

Fritz Haber Institute of the Max Planck Society
EU Marie Curie RTN "Universal Principles of Pattern Formation"
SFB 555 "Complex Nonlinear Processes"

Fifth International Symposium
ENGINEERING OF CHEMICAL COMPLEXITY

Program

24 May, Saturday

16:00 – 20:00 Registration (Harnack House)

25 May, Sunday

8:45 Opening

Session chair: P. De Kepper

9:00 **R. Kapral** (Toronto, Canada)

"Twisting vortex filaments"

9:35 **O. Steinbock** (Tallahassee, USA)

"Three-dimensional wave patterns in excitable systems"

10:10 **M. Hauser** (Magdeburg, Germany)

"Manipulating scroll rings by an external electrical current"

10:45 – 11:15 Coffee break

Session chair: J. Hudson

11:15 **E. Bodenschatz** (Göttingen, Germany)

"Interplay between symmetry breaking elements in a pattern forming system"

11:50 **Y. Nishiura** (Sapporo, Japan)

"Sensitivity of localized waves to the geometry of heterogeneity"

12:25 – 14:00 Lunch

Session chair: H. Yokoyama

14:00 **I. Epstein** (Waltham, USA)

"Cross-diffusion effects on pattern formation in reactive systems"

14:35 **P. De Kepper** (Bordeaux, France)

"Pattern formation in the ferrocyanide-iodate-sulfite reaction: the role of low motility weak acid functions in the gel reactors"

15:10 **A. de Wit** (Brussels, Belgium)

"Dynamics of $A + B \rightarrow C$ reaction fronts in the presence of buoyancy-induced convection"

15:45 – 16:15 Coffee break

Session chair: I. Epstein

- 16:15 **K. Yoshikawa** (Kyoto, Japan)
"Self-running droplet: Emergence of directional, revolutionary and pseudopodial motions"
- 16:50 **M. Falcke** (Berlin, Germany)
"Modeling cell motility motion from chemistry"
- 17:25 **F. Sagues** (Barcelona, Spain)
"Physics of colloids: From collective assemblies to single swimmers"

26 May, Monday

Session chair: Y. Nishiura

- 9:00 **P. Gaspard** (Brussels, Belgium)
"Nonequilibrium chemical clocks in the nanoscale"
- 9:35 **H. Yokoyama** (Tsukuba, Japan)
"Collective molecular motor using liquid crystallinity: Exploration into the molecular origin"
- 10:10 **A. S. Mikhailov** (Berlin, Germany)
"Nonlinear elastic dynamics in molecular machines"

10:45 – 11:15 Coffee break

Session chair: P. Plath

- 11:15 **Y. Kevrekidis** (Princeton, USA)
"Equation-free and variable-free computations for complex systems"
- 11:50 **B. Fiedler** (Berlin, Germany)
"Delay feedback control of single mode rotating waves: opportunities and limitations"

12:25 – 14:00 Lunch

Session chair: E. Schöll

- 14:00 **R. Imbihl** (Hannover)
"Stationary patterns vs. dynamic mass transport of potassium"
- 14:35 **H. H. Rotermund** (Halifax, Canada)
"Putting pitting corrosion under a magnifying glass"
- 15:10 **K. Krischer** (München)
"Impact of fluctuations of oscillatory reactions on nanoelectrodes"

15:45 – 16:15 Coffee break

Session chair: L. Schimansky-Geier

- 16:15 **H. Engel** (Berlin, Germany)
"Rotating excitation waves in circular domains"
- 16:50 **M. Marek** (Prague, Czech Republic)
"Reactors with storage of components on catalyst surface for exhaust gases of cars"
- 17:25 **C. Beta** (Potsdam, Germany)
"Pattern formation in chemotaxis and cell motility"

18:00 – 18:30 Poster session

19:00 Dinner

27 May, Tuesday

Session chair: P. Gaspard

- 9:00 **Y. Kuramoto** (Kyoto, Japan)
“Two-step phase reduction for large populations of oscillators with noise”
- 9:35 **J. Hudson** (Charlottesville, USA)
“Engineering complex dynamical structures in populations of chemical oscillators”
- 10:10 **P. G. Sorensen** (Copenhagen, Denmark)
“Dynamical quorum sensing in yeast cells”

10.45 – 11:15 Coffee break

Session chair: Y. Kuramoto

- 11:15 **K. Showalter** (Morgantown, USA)
Population density dependent behavior of discrete chemical oscillators
- 11:50 **M. Bär** (Berlin, Germany)
“Effective medium theory and percolation threshold for front propagation in heterogeneous reaction-diffusion systems”
- 12:25 **G. Ertl** (Berlin, Germany)
“Self-organization in surface reactions – how it started”
- 13:00 Closing