12.
List of Publications

1. *Special Purpose Computer for Nonlinear Differential Equations*

2. *Pattern Formation on a Nonlinear Periodic Electrical Network*
   Berkemeier, J., T. Dirksmeyer, G. Klempt, and H.-G. Purwins

3. *Pattern Formation in S-Shaped Negative Differential Conductivity Material*
   Radehaus, C., K. Kardell, H. Baumann, D. Jäger, and H.-G. Purwins

4. *Parallel verarbeiten, Multiprozessorkarten steigern Leistung von Arbeitsplatzrechnern*
   Waldowski, M., and H.-G. Purwins
   Maschinenmarkt, **93** (24), 106-110 (1987)

5. *Pattern Formation in Gas-Discharge Systems with High Impedance Electrodes*
   Radehaus, C., T. Dirksmeyer, H. Willebrand, and H.-G. Purwins

6. *Properties of Solitary Current Filaments in Silicon Pin Diodes*
   Baumann, H., R. Symanczyk, C. Radehaus, H.-G. Purwins, and D. Jäger

7. *Temporal and Spatial Structures of Nonlinear Dynamical Systems*
   Purwins, H.-G., G. Klempt, and J. Berkemeier
8. Experimental Investigation of Spatial Pattern Formation in Physical Systems of Activator Inhibitor Type
   Purwins, H.-G., C. Radehaus, and J. Berkemeier
   Z. Naturforsch. 43a, 17-29 (1988)

9. Pattern Formation on Analogue Parallel Networks
   Purwins, H.-G., and C. Radehaus
   In: Neural and Synergetic Computers H. Haken (Ed.),

10. Stable Multifilament Structures in Semiconductor Materials Based on a Kinetic Model
    Kardell, K., C. Radehaus, R. Dohmen, and H.-G. Purwins
    J. Appl. Phys. 64, 6336-6338 (1988)

11. Application of the Activator Inhibitor Principle to Physical Systems

12. Observation of Solitary Filaments and Spatially Periodic Patterns in a DC Gas-Discharge System

13. Experiments on the Formation of Stationary Spatial Structures on a Network of Coupled Electrical Oscillators
    Dirksmeyer, T., R. Schmeling, J. Berkemeier, and H.-G. Purwins

14. Ein Konstruktionsalgorithmus für Mustererkennungssysteme
    Cruse, C., M. Bode, and H.-G. Purwins
    in: Physik und Informatik - Informatik und Physik, Arbeitsgespräch
    (Eds.: D. Krönig and M. Lang), Springer Proc. 66-70 (1991)

15. Spatio-Temporal Oscillations During Filament Splitting in Gas-Discharge Systems
16. *Experimental Observation of Simultaneously Existing Moving and Standing Patterns in a Gas-Discharge System*


17. *Spatially Periodic Patterns in a DC Gas-Discharge System*


18. *Pattern Formation in Nonlinear Physical Systems with Characteristic Electric Properties*


19. *Periodically Self-Excited Moving Striations in a Low-Temperature Gas Plasma*

Ammelt, E., H. Willebrand, and H.-G. Purwins


20. *Spontaneous Appearance of Rocking Localized Current Filaments in a Nonequilibrium Distributive System*

Niedernostheide, F.-J., B.S. Kerner, and H.-G. Purwins


21. *Periodic and Turbulent Behavior of Solitary Structures in Distributed Active Media*


22. *Spatial and Spatio-Temporal Patterns in pn-pn Semiconductor Devices*

Niedernostheide, F.-J., M. Arps, R. Dohmen, H. Willebrand, and H.-G. Purwins

Phys. stat. sol. (b) **172**, 249-266 (1992)

23. *Stationary and Dynamic Patterns of Current Density in Gas-Discharge Systems*


24. *Analytical Approach to Stationary Wall Solutions in Bistable Reaction-Diffusion Systems*
   Dohmen, R., F.-J. Niedernostheide, H. Willebrand, and H.-G. Purwins

25. *Transition from Pulsating to Rocking Localized Structures in Nonlinear Dissipative Distributive Media with Global Inhibition*

26. *Experimental and Numerical Observation of Quasiparticle like Structures in a Distributed Dissipative System*

27. *Fronts between Hopf- and Turing-Type Domains in a Two-Component Reaction-Diffusion System*
   Heidemann, G., M. Bode, and H.-G. Purwins

28. *Spatio-Temporal Pattern Formation in a Lateral High-Frequency Glow Discharge System*
   Ammelt, E., D. Schweng, and H.-G. Purwins

29. *Speed Properties of a Semiconductor-Discharge Gap IR Image Converter Studied with a Streak Camera System*

30. *Periodic and Irregular Spatio-Temporal Behaviour of Current Density Filaments in Si $p^+ - n^+ - p - n^-$ Diodes*
   Niedernostheide, F.-J., M. Kreimer, H.-J. Schulze, and H.-G. Purwins

31. *Parallel Hardware Implementation of Kohonen´s Algorithm With an Active Medium*
   Ruwisch, D., M. Bode, and H.-G. Purwins
   Neural Networks **6**, 1147-1157 (1993)
32. Measurement of the Transition from Uni- to Bi-Directional Front Propagation in a Reaction-Diffusion System  
   Bode, M., A. Reuter, R. Schmeling, and H.-G. Purwins  

33. Spatiotemporal Behaviour of Localized Current Filaments in p-n-p-n Diodes: Numerical Calculations and Comparison with Experimental Results  
   Niedernostheide, F.-J., M. Ardes, M. Or-Guil, and H.-G. Purwins  

34. Synergetic Kohonen-Hardware Based on a Bistable Reaction-Diffusion Medium  
   Ruwisch, D., P. Schütz, M. Bode, and H.-G. Purwins  

35. Travelling Current Density Filaments in Multilayered Silicon Devices  
   Niedernostheide, F.-J., M. Kreimer, B. Kukuk, H.-J. Schulze, and H.-G. Purwins  

36. Experimentelle und numerische Untersuchungen zum Verhalten von Stromdichte­filamenten in einem Halbleiterbauelement  
   Niedernostheide, F.-J., and H.-G. Purwins  

37. Excitation of Wave Patterns in an Infrared-Visible Converter  

38. Dynamics of Current Filaments Studied in Two Exemplary Systems: DC Si p-n-p-n Devices and AC ZnS:Mn Films  
   Niedernostheide, F.-J., C. Goßen, and H.-G. Purwins  
   in: Advances in Synergetics 2, V. Kuvshihnov, and G. Krylov (Eds.), Belarusian State Univ. Press, Minsk (1994)

39. Parallel Kohonen Hardware with Low Connectivity Based on Active Media  
   Ruwisch, D., M. Bode, and H.-G. Purwins  
40. *Spatially and Temporally Resolved IR-Image Detection with a Semiconductor- Gas-Discharge Device*

41. *Bifurcations of Front Dynamics in a Reaction-Diffusion System with Spatial Inhomogeneities*
   Schütz, P., M. Bode, and H.-G. Purwins
   Physica D 82, 382-397 (1995)

42. *Observation of Current-Density Filamentation in Multilayer Structures by EBIC Measurements*
   Wierschem, A., F.-J. Niedernostheide, A. Gorbatyuk, and H.-G. Purwins

43. *Pattern Formation in Reaction-Diffusion Systems - Dissipative Solitons in Physical Systems*
   Bode, M., and H.-G. Purwins

44. *Pattern Formation of the Electroluminescence in Ac ZnS:Mn Devices*
   Goßen, Ch., F.-J. Niedernostheide, and H.-G. Purwins
   in: *Nonlinear Dynamics and Pattern Formation in Semiconductors and Devices*

45. *On the Influence of Inhomogeneities in a Reaction Diffusion System*
   Kulka, A., M. Bode, and H.-G. Purwins

46. *Pattern Formation in Activator-Inhibitor Systems*
   in: *Nonlinear Dynamics and pattern formation in the natural environment*
47. An IR-Visible converter for Spatially and Temporally Resolved IR-Image Detection

48. Oscillations of Fronts and Front Pairs in Two- and Three-Component Reaction-Diffusion Systems
Woesler, R., P. Schütz, M. Bode, M. Or-Guil, and H.-G. Purwins
Physica D 91, 376-405 (1996)

49. Hexagon and Stripe Turing Structures in a Gas Discharge System
Astrov, Yu., E. Ammelt, S. Teperick, and H.-G. Purwins

50. Frequency-locked, Quasiperiodic, and Chaotic Motions of Current-Density Filaments in a Semiconductor Device
Niedernostheide, F.-J., C. Brillert, B. Kukuk, H.-G. Purwins, and H.-J. Schulze

51. Pattern Formation in Gas Discharge Systems
Ammelt, E., Yu. Astrov, and H.-G. Purwins

52. Interaction of Laser Radiation and PNPN Semiconductor Devices
Kukuk, B., F. Reil, F.-J. Niedernostheide, and H.-G. Purwins

53. Interacting Pulses in Three-Component Reaction Diffusion Systems on Two-dimensional Domains
Schenk, C.P., M. Or-Guil, M. Bode, and H.-G. Purwins

54. Dynamical Behavior of Spots in a Nonequilibrium Distributive Active Medium
Niedernostheide, F.-J., M. Or-Guil, M. Kleinkes, and H.-G. Purwins
55. *Glow Dynamics in a Semiconductor-Gas Discharge Image Converter*
Portsel, L.M., Yu.A. Astrov, I. Reimann, and H.-G. Purwins

56. *Experimental Evidence for Zigzag Instability of Solitary Stripes in a Gas Discharge System*
Astrov, Yu.A., E. Ammelt, and H.-G. Purwins

57. *Stripe Turing Structures in a Two-Dimensional Gas Discharge System*
Ammelt, E., Yu.A. Astrov, and H.-G. Purwins

58. *Interaction of Filaments in a A.C.-Driven Planar Gas Discharge System*
Müller, I., E. Ammelt, and H.-G. Purwins
Int. Conf. on Phenomena in Ionized Gases ICPIG XXIII

59. *Pattern Formation and Bifurcations in Electroluminescent ZnS:Mn Films*

60. *Spot Bifurcations in Three-Component Reaction-Diffusion Systems: The Onset of Propagation*
Or-Guil, M., M. Bode, C.P. Schenk, and H.-G. Purwins

61. *Zigzag Destabilized Spirals and Targets*
Astrov, Yu.A., I. Müller, E. Ammelt, and H.-G. Purwins

62. *Interaction of Self-Organized Quasiparticles in an Two-Dimensional Reaction-Diffusion System: The Formation of Molecules*
Schenk, C.P., P. Schütz, M. Bode, and H.-G. Purwins

63. *Hexagon Structures in a Two-Dimensional DC-Driven Gas Discharge System*
Ammelt, E., Yu. A. Astrov, and H.-G. Purwins
64. *Formation of Spatio-Temporal Structures in Semiconductors*
   in: *Evolution of Spontaneous Structures in Dissipative Continuous

65. *High Speed Conversion of Infrared Images with a Planar Gas Discharge System*

66. *Self-Organized Quasiparticles: Breathing Filaments in a Gas Discharge System*
   Müller, I., E. Ammelt, and H.-G. Purwins

67. *Self-Organized Filaments in Dielectric Barrier Glow Discharges*
   Müller, I., C. Punset, E. Ammelt, H.-G. Purwins, and J. P. Boeuf

68. *Simulation of Self-Organized Filaments in a Dielectric Barrier Glow
   Discharge Plasma*
   Brauer, I., C. Punset, H.-G. Purwins, and J.P. Boeuf

69. *Double Breakdowns in a Pattern Forming Dielectric Barrier Discharge System*
   Brauer, I., E. Ammelt, and H.-G. Purwins
   Proc. XXIV Intern. Conf. on Phenomena in Ionized Gases (ICPIG),

70. *Self-Organized Effects and their Origin in ZnS:Mn TFEL Devices*
   Vlasenko N.A., Z.L.Denisova, S.Veligura, S.Zuccaro, F.-J.Niedernostheide, and
   H.-G. Purwins
   Proceedings of the VIIIth International Symposium „Advanced Display

71. *Quasi-Particles in a Three-Dimensional Three-Component Reaction-Diffusion
   System*
   Schenk, C.P., A.W. Liehr, M. Bode, and H.-G. Purwins
   In: *High Performance Computing in Science and Engineering ’99*, E. Krause,

72. *Solitary Current-Density Patterns in Thin ZnS:Mn Films*
73. **Dynamics of Zigzag Destabilized Solitary Stripes in a DC-Driven Pattern-Forming Semiconductor Gas-Discharge System**  
Strümpel, C., Yu. A. Astrov, E. Ammelt, and H.-G. Purwins  

74. **Traveling Pairs of Spots in a Periodically Driven Gas Discharge System: Collective Motion Caused by Interaction**  
Brauer, I., M. Bode, E. Ammelt, and H.-G. Purwins  

75. **Nonlinear Interaction of Homogeneously Oscillating Domains in a Planar Gas Discharge System**  
Strümpel, C., Yu. A. Astrov, and H.-G. Purwins  

76. **Energy Levels of Defects in Electroluminescent ZnS:Mn thin Films exhibiting Hysteresis and Self-Organized Patterns**  

77. **Effect of Insulator Layer Properties in ZnS:Mn AC TFEL Structures on Self-Organized Patterns**  

78. **Self-Organized Quasiparticles and Other Patterns in Planar Gas-Discharge Systems**  
Purwins, H.-G., Yu. A. Astrov, and I. Brauer  

79. **The Generation of Dissipative Quasi-Particles near Turing’s Bifurcation in Three-Dimensional Reaction-Diffusion Systems**  
Liehr, A.W., M. Bode, and H.-G. Purwins

80. Spatiotemporal Filamentary Patterns in a DC-Driven Planar Gas Discharge System
   Strümpel, C., H.-G. Purwins, and, Yu.A. Astrov

81. Plasma Spots in a Gas Discharge System: Birth, Scattering and Formation of Molecules

82. High Speed Switch-On of a Semiconductor Gas Discharge Image Converter Using Optimal Control Methods

83. Localized Patterns in Planar Gas-Discharge Systems
   Purwins H.-G., Yu.A. Astrov, I. Brauer , and M. Bode
   Reaction-diffusion systems: theory and applications
   http://miami.uni-muenster.de/servlets/DerivateServlet/Derivate-274/Localized_Patterns.pdf

84. Interaction of Dissipative Solitons: Particle-like Behaviour of Localized Structures in a Three-Component Reaction-Diffusion System
   Bode, M., A.W. Liehr, C.P. Schenk, and H.-G. Purwins

85. Noise Properties of a High-Speed Semiconductor-Gas Discharge Infrared Imager

86. Application of High-Speed IR Converter in Scientific and Technological Research
   Matern, S., V.M. Marchenko, Yu.A. Astrov, L.M. Portsel, and H.-G. Purwins

87. Technische Realisierung und Laseranwendungen eines ultraschnellen IR-Bildkonverters
   Photonik, 3, 84-87 (2002)
88. *High-Field Transport in AC Thin Film Electroluminescent Devices: Theory and Experiment*

89. *Multioscillatory Patterns in a Hybrid Semiconductor Gas Discharge System*

90. *Voronoi Diagrams in Barrier Gas Discharge*

91. *Temperature Effect on Self-Organized Patterns and Characteristics of Bistable ZnS:Mn Thin-Film Structures*

92. *Replication of Dissipative Solitons by Many-Particle Interaction*
Liehr, A.W., A.S. Moskalenko, M.C. Röttger, J. Berkemeier, and H.-G. Purwins

93. *On Role of Temperature in Formation of Self-Organized Patterns in Emission of Bistable ZnS:Mn TFEL Structures*

94. *Spatially Inhomogeneous States in the Electroluminescence of bistable Thin-Film Structures based on ZnS:Mn*

95. *Spatiotemporal Structures in a Transversely Extended Semiconductor System*
96. Physical processes in thin-film electroluminescent structures based on ZnS:Mn showing self-organized patterns

97. Rotating Waves in a Planar DC-Driven Gas Discharge System with Semi-Insulating GaAs Cathode

98. Noise-Covered Drift Bifurcation of Dissipative Solitons in a Planar Gas-Discharge System

99. Drift-Bifurcation Detection for Dissipative Solitons
Liehr, A.W., H. Bödeker, M.C. Röttger, T. Frank, R. Friedrich, and H.-G. Purwins

100. Rotational Bifurcation of Localized Dissipative Solitons
Moskalenko, A.S., A.W. Liehr, and H.-G. Purwins

101. Drift Bifurcation of Dissipative Solitons: Destabililisation due to a Change of Shape

102. Control of Spacial Structures in a Semiconductor-Gas-Discharge System with a Semi-Insulating GaAs Cathode
Gurevich, E.L., Yu.A. Astrov, and H.-G. Purwins


104. Concentric-Ring Patterns in a Dielectric Barrier Discharge System
105. Transition from Stationary to Rotating Bound States of Dissipative Solitons
Liehr, A.W., A.S. Moskalenko, and H.-G. Purwins

106. Interactions in large arrays of solitons in photorefractive crystals
Träger D., A. Strinic, J. Schröder, C. Denz, M. Belic, M. Petrovic, S. Matern, and H.-G. Purwins

107. The role of surface charges in DC gas-discharge systems with high-ohmic electrodes
Gurevich, E.L., A.W. Liehr, Sh. Amiranashwili, and H.-G. Purwins

108. Self-organization patterns in electroluminescence of bistable ZnS:Mn thin-film structures
Semiconductor Physics, Quantum Electronics & Optoelectronics, 7, 82 (2004)

109. Rotating Bound States of Dissipative Solitons in Systems of Reaction-Diffusion Type
Liehr, A.W., A.S. Moskalenko, Yu.A. Astrov, M. Bode, and H.-G. Purwins

110. Measuring the Interaction Law of Dissipative Solitons

111. The Formation of Voronoi Diagrams in Chemical and Physical Systems: Experimental Findings and Theoretical Models

112. Rotating hexagonal pattern in a dielectric barrier discharge system
113. *Drift Bifurcation of Dissipative Solitons due to a Change of Shape: Experiment and Theory*

114. *Pattern Formation in Planar Gas-Discharge Systems*
8th Experimental Chaos Conference Florence 2004

115. *Pattern Formation in Planar DC-Driven Semiconductor-Gas Discharge Devices: two Mechanisms*
Gurevich E.L., Yu.A. Astrov, and H.-G. Purwins

116. *Current Spots in an obstructed Planar Glow Discharge*
Gurevich E.L., Sh. Amiranashvili, and H.-G. Purwins

117. *Drift Bifurcation of Dissipative Solitons in Barrier Gas Discharge*
Stollenwerk L., and H.-G. Purwins

118. *Dissipative Solitons in Reaction-Diffusion Systems*
in: *Dissipative Solitons*, N. Akhmediev, A. Ankiewicz (eds.)
Lectures Notes in Physics **661**, 267 (2005)

119. *Ionization Fronts in Planar DC Discharge Systems with High-Ohmic Electrode*
Amiranashvili Sh., S. Gurevich, and H.-G. Purwins

120. *Micro Capillary Plate as a Built in intensifier for Semiconductor Gas Discharge Image Converter*
Portsel L.M., V.M. Marchenko, and H.-G. Purwins

121. *Experimental Study of Spatial Resolution of a Semiconductor-Gas Discharge Infrared Image Converter*
Portsel L.M., V.M. Marchenko, S. Matern, and H.-G. Purwins
122. Self-Sustained Oscillations of Low Current Electrical Discharge with a Semiconductor Serving as a Cathode and Ballast Resistor: I. Experiment

123. Measurement and 3D Simulation of Self-Organized Filaments in a Barrier Discharge

124. Spontaneous Division of Dissipative Solitons in a Planar Gas-Discharge System with High Ohmic Electrodes

125. Forced Random Walks with Memory in a Glow Mode Dielectric Barrier Discharge
Stollenwerk L., Sh. Amiranashvili, and H.-G. Purwins

126. Breathing Dissipative Solitons in Three-Component Reaction-Diffusion System
Gurevich S.V., Sh. Amiranashvili, and H.-G. Purwins

127. Selbstorganisierte Strukturen im Strom
H.-G. Purwins, and Sh. Amiranashvili

128. Transition from Bright to Dark Dissipative Solitons in Dielectric Barrier Gas-Discharge
Stollenwerk L., S.V. Gurevich, J.G. Laven, and H.-G. Purwins

129. Formation and Stabilization of Single Current Filaments in Planar DBD

130. Spatially Resolved Surface-Charge Measurement in a Planar Dielectric-Barrier Discharge System
Stollenwerk L., J.G. Larven, and H.-G. Purwins

131. Self-Organized Patterns in Gas-Discharge: Particle-Like Behaviour and Dissipative Solitons
H.-G. Purwins
Eds. H.-J. Hartfuss, , M. Dudeck, J. Musieleok, and J. Sadowsky
Melville, New York, 2008
132. *Stochastic Dynamics of Dissipative Solitons in Gas-Discharge Systems*
Research Singnpost (2008)

---

**Patents**

1. *Lernverfahren für ein selbstorganisierendes Neuronales Netzwerk sowie Vorrichtung zur Durchführung des Verfahrens*
   Ruwisch D., D. Schweng, M. Bode, H.-G. Purwins

2. *Lernverfahren für selbstorganisierende Neuronale Netzwerke und Vorrichtung zur Durchführung des Verfahrens*
   Ruwisch, D., T. von der Mehden, M. Bode, and H.-G. Purwins
   Deutsches Patentamt München, Nr. 196 41 286.C1 (1997)

3. *Verfahren zur qualitativen Bestimmung der Anteile verschiedenartiger Stoffe zu Schuttgütern.*
   Deutsches Patentamt München, Nr. 19720121 (1999)

4. *Bildkonverter zur Umwandlung des Spektrums eines optischen Bildes*
   Marchanka, Valery M. , and Purwins, Hans-Georg