

References

1. R.A. Adams, Sobolev Spaces, Academic, New York, 1975
2. M.M. Ad'jutov and L.A. Lepin, *Absence of blowing up similarity structures in a medium with source for constant thermal conductivity*, Differ. Uravn. 20 (1984), 1279–1281
3. J.R. Anderson and K. Deng, *Global existence for nonlinear diffusion equations*, J. Math. Anal. Appl. 196 (1995), 479–501
4. S. Angenent, *The zero set of a solution of a parabolic equation*. J. Reine Angew. Math. 390 (1988), 79–96
5. H. Amann and M. Fila, *A Fujita-type theorem for the Laplace equation with a dynamical boundary condition*, Acta Math. Uni. Comenian. 66 (1997), 321–328
6. D. Aronson and H.F. Weinberger, *Multidimensional nonlinear diffusion arising in population genetics*, Adv. Math. 30 (1978), 33–76
7. J. Ball, *Remarks on blow-up and nonexistence theorems for nonlinear evolution equations*, Quart. J. Math. Oxford. 28 (1977), 473–486
8. P. Baras and L. Cohen, *Complete blow-up after T_{\max} for the solution of a semilinear heat equation*, J. Funct. Anal. 71 (1987), no. 1, 142–174
9. G.I. Barenblatt, Similarity, Self-similarity, and intermediate asymptotics, Consultants Bureau, New York, 1979
10. C. Bandle and H. Brunner, *Blow-up in diffusion equations, a survey*, J. Comp. Appl. Math. 97 (1988), 3–22
11. C. Bandle and H.A. Levine, *On the existence and nonexistence of global solutions of reaction-diffusion equations in sectorial domains*, Trans. Am. Math. Soc. 316 (1989), 595–622
12. C. Bandle and H.A. Levine, *Fujita type phenomena for reaction-diffusion equations with convection like terms*, Differ. Integr. Equat. 7 (1994), 1169–1193
13. J. Bebernes and V.A. Galaktionov, *On classification of blow-up patterns for a quasilinear heat equation*, Differ. Integr. Equat. 9 (1996), no. 4, 655–670
14. C.J. Budd and V.A. Galaktionov, *Critical diffusion exponents for self-similar blow-up solutions of a quasilinear parabolic equation with an exponential source*, Proc. Roy. Soc. Edinburgh Sect. A 126 (1996), no. 2, 413–441
15. J. Bebernes and D. Eberly, Mathematical Problems from Combustion Theory, Springer, New York, 1989
16. L.A. Caffarelli, B. Gidas and J. Spruck, *Asymptotic symmetry and local behavior of semilinear elliptic equations with critical Sobolev growth*, Comm. Pure Appl. Math. 42 (1989), 271–297
17. L.A. Caffarelli and A. Friedman, *Blow-up of solutions of nonlinear heat equations*, J. Math. Anal. Appl. 129 (1988), 409–419
18. W. Chen and C. Li, *Classification of solutions of some nonlinear elliptic equations*, Duke Math. J. 63 (1991), 615–622
19. X.-Y. Chen and H. Matano, *Convergence, asymptotic periodicity and finite-point blow up in one dimensional semilinear heat equations*, J. Differ. Equat. 78 (1989), 160–190
20. Y.-Z. Chen, Second order parabolic equations (in Chinese), Beijing University Mathematics series, Beijing University Press, Beijing, 2003

21. Y.-Z. Chen and L.-C. Wu, Second order elliptic equations and elliptic systems, Vol. 174 of Translations of Mathematical Monographs, American Mathematical Society, Providence, RI, 1998. Translated from the 1991 Chinese original by Bei Hu
22. M. Chipot, M. Fila and P. Quittner, *Stationary solutions, blow-up and convergence to stationary solutions for semilinear parabolic equations with nonlinear boundary conditions*, Acta Math. Univ. Comenian. LX(1991), 35–103
23. M. Chipot, I. Shafrir and M. Fila, *On the solutions to some elliptic equations with nonlinear neumann boundary conditions*, Adv. Differ. Equat. 1 (1996), 91–110
24. M. Chlebik and M. Fila, *From critical exponents to blow-up rates for parabolic problems*, Rend. Mat. Appl. 19 (1999), 449–470
25. K. Deng, *Nonexistence of global solutions of a nonlinear hyperbolic system*, Trans. Am. Math. Soc. 349 (1997), 1685–1696
26. K. Deng, *Blow-up of solutions of some nonlinear hyperbolic systems*, Rocky Mountain J. Math. 29 (1999), 807–820
27. K. Deng, M. Fila and H.A. Levine, *On critical exponent for a system of heat equations coupled in the boundary conditions*, Acta Math. Univ. Comenian. 63 (1994), 169–192
28. K. Deng and H.A. Levine, *The role of critical exponents in blow-up theorems: the sequel*, J. Math. Anal. Appl. 243 (2000), 85–126
29. G. Dong, Nonlinear partial differential equations of second order, Vol. 95 of Translations of Mathematical Monographs, American Mathematical Society, Providence, RI, 1991. Translated from the 1988 Chinese original by Kai Seng Chou
30. L.C. Evans, Partial differential equations, Graduate Studies in Mathematics, Vol 19, American Mathematical Society, Providence, RI, 1991
31. M. Escobedo and M.A. Herrero, *Boundedness and blow up for a semilinear reaction-diffusion system*, J. Differ. Equat. 89 (1991), 176–202
32. M. Escobedo and H.A. Levine, *Critical blow-up and global existence numbers for a weakly coupled system of reaction-diffusion equations*, Arch. Rational Mech. Anal. 129 (1995), 47–100
33. M. Fila, *Boundedness of global solutions for the heat equation with nonlinear boundary conditions*, Comment. Math. Univ. Carolin. 30 (1989) 479–484
34. M. Fila and J. Filo, *Blow-up on the boundary: a survey*, Proceedings of the Banach Center, Vol. 33, Polish Academy of Science, Institute of Mathematics, Warsaw, 1996, pp. 67–78
35. M. Fila and J. Filo, *A blow-up result for nonlinear diffusion equations*, Math. Slovaca 39 (1989), no. 3, 331–346
36. M. Fila and H.A. Levine, *On critical exponents for a semilinear parabolic system coupled in an equation and a boundary condition*, J. Math. Anal. Appl. 204 (1996), 494–521
37. M. Fila, H.A. Levine and Y. Uda, *A Fujita-type global existence-global non-existence theorem for a system of reaction-diffusion equations with differing diffusivities*, Math. Meth. Appl. Sci. 17 (1994), 807–835
38. M. Fila and P. Quittner, *The blow-up rate for the heat equation with a nonlinear boundary condition*, Math. Meth. Appl. Sci. 14 (1991), 197–205
39. S. Filippas, A.M. Herrero and J.J.L. Velazquez, *Fast blow-up mechanisms for sign-changing solutions of a semilinear parabolic equation with critical nonlinearity*, R. Soc. Lond. Proc. Ser. A Math. Phys. Eng. Sci. 456 (2000), 2957–2982
40. J. Filo, *Uniform bounds for solutions of a degenerate diffusion equation with nonlinear boundary conditions*, Comment. Math. Univ. Carolin. 30 (1989), 485–495
41. J. Filo, *Diffusivity versus Absorption through the Boundary*, J. Differ. Equat. 99 (1992), 281–305
42. A. Friedman and B. McLeod, *Blow-up of positive solutions of semilinear heat equations*, Indiana Univ. Math. J. 34 (1985), 425–477
43. A. Friedman, Partial Differential Equations of Parabolic Type, Prentice-Hall, NJ, 1964
44. S.C. Fu and J.S. Guo, *Blow-up for semilinear reaction-diffusion system coupled in both euqations and boundary conditions*, J. Math. Appl. Anal. 276 (2002), 458–475

45. S.C. Fu, J.S. Guo and J.C. Tsai, *Blow-up behavior for a semilinear heat equation with a nonlinear boundary condition*, Tohoku Math. J. (2) 55 (2003), no. 4, 565–581
46. H. Fujita, *On the blowing up of solutions of the Cauchy problem for $u_t = \Delta u + u^{1+\alpha}$* , J. Fac. Sci. Univ. Tokyo Sect. A. Math. 16 (1966), 105–113
47. V.A. Galaktionov, *On conditions for there to be no global solutions of a class of quasilinear parabolic equations*, USSR Comp. Math. Math. Phys. 22 (1982), 73–90
48. V.A. Galaktionov, *On a blow-up set for the quasilinear heat equation $u_t = (u^\sigma u_x)_x + u^{\sigma+1}$* , J. Differ. Equat. 101 (1993), no. 1, 66–79
49. V.A. Galaktionov, *Blow-up for quasi-linear heat equations with critical Fujita's exponents*, Proc. Roy. Soc. Edinburgh Ser. A 124 (1994), 517–525
50. V.A. Galaktionov, *On asymptotic self-similar behavior for quasilinear heat equation: single point blow-up*, SIAM J. Math. Anal. 26 (1995), 675–693
51. V.A. Galaktionov, *Geometric Sturmian theory of nonlinear parabolic equations and applications*, Chapman & Hall/CRC Applied Mathematics and Nonlinear Science Series, 3. Chapman & Hall/CRC, Boca Raton, FL, 2004
52. V.A. Galaktionov and H.A. Levine, *On critical Fujita exponents for heat equations with a nonlinear flux boundary condition on the boundary*, Israel J. Math. 94 (1996), 125–146
53. V.A. Galaktionov and H.A. Levine, *A general approach to critical Fujita exponents and systems*, Nonlinear Anal. 34 (1998), 1005–1027
54. V.A. Galaktionov and S.I. Pohozaev, *Blow-up and critical exponents for nonlinear hyperbolic equations*, Nonlinear Anal. 53 (2003), 453–466
55. V.A. Galaktionov and J.L. Vázquez, *Necessary and sufficient conditions of complete blow up and extinction for one-dimensional quasilinear heat equations*, Arch. Rational Mech. Anal. 129 (1995), 225–244
56. V.A. Galaktionov and J.L. Vázquez, *Continuation of blow-up solutions of nonlinear heat equations in several space dimensions*, Comm. Pure Appl. Math. 50 (1997), 1–67
57. V.A. Galaktionov and J.L. Vázquez, *Incomplete blow-up and singular interfaces for quasilinear heat equations*, Comm. Partial Differ. Equat. 22 (1997), no. 9–10, 1405–1452
58. V.A. Galaktionov and J.L. Vázquez, *A stability technique for evolution partial differential equations*, Birkhäuser, Berlin, 2004
59. M. Giaquinta, *Introduction to Regularity Theorey for Nonlinear Elliptic Systems*, Birkhäuser, Berlin, 1993
60. B. Gidas, W.N. Ni and L. Nirenberg, *Symmetry and related problems via the maximum principle*, Comm. Math. Phys. 68 (1979), 209–243
61. B. Gidas, W.M. Ni and L. Nirenberg, *Symmetry of positive solutions of nonlinear elliptic equations in \mathbb{R}^n* (collected in the book Mathematical Analysis and Applications, Vol. 7a, the Advances in Mathematics, Supplementary Studies), Academic, New York, 1981
62. B. Gidas and J. Spruck, *Global and local behavior of positive solutions of nonlinear elliptic equations*, Comm. Pure. Appl. Math. 34 (1981), 525–598
63. B. Gidas and J. Spruck, *A priori bounds for positive solutions of nonlinear elliptic equations*, Comm. Partial Differ. Equat. 8 (1981), 883–901
64. Y. Giga and R.V. Kohn, *Asymptotic self-similar blow-up of semilinear heat equations*, Comm. Pure. Appl. Math. 38 (1985), 297–319
65. Y. Giga and R.V. Kohn, *Characterizing blow-up using similarity variables*, Indiana Univ. Math. J. 36 (1987), 425–447
66. Y. Giga and R.V. Kohn, *Nondegeneracy of blow-up for semilinear heat equations*, Comm. Pure Appl. Math. 42 (1989), 845–884
67. D. Gilbarg and N.S. Trudinger, *Elliptic Partial Differential Equations of Second Order*, Third edition, Springer, New York, 1998
68. J.S. Guo and B. Hu, *Blow-up rate for heat equation in Lipschitz domains with nonlinear heat source terms on the boundary*, J. Math. Anal. Appl. 269 (2002), 28–49
69. T. Hamada, *Nonexistence of global solutions of parabolic equation in conical domains*, Tsukuba J. Math. 19 (1995), 15–25

70. K. Hayakawa, *On the nonexistence of global solutions of some semilinear parabolic equations*, Proc. Jpn. Acad. 49 (1973), 503–525
71. M.A. Herrero and J.J.L. Velazquez, *Explosion des solutions d'équations paraboliques semilinéaires*, C. R. Acad. Sci. Paris 319 (1994), 141–145
72. Bei Hu, *Nonexistence of a positive solution of the Laplace equation with a nonlinear boundary condition*, Differ. Integr. Equat. 7 (1994), 301–313
73. Bei Hu, *Remarks on the blow-up estimate for solution of the heat equation with a nonlinear boundary condition*, Differ. Integr. Equat. 9 (1996), 891–901
74. Bei Hu, *Nondegeneracy and single-point-blow-up for solution of the heat equation with a nonlinear boundary condition*, J. Math. Sci. Univ. Tokyo 1 (1994), 251–278
75. Bei Hu and H.-M. Yin, *The profile near blow-up time for solution of the heat equation with a nonlinear boundary condition*, Trans. Am. Math. Soc. 346 (1994), 117–135
76. Bei Hu and H.-M. Yin, *On critical exponents for the heat equation with a nonlinear boundary condition*, Ann. Inst. H. Poincaré 13 (1996), 707–732
77. Bei Hu and H.-M. Yin, *On critical exponents for the heat equation with a mixed nonlinear Dirichlet-Neumann boundary condition*, J. Math. Anal. Appl. 209 (1997), 683–711
78. Bei Hu and H.-M. Yin, *Critical exponents for a system of heat equations coupled in a nonlinear boundary condition*, Math. Meth. Appl. Sci. 19 (1996), 1099–1120
79. D.D. Joseph and T.S. Lundgren, *Quasilinear Dirichlet problems driven by positive sources*, Arch. Rational Mech. Anal. 49, (1972/73), 241–269
80. S. Kaplan, *On the growth of solutions of quasilinear parabolic equations*, Comm. Pure Appl. Math. 16 (1963), 305–333
81. V.K. Kalantarov and O.A. Ladyzhenskaya, *Formation of collapses in quasilinear equations of parabolic and hyperbolic types*, Zap. Nauchn. Sem. Leningrad. Otdel. Mat. Inst. Steklov. (LOMI) 69 (1977), 77–102
82. K. Kobayashi, T. Siano and H. Tanaka, *On the blow-up problem for semilinear heat equations*, J. Math. Soc. Jpn. 29 (1977), 407–424
83. O.A. Ladyzhenskaja, V.A. Solonnikov and N.N. Ural'ceva, *Linear and Quasi-linear Equations of Parabolic Type*, AMS Trans. 23, Providence, RI, 1968
84. O.A. Ladyzhenskaja and N.N. Ural'ceva, *Linear and Quasi-linear Elliptic Equations*, Mathematics in Sciences and Engineering, Academic, New York, 1968
85. H.A. Levine, *Some nonexistence and instability theorems for solutions of formally parabolic equations of the form $Pu_t = -Au + F(u)$* , Arch. Rational Mech. Anal. 51 (1973), 371–386
86. H.A. Levine, *The role of critical exponents in blow-up theorems*, SIAM Rev. 32 (1990), 262–288
87. H.A. Levine, *A Fujita type global existence-global nonexistence theorem for a weakly coupled system of reaction-diffusion equations*, Z. Angew. Math. Phys. 42 (1991), 408–430
88. H.A. Levine and P. Meier, *A blow-up result for the critical exponent in cones*, Israel J. Math. 67 (1989), 1–7
89. H.A. Levine and P. Meier, *The value of the critical exponent for reaction-diffusion equations in cones*, Arch. Rational Mech. Anal. 109 (1990) 73–80
90. H.A. Levine and L.E. Payne, *Nonexistence theorems for the heat equation with nonlinear boundary conditions and for the porous medium equation backward in time*, J. Differ. Equat. 16 (1974), 319–334
91. H.A. Levine and L.E. Payne, *Some nonexistence theorems for initial-boundary value problems with nonlinear boundary constraints*, Proc. Am. Math. Soc. 46 (1974), 277–284
92. H.A. Levine and R.A. Smith, *A potential well theory for the heat equation with a nonlinear boundary condition*, Math. Meth. Appl. Sci. 9 (1987), 127–136
93. G.M. Lieberman, *Intermediate Schauder estimates for oblique derivative problems*, Arch. Rational Mech. Anal., 93 (1986), 129–134
94. G.M. Lieberman, *Second Order Parabolic Differential Equations*, World Scientific, Singapore, 1996

95. G. Lieberman, *Study of global solutions of parabolic equations via a priori estimates. Part I: Equations with principal elliptic part equal to the Laplacian*, Math. Meth. Appl. Sci. 16 (1993), 457–474
96. Y.Y. Li and M. Zhu, *Uniqueness theorems through the method of moving spheres*, Duke. Math. J. 80 (1995), 383–417
97. W. Liu, *The blow-up rate of solutions of semilinear heat equations*, J. Differ. Equat. 77 (1989), 104–122
98. J.L. Gómez, V. Márquez and N. Wolanski, *Blow up results and localization of blow up points for the heat equation and localization of blow up points for the heat equation with a nonlinear boundary condition*, J. Differ. Equat. 92 (1991), 384–401
99. G. Lu and B.D. Sleeman, *Sub and super solutions to systems of parabolic equations with applications to generalized Fujita type systems*, Math. Meth. Appl. Sci. 17 (1994), 1005–1016
100. Y. Martel, *Complete blow up and global behaviour of solutions of $u_t - \Delta u = g(u)$* , Ann. Inst. H. Poincaré, 15 (1998), 687–723
101. H. Matano, *Nonincrease of the lap number of a solution for a one dimensional semilinear parabolic equation*, J. Fac. Sci. Univ. Tokyo, Sect. 1A Math. 29 (1982), 401–441
102. H. Matano and F. Merle, *On non-existence of Type II blow-up for supercritical nonlinear heat equation*, Comm. Pure. Appl. Math. 57 (2004), 1494–1541
103. P. Meier, *Blow-up of solutions of semilinear parabolic differential equations*, Z. Angew. Math. Phys. 39 (1988), 135–149
104. P. Meier, *On the critical exponent for reaction-diffusion equations*, Arch. Rational Mech. Anal. 109 (1990), 63–72
105. F. Merle, *Solution of a nonlinear heat equation with arbitrary given blow-up points*, Comm. Pure Appl. Math. 45 (1992), 263–300
106. N. Mizoguchi, *Type II blow-up for semilinear heat equation*, Adv. Differ. Equat. 9 (2004), 1279–1316
107. N. Mizoguchi and E. Yanagida, *Critical exponents for the blow-up of solutions with sign changes in a semilinear parabolic equation*, Math. Ann. 307 (1997), 663–675
108. N. Mizoguchi and E. Yanagida, *Critical exponents for the blow-up of solutions with sign changes in a semilinear parabolic equation II*, J. Differ. Equat. 145 (1998), 295–331
109. K. Mochizuki and Q. Huang, *Existence and behavior of solutions for a weakly coupled system of reaction-diffusion equations*, Meth. Appl. Math. 5 (1998), 109–124
110. K. Mochizuki and K. Mukai, *Existence and nonexistence of global solutions to fast diffusions with source*, Math. Meth. Appl. Anal. 2 (1995), 92–102
111. K. Mochizuki and R. Suzuki, *Critical exponent and critical blow up for quasi-linear parabolic equations*, Israel J. Math. 98 (1997), 141–156
112. S. Ohta and A. Kaneko, *Critical exponent of blow-up for semilinear heat equation on a product domain*, J. Fac. Sci. Univ. Tokyo, Sec. 1A Math. 40 (1994), 635–650
113. W.F. Osgood, *Beweis der Existenz einer Lösung der Differentialgleichung $dy/dx = f(x, y)$ ohne Hinzunahme der Cauchy-Lipschitzschen Bedingung*, Monatshefte der Mathematik und Physik, 9 (1898), 331–345
114. L.E. Payne, *Improperly posed problems in partial differential equations*, Regional Conference Series in Applied Mathematics, No. 22. SIAM, Philadelphia, PA, 1975
115. L.E. Payne and D.H. Sattinger, *Saddle points and instability of nonlinear hyperbolic equations*, Israel J. Math. 22 (1975), 273–303
116. R.G. Pinsky, *Existence and nonexistence of global solutions for $u_t = \Delta u + a(x)u^p$ in \mathbb{R}^d* , J. Differ. Equat. 133 (1997), 152–177
117. R.G. Pinsky, *Finite time blow-up for the inhomogeneous equation $u_t = \Delta u + a(x)u^p + \lambda\phi$ in \mathbb{R}^d* , Proc. Am. Math. Soc. 127 (1999), 3313–3327
118. M. Protter and H.F. Weinberger, *Maximum Principles in Differential Equations*, Prentice-Hall, Englewood Cliffs, NJ, 1967
119. Y.W. Qi, *On the equation $u_t = \Delta u^\alpha + u^\beta$* , Proc. Roy. Soc. Edinburgh Ser. A 123 (1993), 373–390

120. Y.W. Qi, *The critical exponents of parabolic equations and blow-up in \mathbb{R}^n* , Proc. Roy. Soc. Edinburgh Ser. A 128 (1998), 123–136
121. Y.W. Qi and H.A. Levine, *The critical exponent of degenerate parabolic systems*, Z. Angew. Math. Phys. 44 (1993), 249–265
122. P. Quittner, *On global existence and stationary solutions for two classes of semilinear parabolic problems*, Comment. Math. Univ. Carolin. 34 (1993), 105–124
123. P. Quittner and P. Souplet, *Superlinear Parabolic Problems*, Birkhäuser, Berlin, 2007
124. J. Renclawowicz, *Global existence and blow up for a completely coupled Fujita type system of reaction-diffusion equations*, Appl. Math. 25 (1998), 313–326
125. A.A. Samarskii, V.A. Galaktionov, S.P. Kurdyumov and A.P. Mikhailov, *Blow-up in quasilinear parabolic equations*, Translated from the 1987 Russian original by Michael Grinfeld and revised by the authors, Walter de Gruyter & Co, Berlin, 1995
126. P. Souplet, *Uniform blow-up profiles and boundary behavior for diffusion equations with nonlocal nonlinear source*, J. Differ. Equat. 153 (1999), 374–406
127. P. Souplet and W. Weissler, *Self-similar subsolutions and blow-up for nonlinear parabolic problems*, J. Math. Anal. Appl. 212 (1997), 60–74
128. C. Sturm, *Mémoire sur une classe d'équations à différences partielles*, J. Math. Pure. Appl. 1 (1836), 373–444
129. R. Suzuki, *Critical Blow up for quasilinear parabolic equations in exterior domains*, Tokyo J. Math. 19 (1996), 397–409
130. R. Suzuki, *Existence and nonexistence of global solutions to quasilinear parabolic equations with convection*, Hokkaido Math. J. 27 (1998), 147–196
131. M. Tsutsumi, *Existence and nonexistence of global solutions for nonlinear parabolic equations*, Publ. Res. Inst. Math. Sci. Kyoto Univ. 8(1972), 221–229
132. Y. Uda, *The critical exponent for a weakly coupled system of the generalized Fujita type reaction-diffusion equations*, Z. Angew. Math. Phys. 46 (1995), 366–383
133. W. Walter, *On existence and nonexistence in the large of solutions of parabolic differential equations with a nonlinear boundary condition*, SIAM J. Math. Anal. 6 (1975), 85–90
134. F. Weissler, *Existence and nonexistence of global solutions of a semi-linear heat equation*, Israel J. Math. 38 (1981), 29–40
135. F. Weissler, *Single point blow-up for a semilinear initial value problem* J. Differ. Equat. 55 (1984), 204–224
136. M.X. Wang, *Blow-up estimates for semilinear parabolic systems coupled in an equation and a boundary condition*, Sci. China Ser. A. 44 (2001), 1465–1468
137. M.X. Wang, *Blow-up properties of solutions to parabolic systems coupled in an equation and a boundary condition*, J. Lond. Math. Soc. 67 (2003), 180–194
138. M.X. Wang, *Blow-up rate estimates for semilinear parabolic systems*, J. Differ. Equat. 170 (2001), 317–324
139. M.X. Wang and Y. Wu, *Global existence and blow-up problems for quasilinear parabolic equations with nonlinear boundary conditions*, SIAM J. Math. Anal. 24 (1993), 1515–1521
140. N. Wolanski, *Global behavior of positive solutions to nonlinear diffusion problems with nonlinear absorption through the boundary*, SIAM J. Math. Anal. 24 (1993), 317–326
141. H.-M. Yin, *Blow-up versus global solvability for a class of nonlinear parabolic equations*, Nonlinear Anal. 7 (1994), 911–924
142. Q. Zhang, *A new critical phenomenon for semilinear parabolic problems*, J. Math. Anal. Appl. 219 (1998), 125–139
143. Q. Zhang, *Blow up and global existence of solutions to an inhomogeneous parabolic system*, J. Differ. Equat. 147 (1998), 155–183
144. Q. Zhang, *Blow up results for nonlinear parabolic equations on manifolds*, Duke Math. J. 97 (1999), 515–539
145. S.N. Zheng, *Nonexistence of positive solutions to semilinear elliptic system and blow-up estimates for reaction-diffusion system*, J. Math. Anal. Appl. 232 (1999), 293–311

146. S.N. Zheng, *Global existence and global nonexistence of solutions to a reaction-diffusion system*, Nonlinear Anal. 39 (2000), 327–340
147. S.N. Zheng, X.F. Song and Z.X. Jiang, *Critical Fujita exponents for degenerate parabolic equations coupled via nonlinear boundary flux*, J. Math. Anal. Appl. 298 (2004), 308–324
148. T.I. Zelenyak, *On qualitative properties of solutions of quasilinear mixed problems for equations of parabolic type*, (in Russian) Mat. Sb. 104 (1977), 486–510

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