		34
SX.		
	35.	
范		
		52 5

Contents

Part I Introduction	SECTION 1
Synergetics - Some Basic Concepts and Recent Results By H. Haken (With 3 Figures)	2
Autowaves: Results, Problems, Outlooks By V.I. Krinsky (With 11 Figures)	9
Part II Self-Organization in Physical Systems: Autowaves and Structures Far from Equilibrium	
The Microscopic Theory of Irreversible Processes By I. Prigogine (With 2 Figures)	22
Coherent Structures in Plasmas. By B.B. Kadomtsev	29
Structures in the Universe. By Ya.B. Zeldovich (With 3 Figures)	33
Interfacial Instability in Fluid Layers Under Thermal Constraints By M.G. Velarde (With 5 Figures)	38
Laser-Induced Autowave Processes By F.V. Bunkin, N.A. Kirichenko, and B.S. Luk'yanchuk (With 7 Figures)	49
Completely Integrable Models in the Domain Walls and Interphases Theories By V.M. Eleonskii, N.E. Kulagin, L.M. Lerman, and Ja.L. Umanskii	55
The Autowave Phenomena on the Surface of Crystallizing Solution By V.N. Buravtsev, A.S. Botin, and B.A. Malomed (With 8 Figures)	59
Autowave Processes in Semiconductors with the Temperature-Electric Instability By Yu.V. Gulyaev, Yu.A. Rzhanov, Yu.I. Balkarei, L.L. Golik, M.I. Elinson, and V.E. Pakseev (With 4 Figures)	64
Thermal Wave Propagation in a Superconducting System as an Autowave Process By Yu.M. Lvovsky (With 3 Figures)	68
Theory of Development of Large-Scale Structures in Hydrodynamical Turbulence By R.Z. Sagdeev, S.S. Moiseev, A.V. Tur, G.A. Khomenko, and V.V. Yanovsky	74
The Role of Fluctuations for Self-Organization in Physical Systems (an Exemplary Case of Transition from a Laminar to Turbulent Flow) By Yu.L. Klimontovich	77

Stochastization of Nonstationary Structures in a Distributed Oscillator with Delay. By V.A. Kats and D.I. Trubetskov (With 7 Figures)	81
Experimental Study of Rossby Solitons and Dissipative Structures in Geostrophical Streams. By S.V. Antipov, M.V. Nezlin, V.K. Rodionov, E.N. Snezhkin, and A.S. Trubnikov (With 5 Figures)	87
Part III Mathematical Backgrounds of Autowaves	
A Theory of Spiral Waves in Active Media By A.S. Mikhailov (With 5 Figures)	92
One-Dimensional Autowaves, Methods of Qualitative Description By I.M. Starobinets and V.G. Yakhno (With 5 Figures)	98
Twisted Scroll Waves in Three-Dimensional Active Media By A.V. Panfilov, A.N. Rudenko, and A.M. Pertsov (With 3 Figures)	103
On the Complex Stationary Nearly Solitary Waves By L.A. Beljakov and L.P. Šiľnikov (With 4 Figures)	106
Elements of the "Optics" of Autowaves. By O.A. Mornev (With 5 Figures)	111
Numerical Simulation and Nonlinear Processes in Dissipative Media By A.A. Samarskii	119
The Onset and the Development of Chaotic Structures in Dissipative Media By A.V. Gaponov-Grekhov, M.I. Rabinovich, and I.M. Starobinets	130
(With 6 Figures)	130
	130
Part IV Autowaves and Auto-Oscillations in Chemically Active Media Mathematical Models of Chemically Active Media By A.M. Zhabotinsky and A.B. Rovinsky (With 6 Figures)	
Part IV Autowaves and Auto-Oscillations in Chemically Active Media Mathematical Models of Chemically Active Media	140
Part IV Autowaves and Auto-Oscillations in Chemically Active Media Mathematical Models of Chemically Active Media By A.M. Zhabotinsky and A.B. Rovinsky (With 6 Figures)	140
Part IV Autowaves and Auto-Oscillations in Chemically Active Media Mathematical Models of Chemically Active Media By A.M. Zhabotinsky and A.B. Rovinsky (With 6 Figures) On the Mechanism of Target Pattern Formation in the Distributed Belousov- Zhabotinsky System. By K.I. Agladze and V.I. Krinsky (With 2 Figures) Iodide-Induced Oscillation in Uncatalyzed Bromate Oscillators	140
Part IV Autowaves and Auto-Oscillations in Chemically Active Media Mathematical Models of Chemically Active Media By A.M. Zhabotinsky and A.B. Rovinsky (With 6 Figures) On the Mechanism of Target Pattern Formation in the Distributed Belousov- Zhabotinsky System. By K.I. Agladze and V.I. Krinsky (With 2 Figures) Iodide-Induced Oscillation in Uncatalyzed Bromate Oscillators By E. Körös, M. Varga, and T. Pauló (With 6 Figures) Topological Similarities in Dissipative Structures of Marangoni-Instability	140 147 150
Part IV Autowaves and Auto-Oscillations in Chemically Active Media Mathematical Models of Chemically Active Media By A.M. Zhabotinsky and A.B. Rovinsky (With 6 Figures) On the Mechanism of Target Pattern Formation in the Distributed Belousov-Zhabotinsky System. By K.I. Agladze and V.I. Krinsky (With 2 Figures) Iodide-Induced Oscillation in Uncatalyzed Bromate Oscillators By E. Körös, M. Varga, and T. Pauló (With 6 Figures) Topological Similarities in Dissipative Structures of Marangoni-Instability and Belousov-Zhabotinsky-Reaction. By H. Linde (With 4 Figures) A Generalized Mechanism for Bromate-Driven Oscillators	140 147 150 158
Part IV Autowaves and Auto-Oscillations in Chemically Active Media Mathematical Models of Chemically Active Media By A.M. Zhabotinsky and A.B. Rovinsky (With 6 Figures) On the Mechanism of Target Pattern Formation in the Distributed Belousov-Zhabotinsky System. By K.I. Agladze and V.I. Krinsky (With 2 Figures) Iodide-Induced Oscillation in Uncatalyzed Bromate Oscillators By E. Körös, M. Varga, and T. Pauló (With 6 Figures) Topological Similarities in Dissipative Structures of Marangoni-Instability and Belousov-Zhabotinsky-Reaction. By H. Linde (With 4 Figures) A Generalized Mechanism for Bromate-Driven Oscillators By L. Kuhnert (With 1 Figure) Electrical Field Effects on Propagating Pulse and Front Waves	140 147 150 154 161
Part IV Autowaves and Auto-Oscillations in Chemically Active Media Mathematical Models of Chemically Active Media By A.M. Zhabotinsky and A.B. Rovinsky (With 6 Figures) On the Mechanism of Target Pattern Formation in the Distributed Belousov-Zhabotinsky System. By K.I. Agladze and V.I. Krinsky (With 2 Figures) Iodide-Induced Oscillation in Uncatalyzed Bromate Oscillators By E. Körös, M. Varga, and T. Pauló (With 6 Figures) Topological Similarities in Dissipative Structures of Marangoni-Instability and Belousov-Zhabotinsky-Reaction. By H. Linde (With 4 Figures) A Generalized Mechanism for Bromate-Driven Oscillators By L. Kuhnert (With 1 Figure) Electrical Field Effects on Propagating Pulse and Front Waves By M. Marek and H. Ševčíková (With 3 Figures) Self-Organization Phenomena and Autowave Processes in Heterogeneous Chemical	140 147 150 154 164

Simulation of Self-Organized States in Combustion Processes By L.U. Artyukh, P.G. Itskova, and A.T. Luk'yanov (With 6 Figures)					
Part V Autowaves in Biological Systems	<u> </u>				
Leão's Spreading Depression, an Example of Diffusion-Mediated Propagation of Excitation in the Central Nervous System. By J. Bureš, V.I. Koroleva, and N.A. Gorelova (With 1 Figure)	180				
The Autowave Nature of Cardiac Arrhythmias By A.M. Pertsov and A.K. Grenadier (With 5 Figures)	184				
Cardiac Arrhythmias During Acute Myocardial Ischemia By F.J.L. van Capelle and M.J. Janse (With 3 Figures)	191				
Properties of Rotating Waves in Three Dimensions. Scroll Rings in Myocard By A.B. Medvinsky, A.V. Panfilov, and A.M. Pertsov (With 4 Figures)	195				
Waves and Structures in Space: Ecology and Epidemiology By Yu.M. Svirezhev and V.N. Razzhevaikin	200				
Synergetics and Biological Morphogenesis By L.V. Belousov (With 3 Figures)	204				
Collective Phenomena in the Multicellular Development of Dictyostelium Discoideur. By B.N. Belintsev (With 4 Figures)	209				
Study of "Target Patterns" in a Phage-Bacterium System By G.R. Ivanitsky, A.S. Kunisky, and M.A. Tzyganov (With 5 Figures)	214				
Plasmodium of the Myxomycete <i>Physarum Polycephalum</i> as an Autowave Self-Organizing System. By S.I. Beilina, N.B. Matveeva, A.V. Priezzhev, Yu.M. Romanenko, A.P. Sukhorukov, and V.A. Teplov (With 4 Figures)	218				
Part VI Evolution and Self-Organization					
Violation of Symmetry and Self-Organization in Prebiological Evolution By L.L. Morozov and V.I. Goldanskii	224				
Physical Models of Evolution Processes By W. Ebeling and R. Feistel (With 4 Figures)	233				
Experimental and Theoretical Studies of the Regulatory Hierarchy in Glycolysis By A. Boiteux, B. Hess, and E.E. Sel'kov (Witn 8 Figures)	240				
Evolution and Value of Information By M.V. Volkenstein and D.S. Chernavskii	252				
Index of Contributors	263				