SoftComp Topical Workshop:
Filaments, Membranes, Cells—and their Interactions 2018

SoftComp • Forschungszentrum Jülich • Institut Curie
www.fz-juelich.de/ics/fmc-softcomp

28 January 2018 (at guest house of Forschungszentrum Jülich, Münchener Strasse 4)

13:00-17:45	***Introductory courses***
13:00-14:00	introductory course 1: cells (Alexander Bershadsky)
14:00-14:15	coffee break
14:15-15:15	introductory course 2: membranes (Thorsten Auth)
15:15-15:30	coffee break
15:30-16:30	introductory course 3: filaments (Francois Nedelec)
16:30-16:45	coffee break
16:45-17:45	introductory course 4: biofilms (Benedikt Sabaß)
18:00-20:00	***Welcome reception and registration*** (at guest house of Forschungszentrum Jülich, Münchener Str. 4)

29 January 2018 (at Forschungszentrum, building 04.8, entrance E2, room 365):

8:30	*buses depart at hotels*
9:00-9:20	welcome remarks
9:20-10:30	**Cells**
9:20-9:50	A. D. Bershadsky *Integrin adhesions mediate and are shaped by the crosstalk between microtubule and the actomyosin cytoskeleton*
9:50-10:10	G. Sakaeva, D. Kotsur, K. Sahni, G. Dreissen, J. Mattes, B. Hoffmann, R. Merkel *Polarized epithelial cell migration depends on rear end stress fiber tension*
10:10-10:30	C. G. Tusan, E. Gentleman, S. Yang, B. Sengers, and N. D. Evans *Cells work together to 'feel' materials for better tissue regeneration*
10:30-11:00	coffee break (building 04.16)
11:00-12:30	**Filaments**
11:00-11:30	A. Beber, C. Taveneau, M. Nania, P. Bassereau, D. Levy, P. E. Milhiet, J. T. Cabral, H. Isambert, S. Mangenot, A. Bertin *Membrane reshaping by curvature-sensitive septin filaments*
11:30-11:50	B. J. Gold, W. Pyckhout Hintzen, A. Wischnewski, and D. Richter *The microscopic origin of the rheology in supramolecular entangled polymers*
11:50-12:10	T. Golde, C. Huster, M. Glaser, T. Händler, H. Herrmann, J.A. Käs, and J. Schnauß *Glassy dynamics in composite biopolymer networks*

12:10-12:30	T. Eisenstecken, A. M. Gomez, G. Gompper, and R. G. Winkler *Semiflexible filaments exposed to active noise*
12:30-13:30	lunch break (Seecasino, building 04.1)
13:30-14:00	posters in the foyer of the central library (building 04.7)
13:30-14:00	coffee will be served at building 04.16
14:00-15:20	**Membranes**
14:00-14:30	A. J. Garcia-Saez *Single-molecule analysis of apoptotic pores*
14:30-15:00	R. P. Richter *Many weak interactions make a difference—Superselective recognition of membranes and trans-membrane traffic*
15:00-15:20	E. P. Petrov *Conformations of membrane-driven self-organization of rodlike fd virus particles on freestanding lipid membranes*
15:20-15:50	coffee break (building 04.16)
15:50-17:10	**Biofilms**
15:50-16:20	O. Lieleg *Viscoelastic properties and wetting resistance of bacterial biofilms*
16:20-16:50	N. R. Stanley-Wall and C. MacPhee *How Bacillus subtilis structures its local environment*
16:50-17:10	J. Elgeti *Quantitative modeling of nutrient-limited growth of bacterial colonies in microfluidic cultivation*
17:10-17:20	short break
17:20-18:50	**Filaments**
17:20-17:50	B. Winkler, I. S. Aranson, and F. Ziebert *Modeling cell motility in inhomogeneous environments and confinement*
17:50-18:10	A. Ravichandran, G. A. Vliegenthart, G. Saggiorato, T. Auth, and G. Gompper *Enhanced dynamics of confined cytoskeletal filaments driven by asymmetric motors*
18:10-18:30	M. Loose *Self-organization of the bacterial cell-division machinery*
18:30-18:50	S. Novak, J. Zhang, G. Portale, E. Kentzinger, J. K. G. Dhont, and E. Stiakakis *Self-assembly of DNA-based anisotropic soft-patchy particles*
starting 19:00	**Posters and dinner (foyer of the central library, building 04.7)**
21:30	*buses depart at Forschungszentrum*

30 January 2018 (at Forschungszentrum, building 04.8, entrance E2, room 365):

8:30	*buses depart at hotels*
9:00-10:30	**Membranes**
9:00-9:30	L. Scheidegger, Peter Beltramo and J. Vermant *Large area planar phopholipids bilayers*
9:30-9:50	S. Svetina, T. Švelc Kebe, B. Božič *The role of membrane curvature-dependent mechanosensitivity in the regulation of red blood cell volume*
9:50-10:10	H. G. Franquelim, A. Khmelinskaia, J. P. Sobczak, H. Dietz, and P. Schwille *Membrane sculpting by curved DNA origami*
10:10-10:30	E. Miller, K. Voitchovsky, M. Staykova *Specific depletion of cholesterol from supported lipid bilayers adhered to plasma treated polydimethylsiloxane*
10:30-11:00	coffee break (building 04.16)
11:00-12:00	**Fibrils**
11:00-11:30	M. M. A. E. Claessens *Alpha-synuclein membrane interactions: function and toxicity in Parkinson's disease*
11:30-12:00	A. Saric *Pathways of amyloid aggregation*
12:00-12:30	A. Martel *Interaction of IAPP amyloid peptide with model membranes*
12:30-13:30	lunch break (Seecasino, building 04.1)
13:30-14:00	coffee will be served at building 04.16
14:00-15:20	**Cells**
14:00-14:30	B. Fabry, C. Amadio, D. Kah, D. Böhringer, C. Mark, and I. Thievessen *Tissue formation in response to collective cell forces*
14:30-15:00	T. Betz *Quantifying and modelling active motion in biological systems*
15:00-15:20	S. Polizzi, B. Laperrousaz, F. J. Perez-Reche, F. E. Nicolini, V. M. Sata, A. Arneodo, and F. Argoul *A minimal rupture cascade model for living cell plasticity*
15:20-15:50	coffee break (building 04.16)
15:50-17:00	**Filaments**
15:50-16:20	R. Kusters *Actin polymerization driving localized membrane deformation*
16:20-16:40	J.M. Gomez, L. Chumakova, and N.A. Bulgakova *Regulation of microtubule organization by cell shape*
16:40-17:00	A. Milchev *Semiflexible polymers in spherical confinement*

17:00-17:10	short break
17:10-18:50	**Biofilms**
17:10-17:40	A. Welker, T. Cronenberg, R. Zöllner, E. R. Oldewurtel, and B. Maier *Correlating bacterial interaction forces with biofilm structure*
17:40-18:10	U. Thiele, S. Trinschek, and K. John *Long-wave modelling of osmotically spreading biofilms*
18:10-18:30	F. Kovacic, F. Bleffert, J. Granzin, M. Caliskan, M. Siebers, P. Dörmann, H. Gohlke, R. Batra-Safferling, and Karl-Erich Jaeger *Atomistic details of the mechanisms of membrane remodelling by phospholipase A in bacteria: implications for virulence adaptations and biofilm*
18:30-19:00	G. Bodelon, V. Montes García, C. Costas, J. Pérez-Juste, I. Pastoriza Santos, and L.M. Liz-Marzán *Application of surface-enhanced Raman scattering (SERS) spectroscopy for ultrasensitive detection and imaging of microbial chemical communication*
19:00	*buses depart at Forschungszentrum to Blumenhalle*
19:30	workshop dinner (at Blumenhalle, Brückenkopfpark, Kirchberger Straße, Jülich)

31 January 2018 (at Forschungszentrum, building 04.8, entrance E2, room 365):

8:30	*buses depart at hotels*
9:00-10:00	**Filaments**
9:00-9:30	A. Mathur, S. Correira, S. Dmitrieff, R. Gibeaux, I. Kalinina, T. Quidwai, J. Ries, and F. Nedelec *Cytoskeletal mechanics of blood platelets*
9:30-10:00	G. A. Vliegenthart, A. Ravichandran, T. Auth, and G. Gompper *Filament-motor mixtures*
10:00-10:20	A. Perilli, C. Pierleoni, G. Ciccotti, and J. P. Ryckaert *Flexibility enhances the power of transduction of a bundle of actin filaments working against a load*
10:20-10:50	coffee break (building 04.16)
10:50-11:30	**Membranes**
10:50-11:10	F.-C. Tsai, A. Bertin, H. Bousquet, J. Manzi, Y. Senju, M.-C. Tsai L. Picas, S. Miserey-Lenkei, P. Lappalainen, E. Lemichez, E. Coudrier, and P. Bassereau *Ezrin enrichment on curved membranes requires phosphorylation or interaction with a curvature-sensitive partner*
11:10-11:30	S. Hillringhaus, G. Gompper, D. A. Fedosov *The mechanics of vesicle blebbing*

11:30-12:00	**Cells**
11:30-12:00	K. Franze *The control of neuronal growth by the interaction of chemical and mechanical signals*
12:00-12:15	closing remarks
12:15-13:30	lunch

Buses of the line SB11 to the train stop "Jülich, Forschungszentrum (RTB)" depart at Seecasino at 13:03, 13:18, 13:38, 13:51, 14:03, 14:16,14:38, 14:50, 15:03. The travel time to the train stop is 3 minutes. The bus stop close to the lecture wall is "Wache 1"; buses depart at 13:01, 13:16, 13:36, 13:49, 14:01, 14:14, 14:36, 14:48, 15:01. Buses with other destinations, such as Aachen or Alsdorf, may not stop at the Forschungszentrum train stop.

Posters

C. Abaurrea Velasco, T. Auth, and G. Gompper
Complex self-propelled deformable rings: cell-like motility patterns

A. Abdalla Mohammed Khalid, I-M. Yu, A. Houdusse. and C. F. Schmidt
MKLp2 kinesin regulation and MT-bundling activity

J. Abraham, C. Linnartz, G. Dreissen, S. Blaschke, G. Fink, M. Rüger, B. Hoffmann, and R. Merkel
Neuronal biomechanics in development and disease: understanding neuronal responses to physiological strain amplitudes

A. Booth, C. Marklew, B. Ciani, and P. Beales
ESCRT-IIIs for compartmentalization in phospholipid vesicles – the influence of membrane tension on membrane remodelling

T. Büscher, N. Ganai and J. Elgeti
Tissue competition: The role of cross adhesion

C. Dinet and M. Staykova
Membrane-actin structural remodeling upon stress/compression

C. Falcón García, F. Stangl and O. Lieleg
Topological changes induced by ethanol treatment render B. subtilis biofilms wettable and increase biofilm erosion

K. A. Ganzinger, M. Heymann, T. Robinson, and P. Schwille
Catch me if you can: microfluidic traps for manipulating and studying active processes in GUVs

R. Kolašinac, R.Merkel, and A. Csiszár
Deciphering the functional principles of fusogenic liposomes

V. Oliynyk, H. Haschke, S. Kostrowski, T. Jähnke
Optical tweezers combined with AFM – Investigating cell mechanics and single molecules on multiple scales

G. Kumar, N. Ramakrishnan, and A. Sain
Spontaneous tubulation of membrane vesicles coated with bio-active filaments

L. de Michele, P. Kumar Jana, B. M. Mognetti
The impact of ligand size on endocytosis

Q. Yu, S. Othman, S. Dasgupta, T. Auth, and G. Gompper
Nanoparticle wrapping at small non-spherical vesicles: curvatures at play

K. A. Rosowski, D. Berchtold, R. W. Style, T. Sai, L. Pelkmans, and E. R. Dufresne
Cytoskeletal control of phase separation in living cells

T. Sarkar, L. Saikia, M. Thomas, V. A. Raghynathan, A. Sain, and P. Sharma
Domain formation in colloidal membranes made of chiral molecules

K. Sahni, D. Kotsur, G. Sakaeva, G. Dreissen, L. Mattes, B. Hoffmann, R. Merkel
Migration component dynamics in epithelial cell motility

K. Singh, W. Powers, T. Auth, and G. Gompper
Understanding malaria-like parasite-red blood cell interactions

H. Spanke, C. François-Martin, E. Dufresne
Reversible Adhesion of Particles on Lipid Bilayers through Electrostatics or Depletion

H. Stumpf and A.-S. Smith
Membrane Mediated Forces Between Proteins: Effects on Aggregation and Diffusivity

S. Trinschek, K. John, S. Lecuyer, and U. Thiele
Modelling of front instabilities in surfactant-driven biofilm spreading

M. te Vrugt, F. Ziebert, and U. Thiele
Analysis of an Allen-Cahn-type model for cell crawling

V. J. Woodhouse, M. R. Wilson, and E. H. C. Bromley
Structure and antimicrobial activity of linear peptoids