

REFERENCES

REFERENCES

1. Reinitzer, F., *Monatsh*, **9**, 421 (1888).
2. Lehmann, O., *Zeit. Physikal. Chem.*, **4**, 468 (1889).
3. Friedel, G., *Colloid Chemistry*, edited by Alexander, I., Vol. I., p102, the Chemical Catalog Company, Inc., New York (1926).
4. Friedel, G. and Friedel, E., *Z. Krist.*, **79**, 1 (1931).
5. Friedel, G., *Ann. Physique*, **18**, 273 (1922).
6. Chandrasekhar, S., Sadashiva, B.K. and Suresh, K.A., *Pramana*, **9**, 471 (1977).
7. Sackmann, H. and Demus, D., *Mol. Cryst. Liq. Cryst.*, **21**, 239 (1973); *Mol Cryst.*, **2**, 81 (1967); *Z.Phys. chem.*, **222**, 127 and 143 (1963).
8. deVries, A., and Fishel, D.L., *Mol. Cryst. Liq. Cryst.*, **16**, 311 (1972).
9. Demus, D., *Liquid Crystals* Edited by H. Stegemeyer, Steinkopff Darmstadt, Springer, New York (1994).
10. Gray, G.W. and Goodby, J.W., *Mol. Cryst. Liq. Cryst.*, **41**, 145 (1978). "Smectic Liquid Crystals" (Textures and Structures), Eds Leonar Hill Glassgow.
11. Demus, D. and Richter, L., "Textures of Liquid Crystals," Verlag Chemie, Weinhein, New York (1978).
12. Levelut, A.M., Germain, C., Keller, P., Liebert, L. and Billard, J., *J. Phys. (Paris)*, **44**, 623 (1983).

13. Bennemann, D., Heppke, G., Levelut, A.M. and Lotzsch, D., Mol. Cryst. Liq. Cryst., **260**, 351 (1995).
14. Bennemann, D., Heppke, G. and Lotzsch, D., Presented at the Sixteenth International Conference on Liquid Crystals, Kent, Ohio, U.S.A., Abst. No B 2006, p115 (1996).
15. Gray, G.W. and Mc Donnell, D.G., Electron Lett., **11**, 556 (1975).
16. Keiichi, S., Mizuo, S., Jun, N., Miko, V., Yoshitaka, K., Seiji, H. and Tetsuya, I., Mol. Cryst. Liq. Cryst., **199**, 119 (1991).
17. Gray, G.W., Mol. Cryst. Liq. Cryst., **21**, 161 (1973).
18. Gray, G.W., J. Chem. Soc., **37**, 33 (1956).
19. Saupe, A., Mol. Cryst. Liq. Cryst., **7**, 59 (1969).
20. Bergmann, K. and Stegemeyer, H., Ber. Bunsenges. Phys. Chem., **82**, 1309 (1978); Z. Naturforsch., **34a**, 251 (1979).
21. Bergmann, K., Pollmann, P., Scherer, G. and Stegemeyer, H., Z. Naturforsch., **34a**, 253 (1979).
22. Bergmann, K. and Stegemeyer, H., Z. Naturforsch., **34a**, 1031(1979); Liquid Crystals of One and Two Dimensional Order, edited by Helfrich, W. and Heppke, G. (Springer-Verlag) p161 (1980).
23. Johnson, D.L., Flack, J. H. and Crooker, P.P., Phy. Rev. Lett., **45**, 641 (1980).
24. Hornreich, R.M. and Shtrikman, S., Phys. Rev. A, **24**, 635 (1981); **28**, 1791 (1983); **28**, 3669 (1983).

25. Stegemeyer, H. and Porsch, F., *Phy. Rev. A*, **30**, 3369 (1984) ; *Liq. Cryst.*, **2**, 395 (1987).
26. Koistinen, E.P and Keyes, P.H., *Phy. Rev. Lett.*, **74**, 4460 (1995).
27. Singh, U., Davis, F.J. and Thomson, J.J., Presented at the Sixteenth International Conference on Liquid Crystals, Kent, Ohio, U.S.A., Abst No. A2P 15, pP-25 (1996).
28. Levelut, A.M., *Proceeding of the International Liquid Crystal Conference, Bangalore, December (1979)*, Ed. Chandrashekar, S., Heyden, London, p-21 (1980).
29. Abied, H., Giroud-Godquin, A.M., Gullion, D. and Latour, J.M., Presented at the Eleventh International Conference on Liquid Crystals, Berkeley, U.S.A (1986).
30. Vora, R.A., Mehta, G.D. and Patel, R.G., Presented at the Eleventh International Conference on Liquid Crystals, Berkeley, U.S.A. (1986).
31. Kohne, B. and Praefcke, K., *Chimia.*, **41**, 196 (1986).
32. Ebert, M., Jungbauer, D.A., Kleppinger, R., Wendorff, J.H., Kohne, B. and Praefcke, K., *Liq. Cryst.*, **4**, 53 (1989).
33. Praefcke, K., Kohne, B., Singer, D., Demus, D., Pelzl, G. and Diele, S., *Liq. Cryst.*, **7**, 589 (1990).
34. Praefcke, K., Singer, D., Kohne, B., Ebert, M., Liebmann, A. and Wendorff, J H., *Liq. Cryst.*, **10**, 147 (1991).
35. Janietz, D., Praefcke, K. and Singer, D., *Liq. Cryst.*, **13**, 247 (1993).

36. Cooke, M.J., Cooke, G. and Jafari, F.A., J. Chem. Soc., Chem. Commun., **17**, 1715 (1995); Chem. Commun., 1925 (1996).
37. Farrar, J.M., Huang, J. and Kaszynski, P., Presented at the Sixteenth International Conference on Liquid Crystals, Kent, Ohio, U.S.A., Abst. No D3P-O5, p206 (1996).
38. Trzaska, S.T., Zheng, H. and Swager, T.M., Presented at the Sixteenth International Conference on Liquid Crystals, Kent, Ohio, U.S.A., Abst. No D3P-07, p207 (1996).
39. Pegenau, A., Goring, P. and Tschierske, C., Chem. Commun., 2563 (1996).
40. Sackmann, H., 'Smectic Liquid Crystals', A historical review, Liq. Cryst., **5**, 43 (1989).
41. Cladis, P.E., Phys. Rev. Lett., **35(1)**, 48 (1975).
42. Madhusudana, N.V., Sadashiva, B.K. and Moodithaya, K.P.L., Curr. Sci., **48**, 613 (1979).
43. Hardouin, F., Lerdut, A. M., Nguyen, H.T. and Sigaud, G., Mol. Cryst. Liq. Cryst. Lett., **56**, 35 (1979).
44. Pelzl, G., Diele, S., Latif, I., Weissflog, W. and Demus, D., Cryst. Res. Tech., **17(7)**, K78-K82 (1982).
45. Trivedi, K.N. and Thakkar, D.M., Mol. Cryst. Liq. Cryst., **106(1-2)**, 95(1984).
46. Sear, R.P. and Jackson, G., Phys. Rev. Lett., **74(21)**, 4261 (1995) .
47. Ruhmann, R., Thiele, T., Prescher, D. and Wolff, D., Macromol Rapid Commun., **16(3)**, 161 (1995).

48. Nagappa, J.K.N., Hanumantha, N.R. and Prasad, A.S., Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A., **260**, 547 (1995).
49. Nguyen, H.T., Jousat-Dubian, M. and Destrade, C., Mol. Cryst. Liq. Cryst. Lett., **257**, (1980).
50. Nguyen, H.T., Destrade, C., Hardouin, F. and Achard, M. F., Presented at the Ninth International Conference on Liquid Crystals, Bangalore, India, December (1982).
51. Malthete, J., Nguyen, H.T. and Destrade, C., Presented at the Ninth International Conference on Liquid Crystals, Bangalore, India, December (1982).
52. Destrade, C., Malthete, J. and Nguyen, H.T., Presented at the Tenth International Conference on Liquid Crystals, York (U.K.), July (1984).
53. Tinh, N.H., Foucher, P., Destrade, C., Levelut, A.M. and Malthete, J., Mol. Cryst. Liq. Cryst., **111**, 277 (1984).
54. Subramaniam, R., Wiltebort, R.J. and Dupre, D.B., Mol. Cryst. Liq. Cryst., **87**, 325 (1983).
55. Weissflog, W., Letko, T., Pelzl, G. and Diele, S., Liq. Cryst., **18 (6)**, 867 (1995).
56. Hessel, V. and Ringsdorf, H., Makromolek. Chem. Rapid. Commun., **14**, 707 (1993).
57. Ujiie, S. and Imura, K., Macromolecules, **25**, 3174 (1992).
58. Haramoto, Y., Yin, M., Matukawa, Y., Ujiie, S. and Nanasawa, M., Liq. Cryst., **19(3)**, 319 (1995).
59. Kato, T. and Frechet, J. M. J., Macromolecules, **22**, 3818, (1989).

60. Lehn, J-M., Mascal, M., DeCian, A. and Fischer, J., J. Chem. Soc., Perkin Trans., **2**, 461, (1992).
61. Alexander, C., Jariwala, C. P., Lee, C. M. and Griffin, A. C., Macromol Symp , **77**, 283 (1994).
62. Bhowmik, P. K., Wang. X., Han, H. and Sarker, A. M., **36(2)**, 324 (1995).
63. Kane, J. J., Liao, R-F., Lauher, J. W. and Fowler, F.W., J. Am. Chem. Soc., **117**, 12003 (1995).
64. Lehn, J-M., Supramolecular Chemistry, Concepts and Perspectives, VCH, Weinheim (1995).
65. Friberg, E. S., Podzimek, M. and Tomalia, D. A., Mol. Cryst. Liq. Cryst., **164**, 157 (1988).
66. Percec, V., Heck, J., Johansson, G., Tomazos, D. Kawasumi, M. and Ungar, G., J. M. S. - Pure Appl. Chem., **A31(8)**, p. 1031 (1994).
67. Vorlander, D., Ber. Disch. Ges., **43**, 3120 (1910)
68. Giroud-Godquin, A.M. and Maitlis, P.M., Angew. Chem. Int. Engl., **30**, 375 (1991).
69. Espinet, P., Esteruelas, M.A., Oro, L.A., Serrano, J.L. and Sola, E., Coord. Chem. Rev., **117**, 215 (1992).
70. Giroud-Godquin, A.M. and Muller-Westerhoff U.T., Mol. Cryst. Liq. Cryst , **41**, 11 (1997).
71. Adams, H., Bailey, N.A., Dunmur, D.A., Lalind, E., Marcos, M., Ridgway, C., Smith, A.J., Styring, P. and Maitlis, P.M., Liq. Cryst., **2**, 381 (1987).

72. Bruce, D.W., Dunmur, D.A., Maitlis, P.M. and Styring, P., *Liq. Cryst* , 3, 385 (1988).
73. Rourke, J.P., Fanizzi, F.P., Salt, N.J.S., Bruce, D.W., Dunmur, D.A. and Maitlis, P.M., *J. Chem. Soc., Chem. Commun.*, 229 (1990).
74. Bruce, D.W., Dunmur, D.A., Maitlis, P.M., Styring, P., Esteruelas, M.A., Oro, L.A., Ros, M.B., Serrano, J.L. and Sola, E., *Chem. Mater.*, 1, 479 (1989).
75. Esteruelas, M.A., sola, E., Oro, L.A., Ros, M.B., Marcos, M. and Serrano, J.L., *J. organomet. chem.*, 387, 103 (1990)
76. Bhatt, J., Fung, B.M., Nicholas, K.M. and Poon, C.D., *J. Chem. Soc., Chem. Commun.*, 1439 (1998).
77. Busico, V. and Vacatello, M., *Mol. Cryst. Liq. Cryst. Lett.*, 64 , 127 (1981).
78. Galyametdinov, Yu. G., Ivanova, G.I. and Ovchinnikov, I.V., *Izv. Akad. Nauk. SSSR. Ser. Khim.*, 1931 (1989).
79. Schmidt, S., Lattermann, G., Kleppinger, R. and Wendorff, J.H., *Liq. Cryst.*, 16(4), 693 (1994).
80. Zheng, H. and Swager, T.M., Report (Rept.No TR-5, Order No. AD- A 274830 (1994); *Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A*, 260, 301 (1995).
81. Morrone, S., Harrison, G. and Bruce, D.W., *Adv. Mater. (Weinheim, Ger.)* , 7(7), 665 (1995).
82. Ghode, A., Shivkumar, U.M.A. and Sadashiva, B.K., *Bull. Mater. Sci.*, 17(3), 283(1994).

83. Prasad, V. and Sadashiva, B.K., *Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A*, **268**, 89 (1995).
84. Schimizù, Yo., Matsuno, J.Y., Miya, M. and Nagata, A., *J.Chem.Soc Chem Commun.*, **20**, 2411 (1994).
85. Yada, M., Machida, M. and Kijima, T., *Chem. Commun. (Cambridge)*, **6**, 769 (1996).
86. Maldivi, P., Bonnet, L., Giroud-Godquin, A.M., Ibn-Elhaj, M., Guillon, D. and Skoulios, A., *Adv. Matter. (Weinheim, Fed. Repub. Ger.)*, **5(12)** 909 (1993).
87. Bunz, U.H.F., *Pure Appl. Chem.*, **68(2)**, 309 (1996).
88. Xu, B. and Swager, T.M., *ibid*, **115**, 1159 (1993).
89. Xu, B., Fu, D.-K. and Swager, T.M., Presented at the Sixteenth International Conference on Liquid Crystals, Kent, Ohio, U.S.A., Abst. No. D3P. 24, p P- 212(1996).
90. Malthete, J., *Adv. Mater. (Weinheim, Ger.)*, **6(4)**, 315 (1994).
91. Swager, T.M. and Xu, B., *J. Inclusion Phenom. Mol. Recognit. Chem.*, **19(1-4)**, 389 (1994).
92. Lam, L., *Liq. Cryst. Mesomorphic Polym.*, 435 (1994).
93. Bogojawalensky, A. and Winogradow, N., *Z. Phys. Chem.*, **64**, 229 (1908).
94. Dave, J.S. and Dewar, M.J.S., *J. Chem. Soc.*, 4616 (1954); *J.Chem. Soc.*, 4305 (1995).
95. Dave, J.S. and Lohar, J.M., *Proc. Nat. Acad. Sci., India*, **29A**, 35 (1960); *J. Chem. Soc. (A)*, 1473 (1967).

96. Dave, J.S. and Vasant, K.L., *Mol. Cryst.*, **2**, 125 (1996); *Pramana, Suppl.* No.1, 415 (1975).
97. Lohar, J.M., *J.de Phys. Colloq. C₁*, **36**, C₁- 393 (1975).
98. Dave, J.S. and Vora, R.A., *Liquid Crystals and Plastic Crystals*, Vol.1, Gray G.W. and Winsor, P.A., Ed., Ellis, Harwood Ltd., Chichester, England , p161 (1974).
99. Nguyen, H.T., Zann, A. and Dubois, J.C., *Mol. Cryst. Liq. Cryst.*, **53**, 29 (1979).
100. Smith, G.W., *Mol. Cryst. Liq. Cryst.*, **30**, 101 (1975); *Mol. Cryst. Liq. Cryst.*, **49**, 27 (1978).
101. Smith, G.W. and Kapit, M., *Mol. Cryst. Liq. Cryst.*, **47**, 59 (1978).
102. Vora, R.A. and Changawala, M.T., Presented at the Seventh International Conference on Liquid Crystal, Bordeaux, Paris, France (1978).
103. George, A.K., Vora, R.A., Padmini, A.R., *Mol. Cryst. Liq. Cryst.*, **60**, 297 (1980).
104. Ziemnicka, B., deVaries, A., Doane, J.W. and Arora, S.L., *Mol. Cryst. Liq. Cryst.*, **132**, 289 (1986).
105. Neubert, M.E., Leung, K. and Saupe, A., *Mol. Cryst. Liq. Cryst.*, **135**, 283 (1986).
106. Shindo, T. and Uryu, T., *Liq. Cryst.*, **15(2)**, 239 (1993).
107. Matsunaga, Y., Sakamoto, S., Togashi, A. and Tsujimoto, M., *Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A*, **250**, 161 (1994).

108. Sheikh-Ali, B.M. and Weiss, R.G., *Liq. Cryst.*, **17**(5), 605 (1994).
109. Brodzik, M. and Dabrowski, R., *Proc. SPIE-Int. Soc. Opt. Eng.*, 2372 (*Liquid Crystals : Materials Science and Applications*) 280 (1995); *Mol. Cryst Liq. Cryst. Sci. Technol., Sect. A*, **260**, 361 (1995).
110. Letko, I., Diele, S., Pelzl, G. and Weissflog, W., *Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A*, **260**, 171 (1995).
111. Doerfler, H.-D., Friedrich, G. and Swaboda, C., *Tenside, Surfactants, Deterg.*, **32**(3), 244 (1995).
112. Seghrouchni, R. and Skoulios, A., *J. Phys. II*, **5**(9), 1385 (1995).
113. Wazynska, B., Presented at the Sixteenth International Conference on Liquid Crystals, Kent, Ohio, U.S.A., Abst. No. C2P.21, p P-149(1996).
114. Ringsdorf, H., Schlarb, B. and Venzmer, J., *Angew. Chem.*, **100**, 1 (1988) and references therein.
115. Zimmermann, H., Poupko, R., Luz, Z. and Billard, J., *Liq. Cryst.*, **6**, 151 (1989).
116. Percec, V. and Hsu, C.S., *Polym. Bull.*, **23**, 463 (1990).
117. Percec, V., Heck, J., Tomazos, D., Falkenberg, F., Blackwell, H. and Ungar, G., *J. Chem. Soc., Parkin Trans.*, **1**, 2799 (1993).
118. Mckeown, N.B. and Painter, J., *J. Mater. Chem.*, **4**, 1153 (1994).
119. Decher, G. and Ringsdorf, H., *Liq. Cryst.*, **13**, 57 (1993).
120. Billard, J., *Z. Chem.*, **26**, 25 (1986).

121. Luhmann, B., Finkelmann, H. and Rehage, G., *Macromol. Chem.*, **186**, 1059 (1985).
122. Luhmann, B. and Finkelmann, H., *Colloid Polym. Sci.*, **265**, 506 (1987).
123. Schafheutle, M.A. and Finkelmann, H., *Liq. Cryst.*, **3**, 1369 (1988).
124. Tschierske, C., Brezesinski, G., Kuschel, F. and Zschke, H., *Mol. Cryst. Liq. Cryst. Lett.*, **6**, 139 (1989).
125. VanDoren, H.A., Vander Geest, R., Kellog, R.M. and Wynberg, H., *Reel. Trav. Chim. Pays-Bas*, **109**, 197 (1990).
126. Tschierske, C., Brezesinski, G., Wolgast, S., Kuschel, F. and Zschke, H., *Mol. Cryst. Liq. Cryst. Lett.*, **7**, 131 (1990).
127. Tschierske, C., Lunow, A., Joachimi, D., Hentrich, F., Girdziunaite, D., Zschke, H., Madicke, A., Brezesinski, G. and Kuschel, F., *Liq. Cryst.*, **9**, 821 (1991).
128. Pietschmann, N., Lunow, A., Brezesinski, G., Tschierske, C., Kuschel, F. and Zschke, H., *Colloid Polym. Sci.*, **269**, 636 (1991).
129. Tschierske, C., Joachimi, D., Muller, H., Wendorff, J.H., Schneider, L. and Kleppinger, R., *Angew. Chem.*, **32**, 1165 (1993).
130. Hentrich, F., Tschierske, C., Diele, S. and Saucer, C., *J. Mater. Chem.*, **4**, 1547 (1994).
131. Tschierske, C., Neumann, B., Saucer, C. and Diele, S., *J. Mater. Chem.*, **6(7)**, 1087 (1996).
132. Borisch, K., Diele, S., Goering, P. and Tschierske, C., *Chem Commun (Cambridge)*, **2**, 237 (1996).

133. Vorlander, D., Z. Phys. Chem., **126**, 449 (1927).
134. Griffin, A.C. and Britt, T.R., J.Am. Chem. Soc., **103**, 4957 (1981).
135. Emsley, J.W., Luckhurst, G.R. and Shilstone, G.N., Mol. Phys., **53**, 1023 (1984)
136. Hogan, J.L., Imrie, C.T. and Luckhurst, G.R., Liq. Cryst., **3**, 645 (1988).
137. Barbera, J., Omenat, A. and Serrano, J.L., Mol. Cryst. Liq. Cryst., **166**, 167 (1989).
138. Yoshizawa, A. and Nishiyama, I., J. Mater. Chem., **4**, 449 (1994).
139. Bruce, D.W. and Hall, M.D., Mol. Cryst. Liq. Cryst., **250**, 373 (1994).
140. Hanasaki, T., Ueda, M. and Nakamura, N., Mol. Cryst. Liq. Cryst., **250**, 257 (1994).
141. Fletcher, I.D. and Luckhurst, G.R., Liq. Cryst., **18**, 175 (1995).
142. Imrie, C.T., Karasz, F.E. and Attard, G.S., Macromolecules, **26**, 2803 (1993).
143. Marcelis, A.T.M., Koudijs, A. and Sudholter, J.R., Liq. Cryst., **18**, 851 (1995).
144. Shi, H. and Chen, S.H., Liq. Cryst., **17**, 413 (1994).
145. Vora, R.A. and Teckchandani, V. R., Mol. Cryst. Liq. Cryst., **209**, 279 (1991).
146. Kranig, W., Huser, B., Spiess, H.W., Kreuder, W., Ringsdorf, H. and Zimmermann, H., Adv. Mater., **2**, 36 (1990).
147. Plesnivý, T., Ringsdorf, H., Schumacher, P., Nutz, U. and Diele, S., Liq Cryst., **18**, 185 (1995).

148. Percec, V. and Kawasumi, M., *Adv. Mater.*, **4**, 572 (1992).
149. Borges-Lopes, E., Madec, P.-J. and Marechal, E., *Polym.Bull.*, **34**, 523 (1995).
150. Ishizuka, H., Nishiyama, I. and Yoshizawa, A., *Liq. Cryst.*, **18**, 775 (1995).
151. Tschierske, C. and Andersch, J., *Liq. Cryst.*, **21**, 51 (1996).
152. Andersch, J., Diele, S., Goring, P., Schroter, J.A. and Tschierske, C., *J. Chem. Soc., Chem. Commun.*, 107 (1995).
153. Andersch, J., Diele, S., Lose, D. and Tschierske, C., *Liq. Cryst.*, **21**, 103 (1996).
154. Griffin, A.C., Buckley, N.W., Hughes, W.E. and Wertz, D.L., *Mol. Cryst. Liq. Cryst., Lett.*, **64** 139 (1981).
155. Griffin, A.C., Campbell, G.A. and Hughes, W.E., in *Liquid Crystals and Ordered Fluids*, ed. A.C. Griffin and J. F. Johnson, Plenum Press, New York, **4** 1077 (1984).
156. Dehne, H., Roger, A., Demus, D., Diele, S., Kresse, H., Pelzl, G., Wedler, W. and Weissflog, W., *Liq. Cryst.*, **6**, 47 (1989).
157. Weissflog, W., Demus, D., Diele, S., Nitschke, P. and Wedler, W., *Liq. Cryst.*, **5**, 111(1989).
158. Goodby, J.W. and Gray, G.W., *Mol. Cryst. Liq. Cryst.*, **48**, 127 (1978).
159. de Jeu, W.H., *J.de Phys.*, **38**, 1265 (1977).
160. McMillan, W.L., *Phys. Rev. A.*, **8** 1921 (1973).

161. Goodby, J.W., Gray, G.W. and McDonnel, D.G., *Mol. Cryst. Liq. Cryst. Lett.*, **34**, 183 (1977).
162. Beresnev, L.A., Baikalov, V.A., Blinov, L.M., Pozhidaev, E.P. and Purvanetskias, G.V., *J.E.T.P. Lett.*, **33**, 536 (1981).
163. Espinet, P., Etxebarria, J., Marcos, M., Perez-Jubindo, M.A., Ros, M.B. and serrano, J.L., *Mater. Res. Soc. Symp. Proc.*, **392** (Thin Films for Integrated Optics Applications) 123 (1995).
164. Blinov, L. M., Beresnev, L.A., Shtykov, N.M. and Elashviu, M., *J.de. Phys.*, C3, **40**, 269 (1979).
165. Beresnev, L.A., Blinov, L.M. and Purvanestksas, G.V., *J.E.T.P. Lett.*, **31**, 34 (1980).
166. Beresnev, L.A., Pozhidaev, E.P., Blinov, L.M., Paulyuchenko, A.I. and Etingen, N.B., *J.E.T.P. Lett.*, **35**, 531 (1982).
167. Chandani, A.D.L., Gorecka, E., Ouchi, Y., Takezoe, H. and Fukuda A., *Jpn. J.Appl. Phys.*, **28L**, 1265 (1989).
168. Isozaki, T., Fujikawa, T., Takezoe, H. and Fukuda, A., *Phys. Rev. B*, **48**, 13439 (1994).
169. Fukuda, A., Yakanishi, Y., Isozaki, T., Ishikawa, K. and Takezoe, H., *J.Mater Chem.*, **4**, 997 (1994).
170. Takanishi, y., Hiraoka, K., Agrawal, V.K., Takezoe, H., Fukuda, A. and Matsushita, M., *Jpn. J. Appl. Phy.*, **30**, 2023 (1991).
171. Miyachi, K., Matsushima, J., Takanishi, Y., Ishikawa, K., Takezoe, H. and Fukuda, A., *Phys. Rev. E*, **52**, R2153 (1995).

172. Yamada, Y., Yamamoto, N., Mori, k., Nakamura K., Hagiwara, T., Suzuki, Y., Kawamura I., Orihara, H. and Ishibashi, Y., *Jpn. J. Appl. phys.*, **29**, 1757 (1990).
173. Yamamoto, Y., Yamada, Y., Koshobu, N., Mori, K., Nakamura, K., Orihara, H., Ishibashi, Y., Suzuki, Y. and Kawamura, I., *Jpn. J. Appl. Phys.*, **31**, 3186 (1992)
174. Suzuki, Y., Nonaka, O., Koide, Y., Okabe, N., Hagiwara, T., Kawamura, I., Yamamoto, N., Yamada, Y. and Kitazume, T., *Ferroelectrics*, **147**, 109 (1993).
175. Nishiyama, I. and Goodby, J.W., *J. Mater. Chem.*, **2**, 1015 (1992).
176. Nishiyama, I., Chin, E. and Goodby, J.W., *J. Mater. Chem.*, **3**, 161 (1993).
177. Goodby, J.W., Patel, J.S. and Chin, E., *J. Mater. Chem.*, **2**, 197 (1992).
178. Inui, S., Suzuki, T., Iimura, N., Iwane, H. and Nohira, H., *Ferroelectrics*, **148**, 79 (1993).
179. Inui, S., Suzuki, T., Oimura, N., Iwane, H. and Nohira, H., *Mol. Cryst. Liq. Cryst*, **239**, 1 (1994).
180. Cluzeau, P., Nguyen, T., Destrade, C., Isaert, N., Barois, P. and Babeau, A., *Mol. Cryst. Liq. Cryst.*, **260**, 69 (1995).
181. Faye, V., Rouillon, J.C., Destrade, C. and Nguyen, T., *Liq. Cryst.*, **19**, 47 (1995).
182. Gray, G.W., *Liquid Crystals and Plastic Crystals*, Vol. 1, Eds. G. W. Gray and P.A - Winsor, (Ellis Horwood Ltd., 1974).
183. Gray, G.W., *Molecular Structure and the Properties of Liquid Crystals*, Academic Press, London, (1962).

184. Weissflog, W., Wegeleben, A. and Demus, D., Presented at the Ninth International Conference on Liquid Crystal, Bangalore, India, December (1982).
185. Weissflog, W. and Demus, D., Cryst. Res. Technol., **18**, K-21 (1983).
186. Weissflog, W., Demus, D., Selbmann, Ch. and Hauser, A., Presented at the Tenth International Conference on Liquid crystals, York (U.K.) July (1984).
187. Weissflog, W., Wegeleben, A. and Demus, D., Mater. Chem. Phys., **12(5)**, 461 (1985).
188. Dave, J.S. and Vora, R.A., Indian, J. Chem., **11**, 19 (1973).
189. Gray, G.W., and Harrison, K.J., Mol. Cryst. Liq. Cryst., **13**, 37 (1971); Symp. Faraday Soc., No. 5, 54 (1971).
190. Matsunaga, Y. and Miyajima, N., Mol. Cryst. Liq. Cryst., **104**, 353 (1984); **16**, 207 (1985); Bull. Chem. Soc. Jpn., **57**, 1413 (1985).
191. Matsunaga, Y. and Matsuzaki, H., Bull. Chem. Soc. Jpn., **62**, 3417 (1989), **63**, 2300 (1990).
192. Dabrowski, R., Bezborodov, V. S., Lapanik, V. J., Dziaduszek, J. and Czuprynski, K., Liq. Cryst., **18(2)**, 213 (1995).
193. Ogawa, Y., Polym. J. (Tokyo), **28 (4)**, 289(1996).
194. Gray, G. W. and Jones, B., J. Chem. Soc., 4179 (1953); 678, 683, 1467 (1954); 236 (1955).
195. Wiegand, C., Z. Naturforsch, **9b**, 514 (1954).
196. Dave, J.S., Joshi, B.C. and Kurian. G., Curr. Sci., **42**, 439 (1973).

197. Dave, J.S., Kurian, G. and Joshi, B.C., "Liquid Crystals" Proc. International Liquid Crystal Conference, Bangalore, India, Edt. S. Chandrasekhar, Heyden, London, 549 (1980).
198. Vora, R.A. and Gupta, R., Indian J. Chem., **17**, 609 (1979).
199. Vora, R.A. and Gupta, R., "Liquid Crystals", Proc. International Liquid Crystal Conference, Bangalore, India, Edt. S. Chandrasekhar, Heyden, London, 589 (1980).
200. Chan, L.K.M., Gray, G.W. and Lacey, D., Mol. Cryst. Liq. Cryst., **123** (1-4), 185 (1985).
201. Fearon, J.E., Gray, G.W., Ifill, A. and Toyne, K. J., Mol. Cryst. Liq. Cryst , **124**(1-4), 89 (1985).
202. Biggs, J., Gray, G. W. and Nicholas, R.T., Presented at the Tenth International Conference on Liquid Crystals, York (U.K.) July (1984).
203. Faye, V., Rouillon, J.C., Destrade, C. and Nguyen, H.T., Liq. Cryst , **19**(1), 47 (1995).
204. Booth, C.J., Goodby, J.W., Toyne, K.J., Dunmur, D. A. and Kang, J. S., Mol Cryst. Liq. Cryst. Sci. Technol., Sect. A, **260**, 39 (1995).
205. Blake, A.B., Chipperfield, J. R. and Clark, S., Mol. Cryst. Liq. Cryst. Sci Technol., Sect. A, **275**, 305 (1996).
206. Hall, A. W., Laoy, D. and Holmes, D., Mol. Cryst. Liq. Cryst. Sci. Technol , Sect. A, **250**, 333 (1994).
207. Berdague, P., Perez, F., Bayle, J. P., Ho, M. S., and Fung B.M , New. J Chem., **19**(4), 383 (1995).

208. Berdague, P., Perez, F., Judeinsten, P. and Bayle, J.P., *New. J. Chem.*, **19**(3), 293 (1995).
209. Perez. F., Berdague, P., Judeinstein, P., Bayle, J.P., Allouchi, H., Chasseau, D., Cotrait, M. and Lafontaine, E., *Liq. Cryst.*, **19** (3), 345 (1995).
210. Weissflog, W. and Hohmuth, A., Presented at the Sixteenth International Conference on Liquid Crystals, Kent, Ohio, U.S.A., Abst. No. A2P. 14, p P25, (1996) .
211. Castellano, J., *Mol. Cryst. Liq. Crsyt.*, **165**, 389 (1988).
212. Berenberg, V.A., Danilov, V.V., Reznikov, Y.A., Sidorow, A.I. and Tomilin, M.G , *Opt.Zh.*, **7**, 57 (1993).
213. Cesarz, T., Klosowicz, S. and Zmija, J., *Elektronika*, **36** (9), 7 (1995).
214. Owsik, J., Sz wajczak, E. and Szymanski, A., *Proc. SPIE-Int. Soc Opt. Eng* , **2202**, 185 (1995).
215. Chandani, A.D.L., Hagiwara,T., Suzuki, Y., Ouchi, Y., Takezoe, H and Fukuda, A., *Jpn. J. Appl. Phys.*, **27L**, 729 (1988).
216. Johno, M., Chandani, A.D.L., Lee, J., Ouchi, Y., Takezoe, H., Fukuda, A., Itoh, K. and Kitazume, T., *Proc. Japan Display 89*, Kyoto, p 22 (1989). (Society of Information Display, Playa del Rey, U.S.A. and The Institute of Television Engineers of Japan, Tokyo (1989).
217. Yamawaki, M., Yamada, Y., Yamamoto, N., Mori, K., Hayashi, H., Suzuki, Y , Negi, Y.S., Hagiwara, T., Kawamura, I., Orihara, H., and Ishibashi, Y., *Proc. Japan Display 89*, Kyoto, p 26 (1989). (Society of Information Display, Playa del Rey, U.S.A. and The Intitute of Television Engineers of Japan, Tokyo, 1989).

218. Johnno, M., Itoh, K., Lee, J., Ouchi, Y., Takezoe, H., Fukuda, A. and Kitayama, T., Jpn. J. Appl. Phys., **29L**, 107 (1990).
219. Kiefer, R., Plast. Eng. (N.Y.), **28**, 815 (1995).
220. Rankyn, I.D., Underwood, I., Vass, D.G. and Worboys, M.R., Proc. SPIE - Int. Soc. Opt. Eng., 2651 (Liquid Crystal Materials, Devices, and Applications IV), 16 (1996).
221. Patel, J.S., Presented at the Sixteenth International Conference on Liquid Crystals, Kent, Ohio, U.S.A., Plenary B, p 109, (1996).
222. Jones, B., J. Chem. Soc., 1874(1935).
223. Dave, J.S. and Vora, R.A., " Liquid Crystals and Ordered Fluids", Eds. Johnson, J.F., and Porter, R.S., Plenum Press, New York, 477 (1970).
224. Vogel, A. I., " A Text Book of Practical Organic Chemistry", E.L.B.S. and Longman Group Ltd., Fifth Edn., p 1078 (1989).
225. Perkin, W. H., J. Chem. Soc., 388 (1877).
226. Hildesheimer, A., Monatsh. Chem., **22**, 497 (1901).
227. Steerner, R. and Wodarg, F., Chem. Ber., **61B**, 2323 (1928).
228. Weygard, C. and Gabler, R., J. Prakt. Chem., **155**, 332 (1940); **151**, 215(1938).
229. Vyas, G. M. and Shah, N. M., Org. Syn. Col. Vol. IV (Revised Addition of Annual Volumes 30 - 39) John Wiley and Sons. Inc., New York, p. 826 (1963)
230. Dave, J. S. and Kurian, G. J. Phys. (Paris) **C1**, 403 (1975).
231. Singh, J. V., J. Ind. Chem. Soc., **LI**, 443 (1974).

232. Kaufmann, H. P., Arch. Pharm., 197 (1926).
233. Gupta, R.R. and Jain, S. K., Bull. Chem. Soc. Jpn., **49**, 2026 (1976).
234. Jain, M. L. and Soni, R.P., Heterocycles, **16**, 1077 (1981).
235. Belica, P.S. and Manchand, P. S., Synthesis, 529 (1990).
236. Hirsch, B. and Albrecht, D, DDR Patent 138207, Chem. Abstr., **92**, 128934 (1980).
237. Ambroggi, V., Grandolini, G., Periolo, L. and Rossi, C., Synthesis, 656 (1992).
238. Vogel, A. I., A Text Book of Practical Organic Chemistry, E.L.B S and Longman Group Ltd., Fifth Edn., p 946 (1989).
239. Criswell, T. R., Klandermann, B. H. and Bateskey, B.C., Mol. Cryst. Liq. Cryst., **22**, 211 (1973).
240. Johnson, W.S., Gutsche, C. D. and Offenhauer, R. D., J. Am. Chem. Soc., **68**, 1648 (1946).
241. Gray, G. W., Hartley, J. B. and Jones, B., J. Chem. Soc., 1412 (1955).
242. Vora, R. A. and Rajput, S.J., Mol. Cryst. Liq. Cryst., **209**, 265 (1991).
243. Van Meter, J.P. and Klanderman, B.H., Mol. Cryst. Liq. Cryst., **22**, 271 (1973)
244. Tatsuta, H., Fukai, M., Asai, K. and Takahashi, H., DE-OS 2 352 664 (1974).
245. Vora, R.A. and Patel, M., J. Mys. Univ. Secn. B., **33A**, 88 (1994).
246. Agrawal, Y. K. and Rajput, S. J., J. Indian Chem. Soc., **67**, 369 (1990).

247. Shah, N.H., Vora, R.A. and Jadav, N.D., *Mol. Cryst. Liq. Cryst.*, **209**, 291 (1991)
248. Dave, J.S., Kurian. G., Prajapati, A. P. and Vora, R. A., *Mol. Cryst. Liq. Cryst.*, **14**, 307 (1971); *Curr. Sci.*, **41**, 415 (1972); *Indian J. Chem.*, **10**, 754 (1972).
249. Dave, J.S. and Prajapati, A. P., *Pramana, Suppl. No. 1*, 435 (1975); *Curr Sci* , **45**, 95 (1976).
250. Vora, R. A., Ph. D. Thesis, M. S. University of Baroda, Vadodara, India (1974).
251. Lauk, U., Skrabal, P. and Zollinger, H., *Helv. Chim. Acta.*, **64** 1847 (1981).
252. Coates, D., *Mol. Cryst. Liq. Cryst.*, **41**, 119 (1987).
253. Wedler, W., Demus, D., Zashke, H., Mohr, K., Schafer, K. W. and Weissflog, W., *J. Mater. Chem.*, **1**, 347 (1991).
254. Mochizuki, A., Motoyoshi, K. and Nakatsuka, M., *Ferroelectrics*, **122**, 37 (1991).
255. Sierra, T., Serrano, J. L., Ros, M.B., Ezcurra, A. and Zubia, J., *J. Am. Chem. Soc.*, **114**, 7645 (1992).
256. Marcos, M., Omenat, A., Serrano, J. L., Sierra, T. and Ezcurra, A., *Adv. Mater.*, **4**, 285 (1992).
257. Hird, M., Toyne, K. J. and Gray, G. W., *Liq. Cryst.*, **14**, 741 (1993).
258. Hird, M., Toyne, K. J., Gray, G. W., Day, S.E. and McDonnell, D. G., *Liq. Cryst.*, **15**, 123 (1993).
259. Masahiro, N., Kenji. M., Itaru, N., Kuniaki, A., Makoto, N and Nobuko, N., *Jp Appl.* 90/39,448 (1990).

- 259.a Makoto, S., Toshiaki, S., Kentaro, N. and Takahito, I., Appl. 90/170, 109 (1990)
260. Vorlander, D., Z. Phys. Chem. (Leipzig), **105**, 211 (1923); **126**, 470 (1927).
261. Steinstrasser, R., Angew. Chem. Int. Ed. Engl., **11**, 633 (1972).
262. Culling, P., Gray, G. W. and Lewis, D., J. Chem. Soc., 2699 (1960).
263. Berdague, P., Bayle, J.P., Mei-Sing Ho. and Fung, B. M., Liq. Cryst. **14**, 667 (1993).
264. Schroeder, D. C. and Schroeder, J. P., J. Am. Chem. Soc., **96**, 4347, (1974), J. Org. Chem., **41**, 2566 (1976).
265. Goldmacher, J. E. and McAffrey, M. T., Liquid Crystals and Ordered Fluids, edited by J. F. Johnson and R. S. Porter (Plenum Press), p. 375 (1970).
266. MacMillan, J. H. and Labes, M. M., Mol. Cryst. Liq. Cryst., **55**, 61 (1979).
267. Vora, R. A. and Gupta, R., Mol. Cryst. Liq. Cryst. Lett., **56**, 31 (1979); Liquid Crystals edited by S. Chandrasekhar, Heyden, Verlag, p. 589 (1980).
268. Fishel, D. L. and Patel, P. R., Mol. Cryst. Liq. Cryst., **17**, 163 (1972).
269. Arora, S. L., Taylor, T. R. and Ferguson, J. L., Liquid Crystals and Ordered Fluids, edited by J. F. Johnson, and R. S., Porter, (Plenum Press), New York, p 321 (1970).
270. Vora, R.A., Mol. Cryst. Liq. Cryst., **44**, 83 (1978).
271. Marcelja, S., J. Chem. Phys., **60**, 3599 (1974).
272. Gray, G. W., Mol. Cryst. Liq. Cryst., **1**, 333 (1966); **7**, 127 (1969).

273. Maier, W. and Baumgartner, G., *Z. Naturforsch*, **7a**, 172 (1952).
274. Gray, G. W., Hartley, J. B., Ibbotson, A. and Jones, B., *J. Chem. Soc.*, 4359 (1955).
275. Arora, S. L., Fergason, J. L. and Taylor, T. R., *J. Org. Chem.*, **35**, 4055 (1970)
276. Dave, J. S., Kurian, G. and Prajapati, A. P., *Mol. Cryst. Liq. Cryst.*, **99**, 385 (1983).
277. Chudgar, N. K. and Shah, S. N., *Liq. Cryst.*, **4**, 661 (1989).
278. Vora, R. A., J. M. S. University of Baroda, Vadodara, India, **24**, 53 (1976).
279. Prajapati, A. P., Ph.D. Thesis, M. S. University of Baroda, Vadodara (1977).
280. Dave, J. S., Kurian, G., Patel, N. R. and Prajapati, A. P., *Mol. Cryst. Liq. Cryst.*, **112**, 311, (1984).
281. Dave, J. S., Kurian, G. and Patel, N. R., *Indian J. Chem.*, **19A**, 1161 (1980).
282. Vora, R. A. and Gupta, R. *Mol. Cryst. Liq. Cryst.*, **67(A)**, 251 (1981).
283. Kalyvas, V. and McIntyre, J. E., *Mol. Cryst. Liq. Cryst.*, **80**, 105 (1982).
284. Patel, D. N., Ph. D. Thesis, M. S. University of Baroda, Vadodara, India (1986).
285. Gupta, R., *Mol. Cryst. Liq. Cryst.*, **204**, 71 (1991).
286. Demus, D., *Mol. Cryst. Liq. Cryst.*, **165**, 45 (1988); *Liq. Cryst.*, **5**, 75 (1989).
287. Osman, M. A., *Mol. Cryst. Liq. Cryst.*, **128**, 45 (1985).

288. Bui, E., Bayle, J. P., Perez, F., Liebert, L. and Courtieu, J., *Liq. Cryst.*, **8**, 513 (1990).
289. Weissflog, W. and Demus, D., *Liq. Cryst.*, **3**, 275 (1988).
290. Imrie, C. T. and Taylor, L., *Liq. Cryst.*, **6**, 1 (1989).
291. Nguyen, H. T., Destrade, D. and Malthete, J., *Liq. Cryst.*, **8**, 797 (1990).
292. Weissflog, W. and Demus, D., *Mol. Cryst. Liq. Cryst.*, **129**, 235 (1985).
293. Diele, S., Medicke, A., Knaufy, K., Neutzler, J., Weissflog, W. and Demus, D., *Liq. Cryst.*, **10**, 47 (1991).
294. Daumeister, U. Kosturkiewicz, Z., Hartung, H., Weissflog, W. and Demus, D., *Liq. Cryst.*, **7**, 241 (1990).
295. Vander Veen, J. and Hegge, Theodorus C.J.M., *Angew. Chem. Internat. Edit.*, **13**, 344 (1974).
296. Minkin, V. I., Osip, O. A. and Zhdanov, Yu. A., *Dipolemoments in Organic Chemistry*, Plenum Press, New York, p 258 (1970).
297. Hartung, H., Hoffmann, F., Stutzer, C. and Weissflog, W., *Liq. Cryst.*, **19**, 839 (1995).
298. Weissflog, W., Wiegebe, A., Haddawi, S. and Demus, D., *Mol. Cryst. Liq. Cryst.*, **281**, 15 (1996).
299. Booth, C.J., Dunmur, D.A., Goodby, J.W., Haley, J. and Toyne, K.J., *Liq. Cryst.*, **20**, 387 (1996).
300. Billard, J., Dubois, J. C. and Zann, A., *J. de Phys. colloq C₁*, **36**, C - 1 - 355 (1975).

301. Brown, G. H., "A Review of the structure and Physical properties of Liquid Crystals (CRC), Edt. Brown, G. H., Butter Worths, London (1971).
302. Deutscher, H. J., Kuschel, F., Bargenda, H., Schubert, H. and Demus, D., D D WP 106120 (1973).
303. Arora, S. L. and Fergason, J. L., Chem. Soc. Faraday Div. Symposium Nr. 5, 97 (1971).
304. Fishel, D. L. and Patel, P. R., Mol. Cryst. Liq. Cryst., **17**, 139 (1972).
305. Ubbelohde, A. R., "Melting and Crystal Structure", Oxford University Press (Clarendon), London and New York (1965); Molten state of Matter Melting and Crystal structure Willey, New York (1978).
306. Wunderlich, B., "Macromolecular Physics" Vol. - 3, "Crystal Melting". Academic Press, New York (1980).
307. Richards, J. W., Relations between the Melting points and the Latent Heat of Fusion of metals. Chem. News, **75**, 278 (1908).
308. Walden, P., Veber die. S., Spezitische, Kohaesion and Molekulargroesse bie der Schmelz temperature, z. Elektrochem., **14**, 713 (1908).
309. Wunderlich, B., Study of the change in specific heat of monomeric and polymeric Glasses During the Transition., J. Phys. Chem., **64**, 1052 (1960).
310. Heat capacities of Linear Macromolecules in the Molten state, Polymer Div., Am. Chem. Soc. Preprints, **20**, 429 (1979).
311. Smith, G. W., Plastic Crystals, Liquid crystals and the melting phenomenon, the Importance in order, Adv. in Liq. Crystals, Edt. G. H. Brown. Academic Press, New York (1975).

312. Gray, G. W. and Winsor, P. A., "Liquid Crystals and Plastic Crystals", Vol. 1 and 2, Ellis Harwood Ltd., Chichester, London (1974).
313. Labes, M. M and Weissberger, A. Eds., Physics and Chemistry of the Organic Solid State. Interscience publ., New York, Vol. 1, Chapt. - 9 (1963).
314. Marzotko, D. and Demus, D., Paramna, Suppl. No. 1, 189 (1975).