

CURRICULUM VITAE - NOEL A. CLARK

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PERSONAL

Born 1940, Cleveland, Ohio

PRESENT POSITION

PROFESSOR OF PHYSICS  
Department of Physics  
University of Colorado, Boulder

PREVIOUS POSITIONS

1977-1981: ASSOCIATE PROFESSOR OF PHYSICS  
University of Colorado, Boulder  
1973-1977: ASSISTANT PROFESSOR OF APPLIED PHYSICS  
Division of Applied Sciences  
Harvard University, Cambridge, Massachusetts  
1970-1973: RESEARCH FELLOW  
Division of Engineering and Applied Physics  
Harvard University, Cambridge, Massachusetts  
**Postdoctoral Advisor:** Peter S. Pershan

EDUCATION

Massachusetts Institute of Technology, Cambridge, Massachusetts:  
Ph.D. in Physics (1970) Thesis Title: "INELASTIC LIGHT SCATTERING FROM  
THERMAL FLUCTUATIONS IN DILUTE GASES"  
**Graduate Advisor:** George B. Benedek  
  
John Carroll University, Cleveland, Ohio  
M.S. in Physics (1965)  
B.S. in Physics (1963)

AWARDS

National Science Foundation Predoctoral Fellowship (1966-1970)  
First Prize – American Association of Physics Teachers Lab. Apparatus Competition (1969)  
University of Colorado Faculty Fellowships (1983-1984, 1989-1990, 1997-1998)  
Fellow, American Physical Society (1984)  
Guggenheim Foundation Fellowship (1985-1986)  
IR-100: "SSFLC Devices," 1 of 100 most significant technological developments (1986)  
National Science Foundation Award for Special Creativity (1986)  
University of Colorado Faculty Research Lecturer (1987)  
Society for Information Display, Special Recognition Award (1989)  
John Carroll University, Outstanding Physics Alumnus (1989)  
Army Research Office: One of forty selected scientific achievements (1951-1991)  
Sony Sabbatical Chair (1993)  
Humboldt Senior Fellowship (1993)  
Fellow, American Association for the Advancement of Science (2000)  
American Physical Society, Oliver E. Buckley Condensed Matter Physics Prize (2006)  
Member, National Academy of Sciences of the United States of America (2007)  
Honored Member, International Liquid Crystal Society (2008)  
Fredericksz Medal, Russian Liquid Crystal Society (2008)  
Gray Medal, British Liquid Crystal Society (2012)  
Luckhurst – Samulski Prize, Best paper in Liquid Crystals (2016)  
Inaugural Awardee, Pierre Gilles de Gennes Prize, International Liquid Crystal Society (2016)  
Friend of Thai Science (2023).

PROFESSIONAL ACTIVITY

Consultant to the Liquid Crystal Group, Department of Physics, Chalmers Technical University (1978- )  
 Editorial Board, *Liquid Crystals* (1985-1993)  
 Editor, *Liquid Crystals* (1994-2005)  
 Editorial Board, *Journal of Molecular Electronics* (1984-1994)  
 Editorial Board, *Ferroelectrics Letters* (1981- )  
 Editorial Board, *Proceedings of the National Academy of Sciences* (2007-2010)  
 Chercheur Associe, Centre Recherche Paul Pascal, Domaine Universitaire, Talence, France (1983-1984)  
 Member, National Research Council Committee on Recommendations for US Army Basic Research (1982- )  
 Chair, Condensed Matter Laboratory, Department of Physics, University of Colorado (1984-1987)  
 Director, Liquid Crystal Materials Research Center, NSF MRSEC, University of Colorado (1995-2011)  
 Founder, Instec, Inc (1984)  
 Founder, Nanostructures, Inc (1985)  
 Founder, Displaytech, Inc (1986)  
 Member, Oversight Committee, Division of Materials Research, National Science Foundation (1986)  
 Co-Chair, International Symposium on Complex and Supermolecular Fluids (1985)  
 Co-Chair, NATO Adv. Research Workshop on Structural Incommensurability in Crystals, LCs, and Quasicrystals (1986)  
 Chair, Scientific Committee, International Liquid Crystal Conference, Berkeley, CA (1986)  
 American Physical Society, Division of Biological Physics, Executive Committee, Member at large (1986-1989),  
 American Physical Society, Division of Biological Physics, Chair, Fellowship Nominating Committee (1986-1989)  
 Member, International Liquid Crystal Planning and Steering Committee (1986-1990)  
 Member, Department of Energy Panel on the Liquid Solid Interface and Its Role in Ceramic Processing (1988)  
 Associate Chair, Gordon Conference on Liquid Crystals (1989)  
 Chair, Scientific Committee, Second Intl. Symposium on Ferroelectric Liquid Crystals, Göteborg, Sweden (1989)  
 Member, International Liquid Crystal Society, Board of Trustees (1990-1995)  
 Chair, Gordon Conference on Liquid Crystals (1991)  
 Chair, Third International Symposium on Ferroelectric Liquid Crystals, Boulder, CO (1991)  
 Member, National Research Council Panel on Biomolecular Materials (1991-1994)  
 Ferroelectrics Committee, IEEE Section on Ultrasonics, Ferroelectrics, and Frequency Control (1994- )  
 Chair, International Liquid Crystal Conference, Keystone, CO (2006)  
 Co-Chair, LCMRC Workshop on Liquid Crystals for Organic Photovoltaics (2010)  
 Scientific Advisory Board, Institute of Smart Liquid Crystal Technology, Changshu, China (2019- )

RESEARCH INTERESTS

Study of condensed matter by optical techniques; inelastic light scattering spectroscopy; structure, optical properties and applications of liquid crystals; liquid crystal electro-optics; membrane biophysics; structure and dynamics of colloidal suspensions; nanometer scale fabrication; liquid structure and melting; soft matter chirality; liquid crystals of bent-core molecules; liquid crystals of DNA and RNA; liquid crystals and the origin of life; ferromagnetic liquid crystals; new phases and phenomena of the ferroelectric nematic realm.

PUBLICATIONS

1. "GENERATION OF ACOUSTIC SIGNALS IN LIQUIDS BY RUBY LASER-INDUCED THERMAL STRESS TRANSIENTS," E.F. Carome, N.A. Clark and C.E. Moeller, *Applied Physics Letters* **4**, 95-97 (1964).
2. "HYPERSONIC VELOCITY MEASUREMENTS IN LIQUID DICHLOROMETHANE," N.A. Clark, C.E. Moeller, J.A. Bucaro and E.F. Carome, *Journal of Chemical Physics* **44**, 2528-2529 (1966).
3. "INTENSE RUBY LASER-INDUCED ACOUSTIC IMPULSES IN LIQUIDS," E.F. Carome, C.E. Moeller and N.A. Clark, *Journal of the Acoustical Society of America* **40**, 1462-1466 (1966).
4. "OBSERVATION OF THE NATURAL LINE WIDTH OF THE BRILLOUIN COMPONENTS OF LIGHT SCATTERED BY A SOLID," J.H. Lunacek, N.A. Clark, P.D. Lazay and G.B. Benedek, *Bulletin of the American Physical Society* **13**, 183 (1968).
5. "THE RAYLEIGH-BRILLOUIN SPECTRA OF AMMONIUM CHLORIDE," P.D. Lazay, J.H. Lunacek, N.A. Clark and G.B. Benedek, in *Light Scattering Spectra of Solids*, G.B. Wright, Ed., Springer-Verlag, New York, (1969) 593-602.
6. "A STUDY OF BROWNIAN MOTION USING LIGHT SCATTERING," N.A. Clark and J.H. Lunacek, *American Journal of Physics* **37**, 853-854 (1969).
7. "A STUDY OF BROWNIAN MOTION USING LIGHT SCATTERING," N.A. Clark, J.H. Lunacek and G.B. Benedek, *American Journal of Physics* **38**, 575-585 (1970).
8. "MEASUREMENT OF THE ROTATIONAL DIFFUSION COEFFICIENT OF LYSOZYME BY DEPOLARIZED LIGHT SCATTERING: CONFIGURATION OF LYSOZYME IN SOLUTION," S.B. Dubin, N.A. Clark and G.B. Benedek, *Journal of Chemical Physics* **54**, 5158-5164 (1971).
9. "STATIC AND DYNAMIC BEHAVIOR NEAR THE ORDER-DISORDER TRANSITION OF NEMATIC LIQUID CRYSTALS," T.W. Stinson, J.D. Litster and N.A. Clark, *Journal de Physique* **33-C1**, 69-75 (1972).
10. "OBSERVATION OF A FREQUENCY-DEPENDENT THERMAL CONDUCTIVITY IN A THERMALLY RELAXING POLYATOMIC GAS," N.A. Clark, G.R. Mellman and T.J. Greytak, *Physical Review Letters* **29**, 150-154 (1972).
11. "LIGHT SCATTERING BY DEFORMATION OF THE PLANE TEXTURE OF SMECTIC AND CHOLESTERIC LIQUID CRYSTALS," N.A. Clark and P.S. Pershan, *Physical Review Letters* **30**, 3-6 (1973).
12. "BRILLOUIN SCATTERING FROM SMECTIC LIQUID CRYSTALS," Y. Liao, N.A. Clark and P.S. Pershan, *Physical Review Letters* **30**, 639-641 (1973).
13. "STRAIN INDUCED INSTABILITY OF MONODOMAIN SMECTIC A AND CHOLESTERIC LIQUID CRYSTALS," N.A. Clark and R.B. Meyer, *Applied Physics Letters* **22**, 493-494 (1973).
14. "CONTINUITY OF FLOW ALIGNMENT PARAMETERS ACROSS THE NEMATIC ISOTROPIC PHASE TRANSITION," N.A. Clark, *Physics Letters* **46A**, 171-172 (1973).
15. "RAMAN SCATTERING FROM A NEMATIC LIQUID CRYSTAL: ORIENTATION STATISTICS," S. Jen, N.A. Clark, P.S. Pershan and E.B. Priestly, *Physical Review Letters* **31**, 1552-1556 (1973).
16. "INELASTIC LIGHT SCATTERING FROM DENSITY FLUCTUATIONS IN DILUTE GASES I: THE KINETIC-HYDRODYNAMIC TRANSITION IN A MONATOMIC GAS," N.A. Clark, *Physical Review A* **12**, 232-244 (1975).
17. "INELASTIC LIGHT SCATTERING FROM DENSITY FLUCTUATIONS IN DILUTE GASES II: NONHYDRODYNAMIC BEHAVIOR OF A BINARY GAS MIXTURE," N.A. Clark, *Physical Review A* **12**, 2092-2105 (1975).
18. "PREPARATION OF LARGE MONODOMAIN PHOSPHOLIPID BILAYER SMECTIC LIQUID CRYSTALS," L. Powers and N.A. Clark, *Proceedings of the National Academy of Science of the United States of America* **72**, (1975) 840-843.
19. "INELASTIC LIGHT SCATTERING FROM ISOTROPIC MBBA," N.A. Clark and Y. Liao, *Journal of Chemical Physics* **63**, 4133-4138 (1975).
20. "COMBINED INTEGRATING THERMAL-PROPORTIONAL SERVICES FOR LONG TERM LASER FREQUENCY STABILIZATION," N.A. Clark, *Applied Optics* **15**, 1375 (1976).

21. "PRETRANSITIONAL MECHANICAL EFFECTS IN A SMECTIC LIQUID CRYSTAL," N.A. Clark, *Physical Review A* **14**, 1551-1554 (1976).
22. "FLUORESCENCE DEPOLARIZATION STUDIES OF CHLOROPHYLL IN ORIENTED LIPID MULTILAYERS," R. Bansil, L. Powers and N.A. Clark, *Biophysical Journal* **16**, 158a (1976).
23. "POLARIZED RAMAN SCATTERING STUDIES OF ORIENTATIONAL ORDER IN UNIAXIAL LIQUID CRYSTALLINE PHASES," S. Jen, N.A. Clark, P.S. Pershan and E.B. Priestly, *Journal of Chemical Physics* **66**, 4635-4661 (1977).
24. "PARABOLIC FOCAL CONIC DEFECTS IN THE SMECTIC A PHASE," C.S. Rosenblatt, R. Pindak, N.A. Clark and R.B. Meyer, *Journal de Physique* **38**, 1105-1115 (1977).
25. "PRETRANSITION BEHAVIOR NEAR THE RAYLEIGH-BENARD INSTABILITY," N.A. Clark, *Bulletin of the American Physical Society* **22**, 70 (1977).
26. "LIGHT SCATTERING STUDY OF TWO DIMENSIONAL MOLECULAR ORIENTATION FLUCTUATIONS IN A FREELY SUSPENDED FERROELECTRIC LIQUID CRYSTAL FILM," C.Y. Young, R. Pindak, N.A. Clark and R.B. Meyer, *Physical Review Letters* **40**, 773-776 (1978).
27. "OBSERVATION OF EXTENDED BOUNDARY LAYERS IN THE PERMEATIVE FLOW OF A SMECTIC A LIQUID CRYSTAL AROUND AN OBSTACLE," N.A. Clark, *Physical Review Letters* **40**, 1663-1666 (1978).
28. "ELECTRIC FIELD INDUCED BEND-UNDULATION INSTABILITY IN A FERROELECTRIC SMECTIC C," N.A. Clark, *Applied Physics Letters* **35**, 688-690 (1979).
29. "FREELY SUSPENDED FERROELECTRIC LIQUID CRYSTAL FILMS: ABSOLUTE MEASUREMENTS OF POLARIZATION, ELASTIC CONSTANTS, AND VISCOSITIES," C. Rosenblatt, R. Pindak, N.A. Clark and R.B. Meyer, *Physical Review Letters* **42**, 220-223 (1979).
30. "ANOMOLOUS AMIDE I INFRARED ABSORPTION OF PURPLE MEMBRANE," K.J. Rothschild and N.A. Clark, *Science* **204**, 311-312 (1979).
31. "THERMODYNAMICS OF RE-ENTRANT NEMATIC-BILAYER SMECTIC A PHASE TRANSITION," N.A. Clark, *Journal de Physique* (Supplement C3) **40-C3**, 345-349 (1979).
32. "POLARIZED INFRARED SPECTROSCOPY OF ORIENTED PURPLE MEMBRANE," K.J. Rothschild and N.A. Clark, *Biophysical Journal* **25**, 473-487 (1979).
33. "SINGLE COLLOIDAL CRYSTALS," N.A. Clark, A.J. Hurd and B.J. Ackerson, *Nature* **281**, 57-60 (1979).
34. "OBSERVATION OF THE COUPLING OF CONCENTRATION FLUCTUATIONS TO STEADY STATE SHEAR FLOW," N.A. Clark and B.J. Ackerson, *Physical Review Letters* **44**, 1005-1008 (1980).
35. "TEMPERATURE BEHAVIOR OF FERROELECTRIC LIQUID CRYSTAL THIN FILMS. A CLASSICAL XY SYSTEM," C. Rosenblatt, R.B. Meyer, R. Pindak and N.A. Clark, *Physical Review A* **21**, 140-146 (1980).
36. "SUBMICROSECOND BISTABLE ELECTRO-OPTIC SWITCHING IN LIQUID CRYSTALS," N.A. Clark and S.T. Lagerwall, *Applied Physics Letters* **36**, 899-901 (1980).
37. "MACROSCOPIC ORIENTATION PATTERNS IN SMECTIC C FILMS," R. Pindak, C.Y. Young, R.B. Meyer and N.A. Clark, *Physical Review Letters* **45**, 1193-1196 (1980).
38. "SPECTROSCOPIC STUDY OF PHOTORECEPTOR MEMBRANE INCORPORATED INTO A MULTI-LAMELLAR FILM," K.J. Rothschild, N.A. Clark, K.M. Rosen, R. Sanches and T.L. Hsiao, *Biophysical and Biochemical Research Communications* **92**, 1266-1272 (1980).
39. "INCORPORATION OF PHOTORECEPTOR MEMBRANE INTO A MULTILAMELLAR FILM," K.J. Rothschild, K.M. Rosen and N.A. Clark, *Biophysical Journal* **31**, 45-52 (1980).
40. "A SPECTROSCOPIC STUDY OF RHODOPSIN ALPHA-HELIX ORIENTATION," K.J. Rothschild, R. Sanches, T.L. Hsiao and N.A. Clark, *Biophysical Journal* **31**, 53-64 (1980).
41. "SURFACE-INDUCED LAMELLAR ORIENTATION OF MULTILAYER MEMBRANE ARRAYS: THEORETICAL ANALYSIS OF A NEW METHOD WITH APPLICATION TO PURPLE MEMBRANE FRAGMENTS," N.A. Clark, K.J. Rothschild, B.A. Simon and D.A. Luippold, *Biophysical Journal* **31**, 65-96 (1980).
42. "A MICROSECOND-SPEED, BISTABLE, THRESHOLD-SENSITIVE LIQUID CRYSTAL DEVICE," N.A. Clark and S.T. Lagerwall, in *Liquid Crystals of One and Two Dimensional Order*, W. Helfrich, Ed., Springer, New York (1980) 222-226.

43. "HYDRODYNAMIC PROPERTIES OF TWO DIMENSIONALLY ORDERED LIQUID CRYSTALS," J. Prost and N.A. Clark, in *Liquid Crystals*, S. Chandrasekhar, Ed., Heyden, London (1980) 53-58.
44. "MECHANICAL BLEACHING OF PURPLE MEMBRANE," N.A. Clark, K.J. Rothschild and D.E. Bass, *Federation Proceedings* **39**, 1846 (1980).
45. "PROCESS FOR PRODUCING A MOLECULARLY ORIENTED FILM," K.J. Rothschild and N.A. Clark, *U.S. Patent* #4,241,005 (1980).
46. "SHEAR INDUCED MELTING," B.J. Ackerson and N.A. Clark, *Physical Review Letters* **46**, 123-126 (1981).
47. "MEAN FIELD THEORY OF LIQUID CRYSTALLINE PHASES OF DISC-SHAPED MOLECULES," G.E. Feldkamp, M.A. Handschy and N.A. Clark, *Physics Letters* **85A**, 359-362 (1981).
48. "DYNAMICS OF FREELY SUSPENDED LYOTROPIC FILMS I: AN INELASTIC LIGHT SCATTERING STUDY OF THERMAL SURFACE FLUCTUATIONS," C.Y. Young and N.A. Clark, *Journal of Chemical Physics* **74**, 4171-4185 (1981).
49. "DYNAMIC LIGHT SCATTERING AT LOW RATES OF SHEAR," B.J. Ackerson and N.A. Clark, *Journal de Physique* **42**, 929-936 (1981).
50. "CHIRALLY ASYMMETRIC REVERSIBLE PHOTBLEACHING IN PURPLE MEMBRANE FILMS," N.A. Clark and K.J. Rothschild, *Biophysical Journal* **33**, 217a (1981).
51. "PHYSICS OF FERROELECTRIC FLUIDS: THE DISCOVERY OF A HIGH-SPEED ELECTRO-OPTIC SWITCHING PROCESS IN LIQUID CRYSTALS," N.A. Clark and S.T. Lagerwall, in *Recent Developments in Condensed Matter Physics* **5**, J.T. Devreese, Ed., Plenum Press, New York (1981) 309-319.
52. "MICROSCOPIC STRUCTURE OF SHEARED COLLOIDS," B.J. Ackerson and N.A. Clark, in *Proceedings of the NATO Advanced Study Institute on Scattering Techniques Applied to Molecular and Nonequilibrium Systems*, S.H. Chen, B. Chu and R. Nossal, Eds., Plenum, New York (1981) 781-786.
53. "ELASTIC LIGHT SCATTERING BY SMECTIC A FOCAL CONIC DEFECTS," N.A. Clark and A.J. Hurd, *Journal de Physique* **43**, 1159-1165 (1982).
54. "FREELY SUSPENDED STRANDS OF TILTED COLUMNAR LIQUID CRYSTAL PHASES: ONE DIMENSIONAL NEMATICS WITH ORIENTATIONAL JUMPS," D.H. Van Winkle and N.A. Clark, *Physical Review Letters* **48**, 1407-1410 (1982).
55. "INFRARED ABSORPTION OF PHOTORECEPTOR AND PURPLE MEMBRANES," K.J. Rothschild, R. Sanches and N.A. Clark, in *Methods in Enzymology* **88**, L. Packer, Ed., Academic Press, New York (1982) 696-714.
56. "PREPARATION OF ORIENTED MULTILAMELLAR ARRAYS OF NATURAL AND ARTIFICIAL BIOLOGICAL MEMBRANES," N.A. Clark and K.J. Rothschild, in *Methods in Enzymology* **87**, L. Packer, Ed., Academic Press, New York (1982) 326-333.
57. "STROBOSCOPIC MICROSCOPY OF FAST ELECTRO-OPTIC SWITCHING IN A FERRO-ELECTRIC SMECTIC C LIQUID CRYSTAL," M.A. Handschy and N.A. Clark, *Applied Physics Letters* **41**, 39-41 (1982).
58. "X-RAY DIFFRACTION AND ELECTRON MICROSCOPE STUDY OF PHASE SEPARATION IN ROD OUTER SEGMENT PHOTORECEPTOR MEMBRANE MULTILAYERS," S.M. Gruner, K.J. Rothschild, and N.A. Clark, *Biophysical Journal* **39**, 241-251 (1982).
59. "LATTICE DYNAMICS OF COLLOIDAL CRYSTALS," A.J. Hurd, N.A. Clark, R.C. Mockler and W.J. O'Sullivan, *Physical Review A* **26**, 2869-2881 (1982).
60. "CHIRAL SMECTIC C OR H LIQUID CRYSTAL ELECTRO-OPTICAL DEVICE," N.A. Clark and S.T. Lagerwall, *U.S. Patent* #4,367,924 (1983).
61. "MULTIDETECTOR SCATTERING AS A PROBE OF LOCAL STRUCTURE IN DISORDERED PHASES," N.A. Clark, B.J. Ackerson and A.J. Hurd, *Physical Review Letters* **50**, 1459-1461 (1983).
62. "SHEARED COLLOIDAL SUSPENSIONS," B.J. Ackerson and N.A. Clark, *Physica* **118A**, 221-249 (1983).
63. "FERROELECTRIC LIQUID CRYSTAL ELECTRO-OPTICS IN THE SURFACE STABILIZED STRUCTURE," N.A. Clark, M.A. Handschy and S.T. Lagerwall, *Molecular Crystals and Liquid Crystals* **94**, 213-233 (1983).
64. "FIELD INDUCED FIRST ORDER ORIENTATION TRANSITIONS IN FERROELECTRIC LIQUID CRYSTALS," M.A. Handschy, N.A. Clark and S.T. Lagerwall, *Physical Review Letters* **51**, 471-474 (1983).

65. "LIQUID STRUCTURE UNDER SHEAR: COMPARISON BETWEEN COMPUTER SIMULATIONS AND COLLOIDAL SUSPENSIONS," H.J. Hanley, J.C. Rainwater, N.A. Clark and B.J. Ackerson, *Journal of Chemical Physics* **79**, 4448-4458 (1983).
66. "CROSS-CORRELATION INTENSITY FLUCTUATION SPECTROSCOPY APPLIED TO COLLOIDAL SUSPENSIONS," B.J. Ackerson and N.A. Clark, in *Concentrated Colloidal Dispersions, Faraday Discussions of the Chemical Society of London* **76**, 219-228 (1983).
67. "A HEAT CAPACITY STUDY OF PHASE TRANSITIONS IN THE FERROELECTRIC LIQUID CRYSTAL (R-) HEXYLOXYBENZYLIDENE p'-AMINO-2-CHOLORPROPYL CINNAMATE (HOBACPC)," S.C. Lien, J.M. Viner, C.C. Huang and N.A. Clark, *Molecular Crystals and Liquid Crystals* **100**, 145-151 (1983).
68. "ELASTIC RESONANCE OF A LIQUID CRYSTAL BLUE PHASE," N.A. Clark, S.T. Vohra and M.A. Handschy, *Physical Review Letters* **52**, 57-60 (1984).
69. "DYNAMIC RESPONSE OF MOLECULAR ORIENTATION IN FERROELECTRIC LIQUID CRYSTALS," P.G. Amaya, M.A. Handschy and N.A. Clark, *Optical Engineering* **23**, 261-264 (1984).
70. "SURFACE STABILIZED FERROELECTRIC LIQUID CRYSTAL ELECTRO-OPTICS: NEW MULTISTATE STRUCTURES AND DEVICES," N.A. Clark and S.T. Lagerwall, *Ferroelectrics* **59**, 25-67 (1984).
71. "STRUCTURES AND RESPONSES OF FERROELECTRIC LIQUID CRYSTALS IN THE SURFACE-STABILIZED GEOMETRY," M.A. Handschy and N.A. Clark, *Ferroelectrics* **59**, 69-116 (1984).
72. "SYNCHROTRON X-RAY STUDY OF THE ORIENTATIONAL ORDERING D2-D1 STRUCTURAL PHASE TRANSITION OF FREELY SUSPENDED DISCOTIC STRANDS IN HAT11," C.R. Safinya, K.S. Liang, W.A. Varady, N.A. Clark and G. Andersson, *Physical Review Letters* **53**, 1172-1175 (1984).
73. "SHEAR INDUCED PARTIAL TRANSLATIONAL ORDERING OF A COLLOIDAL SOLID," B.J. Ackerson and N.A. Clark, *Physical Review A* **30**, 906-918 (1984).
74. "DIRECT MEASUREMENT OF ORIENTATION CORRELATIONS: OBSERVATION OF THE LANDAU-PEIERLS DIVERGENCE IN A FREELY SUSPENDED TILTED SMECTIC FILM," D.H. Van Winkle and N.A. Clark, *Physical Review Letters* **53**, 1157-1160 (1984).
75. "FAST AND BISTABLE ELECTRO-OPTICS USING FERROELECTRIC LIQUID CRYSTALS," N.A. Clark, S.T. Lagerwall and J. Wahl, *Proceedings of the Fourth Display Research Conference (Eurodisplay 1984) of the Society for Information Display* (1984) 73-76.
76. *Ferroelectrics*, Volumes **58** and **59**, Special Issue on Ferroelectric Liquid Crystals, R. Blinc, N.A. Clark, J. Goodby, A. Pikin and K. Yoshino, Eds. (1984).
77. "CHIRAL SMECTIC C OR H LIQUID CRYSTAL ELECTRO-OPTICAL DEVICE AND PROCESS OF MAKING THE SAME," N.A. Clark and S.T. Lagerwall, *European Patent* #32,362 (1984).
78. "CRITICAL BEHAVIOR NEAR A VANISHING MISCIBILITY GAP," R.G. Johnston, N.A. Clark, P. Wiltzius and D.S. Cannell, *Physical Review Letters* **54**, 49-52 (1985).
79. "CO-EXISTING LYOTROPIC LIQUID CRYSTALS: COMMENSURATE, FACETED AND CO-PLANAR SINGLE HEXAGONAL (HII) DOMAINS IN LAMELLAR PHOTORECEPTOR MEMBRANES," S.M. Gruner, K.J. Rothschild, W.J. DeGrip and N.A. Clark, *Journal de Physique* **46**, 193-201 (1985).
80. "CHARACTERIZATION OF THE LOCAL STRUCTURE OF FLUIDS BY APERTURED CROSS-CORRELATION FUNCTIONS", B.J. Ackerson, T.W. Taylor and N.A. Clark, *Physical Review A* **31**, 3183-3193 (1985).
81. "LASER INDUCED BUCKLING OF A THIN FREE-STANDING CRYSTAL FILM," N.A. Clark, P.W. Young and J.F. Scott, *Applied Optics* **24**, 3685-3686 (1985).
82. "FRICTION FACTORS FOR A LATTICE OF BROWNIAN PARTICLES," A.J. Hurd, N.A. Clark, R.C. Mockler and W.J. O'Sullivan, *Journal of Fluid Mechanics* **153**, 401-416 (1985).
83. "POLYMER MICRODISCS," N.A. Clark, *Journal de Physique* Lettres **46**, L277-L281 (1985).
84. "SURFACE MEMORY EFFECTS IN LIQUID CRYSTALS: INFLUENCE OF SURFACE COMPOSITION," N.A. Clark, *Physical Review Letters* **55**, 292-295 (1985).

85. "MODULATORS, LINEAR ARRAYS, AND MATRIX ARRAYS USING FERROELECTRIC LIQUID CRYSTALS," N.A. Clark, S.T. Lagerwall and J. Wahl, *Proceedings of the Society for Information Display* **26**, 133-140 (1985).
86. "STUDIES OF LOCAL ORDER IN FLUID STATES BY CROSS CORRELATION INTENSITY FLUCTUATION SPECTROSCOPY," N.A. Clark, B.J. Ackerson and T.W. Taylor, *Journal de Physique* (Supplement C3) **46-C3**, 137-147 (1985).
87. "HIGHLY ORIENTED FIBRES OF DISCOTIC LIQUID CRYSTALS," L.Y. Chiang, C.R. Safinya, N.A. Clark, K. S. Liang and A.N. Bloch, *Journal of the Chemical Society, Chemical Communications* **1744**, 695-696 (1985).
88. "PERSONAL-COMPUTER-BASED PROGRAMMABLE TEMPERATURE CONTROLLER FOR GENERAL LABORATORY APPLICATIONS," J.E. MacLennan, M.R. Meadows, M.A. Handschy and N.A. Clark, *Review of Scientific Instruments* **56**, 775 (1985).
89. "LASER-INDUCED FREEZING", A. Chowdhury, B.J. Ackerson and N.A. Clark, *Physical Review Letters* **55**, 833-836 (1985).
90. "SYNCHROTRON X-RAY SCATTERING STUDY OF FREELY SUSPENDED DISCOTIC STRANDS," C.R. Safinya, N.A. Clark, K.S. Liang, W.A. Varady and L.Y. Chiang, *Molecular Crystals and Liquid Crystals* **123**, 205-216 (1985).
91. "FERROELECTRIC LIQUID CRYSTALS FOR DISPLAYS," S.T. Lagerwall, J. Wahl and N.A. Clark, *Proceedings of the International Display Research Conference of the Institute of Electrical and Electronic Engineers Group on Electron Devices* (1985) 213-221.
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