calculated vs. theory	12
33	thermal optical analysis	x		12
34	thermal optical analysis	x		12
35	thermal optical analysis	x		12
36	thermal optical analysis	x		12
37	thermal optical analysis	x		12
38	microscopy	partial	dielectric measurements	15
39	DSC	x	calculation of eutectic; thermodynamic study	17
40	DSC	x	Schroder-Van Laar calculated vs. theory	19
41	DSC	x	thermodynamic study; broad nematic range	39
42	DSC	x	thermodynamic study; broad nematic range	39
43	Mel-Temp apparatus	x	determine composition of eutectic	40
44	Mel-Temp apparatus	x		40
45	microscopy	x	monotropic nematic	43
46	calculation	partial	calculated vs. experimental	45
47	microscopy & DSC	partial	induced smectic phase study	47
48	microscopy	x	mixtures & high-contrast wide nematic range	48
49	DSC	x	thermodynamic study, metastable phase	56
50		x	x-ray study	76
51	microscopy	x	wide nematic range	48
52	microscopy	x	wide nematic range	48
53	microscopy & DSC	x	enhanced nematic; double eutectic; solid molecular complex formation	59
54	microscopy	x	smectic phase on cooling	57
55	microscopy	x	calculated vs. experimental	64
56	microscopy	x	calculated vs. experimental	64

TABLE IV (*continued*)

System	Measurement method	Phase diagram	Comments	References
57	microscopy	x	calculated vs. experimental	64
58	microscopy	x	calculated vs. experimental	64
59	hot-stage microscopy	x	dielectric study	66
60	microscopy	x	monotropic nematic	43
61	microscopy	x	monotropic nematic	43
62	microscopy	x	monotropic nematic	43
63	DTA	x	thermodynamic study	73
64	DTA	x	thermodynamic study	73
65	DTA	x	thermodynamic study	73
66	DTA	x	thermodynamic study	73
67	microscopy & DSC	x	dielectric constant & anisotropy also measured	83
68	microscopy & DSC	x	smectic phase intervenes in nematic range	88
69	microscopy & DSC		multiplicity of glass transitions noted; possible formation of solid solution	86, 87, 88
70	DTA/DSC	x	metathetic reaction; u-shaped phase diagram	85
71	DTA/DSC	x	u-shaped phase diagram	85
72	DTA/DSC	x	u-shaped phase diagram after annealing	85
73	DTA/DSC	x	u-shaped phase diagram	85
74	DTA/DSC	x	u-shaped phase diagram	85
75	DTA/DSC	x	metathetic reactions	85
76	DTA/DSC	x	v-shaped phase diagram	85
77	DTA/DSC	x	u-shaped phase diagram	85
78	microscopy & DSC		experimental values in agreement with calculated	86, 87, 88
79	microscopy & DSC		possible formation of solid solution	88
80	microscopy & DSC		possible formation of solid solution	88
81	microscopy & DSC		possible formation of solid solution	88
82	not stated	x	electronic nature interactions in mixture	82
83	DTA	x		92
84	DTA	x		92

TABLE IV (*continued*)

System	Measurement method	Phase diagram	Comments	References
85	DTA	x		92
86	DTA	x	dependence of eutectic m.p. on molecular structure of components	93
87	DTA	x	dependence of eutectic m.p. on molecular structure of components	93
88	DTA	x	dependence of eutectic m.p. on molecular structure of components	93
89	DTA	x	dependence of eutectic m.p. on molecular structure of components	93
90	DTA	x	dependence of eutectic m.p. on molecular structure of components	93
91	DTA	x	dependence of eutectic m.p. on molecular structure of components	93

TABLE V

Cholesteric-cholesteric binary systems

System	Measurement method	Phase diagram	Comments	References
1	DSC	x	study cholesteric properties; monotropic mixture	1
2	microscopy	x	helical pitch	42
3	microscopy & DSC	x	thermodynamic study	28
4	microscopy & DSC	x	structural effects	28
5	microscopy & DSC	partial	low-temperature cholesteric range	8
6	microscopy & DSC	x	thermal and structural study	46
7	microscopy	x	components mixed in agate mortar to avoid first thermal history	11
8	thermal optical analysis & DTA	x	dependence of thermal effects noted	91

TABLE VI

Smectic-nematic, smectic-cholesteric, and nematic-cholesteric binary systems

System	Measurement method	Phase diagram	Comments	References
1	microscopy		miscibility	5
2	DTA & DSC	x	predicted eutectic; Schroder-Van Laar	7
3	microscopy	partial	orientational study	14
4	microscopy	x	orientational study	14
5	microscopy	x	miscibility	16
6	microscopy	x	miscibility	16
7	microscopy	x	miscibility	16
8	microscopy	x	miscibility	16
9	microscopy	x	miscibility	16
10	microscopy	x	miscibility	16
11	microscopy	x	miscibility	16
12	microscopy	x	miscibility	16
13	microscopy	x	miscibility	16
14	DSC	partial	thermal study	17
15	microscopy	partial	miscibility	18
16	microscopy	partial	miscibility	18
17	microscopy	partial	miscibility	18
18	microscopy	partial	miscibility	18
19	DSC & microscopy, contact method	x	miscibility	19
20	DSC & microscopy, contact method	x	miscibility	19

TABLE VI (*continued*)

System	Measurement method	Phase diagram	Comments	References
21	DSC & microscopy, contact method	x	miscibility	19
22	DSC	x	induced S_A phase	20
23	DSC	x	induced S_A phase	20
24	microscopy	partial		21
25	microscopy	x	miscibility; contact method	22
26	microscopy	partial	miscibility; contact method	23
27	microscopy	partial	higher than calculated N-I inc. range	24
28	microscopy	x	thermodynamic study	
29	microscopy	x	thermodynamic study	25
30	microscopy	x	thermodynamic study	25
		x	smectic disp. devices	35
31	microscopy	x	miscibility	26
32	microscopy	x	miscibility	26
33	microscopy	partial	selective scattering pitch	27
34	microscopy & DSC	x	thermodynamic study; effect of structural variation of binary mixture	28
36	microscopy & DSC	x	thermodynamic study; effect of structural variation of binary mixture	28
37	microscopy & DSC	partial	thermodynamic study; effect of structural variation of binary mixture	28
38	microscopy & NMR	partial	study of N-S_A transition	31
39	microscopy	partial	miscibility	32
40	microscopy	partial	miscibility	32
41	microscopy	partial	miscibility	33
42	microscopy	partial	miscibility	33
43	microscopy	x	effect of chirality on mesomorphic properties	34
44	microscopy	x	effect of chirality on mesomorphic properties	34
45	microscopy	partial	effect of chirality on mesomorphic properties	34
46	microscopy	x	nonlinear smectic-isotropic behavior; enhanced smectic phase	36

TABLE VI (*continued*)

System	Measurement method	Phase diagram	Comments	References
47	microscopy	x	nonlinear mesophase-isotropic transition temperature study	37
48	microscopy	x	nonlinear mesophase-isotropic transition temperature study	37
49	microscopy	x	nonlinear mesophase-isotropic transition temperature study	37
50	microscopy	x	nonlinear mesophase-isotropic transition temperature study	37
51	microscopy	x	nonlinear mesophase-isotropic transition temperature study	37
52	microscopy	x	nonlinear mesophase-isotropic transition temperature study	37
53	microscopy	x	nonlinear mesophase-isotropic transition temperature study	37
54	microscopy	x	nonlinear mesophase-isotropic transition temperature study	38
55	microscopy	x	nonlinear mesophase-isotropic transition temperature study	38
56	microscopy	x	nonlinear mesophase isotropic transition temperature study	38
57	DSC	x	induced smectic phase	41
58	microscopy	partial	helical pitch study	42
59	microscopy	partial	helical pitch study	42
60	microscopy	x	x-ray study admixture	44
61	microscopy	x	thermal & structural study	46
62	microscopy & DSC	partial	induced smectic phase	47
63	microscopy & DSC	partial	induced smectic phase	47
64	microscopy	x	miscibility	50
65	microscopy	x	miscibility	50
66	microscopy	x	miscibility	50
67	microscopy	x	miscibility	50
68	microscopy	x	miscibility	50
69	microscopy	x	miscibility	50
70	microscopy	partial	structure effects on cholest. alkan. prop.	51
71	microscopy & DSC	partial	miscibility	52
72	microscopy & DSC	x	miscibility	52
73	microscopy & DSC	partial	miscibility	52
74	microscopy & DSC	partial	miscibility	52

TABLE VI (*continued*)

System	Measurement method	Phase diagram	Comments	References
75	microscopy & DSC	partial	miscibility	52
76	microscopy & DTA	partial	miscibility	59
77	microscopy	x	thermodynamic study	61
78	microscopy	x	thermodynamic study	61
79	microscopy	x	thermodynamic study	61
80	DSC	x	induced smectic	62
82	microscopy & DSC	x	electro-optical devices; L.C. storage displays	63
83	microscopy & DSC	x	electro-optical devices; L.C. storage displays	63
84	microscopy	x	calculated vs. experiment	64
85	microscopy	x	calculated vs. experiment	64
86	microscopy	x	calculated vs. experiment	64
87	microscopy	x	calculated vs. experiment	64
88	microscopy	x	calculated vs. experiment	65
89	microscopy	x	miscibility	68
90	microscopy	x	miscibility	68
91	microscopy	x	miscibility	68
92	microscopy	x	miscibility	69
93	microscopy	x	miscibility	69
94	microscopy	x	miscibility	69
95	microscopy	x	miscibility	69
96	microscopy	x	miscibility	69
97	microscopy	no, like (6–94)	miscibility	69
98	microscopy	no, like (6–94)	miscibility	69
99	microscopy	x	miscibility	70
100	microscopy	x	miscibility	70
101	microscopy	no, like (6–102)	miscibility	70
102	microscopy	x	miscibility	71
103	microscopy	x	miscibility	71
104	microscopy	x	miscibility	71
105	microscopy	x	miscibility	71
106	microscopy	x	miscibility	71
109	microscopy	x	miscibility	71
110	microscopy	x	miscibility	71
111	microscopy	x	miscibility	71
112	microscopy	x	miscibility	71
113	microscopy	x	miscibility	71
114	microscopy	x	miscibility	71
115	microscopy	x	miscibility	71
116	DSC	x	induced S_A study	
117	DSC	x	induced S_A study	72
118	DSC	x	induced S_A study	72
119	DSC	x	induced S_A study	72
120	DSC	x	induced S_A study	72

TABLE VI (*continued*)

System	Measurement method	Phase diagram	Comments	References
121	microscopy	no, like (6–8)	miscibility	16
122	microscopy	no, like (6–8)	miscibility	16
123	microscopy	no, like (6–8)	miscibility	16
124	microscopy	no, like (6–8)	miscibility	16
125	microscopy	no, like (6–8)	miscibility	16
126	microscopy	no, like (6–8)	miscibility	16
127	microscopy	no, like (6–8)	miscibility	16
128	microscopy	no, like (6–8)	miscibility	16
129	microscopy	no, like (6–8)	miscibility	16
130	microscopy & DTA	x	thermographic study	79
131	microscopy & DTA	x	thermographic study	79
132	microscopy	x	miscibility	80
135	microscopy	x	miscibility	80
136	microscopy & DSC	x	two branches of N-S_A transition determined	81
137	microscopy	x	calculated vs. experimental	84
138	microscopy	x	calculated vs. experimental	84
139	microscopy	x	calculated vs. experimental	84
140	microscopy	x	calculated vs. experimental	84
141	not stated	x	electronic nature interactions in mixture	82
142	microscopy & DSC	x	reentrant nematic	17
143	microscopy, DSC & x-ray	x	reentrant nematic	17
144	microscopy & x-ray	x	miscibility	89
145	thermal optical analysis & DSC	x	reentrant nematics	94
146	thermal optical analysis & DSC	x	reentrant nematics	94
147	thermal optical analysis & DSC	x	reentrant nematics	84
148	thermal optical analysis & DSC	x	reentrant nematics	94
149	thermal optical analysis & DSC	x	reentrant nematics	94
150	thermal optical analysis & DSC	x	reentrant nematics	94

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