

STEPHEN H. DAVIS

Address: Department of Engineering Sciences and Applied Mathematics
Northwestern University
Evanston, Illinois 60208
(847) 491-5397

Present Positions: McCormick School (Institute) Professor
Walter P. Murphy Professor of Applied Mathematics

Education:

B.E.E.	(Electrical Engineering)	Rensselaer Polytechnic Institute	1960
M.S.	(Mathematics)	Rensselaer Polytechnic Institute	1962
Ph.D.	(Mathematics)	Rensselaer Polytechnic Institute	1964

Professional Employment:

Chairman, Department of Engineering Sciences and Applied Mathematics
Northwestern University (1988-1991)

Professor of Engineering Sciences and Applied Mathematics (1979-present)
Northwestern University

Professor of Mechanical Engineering (1979-1999, 2003-present)
Northwestern University

Director of the Center for Multiphase Fluid Flow and Transport (1986-1988)
Northwestern University

President, SHD Associates, Inc. (1979-1994)

Professor of Mechanics and Materials Science (1975-1978)
The Johns Hopkins University

Professor of Earth and Planetary Sciences (1975-1978)
The Johns Hopkins University

Associate Professor of Mechanics (1970-1975)
The Johns Hopkins University

Assistant Professor of Mechanics (1968-1970)
The Johns Hopkins University

Lecturer (1966-1968) Department of Mathematics, Imperial College,
University of London

Mathematician (1964-1966) RAND Corp., Santa Monica, California

Professional Appointments and Activities:

CMC (Committee on Membership) National Academy of Sciences 2015- present

National Materials and Manufacturing Board
Member 2013

Journal of Fluid Mechanics
Assistant Editor 1969 - 1975
Associate Editor 1975 – 1989
Editor 2000 - 2010

Annual Review of Fluid Mechanics
Member, Editorial Board 1994 - 1999
Associate Editor 1999 – 2002
Editor 2003 – present

Institute of Mathematical Sciences, Imperial College London
Member, International Advisory Board, 2004-2009

SIAM Monographs on Mathematical Modeling and Computation
Member, Editorial Board 1994 – 1999

International Review of Mathematics in the United Kingdom
Committee Member, 2003

Cambridge University Press Monographs in Mechanics
General Editor 1999 – present

Proceedings of the Royal Society London
Editorial Board 2004 - 2007

American Physical Society
Chairman, Division of Fluid Dynamics 1978 - 1979, 1987 - 1988
Councillor, Division of Fluid Dynamics 1980 - 1981
Chairman, Fellowship Committee, Division of Fluid Dynamics 1981 - 1986
Member, Executive Committee - Division of Fluid Dynamics 1977 - 1980, 1987 - 1990

National Aeronautics and Space Administration
Member, Fluid Physics Committee of the Universities Space Research
Guidance Committee 1977 - 1981
Chairman, Discipline Working Group on Fluid Dynamics and Transport
Phenomena 1991 – 1997, Member, 1997 - 2005
Member, Microgravity Science and Applications Subcommittee of the Space
Science and Applications Advisory Committee 1991 – 1997

National Academy of Engineering
Member, Mechanical Engineering Peer Committee 1998 – 2001

U.S. National Committee on Theoretical and Applied Mechanics
Member-at-large 1978 - 1979
Representative, Society of Industrial and Applied Mathematics 1979 - 1983
Representative, American Physical Society 1983 - 1987

Society for Industrial and Applied Mathematics

Visiting lecturer 1973 - 1974

Member, Council 1983 – 1985

National Science Foundation

Cited for achievement 1974

Advisory Committee, Mechanics, Structures, and Materials Engineering
member 1987-1989

Environmental Research Guidance Committee
Member, advisory to the State of Maryland on power plant siting 1975 – 1978

Visiting Positions

Eidgenössische Technische Hochschule, Institut für Aerodynamik, Zürich, Visiting
Scholar, June - August 1971

Monash University, Department of Mathematics, Monash, Visiting Professor, June -
August 1973

University of Arizona,
Department of Chemical Engineering, Visiting Professor,
January - June 1977
Department of Aerospace and Mechanical Engineering,
Visiting Professor, March - August 1982

Ecole Polytechnic Federale de Lausanne, Department de Mathematiques,
Visiting Scholar, June - August 1984
Visiting Scholar, June - August 1986
Visiting Professor, June - July 1987
Visiting Professor, January - March 1988
Visiting Professor, June - August 1991

Forschungszentrum Karlsruhe
von Humboldt Research Scholar, 1994, 1996, 1999

Ecole Superieure de Physique et de Chemie Industriale
Visiting Professor, April - May 2003

University of California Santa Barbara, Department of Mechanical and Environmental
Engineering, February 2007

University of California San Diego, Mechanical and Aerospace Engineering, February
2008, 2011, 2014

California Institute of Technology, Department of Computing and Mathematical Sciences,
March 2009

University of Southern California, Department of Aerospace and Mechanical Engineering,
February 2010

University of California Los Angeles, Department of Mechanical and Aerospace Engineering,
Boelter Professor February/March 2012, February 2015

Selected Special Lectures:

Prince Distinguished Lecturer - Arizona State University 1982
Stewartson Memorial Lecturer, London 1987
Westinghouse Distinguished Lecturer - University of Michigan 1990
Richard C. DiPrima Lecturer – Rensselaer Polytechnic Institute 1995

L.S.G. Kovaszny Distinguished Lecturer – University of Houston 2000
Chancellor's Distinguished Lecturer – Louisiana State University 2000
Ascher H. Shapiro Lecturer – Massachusetts Institute of Technology 2000
S. S. Penner Lecturer- University of California San Diego 2000
George K. Batchelor Lecturer- University of Cambridge 2003
John Laufer Keynote Lecturer- University of Southern California 2010
Boelter Lecture- University of California Los Angeles 2012
Arthur Newell Talbot Lecture- University of Illinois 2013
Lighthill (Inaugural) Lecture- Imperial College 2014

Honors:

Pi Mu Epsilon 1962
Sigma Xi 1964
Fellow, American Physical Society 1978
Fluid Dynamics Prize, American Physical Society 1994
Member, National Academy of Engineering 1994
Humboldt Research Award for Senior Research Scientists 1994
Member, American Academy of Arts and Sciences 1995
Russell Severance Springer Professor - University of California Berkeley 1996
G. I. Taylor Medal, Society of Engineering Sciences 2001
D.Sc. (honoris causa), University of Western Ontario 2001
Member, National Academy of Sciences 2004
Commemorative Volume (647), Journal of Fluid Mechanics 2010
Member, Johns Hopkins Society of Scholars 2010
Recipient, Royal Society of Engineering (U.K.) Distinguished Researcher Award 2014

Book

"The Theory of Solidification," 2001, 385 pages, Cambridge University Press, New York.

Books Edited

"Frontiers of Fluid Mechanics," 1985 Eds. S. H. Davis and J. L. Lumley, Springer-Verlag.

"Interactive Dynamics of Convection and Solidification," 1992 Eds. S. H. Davis, H. E. Huppert, U. Müller and M. G. Worster, NATO ASI Series E, vol. 219, Kluwer.

"Free Boundaries in Viscous Flows," 1994 Eds. R. A. Brown and S. H. Davis, IMA Volumes in Mathematics and Its Applications, vol. 61, Springer-Verlag.

List of Publications

1. 1963 "*Surface elevation in Bénard cells*" Amer. Math. Soc. Notices **10**, 496, ABSTRACT (co-author L. A. Segel).

2. 1966 *"Inviscid cone flows with surface mass transfer"* AIAA J. **4**, 1830 (co-author J. Aroesty).
3. 1967 *"Convection in a box: linear theory"* J. Fluid Mech. **30**, 465.
4. 1968 *"Effects of surface curvature and property variation on cellular convection"* Phys. Fluids **11**, 470 (co-author L. A. Segel).
5. 1968 *"Convection in a box: On the dependence of preferred wave number upon the Rayleigh number at finite amplitude"* J. Fluid Mech. **32**, 619.
6. 1969 *"On the principle of exchange of stabilities"* Proc. Roy. Soc. **310A**, 341.
7. 1969 *"Buoyancy-surface tension instability by the method of energy"* J. Fluid Mech. **39**, 347.
8. 1969 *"On the possibility of subcritical instabilities"* Proc. IUTAM Symposium on the Instability of Continuous Systems (H. Liepholz, Ed.), Herrenalb, W. Germany, 222.
9. 1969 Comments on *"Thermal instability in fluids layers in the presence of horizontal and vertical temperature gradients"* J. Appl. Mech. **36**, 906.
10. 1970 *"Thermal instability with radiative transfer"* Phys. Fluids **13**, 222 (co-author C. Christophorides).
11. 1971 *"Finite amplitude instability of time-dependent flows"* J. Fluid Mech. **45**, 33.
12. 1971 *"Energy stability of the buoyancy boundary layer"* J. Fluid Mech. **47**, 381 (co-author J. D. Dudis)
13. 1971 *"Energy stability of the Ekman boundary layer"* J. Fluid Mech. **47**, 405 (co-author J. J. Dudis).
14. 1971 *"Energy stability of unsteady flows"* Proc. IUTAM Symposium on Unsteady Boundary Layers, (E. A. Eichelbrenner, Ed.), Quebec, Canada 1, 206.
15. 1972 *"On the stability of flows started from rest"* Quart. J. Mech. Appl. Math. **25**, 459.
16. 1972 *"The instability of oscillatory Stokes layers"* Studies in Appl. Math. **51**, 239 (co-author C. von Kerczek).
17. 1973 *"A reformulation of energy stability theory"* Arch. Rat. Mech. Anal. **52**, 112 (co-author C. von Kerczek).
18. 1974 *"Motion driven by surface-tension gradients in a tube lining"* J. Fluid Mech. **62**, 737 (co-authors A. K. Liu and G. R. Sealy). 1974 Corrigenda **64**, 829.
19. 1974 *"A model of maternal blood flow in the placenta"* 27th ACEMB, Philadelphia, 210 (co-authors F. F. Erian, M.A. Yoshinaga and S. Corrsin).

20. 1974 *"Linear stability theory of oscillatory Stokes layers"* J. Fluid Mech. **62**, 753 (co-author C. von Kerczek).
21. 1974 *"On the motion of a line common to three materials"* J. Fluid Mech. **65**, 71 (co-author E. B. Dussan V.).
22. 1975 *"The slow sedimentation of a sphere in a centrifuge"* J. Fluid Mech. **68**, 209 (co-authors I. H. Herron, and F. P. Bretherton).
23. 1975 *"Influences of variable permeability and inertia on a model of maternal blood flow in the placenta"* 28th ACEMB, New Orleans, 434 (co-authors F. F. Erian and S. Corrsin).
24. 1975 *"Calculation of transition matrices"* AIAA J. **13**, 1400 (co-author C. von Kerczek).
25. 1975 *"Apparent surface tension hysteresis of a dynamical system"* J. Coll. Interf. Sci. **51**, 459 (co-author L. W. Horn).
26. 1976 *"The stability of time-periodic flows"* Ann. Rev. Fluid Mech. **8**, 57.
27. 1976 *"The stability of a stratified, periodic boundary layer"* J. Fluid Mech. **75**, 287 (co-author C. von Kerczek).
28. 1976 *"Frequency dependence of pressure-volume (P-V) hysteresis and dynamic compliance in isolated dog lobes"* The Physiologist **19**, 301 (co-authors W. A. Mitzner and J. B. Grotberg).
29. 1977 *"Viscous attenuation of mean drift in water waves"* J. Fluid Mech. **81**, 63 (co-author A.-K. Liu).
30. 1977 *"Maternal placental blood flows: a model with velocity-dependent permeability"* J. Biomech. **10**, 807 (co-authors F. F. Erian and S. Corrsin).
31. 1977 *"On bifurcating periodic solutions at low frequency"* Studies in Appl. Math. **57**, 59 (co-author S. Rosenblat).
32. 1978 *"Analysis for the prediction of non-equilibrium phase formation in rapid conduction cooling"* Mat. Sci. and Eng. **32**, 199 (co-author J. A. Dantzig).
33. 1979 *"Bifurcation from infinity"* SIAM J. Appl. Math. **37**, 1 (co-author S. Rosenblat).
34. 1980 *"Energy stability theory for free surface problems: buoyancy-thermocapillary layers"* J. Fluid Mech. **98**, 527 (co-author G. M. Homsy).
35. 1980 *"Fluid-dynamic flapping of a collapsible channel: sound generation and flow limitation"* J. Biomech. **13**, 219 (co-author J. B. Grotberg).
36. 1980 *"Moving contact-lines and rivulet instabilities. Part I. The static rivulet"* J. Fluid

Mech. **98**, 225.

37. 1980 "A quasi-periodic Mathieu-Hill equation" SIAM J. Appl. Math. **38**, 139 (co-author S. Rosenblat).
38. 1980 "Energy stability theory of decelerating swirl flows" Phys. Fluids **23**, 432 (co-author G. P. Neitzel).
39. 1980 "Frequency dependence of pressure-volume loops in isolated dog lobes" J. Biomech. **13**, 905 (co-authors J. B. Grotberg and W. A. Mitzner).
40. 1981 "Centrifugal instabilities during spin-down to rest in finite cylinders. Numerical experiments" J. Fluid Mech. **102**, 329 (co-author G. P. Neitzel).
41. 1981 "Moving contact-lines and rivulet instabilities. Part II. Long waves on a dynamic rivulet" J. Fluid Mech. **107**, 261 (co-author R. H. Weiland).
42. 1981 "Eigenvalues of the Rayleigh-Bénard and Marangoni problems" Phys. Fluids **24**, 2115 (co-authors S. Rosenblat and G. M. Homsy).
43. 1982 "Stability and bifurcation in a modulated Burgers system" Quart. Appl. Math. **39**, 467 (co-author W. E. Olmstead).
44. 1982 "Nonlinear Marangoni convection in bounded layers. Part I. Rectangular containers" J. Fluid Mech. **120**, 91 (co-authors S. Rosenblat and G. M. Homsy).
45. 1982 "Nonlinear Marangoni convection in bounded layers. Part II. Rectangular cylindrical containers" J. Fluid Mech. **120**, 123 (co-authors S. Rosenblat and G. M. Homsy).
46. 1982 "Steady thermocapillary flows in two-dimensional slots" J. Fluid Mech. **121**, 163 (co-author A. K. Sen).
47. 1982 "Quasiperiodic bifurcation in nonlinearly-coupled oscillators near a point of strong resonance" SIAM J. Appl. Math. **42**, 1345 (co-author P. H. Steen).
48. 1982 "The instability of sheared liquid layers" J. Fluid Mech. **121**, 187 (co-author M. K. Smith).
49. 1982 "One-dimensional liquid fibers" J. Rheol. **26**, 331 (co-author W. W. Schultz).
50. 1982 "Nonlinear theory of film rupture" J. Coll. Interf. Sci. **90**, 220 (co-author M. B. Williams).
51. 1983 "Rupture of thin liquid films" Waves on Fluid Interfaces, 291 (R. E. Meyer, Ed.), Proc. Symp. Math. Res. Center., Univ. of Wisconsin.
52. 1983 "Multiple solutions and hysteresis in steady parallel viscous flows" Phys. Fluids **26**, 1177 (co-authors G. A. Kriegsmann, R. L. Laurence and S. Rosenblat).

53. 1983 *"Instabilities of dynamic thermocapillary liquid layers. Part 1. Convective instabilities"* J. Fluid Mech. **132**, 119 (co-author M. K. Smith).
54. 1983 *"Instabilities of dynamic thermocapillary liquid layers. Part 2. Surface-wave instabilities"* J. Fluid Mech. **132**, 145 (co-author M. K. Smith).
55. 1983 *"Liquid bridges with thermocapillarity"* Phys. Fluids **26**, 2880 (co-author J.-J. Xu).
56. 1983 *"Viscous thermocapillary convection at high Marangoni number"* J. Fluid Mech. **135**, 175 (co-author S. J. Cowley).
57. 1983 *"Contact-line problems in fluid mechanics"* J. Appl. Mech. **50**, 977.
58. 1984 *"Effects of boundary conditions on the stability of slender viscous fibers"* J. Appl. Mech. **51**, 1 (co-author W. W. Schultz).
59. 1984 *"On the stability of the decelerating laminar boundary layer"* J. Fluid Mech. **138**, 297 (co-authors M. Gad-el-Hak, J. T. McMurray and S. A. Orszag).
60. 1984 *"Bénard convection with time periodic heating"* Phys. Fluids **27**, 796 (co-authors M. N. Roppo and S. Rosenblat).
61. 1984 *"Convective thermocapillary instabilities in liquid bridges"* Phys. Fluids **27**, 1102 (co-author J.-J. Xu).
62. 1984 *"Pattern selection in single-component systems coupling Bénard convection and solidification"* J. Fluid Mech. **144**, 133 (co-authors U. Müller and C. Dietsche).
63. 1984 *"How do liquid drops spread?"* Frontiers of Fluid Mechanics, 171 (S. H. Davis and J. L. Lumley, Eds.) Springer Verlag, Heidelberg (co-author S. Rosenblat).
64. 1984 *"Nonlinear stability of Newtonian fibers"* J. Fluid Mech. **149**, 455 (co-authors W. W. Schultz, A. Zebib and Y. Lee).
65. 1984 *"Meandering of water rivulets"* AIChE J. **30**, 263 (co-author J. B. Culkin).
66. 1985 *"On the asymptotic solutions of boundary-value problems defined on thin domains"* Quart. Appl. Math. **42**, 403 (co-author G. W. Young).
67. 1985 *"Convective fluid flow and diagenetic patterns in domed sheets"* Amer. J. Sci. **285**, **207** (co-authors S. Rosenblat, J. R. Wood and T. A. Hewett).
68. 1985 *"Instability of capillary jets with thermocapillarity"* J. Fluid Mech. **161**, 1 (co-author J.-J. Xu).
69. 1986 *"Bifurcation with memory"* SIAM J. Appl. Math. **46**, 171 (co-authors W. E. Olmstead, S. Rosenblat and W. L. Kath).

70. 1986 "Secondary bifurcation in convective shells" Physical Rev. **33A**, 4326 (co-author P. Metzener).
71. 1986 "Directional solidification with buoyancy in systems with small segregation coefficient" Phys. Rev. **34B**, 3388 (co-author G. W. Young).
72. 1986 "Stability in systems with moving contact lines" J. Fluid Mech. **173**, 115 (co-author E. B. Dussan V.).
73. 1986 "Stability criteria for swirl flows with interfaces" Z. Angew. Math. Phys. **37**, 597 (co-author M. A. Boudourides).
74. 1986 "On the instability of heated film flow with variable surface tension" Heat Transfer 1986 (Proc. VIII-th Intern. Heat Trans. Conf.) (C. L. Tien, V. P. Carey and J. K. Ferrell, Eds.) 4, 1937 (co-authors R. E. Kelly and D. A. Goussis).
75. 1987 "Coupled Lorenz oscillators" Physica D **24**, 226 (co-author M. N. Roppo).
76. 1987 "A plate oscillating across a liquid interface: Effects of contact-angle hysteresis" J. Fluid Mech. **174**, 327 (co-author G. W. Young).
77. 1987 "Rivulet instabilities" J. Fluid Mech. **176**, 1 (co-author G. W. Young).
78. 1987 "Thermocapillary instabilities" Ann. Rev. Fluid Mech. **19**, 403.
79. 1987 "Anisotropic interface kinetics and tilted cells in unidirectional solidification" J. Crystal Growth **83**, 560 (co-authors G. W. Young and K. E. Brattkus).
80. 1987 "Instabilities of a liquid film flowing down a slightly inclined plane" Phys. Fluids **30**, 983 (co-authors J. M. Floryan and R. E. Kelly).
81. 1987 "Stability of thin films" Physicochem. Hydrodyn. **9**, 5 (co-author S. G. Bankoff).
82. 1987 "Directional solidification in an imperfect furnace" Physicochem. Hydrodyn. **9**, 9 (co-author K. Brattkus).
83. 1988 "Bifurcations of convection states in toroidal shells" SIAM J. Appl. Math. **48**, 749 (co-author P. Metzener).
84. 1988 "Flow-induced morphological instabilities: The rotating disc" J. Crystal Growth **87**, 385 (co-author K. Brattkus).
85. 1988 "Flow-induced morphological instabilities: Stagnation-point flows" J. Crystal Growth **89**, 423 (co-author K. Brattkus).
86. 1988 "Nonlinear stability of evaporating/condensing liquid films" J. Fluid Mech. **195**, 463 (co-authors J. P. Burelbach and S. G. Bankoff).
87. 1988 "Crystal growing from the melt" Interdisciplinary Issues in Materials Processing

and Manufacturing, ASME, **2**, 593.

88. 1988 *"Directional solidification with heat losses"* J. Crystal Growth **91**, 538 (co-author K. Brattkus).
89. 1988 *"Cellular growth near absolute stability"* Phys. Rev. **38B**, 11452 (co-author K. Brattkus).
90. 1989 *"Modulated stagnation-point flow and steady streaming"* J. Fluid Mech. **198**, 543 (co-author G. J. Merchant).
91. 1989 *"Morphological instabilities in directional solidification of a binary alloy: End effects"* SIAM J. Appl. Math. **49**, 152 (co-author G. W. Young).
92. 1989 *"Similarity solutions for phase-change problems"* Met. Trans. **20A**, 225 (co-author D. Canright).
93. 1989 *"An annulus model of time-space transitions in Bénard convection"* Physica D **36**, 235 (co-author P. Metzener).
94. 1989 *"Flow -induced morphological instabilities due to temporally-modulated stagnation-point flow"* J. Crystal Growth **96**, 737 (co-author G. J. Merchant).
95. 1989 *"Hydrodynamic stability of the melt during the solidification of a binary alloy with small segregation coefficient"* Physica D **39**, 231 (co-author D. S. Riley).
96. 1989 *"Eckhaus instabilities in generalized Landau-Ginzburg equations"* Phys. Fluids **1A**, 1745 (co-author D. S. Riley).
97. 1989 *"Shallow cells in directional solidification"* Phys. Rev. Lett. **63**, 573 (co-author G. J. Merchant).
98. 1989 *"Directional solidification near minimum c_{∞} : Two-dimensional isolas and multiple solutions"* Phys. Rev. **40B**, 11140 (co-author G. J. Merchant).
99. 1990 *"Hydrodynamic interactions in directional solidification"* J. Fluid Mech. **212**, 241.
100. 1990 *"Steady thermocapillary flows of thin liquid layers. I. Theory"* Phys. Fluids **2A**, 313 (co-authors M. J. Tan and S. G. Bankoff).
101. 1990 *"Steady thermocapillary flows of thin liquid layers. II. Experiment"* Phys. Fluids **2A**, 322 (co-authors J. P. Burelbach and S. G. Bankoff).
102. 1990 *"Long-wave morphological instabilities in the directional solidification of a dilute binary mixture"* SIAM J. Appl. Math. **50**, 420 (co-author D. S. Riley).
103. 1990 *"Long-wave interactions in morphological and convective instabilities"* IMA J. Appl. Math. **45**, 267 (co-author D. S. Riley).

104. 1990 *"Morphological instability in rapid directional solidification"* Acta metall. mater. **38**, 2683 (co-author G. J. Merchant).
105. 1991 *"The linear stability of plane stagnation-point flow against general disturbances"* Quart. J. Mech. Appl. Math. **44**, 135 (co-author K. Brattkus).
106. 1991 *"Non-isothermal spreading of liquid drops on horizontal plates"* J. Fluid Mech. **229**, 365 (co-author P. Ehrhard).
107. 1991 *"On falling-film instabilities and wave breaking"* Phys. Fluids **3A**, 231 (co-authors S. W. Joo and S. G. Bankoff).
108. 1991 *"Oscillatory instabilities in rapid directional solidification: bifurcation theory"* J. Crystal Growth **112**, 670 (co-author R. J. Braun).
109. 1991 *"The dynamics and stability of thin liquid films during spin coating. I. Films with constant rates of evaporation or absorption"* J. Appl. Phys. **70**, 5258 (co-authors B. Reisfeld and S. G. Bankoff).
110. 1991 *"The dynamics and stability of thin liquid films during spin coating. II. Films with unit-order and large Peclet numbers"* J. Appl. Phys. **70**, 5267 (co-authors B. Reisfeld and S. G. Bankoff).
111. 1991 *"Long-wave instabilities of heated falling films: two-dimensional theory of uniform layers"* J. Fluid Mech. **230**, 117 (co-authors S. W. Joo and S. G. Bankoff).
112. 1991 *"Buoyancy effects on a growing, isolated dendrite"* J. Crystal Growth **114**, 153 (co-author D. Canright).
113. 1991 *"Morphological instability in epitaxially-strained dislocation-free solid films"* Phys. Rev. Lett. **67**, 3696 (co-authors B. J. Spencer and P. W. Voorhees).
114. 1992 *"Bénard convection in binary mixtures with Soret effects and solidification"* J. Fluid Mech. **238**, 657 (co-authors G. Zimmermann and U. Müller). Corrigendum: J. Fluid Mech. **254**, 720.
115. 1992 *"Growth from a hypercooled melt near absolute stability"* Phys. Rev. **45A**, 7195 (co-author A. Umantsev).
116. 1992 *"The effect of compositionally-generated elastic stresses on morphological instability during directional solidification"* Acta metall. mater. **40**, 1599 (co-authors B. J. Spencer, P. W. Voorhees and G. B. McFadden).
117. 1992 *"Pulsatile instability in rapid directional solidification: Strongly nonlinear analysis"* SIAM J. Appl. Math. **52**, 1279 (co-authors G. J. Merchant, R. J. Braun and K. Brattkus).
118. 1992 *"Instabilities of three-dimensional viscous falling films"* J. Fluid Mech. **242**, 529 (co-author S. W. Joo).

119. 1992 *"Irregular waves on viscous falling films"* Chem. Eng. Comm. **118**, 111 (co-author S. W. Joo).
120. 1992 *"Pulsatile and cellular mode interaction in rapid directional solidification"* Phys. Rev. **45B**, 7002 (co-authors R. J. Braun and G. J. Merchant).
121. 1992 *"Cellular instability in rapid directional solidification: Bifurcation theory"* Acta metall. mater. **40**, 2617 (co-author R. J. Braun).
122. 1993 *"Two- and three-dimensional instabilities and rupture of thin liquid films falling on heated inclined plates"* Nuclear Engineering and Design **141**, 225 (co-authors S. W. Joo and S. G. Bankoff).
123. 1993 *"Effects of flow on morphological stability"* HANDBOOK OF CRYSTAL GROWTH **1**, 859 (D.T.J. Hurle, Ed.) North Holland.
124. 1993 *"Thermal effects in rapid solidification: linear theory"* Acta metall. mater. **41**, 2025 (co-author D. A. Huntley).
125. 1993 *"Thermocapillary breakdown of f "* J. Heat Mass Trans. **36**, 1875 (co-author M. S. Bohn).
126. 1993 *"Nonlinear rupture of free films"* Phys. Fluids **A 5**, 1117 (co-author T. Erneux).
127. 1993 *"Morphological instability in epitaxially-strained dislocation free solid films: linear stability theory"* J. Appl. Phys. **73**, 4955 (co-authors B. J. Spencer and P. W. Voorhees).
128. 1993 *"Morphological instability in epitaxially-strained dislocation-free solid films: nonlinear evolution"* Phys. Rev. B **47**, 9760 (co-authors B. J. Spencer and P. W. Voorhees).
129. 1993 *"Thermal effects in rapid directional solidification: weakly-nonlinear analysis of oscillatory instabilities"* J. Crystal Growth **132**, 141 (co-author D. A. Huntley).
130. 1993 *"Two-fluid viscous flow in a corner"* J. Fluid Mech. **257**, 1 (co-author D. M. Anderson).
131. 1994 *"Local fluid flow and heat transfer near contact lines"* J. Fluid Mech. **268**, 231 (co-author D. M. Anderson). 1998 Addendum **371**, 377.
132. 1994 *"Fluid flow, heat transfer, and solidification near tri-junctions"* J. Crystal Growth **142**, 245 (co-author D. M. Anderson)
133. 1994 *"The influence of oscillatory and steady shears on interfacial stability during directional solidification"* J. Crystal Growth **143**, 317 (co-author T. P. Schulze).
134. 1994 *"Slip over rough and coated surfaces"* J. Fluid Mech. **273**, 125 (co-author M. J.

Miksis)

135. 1994 *"Nonlinear long-wave stability of superposed fluids in an inclined channel"* J. Fluid Mech. **277**, 55 (co-authors B. S. Tilley and S. G. Bankoff).
136. 1994 *"Linear stability theory of two-layer fluid flow in an inclined channel"* Phys. Fluids **6**, 3906 (co-authors B. S. Tilley and S. G. Bankoff).
137. 1995 *"On long-wave morphological instabilities in directional solidification"* Euro. J. Appl. Math. **6**, 639 (co-authors A. C. Skeldon, G. B. McFadden, M. D. Impey, D. S. Riley, K. A. Cliffe and A. A. Wheeler).
138. 1995 *"Shear stabilization of morphological instability during directional solidification"* J. Crystal Growth **149**, 253 (co-author T. P. Schulze).
139. 1995 *"The spreading of volatile liquid drops on heated surfaces"* Phys. Fluids **7**, 248 (co-author D. M. Anderson).
140. 1996 *"Some a-priori estimates for a singular evolution equation arising in thin film dynamics"* SIAM J. Math. Analysis **27**, 638 (co-authors E. DiBenedetto and D. Diller).
141. 1996 *"Oscillatory and cellular mode coupling in rapid directional solidification"* Phys. Rev. B **53**, 3132 (co-author D. A. Huntley).
142. 1996 *"Shear and interfacial instabilities of oil-water flow in an inclined channel"* Chem. Eng. Comm. **141-142**, 41 (co-authors B. S. Tilley and S. G. Bankoff).
143. 1996 *"A mechanism for rivulet formation in heated falling films"* J. Fluid Mech. **321**, 279 (co-authors S. W. Joo and S. G. Bankoff).
144. 1996 *"The case for a dynamic contact angle in containerless solidification"* J. Crystal Growth **163**, 329 (co-authors D. M. Anderson and M. G. Worster).
145. 1996 *"Shear stabilization of a solidifying front: Weakly nonlinear analysis in the long-wave limit"* Phys. Fluids **8**, 2319 (co-author T. P. Schulze).
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