

Soft Matter

Where physics meets chemistry meets biology for fundamental soft matter research

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(20) 3913-4120 (2025)



Cover

See Gleb E. Yakubov *et al.*, pp. 3946–3956. Image reproduced by permission of Prof. Gleb Yakubov, Ms Lathika Vaniyan and Mr Julien Masson from *Soft Matter*, 2025, 21, 3946.



Inside cover

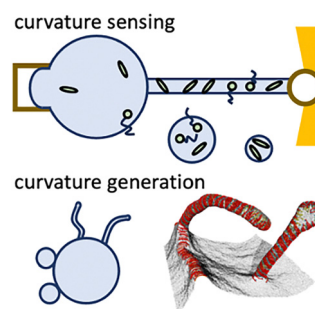
See Mingfeng Wei, Lixin Wu *et al.*, pp. 3941–3945. Image reproduced by permission of Lixin Wu from *Soft Matter*, 2025, 21, 3941.

REVIEW

3922

Curvature-sensing and generation by membrane proteins: a review

Hiroshi Noguchi

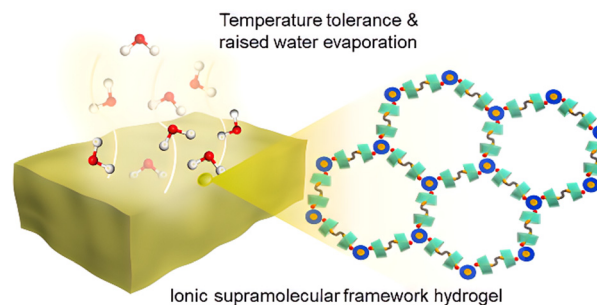


COMMUNICATION

3941

Cluster-directed ionic framework supramolecular hydrogel with high-temperature tolerability and enhanced water evaporation

Jiaxu Wang, Liang Yue, Mingfeng Wei,* Bao Li and Lixin Wu*



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

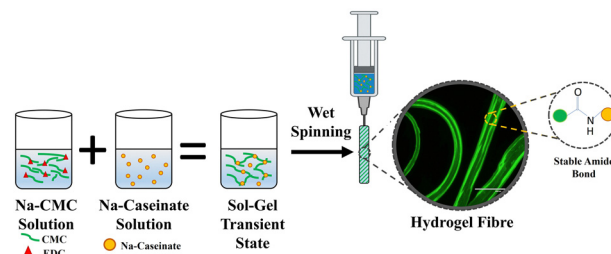
**SAVE
10%**



3946

Wet spinning of sodium carboxymethyl cellulose–sodium caseinate hydrogel fibres: relationship between rheology and spinnability

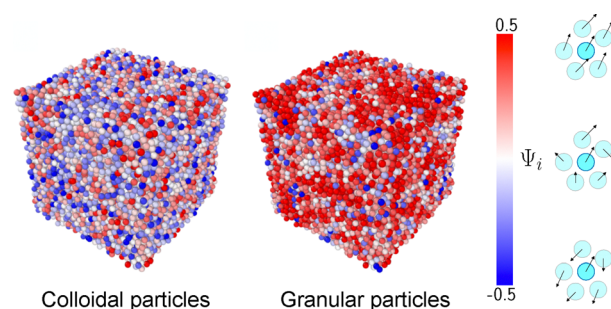
Lathika Vaniyan, Pallab Kumar Borah, Galina E. Pavlovskaya, Nick Terrill, Joshua E. S. J. Reid, Michael Boehm, Philippe Prochasson, Reed A. Nicholson, Stefan Baier and Gleb E. Yakubov*



3957

Enhanced collective vibrations in granular materials

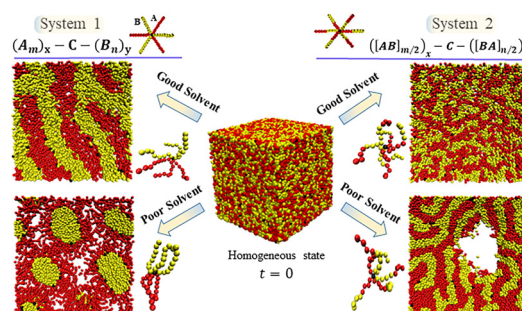
Shihori Koyama,* Norihiro Oyama, Hideyuki Mizuno and Atsushi Ikeda



3965

Self-assembly kinetics of miktoarm star polymers in diverse solvent environments: insights from dissipative particle dynamics simulations

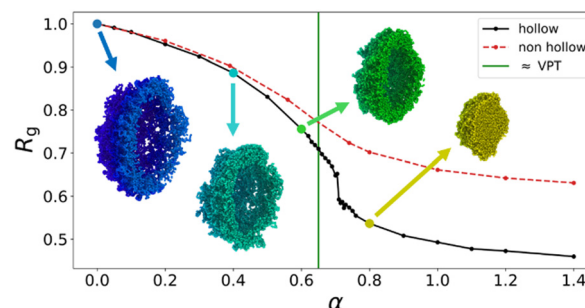
Devendra Kumar Verma and Awaneesh Singh*



3979

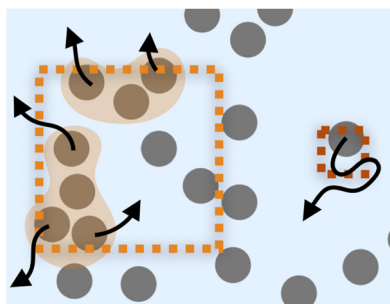
Numerical insights on the volume phase transition of thermoresponsive hollow microgels

Leah Rank and Emanuela Zaccarelli*



PAPERS

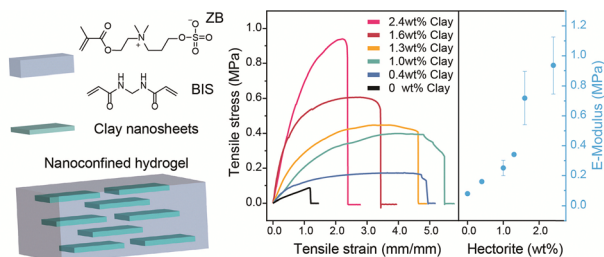
3991



Measuring collective diffusion coefficients by counting particles in boxes

Adam Carter, Eleanor K. R. Mackay, Brennan Sprinkle, Alice L. Thorneywork and Sophie Marbach*

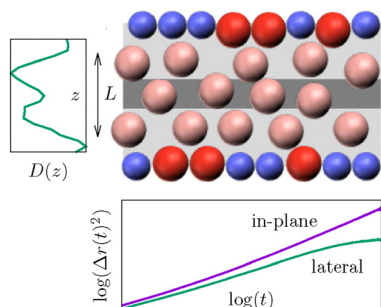
4003



Tunable mechanical properties and phase transitions in nanoconfined polyzwitterionic UCST hydrogels

Sebastian Loescher, Chen Liang, Remi Plamont, Josef Breu,* Olli Ikkala* and Hang Zhang*

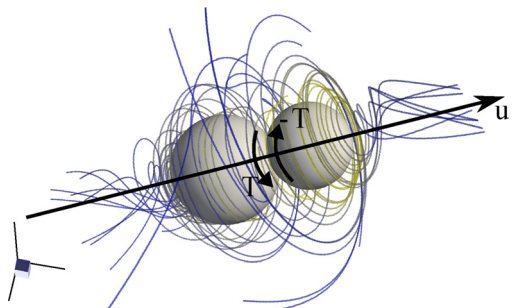
4010



Inhomogeneous diffusion in confined colloidal suspensions

Gerhard Jung,* Alejandro Villada-Balbuena and Thomas Franosch

4021



Inertia-driven propulsion of asymmetric spinner-dimers at moderate Reynolds numbers

Zaiyi Shen,* Dongfang Fu and Juho S. Lintuvuori*

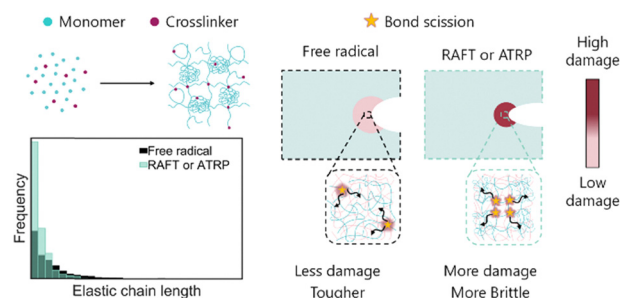


PAPERS

4029

Designing soft and tough multiple-network elastomers: impact of reversible radical deactivation on filler network architecture and fracture toughness

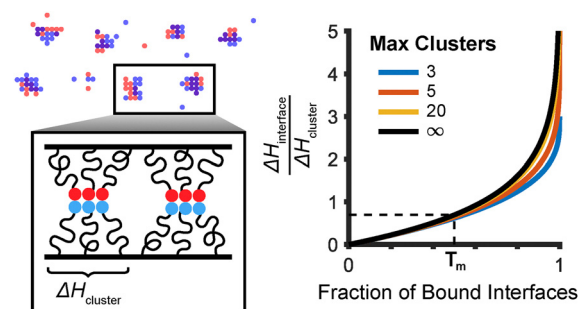
Aaliyah Z. Dookhith, Zidan Zhang, Venkat Ganesan and Gabriel E. Sanoja*



4043

Modeling the role of supramolecular clustering in multivalent assembly

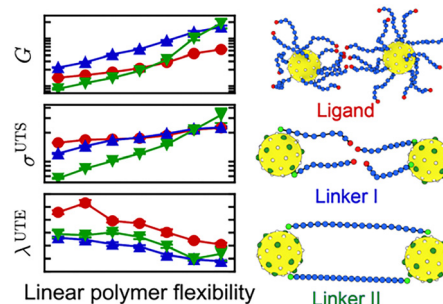
Nicholas Sbalbi, Artem Petrov, Jacob Sass, Matthew Ye, Alfredo Alexander-Katz and Robert J. Macfarlane*



4053

Effects of ligand vs. linker on phase behavior and mechanical properties of nanoparticle gels

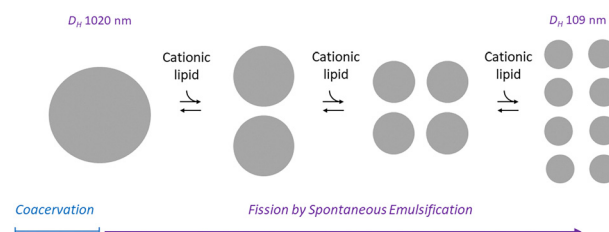
Qizan Chen, Dinesh Sundaravadivelu Devarajan, Arash Nikoubashman, Michael P. Howard* and Jeetain Mittal*



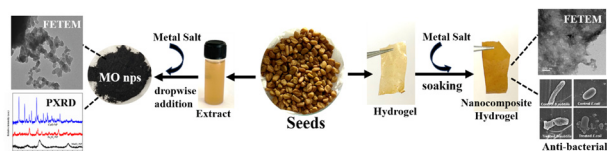
4063

Formation of RNA lipid nanoparticles: an equilibrium process with a liquid intermediate stage

Jessica Boutros, Ziyue Li, Leah Wright and Robert J. Falconer*



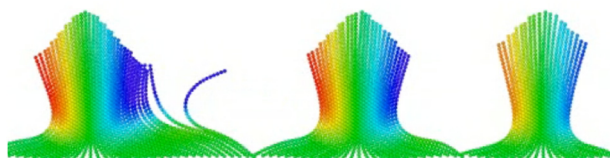
4069



Leveraging metal oxide-fenugreek hydrogel nanocomposites for enhanced structural and biological properties

Debolina Ghosh, Deepmoni Deka and Gopal Das*

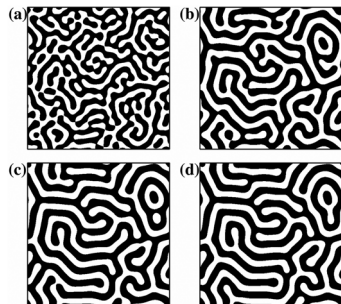
4078



Kinetically arrested periodic clusters in active filament arrays

Sonu Kharayat, Prashant K. Purohit, L. Mahadevan, Arvind Gopinath* and Raghunath Chelakkot*

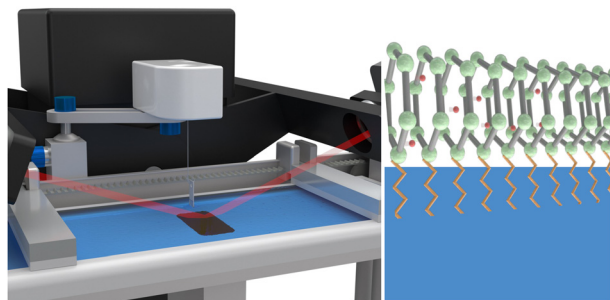
4093



Phase separation in active binary mixtures with chemical reaction

Sayantan Mondal and Prasenjit Das*

4101



Electronic interactions of a quatertiphenyl-based surfactant at the liquid/gas interface

Changwoo Bae, Kamatham Narayanaswamy, Hisham Idriss, Ludvine Poyac, Indraneel Sen, Sébastien Richeter, Sébastien Clément, Anne-Laure Biance,* Samuel Albert* and Oriane Bonhomme



CORRECTION

4117

Correction: Wet spinning of sodium carboxymethyl cellulose–sodium caseinate hydrogel fibres: relationship between rheology and spinnability

Lathika Vaniyan, Pallab Kumar Borah, Galina E. Pavlovskaya, Nick Terrill, Joshua E. S. J. Reid, Michael Boehm, Philippe Prochasson, Reed A. Nicholson, Stefan Baier and Gleb E. Yakubov*

