

# Soft Matter

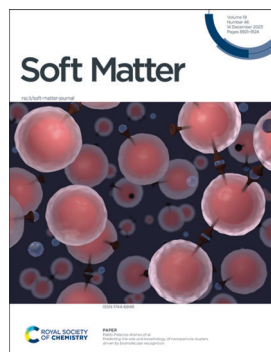
Where physics meets chemistry meets biology for fundamental soft matter research

[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 19(46) 8921-9124 (2023)



### Cover

See Pablo Palacios-Alonso *et al.*, pp. 8929–8944.

Image reproduced by permission of Rafael Delgado-Buscalioni and Alina Jiménez from *Soft Matter*, 2023, 19, 8929.

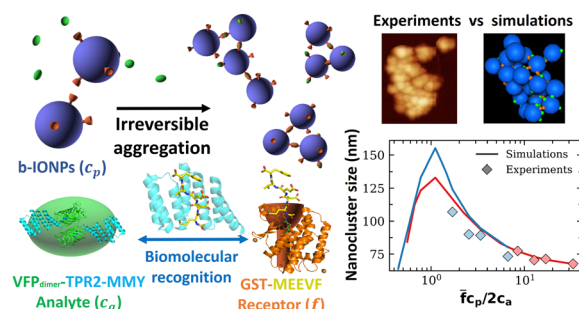
Image credit: Rafael Delgado-Buscalioni and Alina Jiménez

## PAPERS

8929

### Predicting the size and morphology of nanoparticle clusters driven by biomolecular recognition

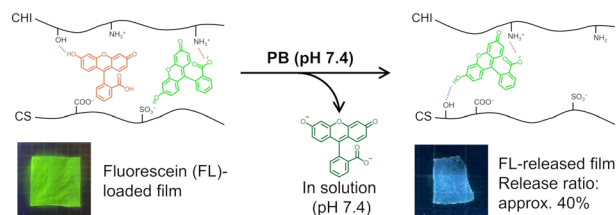
Pablo Palacios-Alonso,\* Elena Sanz-de-Diego, Raúl P. Peláez, A. L. Cortajarena, F. J. Teran and Rafael Delgado-Buscalioni



8945

### The pH responsiveness of fluorescein loaded in polysaccharide composite films

Konatsu Takagi, Takuya Sagawa and Mineo Hashizume\*



## Editorial Staff

### Executive Editor

Maria Southall

### Deputy Editor

Laura Ghandhi

### Editorial Production Manager

Chris Goodall

### Assistant Editors

Sean Browner, Molly Colgate, Paul Scott, Alison Winder

### Editorial Assistant

Basita Javeed

### Publishing Assistant

Allison Holloway

### Publisher

Sam Keltie

For queries about submitted papers, please contact Chris Goodall, Editorial Production Manager in the first instance. E-mail: [softmatter@rsc.org](mailto:softmatter@rsc.org)

For pre-submission queries please contact Maria Southall, Executive Editor. E-mail: [softmatter-rsc@rsc.org](mailto:softmatter-rsc@rsc.org)

Soft Matter (electronic: ISSN 1744-6848)

is published 48 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to the Royal Society of Chemistry Order Department, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK

Tel +44 (0)1223 432398; E-mail: [orders@rsc.org](mailto:orders@rsc.org)

2023 Annual (electronic) subscription price: £1641; \$2891.

Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only will be charged VAT.

If you take an institutional subscription to any Royal Society of Chemistry journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at [www.rsc.org/ip](http://www.rsc.org/ip)

Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank.

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office: Burlington House, Piccadilly, London W1J 0BA, UK, Telephone: +44 (0) 207 4378 6556.

### Advertisement sales:

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017;

E-mail: [advertising@rsc.org](mailto:advertising@rsc.org)

For marketing opportunities relating to this journal, contact [marketing@rsc.org](mailto:marketing@rsc.org)

# Soft Matter

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

An interdisciplinary journal focusing on innovative soft matter topics through original research and reviews.

## Editorial Board

### Editor-in-Chief

Alfred Crosby, University of Massachusetts Amherst, USA

### Associate Editors

Roberto Cerbino, University of Vienna, Austria  
Lorna Dougan, University of Leeds, UK

Ewa Górecka, Warsaw University, Poland

Sanat Kumar, Columbia University, USA

Guruswamy Kumaraswamy, Indian Institute of Technology Bombay, India

Zhihong Nie, Fudan University, China

Amy Shen, Okinawa Institute of Science and

Technology, Japan

Lixin Wu, Jilin University, China

Emanuela Zaccarelli, Sapienza University of Rome, Italy

Xuehua Zhang, University of Alberta, Canada

## Advisory Board

Dave Adams, University of Glasgow, UK  
Shaun Ahn, Dow, USA

Tommy Angelini, University of Florida, USA

Markus Antonietti, Max Planck Institute of Colloids and Interfaces, Germany

Omar Azzaroni, UNLP, Argentina

Piero Baglioni, University of Florence, Italy

Anna Balazs, University of Pittsburgh, USA

Arindam Banerjee, Indian Association for the Cultivation of Science, India

Madivala Basavaraj, Indian Institute of Technology Madras, India

Patricia Bassereau, Physico Chimie Curie Lab, France

Jasna Bruijic, New York University, USA

Jacinta Conrad, University of Houston, USA

Vincent Craig, Australian National University, Australia

Emanuela Del Gado, Georgetown University, USA

Jan Dhont, Forschungszentrum Jülich, Germany

Carmen Domene, University of Bath, UK

Zahra Fakhraei, University of Pennsylvania, USA

Glenn Fredrickson, University of California at Santa Barbara, USA

Valeria Garbin, TU Delft, The Netherlands

Jian Ping Gong, Hokkaido University, Japan

Ian Hamley, University of Reading, UK

Jianbin Huang, Peking University, China

Lucio Isa, ETH Zurich, Switzerland

Paul Janmey, University of Pennsylvania, USA

Gijsje Koenderink, AMOLF, Netherlands

Daniela Kraft, Leiden University, Netherlands

Eugenia Kumacheva, University of Toronto, Canada

Oleg Lavrentovich, Kent State University, USA

Junbai Li, Institute of Chemistry, Chinese Academy of Sciences, China

Christos Likos, University of Vienna, Austria

Dongsheng Liu, Tsinghua University, China

Bradley Olsen, Massachusetts Institute of Technology, USA

Rossana Pasquino, The University of Naples

Federico II, Italy

Susan Perkin, University of Oxford, UK

Sarah Perry, University of Massachusetts Amherst, USA

Darrin Pochan, University of Delaware, USA

David Quéré, ESPCI, France

Sriram Ramaswamy, Indian Institute of Science,

India

Meital Reches, The Hebrew University of Jerusalem, Israel

Alejandro Rey, McGill University, Canada

Connie Roth, Emory University, USA

Michael Rubinstein, Duke University, USA

Sam Safran, Weizmann Institute of Science, Israel

Takamasa Sakai, The University of Tokyo, Japan

Peter Schurtenburger, Lund University, Sweden

Kathleen Stebe, University of Pennsylvania, USA

Joakim Stenhammar, Lund University, Sweden

Howard Stone, Princeton University, USA

Hajime Tanaka, University of Tokyo, Japan

Evelyn Van Ruymbeke, Université Catholique de Louvain, Belgium

Jan Vermant, ETH Zurich, Switzerland

Petia Vlahovska, Northwestern University, USA

Dimitris Vlassopoulos, University of Crete, Greece

Yilin Wang, Institute of Chemistry, Chinese Academy of Sciences, China

Catherine Whitby, Massey University of New Zealand, New Zealand

Tim White, University of Colorado, USA

Duyang Zang, Northwestern Polytechnical University, China

## Information for Authors

Full details on how to submit material for publication in

Soft Matter are given in the Instructions for Authors (available from <http://www.rsc.org/authors>). Submissions should be made via the journal's homepage: [rsc.li/soft-matter-journal](http://rsc.li/soft-matter-journal). Submissions: The journal welcomes submissions of manuscripts for publication as Full Papers, Communications, Reviews, Perspectives, Tutorial Reviews. Full Papers and Communications should describe original work of high quality and impact.

Additional details are available from the Editorial Office or

<http://www.rsc.org/authors>

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)–Reproduced by permission of the Royal Society of Chemistry.

This journal is © The Royal Society of Chemistry 2023.

Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

Registered charity number: 207890

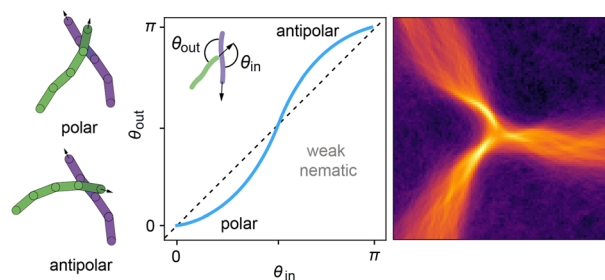


## PAPERS

8954

## Hierarchical defect-induced condensation in active nematics

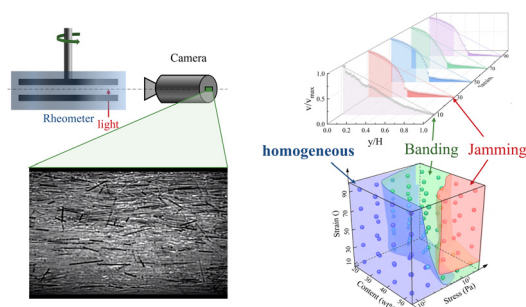
Timo Krüger, Ivan Maryshev and Erwin Frey\*



8965

## Role of confinement in the shear banding and shear jamming in noncolloidal fiber suspensions

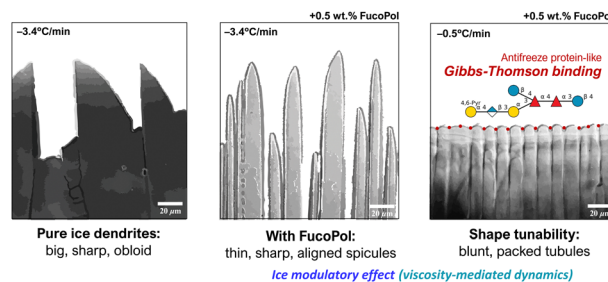
Benke Li, Wei You, Sijun Liu, Li Peng, Xianbo Huang\* and Wei Yu\*



8978

## Ice modulatory effect of the polysaccharide FucoPol in directional freezing

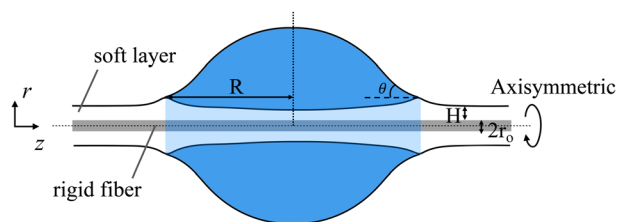
Bruno M. Guerreiro, Leo T. Lou, Boris Rubinsky\* and Filomena Freitas\*



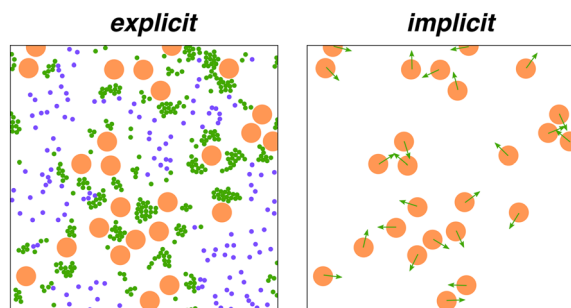
8988

## Static wetting of a barrel-shaped droplet on a soft-layer-coated fiber

Bo Xue Zheng, Christian Pedersen, Andreas Carlson and Tak Shing Chan\*



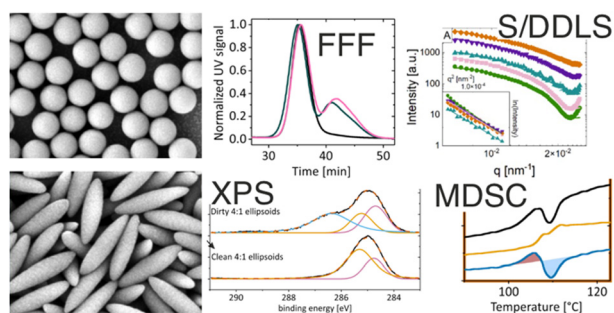
8997



### Isotropic active colloids: explicit vs. implicit descriptions of propulsion mechanisms

Jeanne Decayeux, Jacques Fries, Vincent Dahirel, Marie Jardat and Pierre Illien

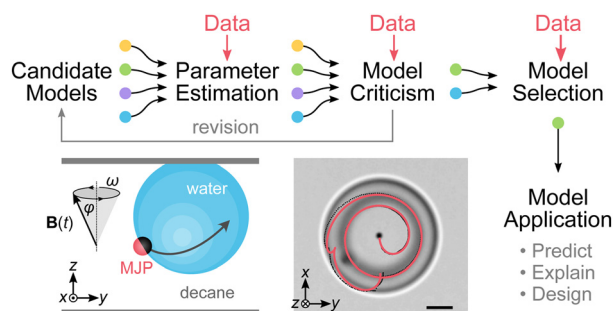
9006



### Prolate spheroidal polystyrene nanoparticles: matrix assisted synthesis, interface properties, and scattering analysis

Dominik Benke, Tanja Feller, Marcel Krüsmann, Anna M. Neuhöfer, Friederike Ganster, Matthias Karg and Markus Retsch\*

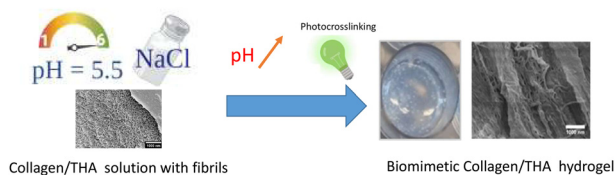
9017



### Magneto-capillary particle dynamics at curved interfaces: inference and criticism of dynamical models

Dimitri Livitz, Kiran Dhatt-Gauthier and Kyle J. M. Bishop\*

9027



### Optimizing the physical properties of collagen/hyaluronan hydrogels by inhibition of polyionic complexes formation at pH close to the collagen isoelectric point

Stéphanie De Oliveira, Gregor Miklosic, Joëlle Veziers, Sébastien Grastilleur, Thibaud Coradin, Catherine Le Visage, Jérôme Guicheux, Matteo D'Este and Christophe Hélary\*

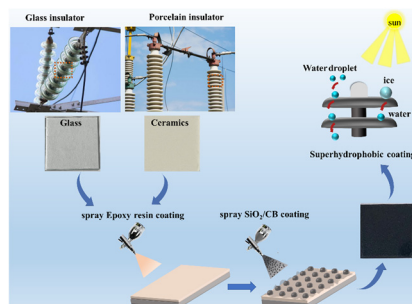


## PAPERS

9036

# Preparation and performance of anti-icing and deicing PF-POS@SiO<sub>2</sub>/CB photothermal superhydrophobic coatings for electrical insulators

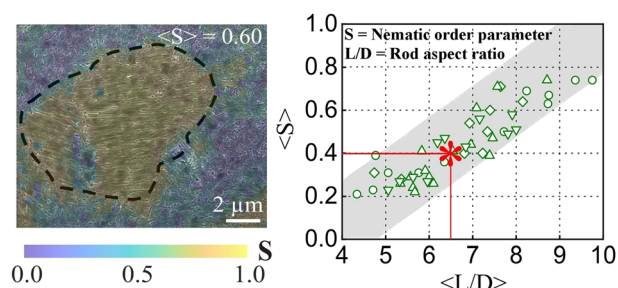
Minchao Zheng, Cheng Zhou, Qinpei Liu, Xia Li, Yuxin Yang, Yan Sun, Zhenyu Zhu, Yanyan Huang\* and Qinghua Zhou\*



9050

# Quantifying nematic order in the evaporation-driven self-assembly of halloysite nanotubes: nematic islands and the critical aspect ratio

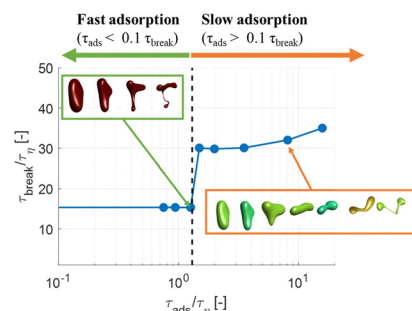
Arun Dadwal, Meenu Prasher,\* Pranesh Sengupta and Nitin Kumar\*



9059

# Emulsifier adsorption kinetics influences drop deformation and breakup in turbulent emulsification

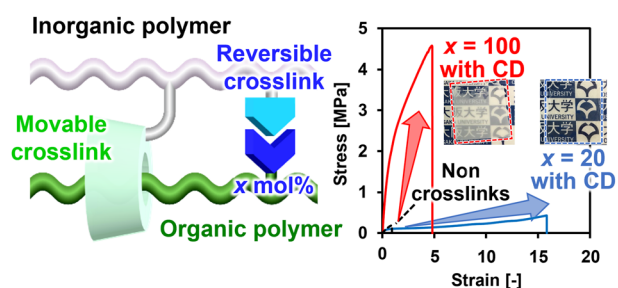
Andreas Håkansson\* and Lars Nilsson



9074

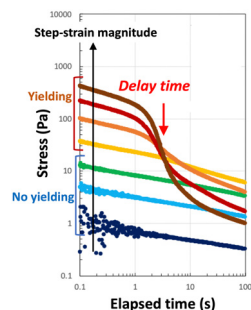
# Enhancement of the mechanical properties of organic–inorganic hybrid elastomers by introducing movable and reversible crosslinks

Naoki Yamashita, Kenji Yamaoka, Ryohei Ikura, Daichi Yoshida, Junsu Park, Nobu Kato, Masanao Kamei, Kentaro Ogura, Minoru Igarashi, Hideo Nakagawa and Yoshinori Takashima\*





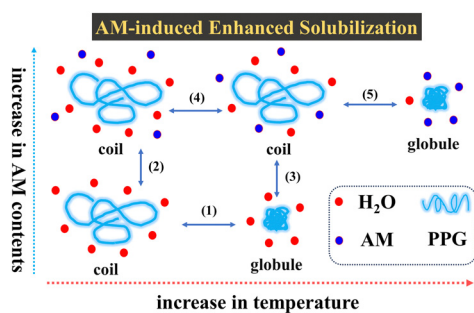
9082



### Stress-independent delay time in yielding of dilute colloidal gels

Atsushi Yamamoto, Takumi Inui, Daisuke Suzuki\* and Kenji Urayama\*

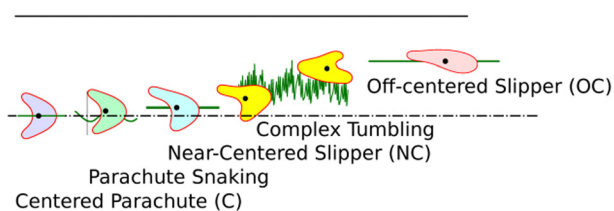
9092



### Acrylamide-induced enhanced solubilization of poly(propylene glycol) in aqueous solution

Chao Zheng,\* Yanlin Chen and Feng Chen

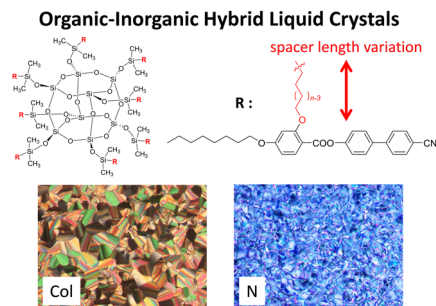
9101



### Dynamics and rheology of vesicles under confined Poiseuille flow

Zhe Gou, Hengdi Zhang, Abdessamad Nait-Ouhra, Mehdi Abbasi, Alexander Farutin and Chaouqi Misbah\*

9115



### Synthesis and mesomorphic properties of "side-on" hybrid liquid crystalline silsesquioxanes

Kosuke Kaneko,\* Atsuhiko Mandai, Benoît Heinrich, Bertrand Donnio and Tomonori Hanasaki

