

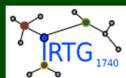
Chair of the conference: **Francesc Sagués**

Co-chair of the conference: **Markus Bär**

Organizing Committee:

Jordi Borrell, Jordi Ignés-Mullol, Ramón Reigada, Blas Echebarria,
Alexander Mikhailov, Holger Stark, Eckehard Schöll, Jürgen Kurths,
Katharina Krischer.

With the collaboration:



Institut de Nanociència
i Nanotecnologia



UNIVERSITAT DE
BARCELONA

Institut de Nanociència i Nanotecnologia Universitat de Barcelona, IN²UB



Berlin Center for Studies of Complex Chemical Systems

9th International Conference Engineering of Chemical Complexity

Neàpolis Auditorium, Vilanova i la Geltrú
(Barcelona)

19th-22nd June 2017

www.ecc9barcelona.com

ECC9 PROGRAM

S.1. Minisymposium: Active colloids I/II

S.2. Minisymposium: Cell migration and tissues

S.3. Minisymposium: Fluctuations far from equilibrium

S.4. Minisymposium: Control of self-organization

S.5. Minisymposium: Active biological matter

S.6. Minisymposium: Chemical networks

S.7. Minisymposium: Synchronization

S.8. Minisymposium: Nanoscale patterns and nanomachines

S.9. Minisymposium: Biological self-organization

Acronyms:

S: Symposia

I: Invited talk

C: Contributed talk

MONDAY 19th June

8.15h-9.15h Accreditation

9.15h-9.30h Presentation

9.30h-10.45h **S.1. Minisymposium: Active colloids I (S. Sánchez, H. Stark)**

9.30h-9.35h Presentation by minisymposium organizers

9.35h-10.10h **I.1. A. Sen.** Collective Behavior of Self-Powered Single Molecules and Nano/Microparticles

10.10h-10.45h **I.2. H. Lowen.** Magnetic microswimmer molecules

10.45h-11.15h Coffee break

11.15h-12.50h **S.1. Minisymposium: Active colloids II (S. Sánchez, H. Stark)**

11.15h-11.40h **C.1. I. Pagonabarraga.** Collective behavior and pattern formation in actuated magnetic and Janus colloidal suspensions

11.40h-12.05h **C.2. P. Tierno.** Emergent Hydrodynamic Bound States Between Magnetically Powered Active Micropropellers

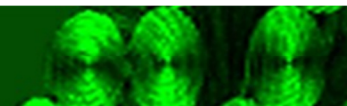
12.05h-12.20h **C.3. J. Blaschke.** Motility-Induced Phase-Separation of Microswimmers: Hydrodynamics and Phase-Equilibria

12.20h-12.35h **C.4. J. Katuri.** Cross-streamline migration of active Janus particles in flow

12.35h-12.50h **C5. M. Tarama.** Swinging motion of active deformable particles in Poiseuille flow

12.50h-14.30h Lunch

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14.30h-16.30h S.2. Minisymposium: Cell migration and tissues

(J. Casademunt, C. Beta)

14.30h-14.35h Presentation by minisymposium organizers

14.35h-15.10h I.3. K. Kruse. Actin-wave driven migration - chance and necessity

15.10h-15.45h I.4. J. Solon. Scaling concepts in morphogenesis: Control of cell shape changes and mechanical tension during epithelial contraction

15.45h-16.00h C.6. R. Alert. Active wetting of epithelial tissues

16.00h-16.15h C.7. S. Alonso. From cell polarization to random crawling of individual amoebas

16.15h-16.30h C.8. H. Chen. Cell lineage and linearized hydrodynamics of a stratified epithelium

16.30h-17.00h Coffee break

17.00h-18.00h Plenary speaker I:

I. Epstein. A Synthetic Approach to Nonlinear Chemical Dynamics (or How to Engineer Chemical Complexity)

TUESDAY 20th June

9.00h-11.05h S.3. Minisymposium: Fluctuations far from equilibrium

(J. M. Sancho, I. Sokolov)

9.00h-9.05h Presentation by minisymposium organizers

9.05h-9.40h I.5. C. Van Den Broeck. Brownian duet: a novel tale of thermodynamic efficiency

9.40h-10.15h I.6. F. Ritort. *t.b.a*

10.15h-10.50h I.7. B. Lindner. *t.b.a*

10.50h-11.05h C.13. L. Dinis. Brownian Carnot Engine

11.05h-11.35h Coffee break

11.35h-12.50h Oral presentations I

11.35h-11.50h C.9. R. Großmann. Active particles with internal clocks – detecting concentration gradients without memory

11.50h-12.05h C.10. I. Lavi. Confined cell-fragment migration as an active droplet in a Hele-Shaw cell

12.05h-12.20h C.11. V. Ruprecht. Modulating cell cortex dynamics and migration behavior by the 3D biomechanical microenvironment.

12.20h-12.35h C.12. R. Sunyer. Collective cell durotaxis emerges from long-range intercellular force transmission.

12.35h-12.50h C.14. A. Bonnefont. Stochastic Processes in Far From Equilibrium Mesoscopic Electrochemical Systems.

12.50h-14.30h Lunch

14.30h-16.40h S.4. Minisymposium: Control of self-organization

(E. Schöll, O. Steinbock)

14.30h-14.45h C.15. O. Steinbock. Local Heterogeneities in Excitable Systems: Turbulence Suppression and Knot-Induced Filament Growth

14.45h-15.20h I.8. I. Z. Kiss. Phase-selective entrainment of nonlinear oscillator ensembles

15.20h-15.55h I9. A. De Wit. Control of convective flows by chemical reactions

15.55h-16.10h C.16. D. Gaskins. Turing Patterns from Turing-Hopf pattern invasion in the BZAOT reverse microemulsion reaction-diffusion system

16.10h-16.25h C.17. S. Martens. Control of traveling localized spots.

16.25h-16.40h C.18. A. Ziepkke. Reaction-Diffusion Waves in Tubes With Spatially Modulated Cross Section: Propagation and Boundary Mediated Control

16.40h-18.00h Coffee-break and Poster Session

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WEDNESDAY 21st June

9.00h-11.05h S.5. Minisymposium: Active biological matter (F. Sagués, M. Bär)

9.00-9.05 Presentation by minisymposium organizers

9.05-9.40 I.10. J. Ignés-Mullol. Control of active nematics by means of addressable soft interfaces

9.40-10.15 I.11. L. Giomi. Geometry, defects and motion in active matter

10.15-10.50 I.12. F. Peruani. Active particles in heterogeneous media

10.50-11.05 C.19. D.A. Kulawiak. Poroelastic two-phase model for droplets of *Physarum polycephalum* with free boundaries

11.05h-11.35h Coffee break

11.35h-13.20h S.6. Minisymposium: Chemical networks

(M. A. Serrano, J. Kurths)

11.35h-11.40h Presentation by minisymposium organizers

11.40h-12.15h I.13. T. Alarcón. *t.b.a*

12.15h-12.50h I.14. G. Zamora-López. *t.b.a*

12.50h-13.05h C.22. D. Hochberg. Stoichiometric network analysis of spontaneous mirror symmetry breaking.

13.05h-13.20h C.23. N. Kouvaris. Pattern formation in bistable networks: Theory and applications to chemical reactions

13.20h-15.00h Lunch

15.00h-16.50h S.7. Minisymposium: Synchronization (K. Krischer, H. Engel)

15.00h-15.05h Presentation by minisymposium organizers

15.05h-15.40h I.15. M. Ziegler. Synchronization of memristively coupled van der Pol oscillators

15.40h-16.15h I.16. J. Totz. Experimental observation of spiral wave chimeras in coupled chemical oscillators

16.15-16.50h I.17. S. Yanchuk. Noise-resistance of oscillatory neural networks with adaptive coupling

18.00h-22.00h Social activities

19.00-19.30h *Cava* drink at Victor Balaguer Museum Gardens

20.00-22:30h Conference Dinner (La Cucanya Restaurant)

THURSDAY 22nd June

9.00h-11.00h S.8. Minisymposium: Nanoscale patterns and nanomachines

(A. Mikhailov, R. Kapral)

9.00h-9.05h Presentation by minisymposium organizers

9.05h-9.40h I.18. T. Ando. Direct visualization of biological nanomachines in action by high-speed AFM

9.40h-10.15h I.19. G. Aromí. Design of Multifunctional Molecules

10.15h-10.30h C.26. C. Barroo. Field emission microscopy study of the emergence of chemical oscillations from nanosized target patterns.

10.30h-10.45h C.27. J. Noel. The operation of the dynamin molecular motor

10.45h-11.00h C.28. J. M. García Torres. Magnetically assembled colloidal Microswimmers

11.00-11.30 Coffee break

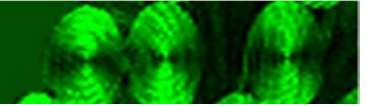
11.30-12.50h Oral presentations II

11.30h-11.50h C.20. L. Pismen. Chemical patterning and actuation of nematic elastomers

11.50h-12.05h C.21. V. Zykov. Fast propagation regions cause spiral wave in an excitable medium

12.05h-12.20h C.24. Y. Izumida. Energetics of hydrodynamic synchronization in coupled oscillators on circular trajectories

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12.20h-12.35h **C.25. V. Maistrenko.** Multiheaded scroll wave chimera states

12.35h-12.50h **C.30. M. Stich.** Symmetry breaking in simple models of cooperative polymerization

12.50h-14.30h Lunch

14.30h-16.35h **S.9. Minisymposium: Biological self-organization**

(J. García-Ojalvo, M. Falcke)

14.30h-14.35h **Presentation by minisymposium organizers**

14.35h -15.10h **I.20. J. Jaeger.** Beyond Networks: Dynamical Systems

Theory and Reverse-Engineering in Developmental Biology

15.10h-15.45h **I.21. M. Ibañes.** Nonlinear interactions for self-organized discrete cellular patterns

15.45h-16.20h **I.22. H. Youk.** Regulation of entropy, spatial order, and information in groups of communicating cells

16.20h-16.35h **C.29. B. Echebarria.** Minimal model for calcium alternans due to calcium release refractoriness

16.35h-17.00h Coffee break

17.00h-18.00h Plenary speaker II:

J.F. Joanny. Toward a physical description of tissues

18.00h-18.15h Closure of the conference