

# Soft Matter

Where physics meets chemistry meets biology for fundamental soft matter research

[rsc.li/soft-matter-journal](https://rsc.li/soft-matter-journal)

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

## IN THIS ISSUE

ISSN 1744-6848 CODEN SMOABF 20(19) 3879-4044 (2024)



### Cover

See Roee Bashan and Naomi Oppenheimer, pp. 3901–3909.

Image reproduced by permission of Naomi Oppenheimer from *Soft Matter*, 2024, 20, 3901.

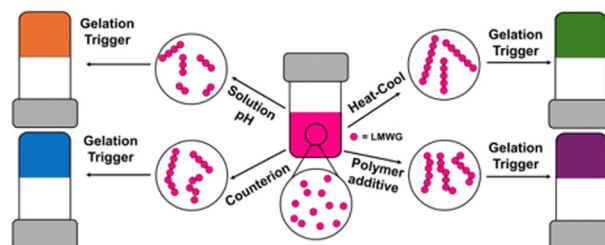
Artist credit: Alexey Chizhik

## REVIEW

3887

### Methods of changing low molecular weight gel properties through gelation kinetics

Rebecca E. Ginesi\* and Emily R. Draper\*

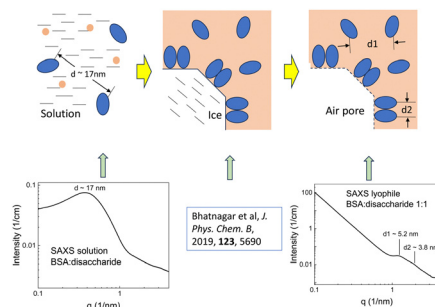


## COMMUNICATION

3897

### Two populations of protein molecules detected by small-angle neutron and X-ray scattering (SANS and SAXS) in lyophilized protein:lyoprotector (disaccharide) systems

Viviana Cristiglio, Shaoxin Feng,\* Michael Sztucki, Xiaoda Yuan and Evgenyi Shalaev\*



# RSC Advances

At the heart of open access for  
the global chemistry community

Editor-in-chief

Russell J Cox

Leibniz Universität Hannover, Germany

We stand for:



**Breadth** We publish work in all areas of chemistry and reach a global readership



**Affordability** Low APCs, discounts and waivers make publishing open access achievable and sustainable



**Quality** Research to advance the chemical sciences undergoes rigorous peer review for a trusted, society-run journal



**Community** Led by active researchers, we publish quality work from scientists at every career stage, and all countries

Submit your work now

[rsc.li/rsc-advances](https://rsc.li/rsc-advances)

@RSC\_Adv

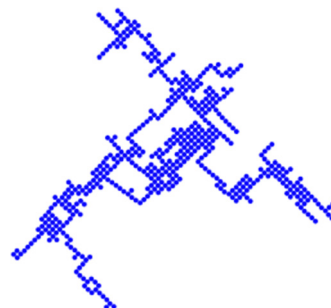


## PAPERS

3901

# Hydrodynamically induced aggregation of two dimensional oriented active particles

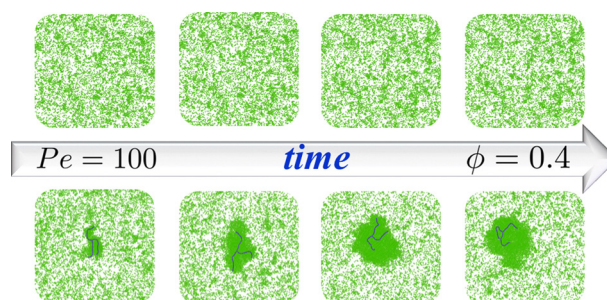
Roe Bashan and Naomi Oppenheimer\*



3910

# A passive star polymer in a dense active bath: insights from computer simulations

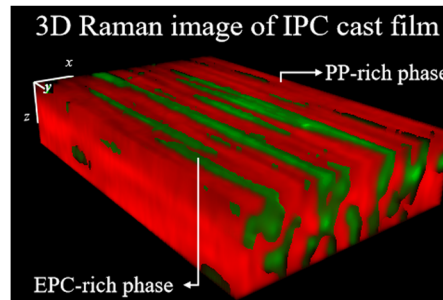
Ramanand Singh Yadav, Sanaa Sharma, Ralf Metzler\* and Rajarshi Chakrabarti\*



3923

# Morphology of impact polypropylene copolymer extruded cast film revealed by confocal Raman imaging

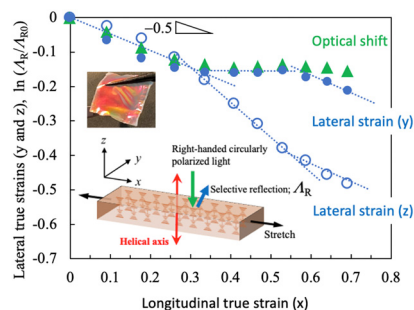
Chunbo Zhang,\* Meng Xu, Minqiao Ren, Hongwei Shi,\* Guoming Liu, Juan Li, Xuanbo Liu, Longgui Zhang\* and Dali Gao



3931

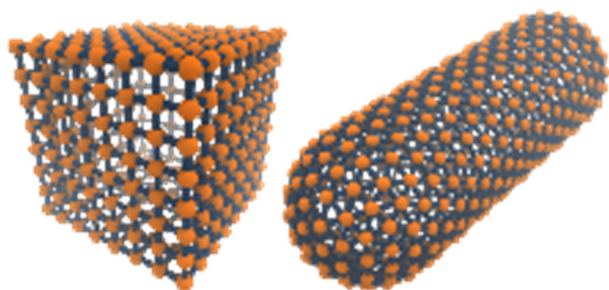
# Significant anisotropic deformation and optical shifts in stretched cholesteric liquid crystal elastomers

Saki Mori, Hideaki Takagi, Nobutaka Shimizu, Noriyuki Igarashi, Shinichi Sakurai and Kenji Urayama\*



## PAPERS

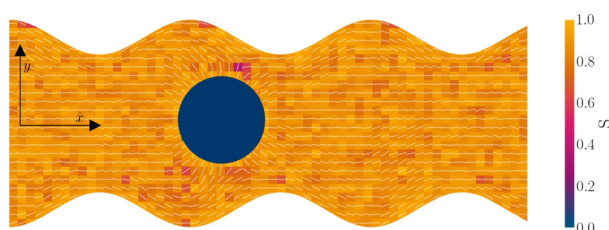
3942



### Mesoscale simulations of diffusion and sedimentation in shape-anisotropic nanoparticle suspensions

Yashraj M. Wani, Penelope Grace Kovakas, Arash Nikoubashman\* and Michael P. Howard\*

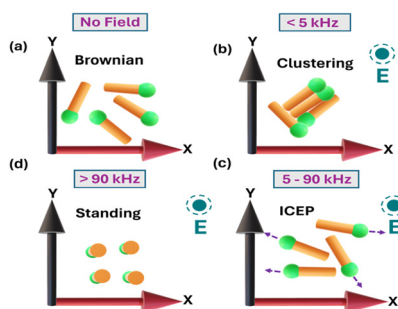
3954



### Lock-key microfluidics: simulating nematic colloid advection along wavy-walled channels

Karolina Wamsler, Louise C. Head and Tyler N. Shendruk\*

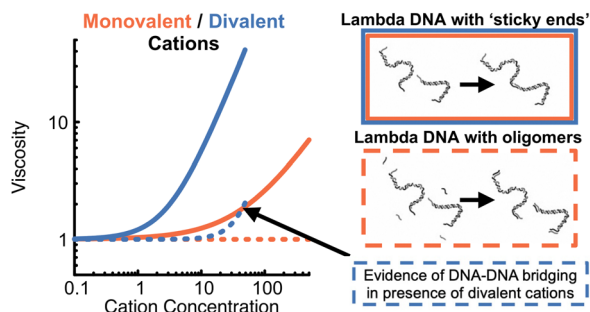
3971



### Dynamics and phase behavior of metallo-dielectric rod-shaped microswimmers driven by alternating current electric field

Suvendu Kumar Panda, Srikanta Debata, Nomaan Alam Kherani and Dhruv Pratap Singh\*

3980



### Effects of monovalent and divalent cations on the rheology of entangled DNA

Jennifer Harnett, Simon Weir and Davide Michieletto\*

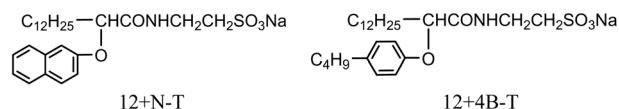


## PAPERS

3987

# The effect of aromatic side chains on the dilational rheological properties of *N*-acyltaurate amphiphiles at water–decane interfaces

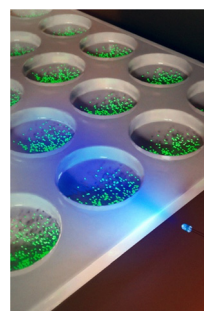
Yang-wen Zhu, Zhi-cheng Xu, Li Zhang, Ping Liu, Yu Hou, Lei Zhang\* and Lu Zhang\*



3996

# Short-term memory effects in the phototactic behavior of microalgae

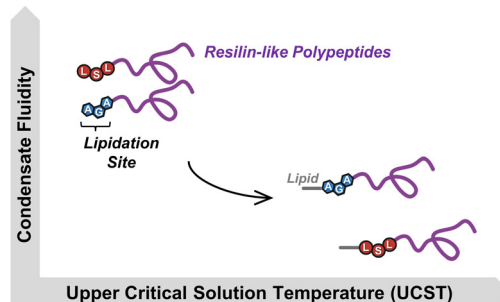
Taha Laroussi, Mojtaba Jarrahi and Gabriel Amselem\*



4007

# Lipidation alters the phase-separation of resilin-like polypeptides

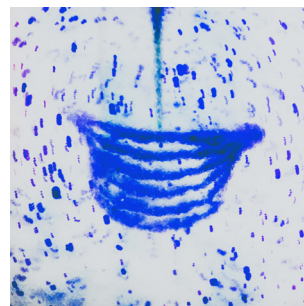
Zhe Zhang, Jingjing Ji, Md. Shahadat Hossain, Briah Bailey, Shikha Nangia\* and Davoud Mozhdehi\*



4015

# Confinement controls the creep rate in soft granular packings

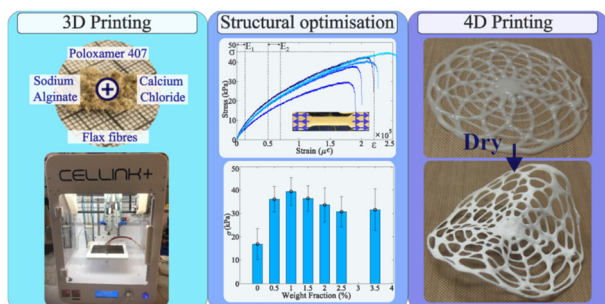
Joshua A. Dijksman\* and Tom Mullin





## PAPERS

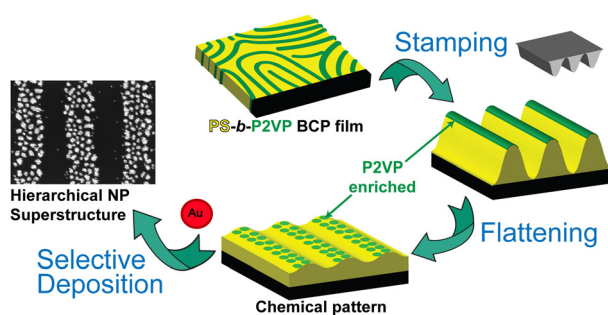
4021



### Flax fibre reinforced alginate poloxamer hydrogel: assessment of mechanical and 4D printing potential

Charles de Kergariou,\* Graham J. Day, Adam W. Perriman, James P. K. Armstrong and Fabrizio Scarpa

4035



### Nanoparticle assembly by transient topography induced by applying soft lithography to block copolymer films

Meneka Banik and Roy Shenhar\*

