

IN THIS ISSUE

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Cover

See Sushanta K. Mitra *et al.*, pp. 7437–7447.
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REVIEW

7401

Granular materials composed of shape-anisotropic grains

Tamás Börzsönyi and Ralf Stannarius

Recent progress in the understanding of orientational ordering, packing, and dynamics of granular materials composed of shape-anisotropic particles is summarized.



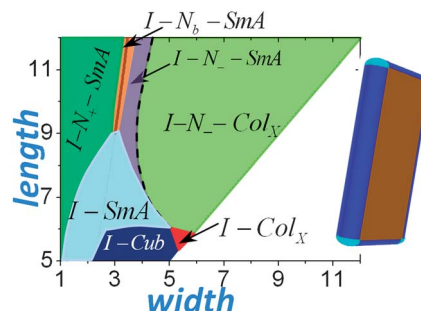
COMMUNICATION

7419

Phase diagram of hard board-like colloids from computer simulations

Stavros D. Peroukidis* and Alexandros G. Vanakaras

Phase diagram of hard board-like particles.



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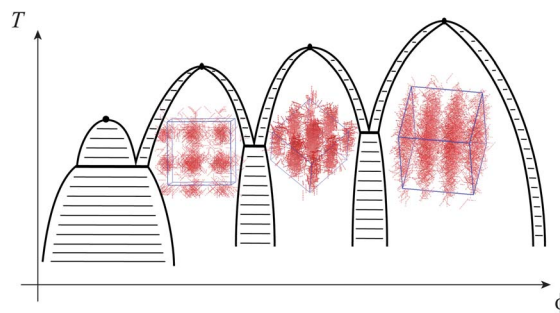


PAPERS

7424

Phase behavior of rigid, amphiphilic star polymersChristian Koch,^{*} Athanassios Z. Panagiotopoulos,
Federica Lo Verso and Christos N. Likos

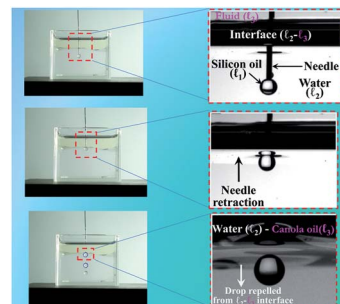
Rigid, telechelic star polymers feature very rich phase behavior, including gas–liquid coexistence and ordered phases with a reentrant melting topology. Examples of the latter are cubic, columnar and lamellar phases as sketched in the figure.



7437

Drop deposition on under-liquid low energy surfacesPrashant R. Waghmare, Siddhartha Das
and Sushanta K. Mitra^{*}

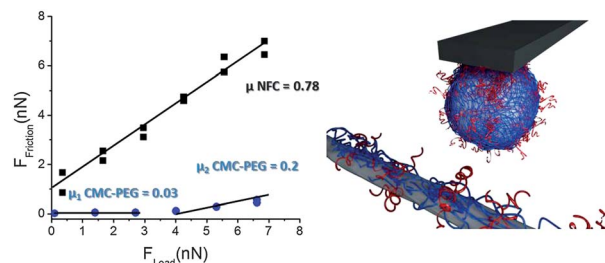
Unique drop deposition technique for under-liquid low energy substrates, independent of drop-substrate surface energy.



7448

Non-ionic assembly of nanofibrillated cellulose and polyethylene glycol grafted carboxymethyl cellulose and the effect of aqueous lubrication in nanocomposite formationAnna Olszewska,^{*} Karoliina Junka, Niklas Nørdgren,
Janne Laine, Mark W. Rutland and Monika Österberg^{*}

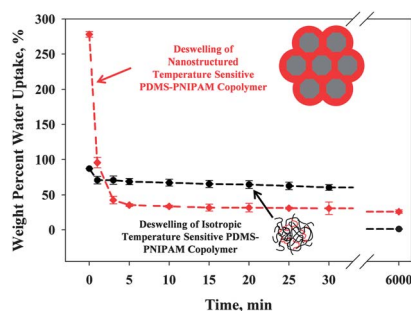
A facile route to significantly lower the frictional forces between cellulose nanofibrils (NFC) has been presented.



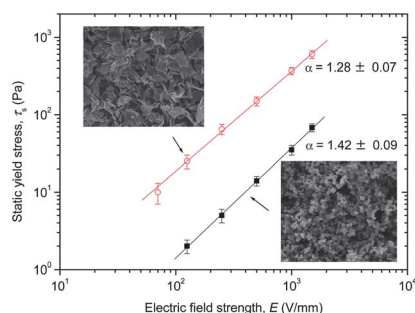
7458

Improved stimuli-response and mechanical properties of nanostructured poly(*N*-isopropylacrylamide-co-dimethylsiloxane) hydrogels generated through photopolymerization in lyotropic liquid crystal templatesBradley S. Forney, Céline Baguenard
and C. Allan Guymon^{*}

Surfactant mesophases allow templating of PDMS-reinforced PNIPAM hydrogels that exhibit higher water uptake, improved mechanical properties, and faster thermal response.



7468

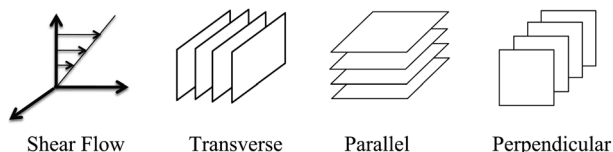


Preparation and enhanced electro-responsive characteristic of reduced graphene oxide/polypyrrole composite sheet suspensions

Jianbo Yin,^{*} Runtian Chang, Yongjun Shui and Xiaopeng Zhao^{*}

Core-shell-structured reduced graphene oxide-supported polypyrrole composite dielectric sheets were prepared for use as novel two-dimensional electrorheological materials showing significantly enhanced electrorheological response compared to conventional granular polypyrrole.

7479

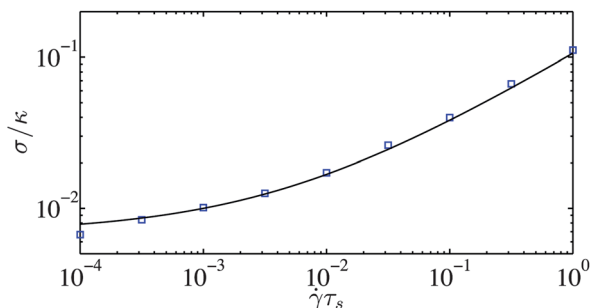


Molecular orientation dynamics on the structural rheology in diblock copolymers

Shunsuke Yabunaka^{*} and Takao Ohta

Linear viscoelasticity is studied for lamellae of block copolymer melts under shear flow by considering the orientational variable of molecules.

7489

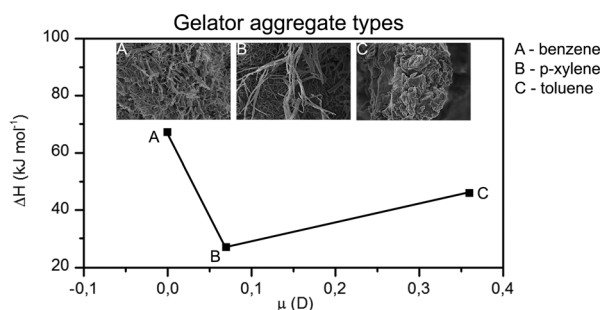


A molecular dynamics study of non-local effects in the flow of soft jammed particles

Vincent Mansard, Annie Colin,^{*} Pinaki Chaudhuri and Lydéric Bocquet

In this paper, we used numerical simulations to investigate the flow properties of soft glassy materials.

7501



Novel supramolecular organogels based on a hydrazide derivative: non-polar solvent-assisted self-assembly, selective gelation properties, nanostructure, solvent dynamics

Michał Bielejewski, Joanna Kowalczyk, Joanna Kaszyńska, Andrzej Łapiński, Roman Luboradzki, Oleg Demchuk and Jadwiga Tritt-Goc^{*}

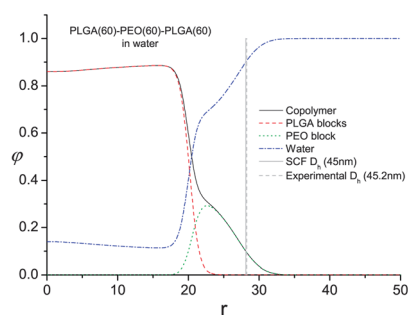
The investigated organogels revealed different properties despite the similarity of solvents used in the process of gelation studied with complementary methods.

7515

Self-consistent field predictions for quenched spherical biocompatible triblock copolymer micelles

Jérôme G. J. L. Lebouille,* Remco Tuinier,
Leo F. W. Vleugels, Martien A. Cohen Stuart
and Frans A. M. Leermakers

We have used the Scheutjens–Fleer self-consistent field (SF-SCF) method to predict the self-assembly of triblock copolymers with a solvophilic middle block and sufficiently long solvophobic outer blocks.

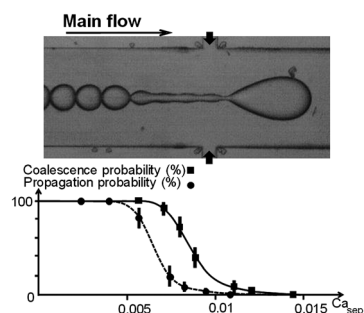


7526

A study of extensional flow induced coalescence in microfluidic geometries with lateral channels

Deniz Z. Gunes,* Mathilde Bercy, Brigitte Watzke,
Olivier Breton and Adam S. Burbidge

The probability of coalescence and its propagation, upon application of an external extensional flow, can be mapped using a microfluidic device with lateral control channels.

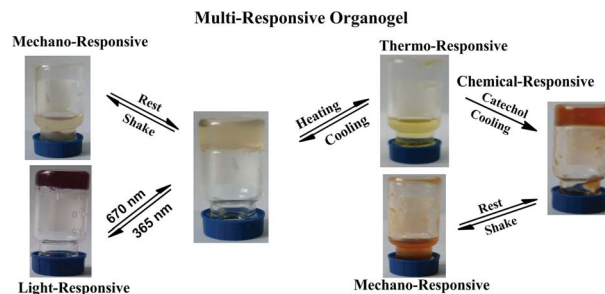


7538

A multi-stimuli responsive organogel based on a tetrapeptide–dithienylcyclopentene conjugate

Yi Jiang, Fei Zeng, Ruiying Gong, Zongxia Guo,
Chuan-Feng Chen and Xiaobo Wan*

Multi-stimuli responsive organogels based on low-molecular-weight gelators (LMWGs) have attracted much attention due to their potential applications.

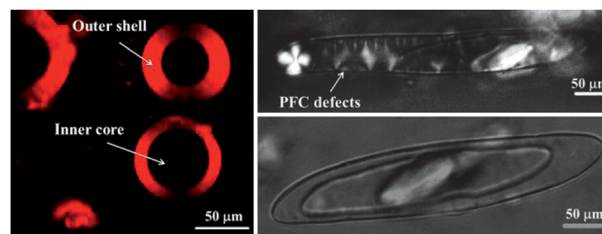


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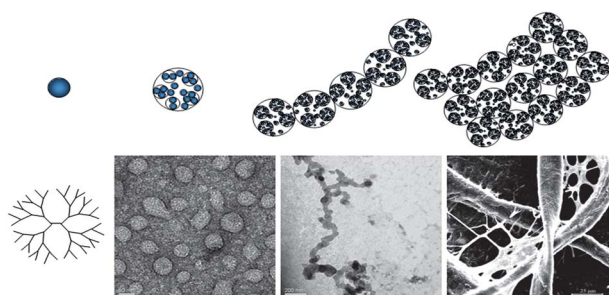
Dynamic flow behaviour of surfactant vesicles under shear flow: role of a multilamellar microstructure

Angelo Pommella,* Sergio Caserta and Stefano Guido

The deformation mechanism of surfactant multilamellar vesicles under shear flow is shown to be associated with the generation of parabolic focal conic (PFC) defects in their outer multilamellar shell.



7553

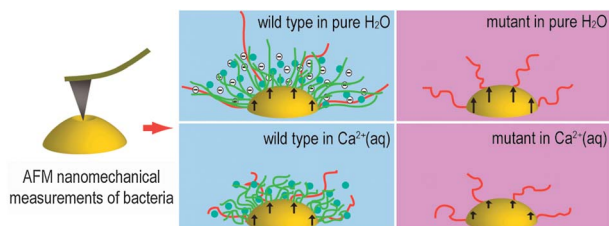


Staged self-assembly of PAMAM dendrimers into macroscopic aggregates with a microribbon structure similar to that of amelogenin

Jiaojiao Yang, Shuqin Cao, Jiahui Li, Jianyu Xin, Xingyu Chen, Wei Wu, Fujian Xu and Jianshu Li*

We revealed the self-assembly process of a carboxyl terminated poly(amidoamine) dendrimer from nanospheres to nanosphere chains, microfibers and the final microribbon structure, which is similar to that of amelogenin.

7560

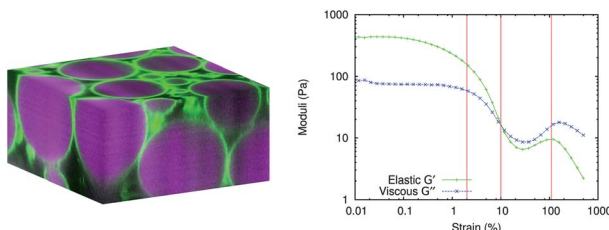


Nanomechanics measurements of live bacteria reveal a mechanism for bacterial cell protection: the polysaccharide capsule in *Klebsiella* is a responsive polymer hydrogel that adapts to osmotic stress

Huabin Wang, Jonathan J. Wilksch, Trevor Lithgow, Richard A. Strugnell and Michelle L. Gee*

AFM nano-indentation of live bacteria shows that the capsule is an organized and responsive polymer hydrogel protecting the cell from osmotic stress.

7568

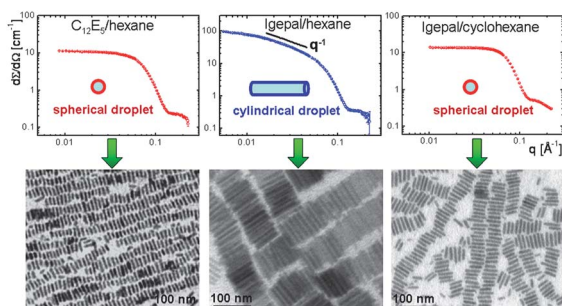


Yielding and flow of concentrated Pickering emulsions

Michiel Hermes* and Paul S. Clegg*

We have used rheo-imaging to investigate the shear flow of particle-stabilized (Pickering) emulsions with different interactions between droplets.

7576



Controllable synthesis and self-assembly of PbCO_3 nanorods in shape-dependent nonionic w/o microemulsions

Jing Zhang, Peter R. Lang, Wim Pyckhout-Hintzen and Jan K. G. Dhont*

Solely by modifying the morphology of parental microemulsions from spheres to cylinders, rodlike nanoparticles with a controllable length have been realized.

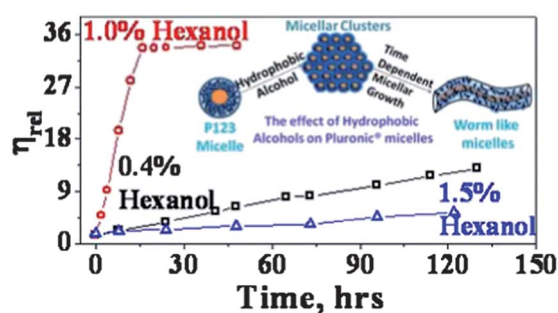
PAPERS

7583

Solubilization of hydrophobic alcohols in aqueous Pluronic solutions: investigating the role of dehydration of the micellar core in tuning the restructuring and growth of Pluronic micelles

V. Patel, J. Dey, R. Ganguly,* S. Kumar, S. Nath, V. K. Aswal and P. Bahadur

The restructuring and growth of Pluronic P123 micelles are modulated as a function of solubilization of hydrophobic alcohols because of their dehydrating effect on the micellar core.

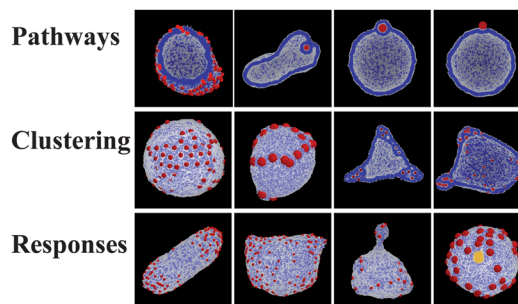


7592

Internalization pathways of nanoparticles and their interaction with a vesicle

Xiaoming Chen, Falin Tian, Xianren Zhang* and Wenchuan Wang

We simulated internalization pathways of nanoparticles and their interaction with vesicles, and discussed their potential implications for nanoparticle–cell interactions.

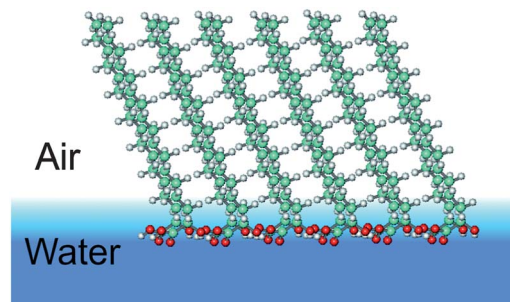


7601

Quantum chemical analysis of the thermodynamics of 2D cluster formation of 2-hydroxycarboxylic acids at the air/water interface

E. S. Fomina, Yu. B. Vysotsky, D. Vollhardt,* V. B. Fainerman and R. Miller

Thermodynamic and structural parameters of 2-hydroxycarboxylic acid monolayers at the air/water interface are calculated using the semiempirical PM3 method.

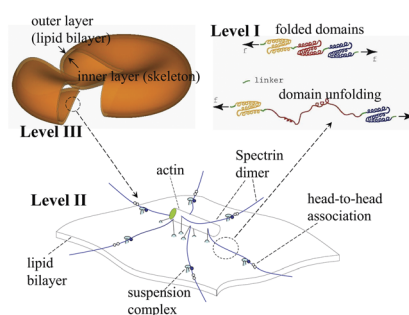


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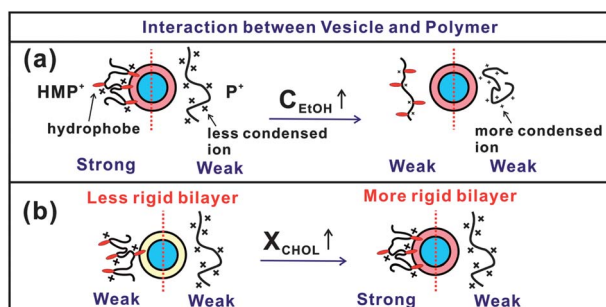
Deformation of the erythrocyte cytoskeleton in tank treading motions

Zhangli Peng and Qiang Zhu*

By coupling a fluid–structure interaction algorithm with a three-level multiscale structural model, we simulate the tank treading responses of erythrocytes (red blood cells, or RBCs) in shear flows.



7628

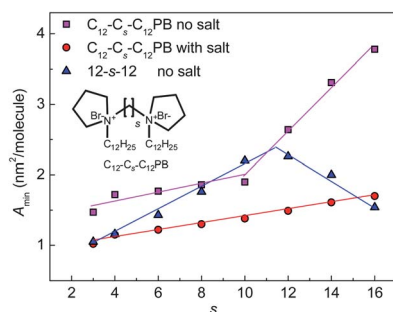


Gelation of ethosome-like catanionic vesicles by water-soluble polymers: ethanol and cholesterol effects

Chun-Wei Chiu, Chien-Hsiang Chang and Yu-Min Yang*

Gelation of ethosome-like catanionic vesicles by polycations is driven by the hydrophobic more than the electrostatic interactions.

7637

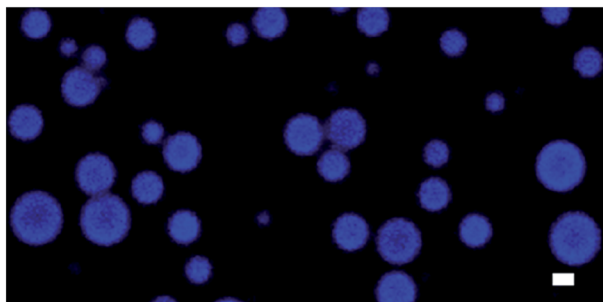


Adsorption and micellization of gemini surfactants with pyrrolidinium head groups: effect of the spacer length

Bo Cai, Jinfeng Dong, Li Cheng, Zan Jiang, Yi Yang and Xuefeng Li*

A new family of cationic gemini surfactants with pyrrolidinium head groups C₁₂-C_s-C₁₂PB (s = 3, 4, 6, 8, 10, 12, 14, and 16) was synthesized, and the molecular structure-property relationships between spacer length s and the surface and bulk properties were established.

7647



Small-molecule uptake in membrane-free peptide/nucleotide protocells

T.-Y. Dora Tang, Massimo Antognozzi, James A. Vicary, Adam W. Perriman and Stephen Mann*

The molecular interactions and mechanical properties associated with the uptake of 1-anilinonaphthalene-8-sulphonic acid into positively charged oligolysine/ATP micro-droplets are investigated.