

# 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 21(28) 5575-5814 (2025)



### Cover

See Liping Liu, Pradeep Sharma *et al.*, pp. 5655-5668.

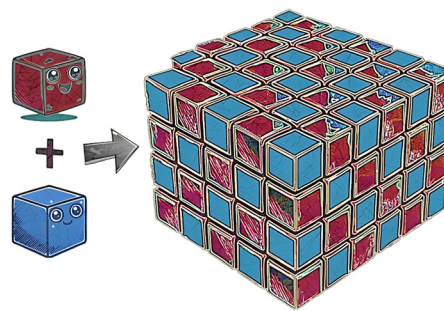
Image reproduced by permission of Pratik Khandagale, Hao Lin, Liping Liu and Pradeep Sharma from *Soft Matter*, 2025, 21, 5655.

## REVIEW

5583

### Co-assembly of nanometer- and submicrometer-sized colloidal particles into multi-component ordered superstructures

Javier Fonseca,\* Li Jiao, Anna Broto-Ribas, Gurvinder Singh and Angang Dong

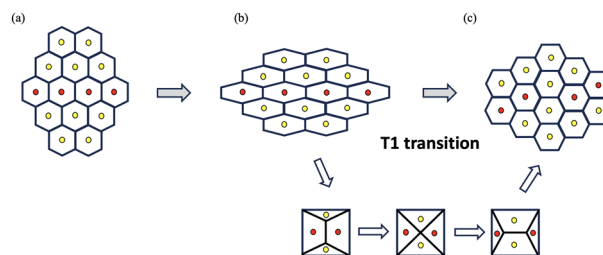


## PAPERS

5655

### Statistical mechanics of cell aggregates: explaining the phase transition and paradoxical piezoelectric behavior of soft biological tissues

Pratik Khandagale, Hao Lin, Liping Liu\* and Pradeep Sharma\*



# Royal Society of Chemistry approved training courses

Explore your options.  
Develop your skills.  
Discover learning  
that suits you.

**Courses in the classroom,  
the lab, or online**

Find something for every  
stage of your professional  
development. Search our  
database by:

- subject area
- location
- event type
- skill level

Members **get at least 10% off**

Visit [rsc.li/cpd-training](https://rsc.li/cpd-training)

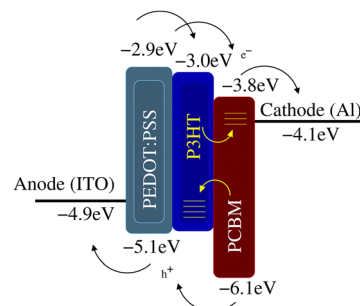
**SAVE  
10%**



5669

### Degradation mechanism of P3HT:PCBM-based bulk heterojunction solar cells

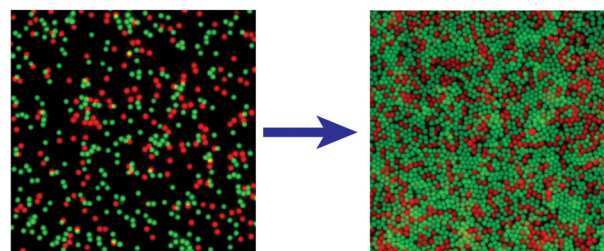
Tirukoti Mounika, Manshi Singh, Inderpreet Singh,\*  
P. Arun and Kuldeep Kumar\*



5675

### Frustrated crystallization kinetics in marginally mismatched binary self-assembly driven by depletion interactions

Sk Tahmid Shahriar, Chris Feltman, Sean Machler and  
Nabila Tanjeem\*



5687

### Progressive colloidal clogging mechanism by dendritic build-up in porous media

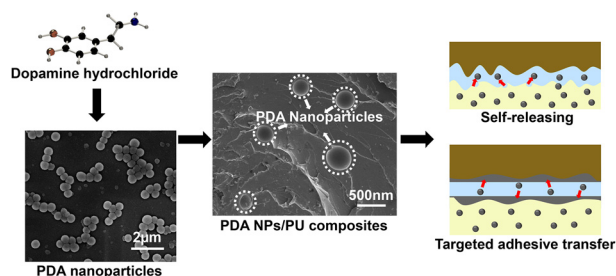
Walid Okaybi,\* Sophie Roman and Cyprien Soulaïne



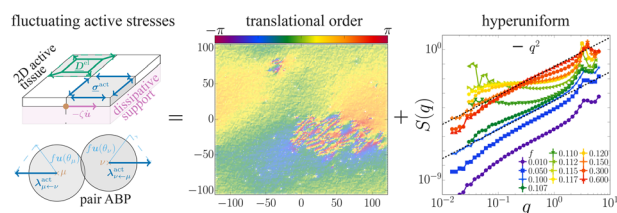
5699

### Preparation of polydopamine nanoparticles/polyurethane composites for self-targeted transfer of hydration lubrication films underwater

Chaobao Wang, Yuyang Xi, Xinqi Zou,\* Xiuqin Bai,\*  
Jiale Chen and Binlu Zhang



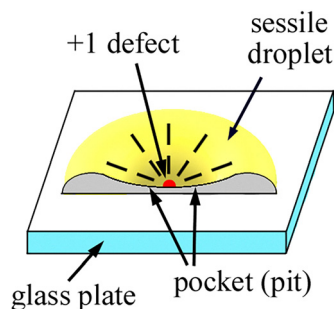
5710



## Long-range order in two-dimensional systems with fluctuating active stresses

Yann-Edwin Keta\* and Silke Henkes\*

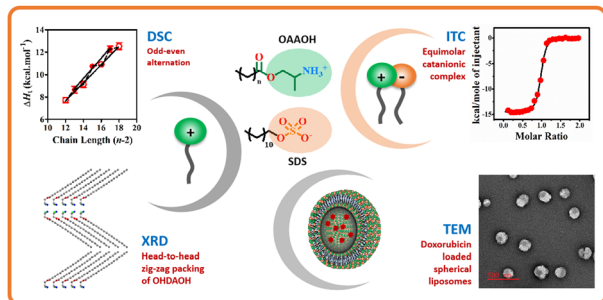
5720



## Topological transformations of isotropic droplets with breakup and formation of topological defects in a confined nematic geometry

P. V. Dolganov,\* N. A. Spiridenko and V. K. Dolganov

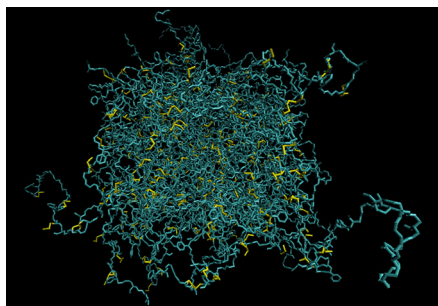
5728



## Synthesis and characterization of long chain O-acyl-L-alaninols and investigation of drug encapsulation and release by equimolar O-myristoyl-L-alaninol/SDS catanionic liposomes

Suman Kumar Choudhury, Ravindar Chinapaka, Konga Manasa and Musti J. Swamy\*

5743



## Elastic, viscoelastic, dynamic, topological and structural properties of crosslinked SBR through atomistic molecular dynamics simulations

Spyros V. Kallivokas,\* Anthony Chazirakis, Rohit Ghanta, Anastassia Rissanou, Patrycja Polńska, Craig Burkhardt, Manolis Doxastakis and Vagelis Harmandaris\*

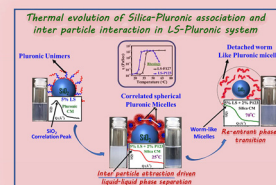




5752

## Association of Pluronics at silica surfaces and accompanying evolutions of inter particle interactions in conjugate nano-suspensions

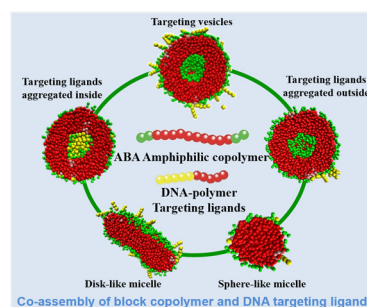
Sugam Kumar, Rajib Ganguly,\* Dirk Honecker and Vinod K. Aswal



5764

## Co-assembly of amphiphilic triblock copolymers with DNA-polymer targeting ligands in solution

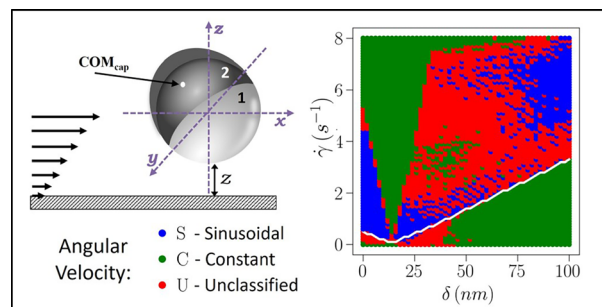
Junwei Zhou, Menghan Zou, Xiandeng Qiu and Rong Wang\*



5773

## Dynamics of a bottom-heavy Janus particle near a wall under shear flow

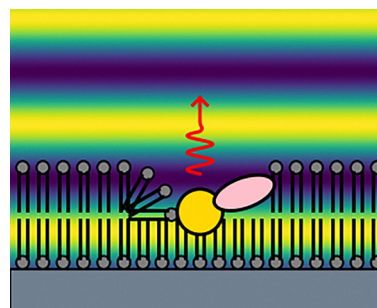
Zohreh Jalilvand, Daniele Notarmuzi,\* Ubaldo M. Córdova-Figueroa, Emanuela Bianchi and Ilona Kretzschmar\*



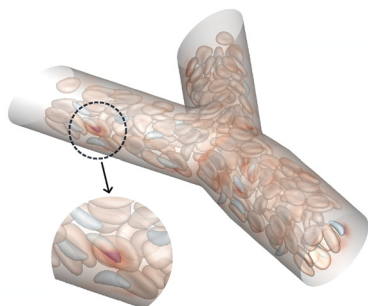
5785

## X-ray fluorescence standing wave study of the interaction of the antimicrobial peptide indolicidin with a supported model membrane

Gobind Basnet, Jonathan Maloney, Jyotsana Lal, Elizabeth Gaillard, Denis T. Keane, Evguenia A. Karapetrova, Raymond Conley and Laurence Lurio\*



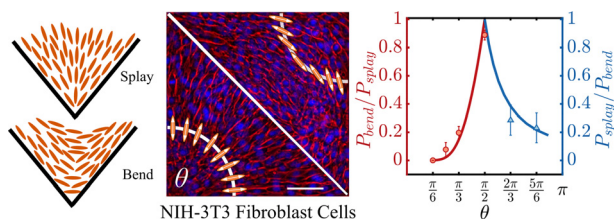
5793



### Red blood cell partitioning and segregation through vascular bifurcations in a model of sickle cell disease

Xiaopo Cheng, Christina Caruso, Wilbur A. Lam and Michael D. Graham\*

5804



### Splay and bend deformations in cells near corners

Aniruddh Murali, Praseon Awasthi, Kirsten Endresen, Arkadiusz Goszczak and Francesca Serra\*

