

ALCOM PUBLICATIONS – 1991-1994

*NSF Science and Technology Center for Advanced Liquid Crystalline Optical Materials
Consortium of Kent State University, Case Western Reserve University and The University of Akron*

1. Z. Li, R. Ambigapathy, R.G. Petschek and C. Rosenblatt, "Dynamics of the Nematic-Electroclinic Effect," *Phys. Rev. A* **43**, 7109 (1991).
2. S.Z.D. Cheng, F.E. Arnold, Jr., A.-Q. Zhang, S.L.C. Hsu and F.W. Harris, "Organosoluble Segmented Rigid-Rod Polyimide Films. 1. Structure Formation," *Macromolecules* **24**, 5856 (1991).
3. G.P. Crawford, D.W. Allender, J.W. Doane, M. Vilfan and I. Vilfan, "Finite Molecular Anchoring in the Escaped-Radial Nematic Configuration: A ^2H -NMR Study," *Phys. Rev. A* **44**, 2570 (1991).
4. G.P. Crawford, R. Stannarius and J.W. Doane, "Surface-Induced Orientational Order in the Isotropic Phase of a Liquid Crystal Material," *Phys. Rev. A* **44**, 2558 (1991).
5. D.W. Allender, G.P. Crawford and J.W. Doane, "Determination of the Liquid-Crystal Surface Elastic Constant K_{24} ," *Phys. Rev. Lett.* **67**, 1442 (1991).
6. S. Tripathi, M.H. Lu, E.M. Terentjev, R.G. Petschek and C. Rosenblatt, "Surface Induced Polarization at a Chiral Nematic-Substrate Interface," *Phys. Rev. Lett.* **67**, 3400 (1991).
7. P.L. Taylor, B. Lin and R. Kaplar, "Polymer-Dispersed Liquid-Crystal Electro-Optical Devices--Some Theoretical Considerations," *Proceedings of 3rd Int'l Conf. on Electrical, Optical, & Acoustic Properties of Polymers*, pp. 1-6 (PRI, London, 1992).
8. J. W. McCargar, R. Ondris-Crawford and J. L. West, "Polymer Dispersed Liquid Crystal Infrared Light Shutter," *J. Elec. Imag.* **1**, 22 (1992).
9. L. Chen, S. Kumar, M. Tristani-Kandra and E.P. Janulis, "Smectic Layer Orientation During Switching of Surface Stabilized Cells Filled with Fluorinated Ferroelectric Liquid Crystals," *J. Appl. Phys.* **71**, 664 (1992).
10. D.A. Dunmur and P. Palffy-Muhoray, "A Mean Field Theory of Dipole-Dipole Correlation in Nematic Liquid Crystals," *Mol. Phys.* **76**, 1015 (1992).
11. S. Tripathi, R.G. Petschek and C. Rosenblatt, "Electric Field Modulated Reflectivity at a Liquid Crystal-Substrate Interface," *Phys. Rev. A* **45**, 3387 (1992).
12. A. Jakli and A. Saupe, "Spontaneous Transition from Chevron to Striped Texture of a Planar Smectic C* LC," *Phys. Rev. A* **45**, 5674 (1992).
13. E.M. Terentjev and R.G. Petschek, "Anomalous Dipolar Flexoelectric Effect in a Nematic Main-Chain Polymer," *Phys. Rev. A* **45**, 5775 (1992).
14. A. Jakli and A. Saupe, "Method to Obtain Uniform Bookshelf Textures in Smectic C* Liquid Crystals," *Appl. Phys. Lett.* **60**, 2622 (1992).
15. T. Kyu, D. Park and W. Cho, "Single-Phase Blends of Polycarbonate and Poly(Phenyl Methacrylate)," *J. Appl. Phys.* **44**, 2233 (1992).
16. D.K. Yang and J.W. Doane, "Cholesteric Liquid Crystal/Polymer Gel Dispersion: Reflective Display Application," *SID Digest of Technical Papers XXIII*, 759-761 (1992).
17. J.W. Doane, D.K. Yang, and Z. Yaniv, "Front-Lit Flat-Panel Display from Polymer Stabilized Cholesteric Textures," *Japan Display '92, Hiroshima*, 73-76 (1992).
18. H. Lin and P. Palffy-Muhoray, "TE and TM Modes in a Cylindrical Liquid Crystal Waveguide," *Opt. Lett.* **17**, 722 (1992).

19. Crawford, L.M. Steele, R. Ondris-Crawford, G.S. Iannacchione, C.J. Yeager, J.W. Doane and D. Finotello, "Characterization of the Cylindrical Cavities of Anopore and Nuclepore Membranes," *G.P. J. Chem. Phys.* **96**, 7788-7796 (1992).
20. M.R. Kuzma, W. Wedler, A. Saupe, S. Shin and Satyendra Kumar, "Confinement Effects Induced by a Solubilized Polymer on the Micellar Nematic-Lamellar Transition," *Phys. Rev. Lett.* **68**, 3436 (1992).
21. Z. Li, J.R. Kelly, P. Palffy-Muhoray, and C. Rosenblatt, "Comparison of Magnetic and Electric Field Induced Switching in Polymer Dispersed Liquid Crystal Films," *Appl. Phys. Lett.* **60**, 3132 (1992).
22. J. L. West, J. R. Kelly, K. Jewell and Y. Ji, "Effect of Polymer Matrix Glass Transition Temperature on Polymer Dispersed Liquid Crystal Electro-optics," *Appl. Phys. Lett.*, **60** 3238 (1992).
23. J. T. Mang, K. Sakamoto and Satyendra Kumar, "Smectic Layer Orientation in Confined Geometries," *Mol. Cryst. Liq. Cryst.* **223**, 133 (1992).
24. H.J. Yuan, H. Lin and P. Palffy-Muhoray, "Optical Power Limiting by Liquid Crystals in Glass Capillary Arrays," *Mol. Cryst. Liq. Cryst.* **223**, 229 (1992).
25. H. Lin, D. Moroi and P. Palffy-Muhoray, "Wave Propagation in Liquid Crystal Slab Waveguides," *Mol. Cryst. Liq. Cryst.* **223**, 241 (1992).
26. J.R. Kelly, W. Wu, and P. Palffy-Muhoray, "Wavelength Dependence of Scattering in PDLC Films: Droplet Size Effects," *Mol. Cryst. Liq. Cryst.* **223**, 251 (1992).
27. G.P. Crawford, J.A. Mitcheltree, E.P. Boyko, W. Fritz, S. Zumer and J.W. Doane, " $K_{33}K_{11}$ Determination in Nematic Liquid Crystals: An Optical Birefringence Technique," *Appl. Phys. Lett.* **60**, 3226-3228 (1992).
28. G.P. Crawford, D.W. Allender and J.W. Doane, "Surface Elastic and Molecular Anchoring Properties of Nematic Liquid Crystals Confined to Cylindrical Cavities," *Phys. Rev. A* **45**, 8693-8708 (1992).
29. S. Zumer and S. Kralj, "Influence of K_{24} on the Structure of Nematic Liquid Crystal Droplets," *Liq. Cryst.* **12**, 613 (1992).
30. P. Patel, S.S. Keast, M.E. Neubert and S. Kumar, "Nonexistence of Incommensurate Smectic-A Phases in Binary Mixtures of 80BCAB and DB80CN," *Phys. Rev. Lett.* **69**, 301 (1992).
31. K.A. Crandall, S. Tripathi and C. Rosenblatt, "Surface Mediated Electroclinic Effect in a Chiral Nematic Liquid Crystal," *Phys. Rev. A* **46**, 715 (1992).
32. J.H. Andrews, K.L. Kowalski and K.D. Singer, "Pair Correlations, Cascading, and Local-Field Effects in Nonlinear Optical Susceptibilities," *Phys. Rev. A* **46**, 4172 (1992).
33. E. Terentjev and R.G. Petschek, "Dielectric Properties and Ferroelectricity in Main-Chain Nematic Polymers," *Phys. Rev. A*, **46**, 6564 (1992).
34. J.L. West, D.S. Fredley and J.C. Carrell, "Haze-Free Polymer Dispersed Liquid Crystals Utilizing Linear Polarizers," *Appl. Phys. Lett.* **61**, 2004 (1992).
35. S.H. Ou, J.A. Mann, J.B. Lando, L. Zhou and K.D. Singer, "Nonlinear Optical Studies of Polar Polymeric Langmuir-Schaefer Films," *Appl. Phys. Lett.* **61**, 2284 (1992).
36. G.S. Iannacchione, G.P. Crawford, J. W. Doane and D. Finotello, "Orientational Effects on Confined 5CB," *Mol. Cryst. Liq. Cryst.* **222**, 205 (1992).
37. G.P. Crawford and J.W. Doane, "Polymer Dispersed Liquid Crystals," *Condensed Matter News* **1**, 5-11 (1992).
38. G.A. DiLisi, C. Rosenblatt, R.B. Akins, A.C. Griffin and U. Hari, "Anchoring Strength Coefficient of a Monomer and Its Dimer at a Polymer-Coated Interface," *Liq. Cryst.* **11**, 63 (1992).

39. A. Ruttan, P.A. Farrell and R.R. Zeller, "Finite Difference Minimization of the Landau-de Gennes Free Energy for Liquid Crystals in Rectangular Regions," in *Computational and Applied Mathematics*, C. Brezinski and V. Kulish, ed., Vol. I, 137-146 (1992).
40. T. Kyu, M. Mustafa, Jen-Chang Yang, J.Y. Kim and P. Palffy-Muhoray, "Polymerization and Thermal Quench Induced Phase Separation in Polymer Dispersed Nematic Liquid Crystals," in *Polymer Solutions, Blends and Interfaces*, eds. I. Noda and D.N. Rudingh, pp. 245-271 (1992).
41. R. Ondris-Crawford, G.P. Crawford and J. W. Doane, "Liquid Crystals: The Phase of the Future," *The Physics Teacher* **30**, 332 (1992).
42. A. Jakli, D. Kim, L.C. Chien, and A. Saupe, "Effect of a Polymer Network on the Alignment and the Rotational Viscosity of a Nematic Liquid Crystal," *J. Appl. Phys.* **72**, 3161 (1992).
43. F.E. Arnold, S.Z.D. Cheng, S.L.C. Hsu, F.W. Harris and S.F. Lau, "Organo-Soluble Segmented Rigid-Rod Polyimide Films. 2. Properties for Microelectronic Applications," *Polymers* **33**, 5179 (1992).
44. G.S. Iannacchione and D. Finotello, "Calorimetric Study of Phase Transitions in Confined Liquid Crystals," *Phys. Rev. Lett.* **69**, 2094 (1992).
45. Z.Z. Zhong, D.E. Schuele, W.L. Gordon, K.J. Adamic and R.B. Akins, "Dielectric Properties of a PMMA/E7 Polymer-Dispersed Liquid Crystal," *J. Poly. Sci.* **30**, 1443 (1992).
46. A. Jakli, N. Eber and L. Bata, "Electromechanical Effects in Ferroelectric Liquid Crystalline Polymers," *Polymers for Advanced Technologies* **3**, 269 (1992).
47. L.-C. Chien, L.G. Cada and L. Xie, "Liquid-Crystalline Behavior of 4-(ω -Aminoalkoxy)-4'-cyanobiphenyls and their Side Chain Epoxy Polymers," *Liq. Cryst.* **12**, 853 (1992).
48. L.-C. Chien, I.G. Shenouda and L. Li, "Synthesis and Properties of Diacetylenic Liquid Crystalline Monomers and Polymers," *SPIE* **1692**, 159 (1992).
49. L.-C. Chien and L.G. Cada, "Anisotropic Binders for Polymer/Liquid-Crystal Dispersions and Devices," *SID 92 Digest*, p. 587 (1992).
50. J.L. West, K. Jewell, J. Francl, Y. Ji and J.R. Kelly, "Surface Anchoring, Polymer Glass Transition and Polymer Dispersed Liquid Crystal Electrooptics," *Proc. SPIE*, **1665**, 8-12 (1992).
51. L. Li, G. Hu, P. Palffy-Muhoray, M.A. Lee and H.J Yuan, "Z-Scan Measurements of Optical Nonlinearities in Nematic Liquid Crystals," *Proc. SPIE*, **1692** (1992).
52. S.K. Lee, S.Z.D. Cheng, Z.Q. Wu, C.J. Lee, F.W. Harris, T. Kyu and J.C. Yang, "Molecular Weight and Concentration Effects on Gel/Sol Transitions in a Segmented Rigid-Rod Polyimide Solution," *Polymer International* **30**, 115 (1993).
53. B. Lin and P.L. Taylor, "Dynamic Effects in Liquid Crystal Anchoring," *Phys. Lett. A* **172**, 281 (1993).
54. R.J. Ondris-Crawford, G.P. Crawford, S. Zumer and J.W. Doane, "Curvature-Induced Configuration Transition in Confined Nematic Liquid Crystals," *Phys. Rev. Lett.* **70**, 194 (1993).
55. J.B. Whitehead, Jr., S. Zumer and J.W. Doane, "Light Scattering From a Dispersion of Aligned Nematic Droplets," *J. Appl. Phys.* **73**, 1057 (1993).
56. M.-H. Lu, C. Rosenblatt and R.G. Petschek, "Ion-Director Coupling in a Ferroelectric Liquid Crystal," *Phys. Rev. E* **47**, 1139 (1993).
57. F.E. Arnold, Jr., D. Shen, C.J. Lee, F.W. Harris, S.Z.D. Cheng and H.W. Starkweather, Jr., "Organo-Soluble Segmented Rigid-Rod Polyimide Films. 3. Effect of Copolymer Composition on Thermal Expansivity and on Relaxation Processes," *J. Mater. Chem.* **3**, 183 (1993).

58. N.Vrbancic, M. Vilfan, R. Blinc, J. Dolinsek, G.P. Crawford and J.W. Doane, "Deuteron Spin Relaxation and Molecular Dynamics of a Nematic Liquid Crystal (5CB) in Cylindrical Microcavities," *J. Chem. Phys.* **98**, 3540 (1993).
59. A. Jakli and A. Saupe, "Electro-Optic Effects in Smectic A Phase," *Mol.Cryst. Liq. Cryst.* **222**, 101 (1992).
60. C.A. McFarland, J.L. Koenig and J.L. West, "Analysis of Polymer-Dispersed Liquid Crystals by Infrared Spectroscopy," *Appl. Spectroscopy*, **47**, 321 (1993).
61. G.P. Crawford, R. Ondris-Crawford, S. Zumer and J.W. Doane, "Anchoring and Orientational Wetting Transitions of Confined Liquid Crystals," *Phys. Rev. Lett.* **70**, 1838 (1993).
62. F.E. Arnold, Jr., D. Shen, C.J. Lee, F.W. Harris, S.Z.D. Cheng and S.F. Lau, "Organo-Soluble Segmented Rigid-Rod Polyimide Films. 4. Anisotropic Structure and Properties," *J. Mater. Chem.* **3**, 353-360 (1993).
63. P. Patel, L. Chen and S. Kumar, "Phase Diagram of a Frustrated Smectic Liquid Crystal System and the Absence of the Incommensurate Smectic-A₂ Phase," *Phys. Rev. A* **47**, 2643 (1993).
64. S. Kumar and P. Patel, "Recent Advances in Frustrated Smectic Liquid Crystals," *Condensed Matter News* **2**, 9 (1993).
65. P.J. Bos, J.A. Rahman and J.W. Doane, "A Low Threshold Voltage Polymer Network TN Device," *SID 93 Digest XXIV*, 877-880 (1993).
66. H.K.M. Vithana, G. Xu and D.L. Johnson, "Dynamics of the Lowest Order Bend-Twist Director Mode Near Nematic-Smectic A Criticality," *Phys. Rev. E* **47**, 3441-3455 (1993).
67. H.K.M. Vithana, L. Asfaw and D.L. Johnson, "Coherent Backscattering of Light in a Nematic Liquid Crystal," *Phys. Rev. Lett.* **70**, 3561-3564 (1993).

Total as of October 31, 1993

68. G.P. Crawford, R.J. Ondris-Crawford, S. Zumer, S. Keast, M. Neubert and J.W. Doane, "Alignment and Ordering Mechanisms at a Liquid Crystal-Solid Interface," *Liq. Cryst.* **14**, 1573-1585 (1993).
69. O.D. Lavrentovich and M. Kleman, "Field-Driven First-Order Structural Transition in the Restricted Geometry of a Smectic-A Cell," *Phys. Rev E*, **48**, 39-42 (1993).
70. C.W. Greeff, J. Lu and M.A. Lee, "Theoretical Study of Mechanisms of Non-Linear Optical Response in Liquid Crystals," *Liq. Cryst.* **15**, 75-85 (1993).
71. R.J. Ondris-Crawford, G.P. Crawford and J.W. Doane, "Crystal-Clear Technology," *The Science Teacher* **60**, 22-25 (1993).
72. Y. L'vov, R.M. Hornreich and D.W. Allender, "Theory of a Symmetry-Breaking Phase Transition in a Surface Layer of Nematic Liquid Crystal," *Phys. Rev. E* **48**, 1115-1122 (1993).
73. I. G. Shenouda and L.C. Chien, "New Ferroelectric Liquid-Crystalline Polysiloxanes Containing Cyanohydrin Chiral Mesogens: L-Norleucine Series," *Macromolecules* **26**, 5020-5023 (1993).
74. L.C. Chien, I.G. Shenouda, A. Saupe and A. Jakli, "Side-Chain Liquid Crystalline Polysiloxanes Containing a Cyanohydrin Chiral Centre," *Liquid Crystals* **15**, 497-511 (1993).
75. J.Y. Kim, C.H. Cho, P. Palffy-Muhoray, M. Mustafa and T. Kyu, "Polymerization-Induced Phase Separation in a Liquid-Crystal-Polymer Mixture," *Phys. Rev. Lett.* **71**, 2232-2235 (1993).

76. R.J. Ondris-Crawford, G.P. Crawford, J.W. Doane, S. Zumer, M. Vilfan and I. Vilfan, "Surface Molecular Anchoring in Microconfined Liquid Crystals Near the Nematic-SmecticA Transition," *Phys. Rev. E* **48**, 1998-2005 (1993)
77. S.H. Ou, V. Percec, J.A. Mann, J.B. Lando, L. Zhou and K.S. Singer, "Polar Polymeric Langmuir-Blodgett Films Containing Nitrophenyl Groups," *Macromolecules*, **26**, 7263-7273 (1993).
78. A. Scharkowski, G.P. Crawford, S. Zumer and J.W. Doane, "A Method for the Determination of the Elastic Constant Ratio K_{33}/K_{11} in Nematic Liquid Crystals," *J. Appl. Phys.*, **73**, 7280-7287 (1993).
79. J.L. West, R.B. Akins, J. Francl and J.W. Doane, "Cholesteric/Polymer Dispersed Light Shutters," *Appl. Phys. Lett.*, **63**, 1471-1473 (1993).
80. G.S. Iannacchione, G.P. Crawford, S. Zumer, J.W. Doane and D. Finotello, "Randomly Constrained Orientational Order in Porous Glass," *Phys. Rev. Lett.*, **71**, 2595-2598 (1993).
81. F.E. Arnold, Jr., K.R. Bruno, D. Shen, M. Eashoo, C.J. Lee, F.W. Harris and S.Z.D. Cheng, "The Origin of β Relaxations in Segmented Rigid-Rod Polyimide and Copolyimide Films," *Poly. Engr. & Sci.*, **33**, 1373-1380 (1993).
82. S.Z.D. Cheng, F.E. Arnold, Jr., F.M. Li and F.W. Harris, "Recent Advances in Aromatic Polyimide Films in Microelectronic and Optical Applications," *Trends in Poly. Sci.*, **1**, 243-247 (1993).
83. F.W. Harris, F.E. Arnold, Jr., M. Eashoo, S.L.-C. Hsu, C.J. Lee, D. Shen, A. Zhang and S.Z.D. Cheng, "Fluorine Containing High-Performance Polyimides: Synthesis, Properties and Applications," *Proc. of the Soc. of Plastics Engrs.* **XXXIV**, 1318-1320 (1993).
84. G.P. Crawford and J.W. Doane, "Ordering and Ordering Transitions in Confined Liquid Crystals," *Mod. Phys. Rev. B*, **7**, 1785-1808 (1993).
85. K.L. Buchert, J.L. Koenig and S.Q. Wang, "Molecular Motion Analysis of 5CB in PDLC's Using Solid State ^{13}C NMR Relaxation Spectroscopy," *Appl. Spectrosc.*, **47**, 933-941 (1993).
86. K.L. Buchert, J.L. Koenig and S.Q. Wang, "Molecular Motion Analysis of E7 in PDLC's as a Function of Droplet Size Using Solid State ^{13}C -NMR Relaxation Spectroscopy," *Appl. Spectrosc.*, **47**, 942-951 (1993).
87. C.A. McFarland, J.L. Koenig and J.L. West, "The Influence of the Polymer Matrix on the Bipolar and Radial Droplet Configurations Within PDLC Films Examined by Infrared Spectroscopy," *Appl. Spectrosc.*, **47**, 598-605 (1993).
88. P.A. Farrell, A. Ruttan and R.R. Zeller, "Application of Multigrid Methods to the Solution of Liquid Crystal Equations on a SIMD Computer," *Sixth Copper Mt. Conf. on Multigrid Methods*, **1**, 191-269 (1993).
89. P.A. Farrell, A. Ruttan and R.R. Zeller, "Solution of the Landau-de-Gennes Equations of Liquid Crystal Physics on a SIMD Computer," *Proc. of 6th SIAM Conf. on Parallel Processing for Sci. Computing*, **1**, 266-269 (1993).
90. G.S. Iannacchione and D. Finotello, "Confinement and Orientational Study at Liquid Crystal Phase Transitions," *Proc. XIV ILCC, Liq. Cryst.*, **14**, 1135-1142 (1993).
91. G.S. Iannacchione, A. Strigazzi and D. Finotello, "Interface Influenced Phase Transitions of Alkylcyanobiphenyl Liquid Crystals, A Calorimetric Study," *Proc. XIV ILCC, Liq. Cryst.* **14**, 1153-1161 (1993).
92. L.M. Steele, G.S. Iannacchione and D. Finotello, "AC Calorimetry Technique. Applications to Liquid Helium Films and Liquid Crystals," *Rev. Mex. de Fisica*, **39**, 588-601 (1993).
93. J.R. Kelly and Wei Wu, "Multiple Scattering Effects in PDLC Films," *Liq. Cryst.*, **14**, 1683 (1993).

94. P. Patel and S. Kumar, "Correct Phase Diagrams of Liquid Crystals Reported to Exhibit the (Nonexistent) Incommensurate Smectic-A Phases," *Europhys. Lett.*, **23**, 135 (1993).
95. Y. Shi, B. Cull and S. Kumar, "Morphology and Ordering in Thin Liquid Crystal Films on Flat Glass Substrates," *Phys. Rev. Lett.*, **71**, 2773 (1993).
96. W. Zhao and P. Palffy-Muhoray, "Z-Scan Technique Using Top-Hat Beams," *Appl. Phys. Lett.*, **63**, 1613-1615 (1993).
97. A. Sparavigna, A. Strigazzi and P. Palffy-Muhoray, "Axial Escape of Nematics in Bend-Cylindrical Configuration," *Intl. J. Mod. Phys. B*, **7**, 1143-1156 (1993).
98. H. Lin and P. Palffy-Muhoray, "Non-linear Liquid Crystal Waveguides," *Liq. Cryst.*, **14**, 1977-1989 (1993).
99. P. Palffy-Muhoray, A. Sparavigna and A. Strigazzi, "Saddle-Splay and Mechanical Instability in Nematics Confined to a Cylindrical Annular Geometry," *Liq. Cryst.*, **14**, 1143-1151 (1993).
100. F.L. Chen and A.M. Jamieson, "Odd-Even Effect in Miscibility of Main-Chain Liquid Crystal Polymers with Low Molar Mass Nematogens," *Liq. Cryst.*, **15**, 171 (1993).
101. D. Gu, S.R. Smith, A.M. Jamieson, M. Lee and V. Percec, "Dependence of Viscoelastic Properties on Spacer Length and Molecular Weight for a Side Chain Liquid Crystal Polymer in a Nematic Solvent," *J. Phys. II, (France)* **3**, 937 (1993).
102. E.M. Terentjev and R.G. Petschek, "Properties of a Uniaxial Nematic Liquid Crystal of Semiflexible Even and Odd Dimers," *J. de Physique II*, **3**, 661 (1993).
103. D.W. Cronin, R.G. Petschek and E.M. Terentjev, "Second Order Flexoelectric Effect in Chiral Nematic Liquid Crystals," *J. Chem. Phys.*, **98**, 9199 (1993).
104. E.M. Terentjev and R.G. Petschek, "Long Range Interactions and the Pair Correlation Function in Dipolar Main-Chain Nematic Polymers," *Phys. Rev. E*, **48**, 2034 (1993).
105. D.W. Cronin, R.A. Sones, R.G. Petschek and E.M. Terentjev, "Twisting Transition in a Capillary Filled with Chiral Smectic C Liquid Crystal," *Mol. Cryst. Liq. Cryst.*, **238**, 167 (1993).
106. M.-H. Lu and C. Rosenblatt, "Director-Charge Coupling in a Ferroelectric Liquid Crystal: Experiment," *Phys. Rev. E*, **48**, R2370-2373 (1993).
107. J.-C. Lin and P.L. Taylor, "Polymerization-Induced Phase Separation of a Liquid Crystal-Polymer Mixture," *Mol. Cryst. Liq. Cryst.*, **237**, 25 (1993).
108. J.-C. Lin and P.L. Taylor, "Exact Solution of a Phase-Separation Model with Conserved-Order-Parameter Dynamics and Arbitrary Initial Concentration," *Phys. Rev. E*, **48**, 4305 (1993).
109. Z. Z. Zhong, D.E. Schuele, S.W. Smith and W.L. Gordon, "Constitutional Isomeric Effect on the Dielectric Relaxation of a Nematic Liquid Crystalline Polymethacrylate Containing a Methoxymethylstilbene Side Group," *Macromolecules*, **26**, 6403 (1993).
110. Z.Z. Zhong, W.L. Gordon, D.E. Schuele, R.B. Akins and V. Percec, "Dielectric Relaxations of a Smectic Side-Chain Liquid-Crystalline Polymer in Different Alignment States," *Mol. Cryst. Liq. Cryst.* **238**, 129-145 (1994).
111. X.Y. Wang, B.C. Xu and P.L. Taylor, "Exact Soliton Solutions for a Class of Coupled Field Equations," *Phys. Lett A*, **173**, 30-32 (1993).
112. E.M. Terentjev, C. Rosenblatt and R.G. Petschek, "Molecular-Statistical Model for the Nematic Phase of Semiflexible Dimers," *J. Phys. II France*, **3**, 41-51 (1993).

113. F.E. Arnold, Jr., D. Shen, F.W. Harris and S.Z.D. Cheng, "Organo-Soluble Segmented Rigid-Rod Polyimide Films, 5. Effect of Orientation," *J. Mater. Chem.*, **4**, 105-111 (1994).
114. G.P. Crawford, R.D. Polak, A. Scharkowski, L.C. Chien, J.W. Doane and S. Zumer, "Nematic Director-Fields Captured in Polymer Networks Confined to Spherical Droplets," *J. Appl. Phys.*, **75**, 1968-1971 (1994).
115. J.F. Li, V. Percec, C. Rosenblatt and O.D. Lavrentovich, "Biaxiality in a Cyclic Thermotropic Nematic Liquid Crystal," *Europhys. Lett.*, **25**, 199-204 (1994).
116. A. Sparavigna, O.D. Lavrentovich and A. Strigazzi, "Periodic Stripe Domains and Hybrid Alignment Regime in Nematic Liquid Crystals: Threshold Analysis," *Phys. Rev. E*, **49**, 1344-1352 (1994).
117. R.D. Polak, G.P. Crawford, B.C. Kostival, J.W. Doane and S. Zumer, "Optical Determination of the Saddle-Splay Elastic Constant K_{24} in Nematic Liquid Crystals," *Phys. Rev. E-Rapid Comm.*, **49**, R978-R981 (1994).
118. O.D. Lavrentovich, M. Kleman and V.M. Pergamenschchik, "Nucleation of Focal Conic Domains in Smectic A Liquid Crystals," *J. de Physique II*, **4**, 377-404 (1994).
119. V.G. Nazarenko and O.D. Lavrentovich, "Anchoring Transition in a Nematic Liquid Crystal Composed of Centrosymmetric Molecules," *Phys. Rev. E*, **49**, 990-993 (1994).
120. J.R. Kelly and P. Palffy-Muhoray, "The Optical Response of Polymer Dispersed Liquid Crystals," *Mol. Cryst. Liq. Cryst.*, **243**, 11-29 (1994).
121. D.K. Yang, J.W. Doane, Z. Yaniv and J. Glasser, "Cholesteric Reflective Display: Drive Scheme and Contrast," *Appl. Phys. Lett.* **64**, 1905-1907 (1994).
122. J.C. Lin and P.L. Taylor, "Kinetic Phase Transition in Polymerization," *Phys. Rev. E*, **49**, 2476-2479, (1994).
123. J.C. Lin and P.L. Taylor, "Exact Results for Phase Separation in an Asymmetric Model of an Interacting Binary Mixture," *Phys. Rev. E*, **49**, 2058-2061 (1994).
124. P. Patel, S. Kumar, P. Ukleja, "The Case of Missing Incommensurate Smectic-A Phases," *Liq. Cryst.* **16**, 351-371 (Invited) (1994).
125. E.C. Gartland, Jr., *SIAM* "Analysis of a Simplified Liquid Crystal Shear-Flow Model," *J. Appl. Math.*, **54**, 317- 332 (1994) .
126. Z. Li, W.R. Folks and O.D. Lavrentovich, "Surface Anchoring and Growth Pattern of the First-Order Structural Transition in a Smectic A Liquid Crystal," *Proceedings of SPIE*, **2175**, 21-32 (1994).
127. F.M. Aliev, "Liquid Crystals-Porous Glasses Heterogenous Systems as Materials for Investigation of Interfacial Properties and Finite-Size Effects," *Mol. Cryst. Liq. Cryst.*, **243**, 91-105 (1994).
128. N. Kothekar, D.W. Allender and R.M. Hornreich, "Surface-Layer Phase Transitions in Nematic Liquid Crystals," *Phys. Rev. E*, **49**, 2150-2155 (1994).
129. M.F. Flynn, "Numerical Optimization of Liquid-Crystal Displays with Use of Performance Metrics," *J. Opt. Soc. Am. A*, **11**, 2220-2225 (1994).
130. Z.J. Lu and D.K. Yang, "Effect of Chiral Dopant on the Performance of Polymer Dispersed Liquid Crystal Light Valve," *Appl. Phys. Lett.*, **65**, 505-507 (1994).
131. P. Boltenhagen, M. Kleman and O.D. Lavrentovich, "Freeze-Fracture Observations in the L_{α} , Phase of a Swollen Surfactant in the Vicinity of the L_3 and L_1 Phase Transitions," *J. Phys. II France*, **4**, 1439-1448 (1994).

132. O.D. Lavrentovich and V. Pergamenschchik, "Stripe Domain Phase of a Thin Nematic Film and the K_{13} Divergence Term," *Phys. Rev. Lett.*, **73**, 979-982 (1994)
133. D.K. Yang, J.L. West, L.C. Chien and J.W. Doane, "Control of Reflectivity and Bistability in Displays Using Cholesteric Liquid Crystals," *J. Appl. Phys.*, **76**, 1331-1333 (1994).
134. Z. Li and O.D. Lavrentovich, "Surface Anchoring and Growth Pattern of the Field-Driven First-Order Transition in a Smectic-A Liquid Crystal," *Phys. Rev. Lett.*, **73**, 280-283 (1994).
135. E. Gorecka, L. Chen, O. Lavrentovich and W. Pyzuk, "X-ray Studies of Bond Orientational Order in Liquid Crystalline Orthogonal Hexatic-B Phase," *Europhys. Lett.*, **27**, 507-512 (1994).
136. G.P. Crawford and J.W. Doane, "Nuclear Magnetic Resonance of Nematic Liquid Crystals Confined to Curved Geometries," *Modern Topics in Liquid Crystals*, Agnes Buka, ed., World Scientific, (1993) pp. 55-72.
137. M. Pfeiffer, Y. Sun, D.K. Yang, and J.W. Doane, "Design of PSCT Materials for MIM Addressing," *SID Digest of Tech. Papers XXV*, 837-840 (1994).
138. W.J. Fritz, W.D. St. John, D.K. Yang and J.W. Doane, "Reflective Color of PSCT Displays," *SID Digest of Tech. Papers*, **XXV**, 841-844 (1994).
139. K. Crandall, M.R. Fisch, R.G. Petschek and C. Rosenblatt, "Homeotropic, Rub-Free Liquid-Crystal Light Shutter," *Appl. Phys. Lett.*, **65**, 118-120 (1994).
140. T.A. Zupp, J.E. Fulghum and D.J. Surman, "Imaging of Polymer Surfaces Using X-ray Photoelectron Spectroscopy," *Surface and Interface Analysis*, **21**, 79-86 (1994).
141. B.J. Tielsch and J.E. Fulghum, "Application of Angle-Resolved XPS Algorithms to Overlayers and Concentration Gradients," *Surface and Interface Analysis*, **21**, 621-630 (1994).
142. L.G. Cada and L.C. Chien, "Anisotropic Binders for Polymer/Liquid Crystal Dispersions," *Macromol. Chem. Phys.*, **195**, 1733-1739 (1994).
143. B. Cull, M. Heino, S.H. Lee, S. Kumar, S.S. Keast and M.E. Neubert, "Effect of Salt on the Phase Diagrams of Two Binary Lyotropic Liquid Crystalline Solutions," *Liquid Crystals*, **17**, 507-512 (1994).
144. J.W. Doane, W.D. St. John, Z.J. Lu and D.K. Yang, "Stabilized and Modified Cholesteric Liquid Crystals for Reflective Displays," *Conf. Rec. IDRC*, 65-68 (1994).
145. D.S. Fredley, B.M. Quinn and P.J. Bos, "Polymer Stabilized SBE Devices," *Conf. Rec. IDRC*, 480-483 (1994).
146. J.L. West, G.R. Magyar and J.J. Francl, "Polymer-Stabilized Cholesteric Texture Materials for Black-on-White Displays," *SID Digest of Tech. Papers XXV*, 608-610 (1994).
147. M.F. Flynn, J. Kelly and S.H. Jamal, "Applications and Experimental Verification of a Performance-Metric-Based Optimization Scheme for LCDs," *SID Digest of Tech. Papers XXV*, 783-786 (1994).
148. B. Lin and P.L. Taylor, "Liquid Crystal Anchoring Transitions Induced by Thermal Motion," *Liq. Crysts.*, **16**, 831-843 (1994).
149. J.L. West, "Liquid Crystal Dispersions," in *Technological Applications of Dispersions*, Robert B. McKay, ed. (Marcel Dekker, 1994), Chapter 10, pp. 349-371.
150. B. Lin and P.L. Taylor, "Temperature-Driven Polar Anchoring Transitions in Nematic Liquid Crystals: Computer Simulations," *J. de Phys. II* **4**, 825-836 (1994).
151. J.-C. Lin and P.L. Taylor, "Exact Results for the Lower Critical Solution Temperature in an Asymmetric Model of an Interacting Binary Mixture," *Phys. Rev. Lett.* **73**, 2863-2866 (1994).

152. R.J. Ondris-Crawford, M. Ambrozic, J.W. Doane, and S. Zumer, "Pitch-Induced Transition of Chiral Nematic Liquid Crystals in Submicrometer Cylindrical Cavities," *Phys. Rev. E*, **50**, 4773-4779 (1994).
153. G.S. Iannacchione, J.T. Mang, S. Kumar, and D. Finotello, "Surface-Induced Discrete Smectic Order in the Isotropic Phase of 12CB in Cylindrical Pores," *Phys. Rev. Lett.*, **73**, 2708-2711 (1994).
154. G.S. Iannacchione and D. Finotello, "Specific Heat Dependence on Orientational Order at Cylindrically Confined Liquid Crystal Phase Transitions," *Phys. Rev. E*, **50**, 4780-4795 (1994).
155. G.P. Crawford, R.D. Polak, A. Scharkowski, L.-C. Chien, S. Zumer, and J.W. Doane, "Captured Liquid Crystalline Order in Polymer Networks," *SPIE*, **2175**, 34-41 (1994).
156. Marc N. G. De Mul and J. Adin Mann, Jr., "Multilayer Formation in Thin Films of Thermotropic Liquid Crystals at the Air-Water Interface," *Langmuir*, **10**, 2311-2315 (1994).
157. E. Gorecka, L. Chen, W. Pyzuk, A. Krowczynski, and S. Kumar, "X-Ray Studies of the Hexatic Phase in Liquid Crystals With a Liquid Crystal-B - Hexatic-B - Smectic-A Phase Sequence," *Phys. Rev. E*, **50**, 2863-2867 (1994).
158. Z.Z. Zhong, D.E. Schuele, and W.L. Gordon, "Influence of Spacer Length on the Dielectric Relaxation of a Side Chain Liquid Crystal Polymer," *Liquid Crystals*, **17**, 199-209 (1994).
159. E.A. Thomas, T.A. Zupp, J.E. Fulghum, D.S. Fredley, and J.L. West, "Investigation of Liquid Crystal Alignment on Polybutylmethacrylate Surfaces Using FTIR-ATR and XPS," *Mol. Cryst. Liq. Cryst.*, **250**, 193-208 (1994).
160. L.-C. Chien and L.G. Cada, "Photo-Cross-Linkable and Optically Active Side-Chain Liquid-Crystalline Copolymers," *Macromolecules*, **27**, 3721-3726 (1994).
161. L. Li, H.J. Yuan, G. Hu, P. Palffy-Muhoray, "Third Order Optical Non-linearities of Nematic Liquid Crystals," *Liq. Cryst.* **16**, 703-712 (1994).
162. T. Kyu, I. Ilies, and M. Mustafa, "Phase Separation Dynamics of a Polymer Dispersed Liquid Crystal," *J. de Phys.*, **3**, 37-40 (1993).
163. M.E. Neubert, S.S. Keast, Y. Dixon-Polverine, F. Herlinger, M.R. Jirousek, K. Leung, K. Murray and J. Rambler, "The Effect of 2- and 3-Lateral Substituents on the Acid Side of 4, 4'-Disubstituted Phenylbenzoates and Phenylthiobenzoates on Mesomorphic Properties," *Mol. Cryst. Liq. Cryst.*, **250**, 109-123 (1994).
164. D.S. Fredley, B.M. Quinn, and P.J. Bos, "Polymer Stabilized SBE Devices," *Conf. Record IDRC*, 480-483 (1994).
165. W. Zhao and P. Palffy-Muhoray, "Z-Scan Measurement of $\chi^{(3)}$ Using Top-Hat Beams," *Appl. Phys. Lett.*, **65**, 673-675 (1994).
166. P. Palffy-Muhoray, T. Wei and W. Zhao, "Z-Scan Measurements on Liquid Crystals: Some Considerations and Results," *Mol. Cryst. Liq. Cryst.*, **251**, 19-31 (1994).
167. A. Sparavigna, G. Barbero, L. Komitov, P. Palffy-Muhoray, and A. Strigazzi, "A Landau-de Gennes Model for the Temperature Surface Transition in Nematics," *Mol. Cryst. Liq. Cryst.*, **251**, 231-241 (1994).
168. T. Kyu, J.-C. Yang, S.Z.D. Cheng, S.L.C. Hsu and F.W. Harris, "Structure Evolution and Kinetics of Thermoreversible Gelation in a Rigid-Rod Polyimide/m-Cresol System," *Macromolecules*, **27**, 1861-1868 (1994).
169. S. Tripathi and C. Rosenblatt, "Orientational Susceptibility in Porous Glass Near a Bulk Nematic-Isotropic Phase Transition," *Phys. Rev. Lett.*, **72** 2725-2728 (1994); *Ibid (E)*, **72**, 3744 (1994).

170. I.G. Shenouda, Y. Shi, and M.E. Neubert, "Mesomorphic Properties of 4-[3', 4', 5'-tri(*p-n*-Dodecyloxybenzyloxy)]-Benzoyloxy-4''-*p-n*-Dodecyloxybenzyloxybiphenyl," *Mol. Cryst. Liq. Cryst.*, **257**, 209-218 (1994).
171. W.D. St. John, W.J. Fritz, Z.J. Lu, and D.-K. Yang, "Bragg Reflection from Cholesteric Liquid Crystals," *Phys. Rev. E*, **51**, 1191-1198 (1994).
172. W.-K. Kim and T. Kyu, "Phase Separation Dynamics in a Mixture of Polystyrene and Liquid Crystal," *Mol. Cryst. Liq. Cryst.*, **250**, 131-141 (1994).