

# RING POLYMERS

**Focused Workshop**

**Aldemar Knossos Royal Hotel, Crete, September 25-27, 2017**

<http://www.ibiselgreco-conferences.gr/ring-polymers.html>



Organizers: D. Vlassopoulos (Heraklion), D. Richter (Jülich), M. Rubinstein (Chapel Hill)

## **Program**

### Sunday 24 September

19.30      Registration and welcome reception

## Monday 25 September

- 08.30 Registration  
08.50-9.15 Welcome & goals of workshop

### *Overviews and trends*

Chair: M. Rubinstein

- 09.15-09.45 A. Grosberg, NYU  
*Topological problems related to genome folding*
- 09.45-10.15 G. B. McKenna, Texas Tech University  
*Ring dynamics: current status and future challenges*
- 10.15-10.35 Discussion
- 10.35-11.00 Coffee break
- 11.00-11.30 Y. Tezuka, Tokyo Institute of Technology  
*Designing cyclic and topological polymer constructions by innovative synthetic protocols*
- 11.30-12.00 K. Kremer, Max-Planck Institute for Polymer Research  
*New simulation studies on large polymer ring melts and their implications for chromosome organization*
- 12.00-12.20 Discussion
- 12.20-15.00 Lunch break and Poster session  
(Posters will be displayed throughout the conference)

## Conformations/knots/topology/effects on dynamics

Chair: G. Ianniruberto

15.00-15.30 C. N. Likos, University of Vienna

*Polymer flow and polymer topology: linear chains, rings and knots flow differently*

15.30-16.00 G. Floudas, University of Ioannina

*Influence of knots within cyclic polystyrene on the segmental dynamics and glass temperature*

16.00-16.30 J. Douglas, NIST

*Knot Energy, Complexity, and Mobility of Knotted Polymers*

16.30-16.50 Discussion

16.50-17.10 Coffee break and Poster session

17.10-17.40 D. Michieletto, University of Edinburgh

*Loose trees and threadings: a recipe for topological glass*

17.40-18.10 H. Meyer, Institut Charles Sadron

*Insights from MD simulations to structure and dynamics of unconcatenated ring melts*

18.10-18.40 M. Dolgusev, Universität Freiburg

*Marginally compact hyperbranched macromolecular trees*

18.40-19.00 Discussion

Tuesday 26 September

**Biological relevance and single molecule studies**

Chair: D. Richter

- 09.00-09.30 C. M. Schroeder, University of Illinois at Urbana-Champaign  
*Single chain dynamics of ring polymers in dilute and semi-dilute solutions*
- 09.00-10.00 R. M. R. Anderson, University of San Diego  
*Effects of entanglements and crowding on the dynamics of ring DNA*
- 10.00-10.30 R. Everaers, ENS Lyon  
*The theory of localization in crumpled interphase chromosomes*
- 10.30-10.50 Discussion
- 10.50-11.15 Coffee break

**Ring purity**

Chair: U. Jonas

- 11.15-11.45 S. M. Grayson, Tulane University  
*Cyclic polymers: an examination of cyclic purity*
- 11.45-12.15 F. Barroso-Bujans, Donostia International Physics Center  
*Separation of cyclic and linear poly(oxyethylene)s based on kinetically-controlled intercalation into graphite oxide: a calorimetric study*
- 12.15-12.35 Discussion
- 12.35-16.45 Lunch break and short sightseeing excursion (optional)

16.45-17.00 Coffee break

**Ring threading and slow modes**

Chair: R. H. Colby

17.00-17.30 V. G. Mavrantzas, University of Patras and ETH Zurich

*Microscopic dynamics and threadings in ring polymers: A detailed computer simulation study*

17.30-18.00 Y. Doi, Kyoto University

*Re-examination of terminal relaxation behavior for high-molecular weight ring polystyrenes*

18.00-18.30 Y. J. Jung, Seoul National University

*Threading dynamics of ring polymer melts revealed by dynamically constrained lattice model*

18.30-18.50 Discussion

20.00 Banquet

Wednesday 27 September

**Confinement effects**

Chair: A. N. Semenov

09.00-09.30 M. D. Foster, University of Akron

*Closed loops: Their impact on melt surface fluctuations and surface segregation in blends*

09.30-10.00 T. Sakaue, Kyushu University

*On segregation of ring polymers under confinement*

10.00-10.30 A. Lyulin, Technical University Eindhoven

*Interfacial and topological effects on the glass transition in free-standing polystyrene films*

10.30-10.50 Discussion

10.50-11.10 Coffee break

**Ring probes, nonlinear rheology and rings from association**

Chair: L. M. Walker

11.10-11.40 H. Watanabe, Kyoto University

*Dynamics and relaxation of linear and ring Rouse chains undergoing reversible end-association and dissociation*

11.40-12.10 W. Pyckhout-Hintzen, Forschungszentrum Jülich

*Ring polymers: a local probe for entangling effects*

12.10-12.40 Q. Huang, DTU

*Extensional rheology of linear/ring polystyrene blends*

12.40-13.00 Discussion

13.00 - 15.00 Lunch break

### **Ring-linear blends**

Chair: E. van Ruymbeke

15.00-15.30 M. Krutyeva, Forschungszentrum Jülich

*Dynamics of cyclic and linear polymer blends*

15.30-16.00 S. Shanbhag, Florida State University

*Unexpected self-diffusivity of ring tracers in linear matrices*

16.00-16.30 D. Tsalikis, University of Patras

*Microscopic dynamics and topology of polymer rings immersed in a host matrix of longer linear polymers: Results from a detailed molecular dynamics simulation study and comparison with experimental data*

16.30-16.50 Discussion

16.50-17.30 Closing remarks and perspectives (Rubinstein, Richter, Vlassopoulos)

## **LIST OF POSTERS**

Y. Doi, Kyoto, *Viscoelastic properties of dumbbell-shaped polystyrenes in bulk*

Y. Doi, Kyoto, *Conformation of Ring Polystyrenes in Bulk and Solution*

L. Weiß, Vienna, *Designing a topological filter: Transport of linear and ring polymers in micro-fluidic devices*

M. Jehser, Vienna, *Polymer Ring Brushes investigated: a DPD simulation study*

D. Parisi, Crete, *Linear and nonlinear shear rheology of ring melts and ring-linear mixtures*

J. Ochs, San Sebastian, *Synthesis of regioregular cyclic poly(glycidyl phenyl ether)*

M. Kaliva, Crete, *Ring shaped polymers via anionic polymerization*

M. Cziep, Karlsruhe, *The Intrinsic Mechanical Nonlinearity  $3Q_0$  of Linear Polymer Melts varying  $M_n$ , Monomer and PDI.*