

# MICHAEL RENARDY

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## **Personal Data**

Born: April 9, 1955  
German, U.S. Resident Alien  
Married, three children  
Personal web site: <http://personal.math.vt.edu/mrenardy>

## **Education**

Dipl. Math., Universität Stuttgart, Nov. 1977  
Dipl. Phys., Universität Stuttgart, Dec. 1978  
Dr. rer. nat., Universität Stuttgart, Feb. 1980  
Supported by Studienstiftung des deutschen Volkes 1973-1978

## **Professional Employment**

Research Associate, Inst. f. theor. Phys., Universität Stuttgart, Apr. 1978-Aug. 1980  
Two-year fellowship by Deutsche Forschungsgemeinschaft:  
    Math. Research Center, Univ. of Wisconsin, Sep. 1980-Aug. 1981;  
    Dept. of Aerospace Eng., Univ. of Minnesota, Sep. 1981-Aug. 1982  
Van Vleck Assistant Professor, Dept. of Math. and Math. Research Center, Univ. of Wisconsin, Aug. 1982-July 1983  
Assistant Professor, Dept. of Math. and Math. Research Center, Univ. of Wisconsin, Aug. 1983-Aug. 1985  
Associate Professor, Dept. of Math. and Math. Research Center, Univ. of Wisconsin, Aug. 1985-July 1986  
Associate Professor, Dept. of Mathematics, Virginia Polytechnic Institute and State University, Sep. 1986-Aug. 1989  
Full Professor, Dept. of Mathematics, Virginia Polytechnic Institute and State University, since Aug. 1989  
Class of 1950 Professor, Dept. of Mathematics, Virginia Polytechnic Institute and State University, Oct. 2000-May 2019  
Professor Emeritus, Dept. of Mathematics, Virginia Polytechnic Institute and State University, since May 2019  
Visiting Fellow, Centre for Mathematical Analysis, Australian National University, June 1984 and July-Aug. 1988  
Visiting Professor, Inst. for Mathematics and its Appl., Univ. of Minnesota, Jan.-June 1989 and Sep.-Dec. 2009  
Visiting Professor, Mathematisches Institut A, Universität Stuttgart, May-Aug. 1991  
Visiting Professor, Isaac Newton Institute for Mathematical Sciences, University of Cambridge, Jan.-June 1996  
Visiting Professor, Tata Institute for Applicable Mathematics, Bangalore, India, June 2013, June 2014, July 2015, January-February 2017

Visiting Professor, Department of Mathematics, University of British Columbia, Vancouver, Canada, April-June 2017

### **Fields of Interest**

Nonlinear partial differential equations, non-Newtonian fluids, free surface flows, stability and bifurcation

### **Graduate Students**

Alfred Kenric Mulzet (PhD, 1997), Thomas Hagen (PhD, 1998), Tirivanhu Chinyoka (PhD, coadvised with Y. Renardy, 2004), Evgeny Savelev (PhD, 2009), Toufik Laadj (PhD, 2011), Ahmed Kaffel (PhD, 2011), Xiaojun Wang (PhD, 2012), Taige Wang (PhD, 2016)

### **Postdoctoral Advisee**

Debanjana Mitra (2016-2017)

### **Membership in Professional Societies**

Society for Industrial and Applied Mathematics (1981-2018)

Society of Rheology (1982-2018)

American Mathematical Society (1983)

Society for Natural Philosophy (1984-2018)

International Society for the Interaction of Mechanics and Mathematics (1985-2018), Executive Committee Member 2000-2003

American Physical Society (1997-2018)

### **Prizes and Awards**

Bundessieger, Bundeswettbewerb Mathematik des Stifterverbandes für die deutsche Wissenschaft (1973)

Presidential Young Investigator Award (1985)

Virginia Tech Alumni Award for Research Excellence (1993)

Fellow of the American Mathematical Society (2012)

### **Editorial Positions**

Co-Editor, Z. angew. Math. Phys., 1988-1990

Editor, Z. angew. Math. Phys., 1991-2019

Co-Editor, SIAM J. Math. Anal., 1993-1999

Co-Editor, Math. Meth. Appl. Sci., 1994-2019

Co-Editor, Adv. Diff. Eq., 1995-2002

Editor, AMS Mathematical Surveys and Monographs, 1996-1999

Co-Editor, Comm. Appl. Anal., 1997-2009

Co-Editor, Int. J. Diff. Eq. Appl., 1999-2009

Co-Editor, SIAM Electronic Problems and Solutions, 1999-2015

Co-Editor, Internat. J. Pure Appl. Math., 2001-2009

Co-Editor, Z. angew. Math. Mech., 2005-2019

Co-Editor, Qual. Th. Diff. Eq. Appl., 2006-2012  
Co-Editor, Int. J. Appl. Math. Comp., 2008-2015  
Co-Editor, Evol. Eqns. Control Th., 2011-2019

## Publications

### A. Books

(with W.J. Hrusa and J.A. Nohel), *Mathematical Problems in Viscoelasticity*, Pitman Monographs and Surveys in Pure and Applied Mathematics **35**, Longman 1987, 273 pp.

(with R.C. Rogers), *An Introduction to Partial Differential Equations*, Texts in Applied Mathematics **13**, Springer 1993, 2004, 434 pp.

*Mathematical Analysis of Viscoelastic Flows*, CBMS-NSF Regional Conference Series in Applied Mathematics **73**, SIAM 2000, 104 pp.

### B. Books Edited

(with A.S. Lodge and J.A. Nohel), *Viscoelasticity and Rheology*, Academic Press 1985

### C. Invited Reviews

1. (with W.J. Hrusa and J.A. Nohel), Initial value problems in viscoelasticity, *Appl. Mech. Rev.* **41** (1988), pp. 371-378
2. Mathematical analysis of viscoelastic flows, *Ann. Rev. Fluid Mech.* **21** (1989), pp. 21-36
3. (with Y. Renardy), Stability and instability in viscous fluids, in: S. Friedlander and D. Serre (eds.), *Handbook of Mathematical Fluid Dynamics*, Vol. 2, Elsevier 2003, pp. 223-287
4. Topics in mathematical analysis of viscoelastic flow, in: D.Y. Gao and R.W. Ogden (eds.), *Advances in Mechanics and Mathematics*, Vol. 2, Kluwer 2003, pp. 109-143
5. Self-similar breakup of non-Newtonian liquid jets, *Rheol. Rev.* 2004, pp. 171-196
6. Mathematical analysis of viscoelastic fluids, in: C. Dafermos and M. Pokorný (eds.), *Handbook of Differential Equations: Evolutionary Equations 4*, Elsevier 2008, pp. 229-265
7. (with Y. Renardy), Thixotropy in yield stress fluids as a limit of viscoelasticity, *IMA J. Appl. Math.* **81** (2016), pp. 1-16
8. (with B. Thomases), A mathematician's perspective on the Oldroyd B model: progress and future challenges, *J. Non-Newtonian Fluid Mech.* **293** (2021), 104573

### D. Papers in Scientific Journals

1. Hopf-Bifurkation bei Lasern, *Math. Meth. Appl. Sci.* **1** (1979), pp. 194-213
2. On bounded solutions of a classical Yang-Mills equation, *Comm. Math. Phys.* **76** (1980), pp. 277-287
3. Bifurcation from rotating waves, *Arch. Rat. Mech. Anal.* **79** (1982), pp. 49-84

4. A quasilinear parabolic equation describing the elongation of thin filaments of polymeric liquids, *SIAM J. Math. Anal.* **13** (1982), pp. 226-238
5. Bifurcation of singular solutions in reversible systems and application to reaction-diffusion equations, *Adv. Appl. Math.* **3** (1982), pp. 384-406
6. Some remarks on the propagation and non-propagation of discontinuities in linearly viscoelastic liquids, *Rheol. Acta* **21** (1982), pp. 251-254
7. (with H. Haken), Bifurcation of solutions of the laser equations, *Physica D* **8** (1983), pp. 57-89
8. (with P. Markowich), A nonlinear Volterra integrodifferential equation describing the stretching of polymeric liquids, *SIAM J. Math. Anal.* **14** (1983), pp. 66-97
9. (with P. Markowich), The numerical solution of a class of quasilinear parabolic Volterra equations arising in polymer rheology, *SIAM J. Num. Anal.* **20** (1983), pp. 890-908
10. A class of quasilinear parabolic equations with infinite delay and application to a problem of viscoelasticity, *J. Diff. Eq.* **48** (1983), pp. 280-292
11. Local existence theorems for the first and second initial-boundary value problems for a weakly non-Newtonian fluid, *Arch. Rat. Mech. Anal.* **83** (1983), pp. 229-244
12. Singularly perturbed hyperbolic evolution problems with infinite delay and an application to polymer rheology, *SIAM J. Math. Anal.* **15** (1984), pp. 333-349
13. (with P. Markowich), Lax-Wendroff methods for hyperbolic history value problems, *SIAM J. Num. Anal.* **21** (1984), pp. 24-51 (Corrigendum: *SIAM J. Num. Anal.* **22** (1985), p. 204)
14. On the domain space for constitutive laws in linear viscoelasticity, *Arch. Rat. Mech. Anal.* **85** (1984), pp. 21-26
15. (with D.D. Joseph and Y. Renardy), Instability of the flow of two immiscible liquids with different viscosities in a pipe, *J. Fluid Mech.* **141** (1984), pp. 309-317
16. (with M. Ahrens, D.D. Joseph and Y. Renardy), Remarks on the stability of viscometric flow, *Rheol. Acta* **23** (1984), pp. 345-354
17. A local existence and uniqueness theorem for a K-BKZ fluid, *Arch. Rat. Mech. Anal.* **88** (1985), pp. 83-94
18. (with P. Markowich), A finite difference study of the stretching and break-up of filaments of polymer solutions, *J. Non-Newtonian Fluid Mech.* **17** (1985), pp. 13-22
19. (with D.D. Joseph and J.C. Saut), Hyperbolicity and change of type in the flow of viscoelastic fluids, *Arch. Rat. Mech. Anal.* **87** (1985), pp. 213-251 (reprinted in: B.D. Coleman, M. Feinberg and J. Serrin (eds.), *Analysis and Thermomechanics*, Springer 1987, pp. 25-63)
20. (with W.J. Hrusa), On wave propagation in linear viscoelasticity, *Quart. Appl. Math.* **43** (1985), pp. 237-254
21. Existence of slow steady flows of viscoelastic fluids with differential constitutive equations, *Z. angew. Math. Mech.* **65** (1985), pp. 449-451

22. (with D.D. Joseph, Y. Renardy and K. Nguyen), Stability of rigid motions and rollers in bicomponent flows of immiscible liquids, *J. Fluid Mech.* **153** (1985), pp. 151-165
23. (with Y. Renardy), Perturbation analysis of steady and oscillatory onset in a Bénard problem with two similar liquids, *Phys. Fluids* **28** (1985), pp. 2699-2708
24. Appendix: A remark on the nonexistence of multiple states or S-shaped curves in kinetic dumbbell theories, in: X.-J. Fan and R.B. Bird, Configuration-dependent friction coefficients and elastic dumbbell rheology, *J. Non-Newtonian Fluid Mech.* **18** (1985), pp. 255-272
25. (with D.D. Joseph), Hopf bifurcation in two-component flow, *SIAM J. Math. Anal.* **17** (1986), pp. 894-910
26. (with W.J. Hrusa), On a class of quasilinear partial integrodifferential equations with singular kernels, *J. Diff. Eq.* **64** (1986), pp. 195-220
27. Dense imbedding of test functions in certain function spaces, *Trans. Amer. Math. Soc.* **298** (1986), pp. 241-243
28. (with K.R. Rajagopal, Y. Renardy and A.S. Wineman), Flow of viscoelastic fluids between plates rotating about distinct axes, *Rheol. Acta* **25** (1986), pp. 259-267
29. Some remarks on the Navier-Stokes equations with a pressure dependent viscosity, *Comm. Part. Diff. Eq.* **11** (1986), pp. 779-793
30. (with Y. Renardy), Linear stability of plane Couette flow of an upper convected Maxwell fluid, *J. Non-Newtonian Fluid Mech.* **22** (1986), pp. 23-33
31. A model equation in combustion theory exhibiting an infinite number of secondary bifurcations, *Physica D* **28** (1987), pp. 155-167
32. Inflow boundary conditions for steady flows of viscoelastic fluids with differential constitutive laws, *Rocky Mt. J. Math.* **18** (1988), pp. 445-453 (Corrigendum: *Rocky Mt. J. Math.* **19** (1989), p. 561)
33. (with W.J. Hrusa), An existence theorem for the Dirichlet problem in the elastodynamics of incompressible materials, *Arch. Rat. Mech. Anal.* **102** (1988), pp. 95-117 (Corrigendum: *Arch. Rat. Mech. Anal.* **110** (1990), pp. 373-375)
34. Existence of slow steady flows of viscoelastic fluids of integral type, *Z. angew. Math. Mech.* **68** (1988), pp. T40-T44
35. Recent advances in the mathematical theory of steady flow of viscoelastic fluids, *J. Non-Newtonian Fluid Mech.* **29** (1988), pp. 11-24
36. (with W.J. Hrusa), A model equation for viscoelasticity with a strongly singular kernel, *SIAM J. Math. Anal.* **19** (1988), pp. 257-269
37. Coercive estimates and existence of solutions for a model of one-dimensional viscoelasticity with a non-integrable memory function, *J. Integral Eq. Appl.* **1** (1988), pp. 7-16
38. (with Y. Renardy), Bifurcating solutions at the onset of convection in the Bénard problem for two fluids, *Physica D* **32** (1988), pp. 227-252
39. (with A. Al-Droubi), Energy methods for a parabolic-hyperbolic interface problem arising in electromagnetism, *Z. angew. Math. Phys.* **39** (1988), pp. 931-936

40. On Rankine-Hugoniot conditions for Maxwell liquids, *J. Non-Newtonian Fluid Mech.* **32** (1989), pp. 69-77
41. (with Y. Renardy), Stability of shear flows of viscoelastic fluids under perturbations perpendicular to the plane of flow, *J. Non-Newtonian Fluid Mech.* **32** (1989), pp. 145-155
42. Existence of steady flows of viscoelastic fluids of Jeffreys type with traction boundary conditions, *Diff. Integral Eq.* **2** (1989), pp. 431-437
43. (with D.D. Joseph), Stokes' first problem for linear viscoelastic fluids with finite memory, *Rheol. Acta* **28** (1989), pp. 453-456
44. Local existence of solutions of the Dirichlet initial-boundary value problem for incompressible hypoelastic materials, *SIAM J. Math. Anal.* **21** (1990), pp. 1369-1385
45. Corner singularities between free surfaces and open boundaries, *Z. angew. Math. Phys.* **41** (1990), pp. 419-425
46. Short wave instabilities resulting from memory slip, *J. Non-Newtonian Fluid Mech.* **35** (1990), pp. 73-76
47. An alternative approach to inflow boundary conditions for Maxwell fluids in three space dimensions, *J. Non-Newtonian Fluid Mech.* **36** (1990), pp. 419-425
48. Compatibility conditions at corners between walls and inflow boundaries for fluids of Maxwell type, *Z. angew. Math. Mech.* **71** (1991), pp. 37-45
49. (with Y. Renardy), On the nature of boundary conditions for flows with moving free surfaces, *J. Comp. Phys.* **93** (1991), pp. 325-335
50. An existence theorem for model equations resulting from kinetic theories of polymer solutions, *SIAM J. Math. Anal.* **22** (1991), pp. 313-327
51. (with D.D. Joseph, J. Nelson and Y. Renardy), Two-dimensional cusped interfaces, *J. Fluid Mech.* **223** (1991), pp. 383-409
52. Ill-posedness at the boundary for elastic solids sliding under Coulomb friction, *J. Elasticity* **27** (1992), pp. 281-287
53. (with Y. Renardy), Pattern selection in the Bénard problem for a viscoelastic fluid, *Z. angew. Math. Phys.* **43** (1992), pp. 154-180
54. An existence theorem for a free surface flow problem with open boundaries, *Comm. Part. Diff. Eq.* **17** (1992), pp. 1387-1405
55. A rigorous stability proof for plane Couette flow of an upper convected Maxwell fluid at zero Reynolds number, *Euro. J. Mech. B* **11** (1992), pp. 511-516
56. A centre manifold theorem for hyperbolic PDEs, *Proc. Roy. Soc. Edinburgh* **122A** (1992), pp. 363-377
57. (with D.G. Baird), Report on the VIIth International Workshop on Numerical Methods in Non-Newtonian Flow, *J. Non-Newtonian Fluid Mech.* **43** (1992), pp. 383-385
58. A possible explanation of "bamboo waves" in core-annular flow of two liquids, *Theor. Comp. Fluid Dyn.* **4** (1992), pp. 95-99

59. (with R.C. Rogers), Shock conditions for hypoelastic materials, *Theor. Comp. Fluid Dyn.* **5** (1993), pp. 162-170
60. On the stability of parallel shear flow of an Oldroyd B fluid, *Diff. Integral Eq.* **6** (1993), pp. 481-489
61. On the type of certain  $C_0$ -semigroups, *Comm. Part. Diff. Eq.* **18** (1993), pp. 1299-1307
62. The stresses of an upper convected Maxwell fluid in a Newtonian velocity field near a reentrant corner, *J. Non-Newtonian Fluid Mech.* **50** (1993), pp. 127-134
63. (with Y. Renardy), Derivation of amplitude equations and analysis of sideband instabilities in two-layer flows, *Phys. Fluids A* **5** (1993), pp. 2738-2762 (Corrigendum: *Phys. Fluids A* **6** (1994), p. 3502)
64. (with H. Amann), Reaction-diffusion problems in electrolysis, *Nonlinear Diff. Eq. Appl.* **1** (1994), pp. 91-117
65. Some comments on the surface-tension driven breakup (or the lack of it) of viscoelastic jets, *J. Non-Newtonian Fluid Mech.* **51** (1994), pp. 97-107
66. On an eigenvalue problem arising in the study of the stability of ocean currents, *Z. angew. Math. Phys.* **45** (1994), pp. 497-501
67. How to integrate the upper convected Maxwell (UCM) stresses near a singularity (and maybe elsewhere, too), *J. Non-Newtonian Fluid Mech.* **52** (1994), pp. 91-95
68. On the linear stability of hyperbolic PDEs and viscoelastic flows, *Z. angew. Math. Phys.* **45** (1994), pp. 854-865
69. Instability of uniform flow, *Int. J. Num. Meth. Fluids* **19** (1994), pp. 687-692
70. Existence of steady flows for Maxwell fluids with traction boundary conditions on open boundaries, *Z. angew. Math. Mech.* **75** (1995), pp. 153-155
71. (with Z. Liu), A note on the equations of a thermoelastic plate, *Appl. Math. Lett.* **8** (1995), No. 3, pp. 1-6
72. A matched solution for corner flow of the upper convected Maxwell fluid, *J. Non-Newtonian Fluid Mech.* **58** (1995), pp. 83-89
73. On the mechanism of drag reduction, *J. Non-Newtonian Fluid Mech.* **59** (1995), pp. 93-101
74. A numerical study of the asymptotic evolution and breakup of Newtonian and viscoelastic jets, *J. Non-Newtonian Fluid Mech.* **59** (1995), pp. 267-282
75. Polar decomposition of positive operators and a problem of Crandall and Lions, *Appl. Anal.* **57** (1995), pp. 383-385
76. On the stability of differentiability of semigroups, *Semigroup Forum* **51** (1995), pp. 343-346
77. Instability proof for some transonic problems with resonant mode crossings, *Theor. Comp. Fluid Dyn.* **7** (1995), pp. 457-461
78. Nonlinear stability of flows of Jeffreys fluids at low Weissenberg numbers, *Arch. Rat. Mech. Anal.* **132** (1995), pp. 37-48

79. Hopf bifurcation on the hexagonal lattice with small frequency, *Adv. Diff. Eq.* **1** (1996), pp. 283-299
80. Singular value decomposition in Minkowski space, *Lin. Alg. Appl.* **236** (1996), pp. 53-58
81. (with Y. Renardy, R. Sureshkumar and A.N. Beris), Hopf-Hopf and steady-Hopf mode interactions in Taylor-Couette flow of an upper convected Maxwell liquid, *J. Non-Newtonian Fluid Mech.* **63** (1996), pp. 1-31
82. Initial value problems with inflow boundaries for Maxwell fluids, *SIAM J. Math. Anal.* **27** (1996), pp. 914-931
83. On an equation describing the spreading of surfactants on thin films, *Nonlin. Anal. TMA* **26** (1996), pp. 1207-1219
84. A singularly perturbed problem related to surfactant spreading on thin films, *Nonlin. Anal. TMA* **27** (1996), pp. 287-296
85. Spectrally determined growth is generic, *Proc. Amer. Math. Soc.* **124** (1996), pp. 2451-2453
86. A degenerate parabolic-hyperbolic system modeling the spreading of surfactants, *SIAM J. Math. Anal.* **28** (1997), pp. 1048-1063
87. Imposing “no” boundary condition at outflow: Why does it work? *Int. J. Num. Meth. Fluids* **24** (1997), pp. 413-417
88. Qualitative correlation between viscometric and linear viscoelastic functions, *J. Non-Newtonian Fluid Mech.* **68** (1997), pp. 133-135
89. High Weissenberg number boundary layers for the upper convected Maxwell fluid, *J. Non-Newtonian Fluid Mech.* **68** (1997), pp. 125-132
90. Reentrant corner behavior of the PTT fluid, *J. Non-Newtonian Fluid Mech.* **69** (1997), pp. 99-104
91. The high Weissenberg number limit of the UCM model and the Euler equations, *J. Non-Newtonian Fluid Mech.* **69** (1997), pp. 293-301
92. (with J. Perkins), Stability of equatorial currents with nonzero potential vorticity, *Geophys. Astrophys. Fluid Dyn.* **85** (1997), pp. 31-64
93. (with A.V. Coward, Y. Renardy and J.R. Richards), Temporal evolution of periodic disturbances in two-layer Couette flow, *J. Comp. Phys.* **132** (1997), pp. 346-361
94. (with T. Hagen), Boundary layer analysis of the Phan-Thien Tanner and Giesekus model in high Weissenberg number flow, *J. Non-Newtonian Fluid Mech.* **73** (1997), pp. 181-189
95. Equilibrium configurations of an inflated cylindrical membrane, *J. Elasticity* **46** (1997), pp. 255-261
96. (with Y. Renardy), Influence of non-Boussinesq effects on patterns in salt finger convection, *Z. angew. Math. Phys.* **49** (1998), pp. 224-250
97. (with O. Hassager and M.I. Kolte), Failure and nonfailure of fluid filaments in extension, *J. Non-Newtonian Fluid Mech.* **76** (1998), pp. 137-151



98. (with Y. Renardy), A model equation for axisymmetric stability of small-gap parallel-plate flows, *J. Non-Newtonian Fluid Mech.* **77** (1998), pp. 103-114
99. Well-posedness of the shallow water equations in the presence of a front, *Diff. Integral Eq.* **11** (1998), pp. 95-105
100. (with J. Li and Y. Renardy), A numerical study of periodic disturbances in two-layer Couette flow, *Phys. Fluids* **10** (1998), pp. 3056-3071
101. (with A.K. Mulzet), Exponential stability for a diffusion equation in polymer kinetic theory, *Comm. Appl. Anal.* **3** (1999), pp. 305-325
102. (with H.J. Wilson and Y. Renardy), Structure of the spectrum in zero Reynolds number shear flow of the UCM and Oldroyd-B liquids, *J. Non-Newtonian Fluid Mech.* **80** (1999), pp. 251-268
103. (with Y. Renardy), Instability due to second normal stress jump in two-layer shear flow of a Giesekus fluid, *J. Non-Newtonian Fluid Mech.* **81** (1999), pp. 215-234
104. A note on bifurcation problems in large containers, *Fluid Dyn. Res.* **24** (1999), pp. 189-199
105. Bifurcation of traveling waves resulting from resonant mode crossings in oceanic currents, *Euro. J. Mech. B* **18** (1999), pp. 35-46
106. (with D.L. Russell), Formability of linear elastic structures with volume-type actuation, *Arch. Rat. Mech. Anal.* **149** (1999), pp. 97-122
107. (with Y. Renardy and K. Fujimura), Takens-Bogdanov bifurcation on the hexagonal lattice for double-layer convection, *Physica D* **129** (1999), pp. 171-202
108. A boundary value problem for Laplace's equation, *Complex Variables* **41** (2000), pp. 145-150
109. Boundary layers for Maxwell liquids, *Arch. Rat. Mech. Anal.* **152** (2000), pp. 93-102
110. (with T. Hagen), Non-adiabatic elongational flows of viscoelastic melts, *Z. angew. Math. Phys.* **51** (2000), pp. 845-866
111. Asymptotic structure of the stress field in flow past a cylinder at high Weissenberg number, *J. Non-Newtonian Fluid Mech.* **90** (2000), pp. 13-23
112. Current issues in non-Newtonian flows: a mathematical perspective, *J. Non-Newtonian Fluid Mech.* **90** (2000), pp. 243-259
113. (with J. Li and Y. Renardy), Numerical simulation of breakup of a viscous drop in simple shear flow with a volume-of-fluid method, *Phys. Fluids* **12** (2000), pp. 269-282
114. Location of the continuous spectrum in complex flows of the UCM fluid, *J. Non-Newtonian Fluid Mech.* **94** (2000), pp. 75-85
115. (with T. Hagen), Eigenvalue asymptotics in non-isothermal elongational flow, *J. Math. Anal. Appl.* **252** (2000), pp. 431-443
116. Shape control by collinear actuators, *Arch. Rat. Mech. Anal.* **156** (2001), pp. 231-240
117. (with T. Hagen), Studies on the linear equations of melt-spinning of viscous fluids, *Diff. Integral Eq.* **14** (2001), pp. 19-36

118. Self-similar breakup of a Giesekus jet, *J. Non-Newtonian Fluid Mech.* **97** (2001), pp. 283-293
119. (with I. Lasiecka and R. Triggiani), Backward uniqueness for thermoelastic plates with rotational forces, *Semigroup Forum* **62** (2001), pp. 217-242
120. Finite time breakup of viscous filaments, *Z. angew. Math. Phys.* **52** (2001), pp. 881-887 (Corrigendum: **58** (2007), pp. 904-905)
121. (with Y. Renardy and J. Li), Numerical simulation of moving contact line problems using a volume-of-fluid method, *J. Comp. Phys.* **171** (2001), pp. 243-263
122. (with Y. Renardy and V. Cristini), A volume-of-fluid formulation for surfactants and simulations of drop deformation under shear at a low viscosity ratio, *Euro. J. Mech. B* **21** (2002), pp. 49-59
123. Self-similar jet breakup for a generalized PTT model, *J. Non-Newtonian Fluid Mech.* **103** (2002), pp. 261-269
124. Higher order Neumann problems for Laplace's equation in two dimensions, *Diff. Integral Eq.* **15** (2002), pp. 1273-1279
125. Similarity solutions for jet breakup for various models of viscoelastic fluids, *J. Non-Newtonian Fluid Mech.* **104** (2002), pp. 65-74
126. The effect of upstream boundary conditions on stability of fiber spinning in the highly elastic limit, *J. Rheol.* **46** (2002), pp. 1023-1028
127. (with D. Losh), Similarity solutions for jet breakup in a Giesekus fluid with inertia, *J. Non-Newtonian Fluid Mech.* **106** (2002), pp. 17-27
128. (with Y. Renardy), PROST: A Parabolic Reconstruction Of Surface Tension for the volume-of-fluid method, *J. Comp. Phys.* **183** (2002), pp. 400-421
129. Spectrally determined growth for creeping flow of the upper convected Maxwell fluid, *Semigroup Forum* **66** (2003), pp. 171-178
130. (with Y. Renardy, S. Popinet, L. Duchemin, S. Zaleski, C. Josserand, M.A. Drumright-Clarke, D. Richard, C. Clanet and D. Quéré), Pyramidal and toroidal water drops after impact on a solid surface, *J. Fluid Mech.* **484** (2003), pp. 69-83
131. Stress integration for the constitutive law of the upper convected Maxwell fluid near the corners in a driven cavity, *J. Non-Newtonian Fluid Mech.* **112** (2003), pp. 77-84
132. Parallel shear flows of fluids with a pressure dependent viscosity, *J. Non-Newtonian Fluid Mech.* **114** (2003), pp. 229-236
133. On damping in two-layer elastic-viscoelastic media, *Z. angew. Math. Mech.* **84** (2004), pp. 205-210
134. On localized Kelvin-Voigt damping, *Z. angew. Math. Mech.* **84** (2004), pp. 280-283
135. (with Y. Renardy), Similarity solutions for breakup of jets of power law fluids, *J. Non-Newtonian Fluid Mech.* **122** (2004), pp. 303-312
136. A comment on self-similar breakup for inertialess Newtonian liquid jets, *IMA J. Appl. Math.* **70** (2005), pp. 353-358

137. (with P. Wapperom), Numerical prediction of the boundary layers in the flow around a cylinder using a fixed velocity field, *J. Non-Newtonian Fluid Mech.* **125** (2005), pp. 35-48
138. Post-breakup asymptotics for a Giesekus jet, *J. Non-Newtonian Fluid Mech.* **126** (2005), pp. 1-5
139. When is a given set of PDEs part of an elliptic system?, *Diff. Integral Eq.* **18** (2005), pp. 233-239
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