# **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 19(36) 6859-7048 (2023)



#### Cover

See Adrian Baule et al., pp. 6875-6884. Image reproduced by permission of Adrian Baule from Soft Matter. 2023, 19, 6875.



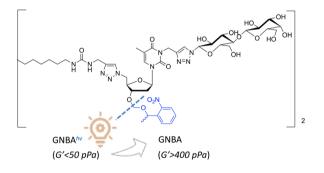
#### Inside cover

See Mario Sandoval. pp. 6885-6895. Image reproduced by permission of Mario Sandoval from Soft Matter. 2023, 19, 6885.

#### COMMUNICATIONS

Light-modulation of gel stiffness: a glyconucleoside based bolaamphiphile as a photo-cleavable low molecular weight gelator

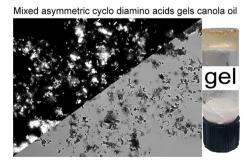
Nitin Bansode, Julien Verget and Philippe Barthélémy\*



#### 6871

Mixed cyclo di-amino acids structured edible oils: a potential hardstock fat mimic

A. Sultani, S. M. Ghazani, A. G. Marangoni, I. J. Joye, M. G. Corradini and M. A. Rogers\*



**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** 

Rasita Javeed

Publishing Assistant

Allison Holloway

Publisher Sam Keltie

For queries about submitted papers, please contact Emily Skinner Editorial Production Manager in the first instance. E-mail: softmatter@rsc.org

For pre-submission queries please contact Maria Southall, Executive Editor. E-mail: 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 OWF.

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

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/jp

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,

Advertisement sales:

Telephone: +44 (0) 207 4378 6556.

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017; E-mail: advertising@rsc.org

For marketing opportunities relating to this journal, contact marketing@rsc.org

# Soft Matter

rsc.li/soft-matter-journal

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

#### **Editorial Board**

Editor-in-Chief

Alfred Crosby, University of Massachusetts

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 Brujic, 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 Fakhraai, University of Pennysylvania, USA Glenn Fredrickson, University of California at Santa Barbara, USA

Valeria Garbin, TU Delft, The Netherlands

Jian Ping Gong, Hokkaido University, Japan lan 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 Tom McLeish, University of York, UK 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,

Darrin Pochan, University of Delaware, USA David Quéré, ESPCI, France Sriram Ramaswamy, Indian Institute of Science, 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 Pennslyvania, USA Joakim Stenhammar, Lund University, Sweden Howard Stone, Princeton University, USA Hajime Tanaka, University of Tokyo, Japan Evelyne 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: rscli/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.

 $\label{lem:conditional} Additional \ details \ are \ available \ from \ the \ Editorial \ Office \ or \ http://www.rsc.org/authors$ 

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.

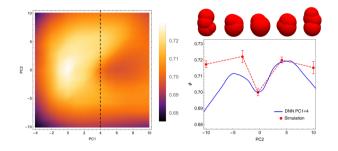
Registered charity number: 207890



#### 6875

# Machine learning approaches for the optimization of packing densities in granular matter

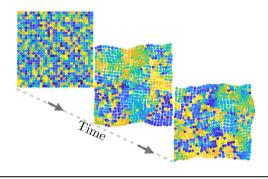
Adrian Baule,\* Esma Kurban, Kuang Liu and Hernán A. Makse



#### 6885

# Stiffening and dynamics of a two-dimensional active elastic solid

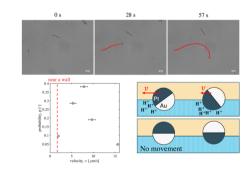
Mario Sandoval



# 6896

# Sideways propelled bimetallic rods at the water/oil interface

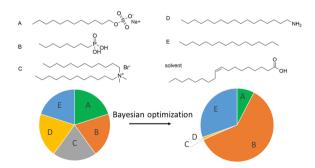
Alina Arslanova, Ine Matthé, Olivier Deschaume, Carmen Bartic, Wouter Monnens, Erwin Konrad Reichel, Naveen Reddy, Jan Fransaer and Christian Clasen\*



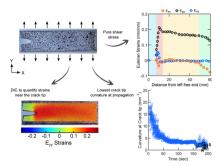
#### 6903

# Combinatorial mixtures of organic solutes for improved liquid/liquid extraction of ions

Shu Liu, An-Tsun Wei, Hui Wang, David Van Winkle and Steven Lenhert\*



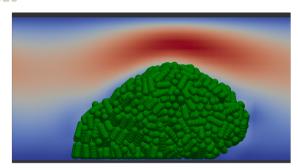
#### 6911



# Crack propagation and arrests in gelatin hydrogels are linked to tip curvatures

Anshul Shrivastava, Supreeth M. and Namrata Gundiah\*

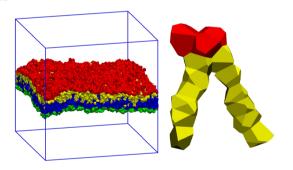
#### 6920



### A novel model for biofilm initiation in porous media flow

Christoph Lohrmann and Christian Holm\*

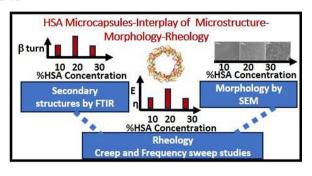
# 6929



# Probing the elastic response of lipid bilayers and nanovesicles to leaflet tensions via volume per lipid

Miftakh F. Zamaletdinov, Markus S. Miettinen\* and Reinhard Lipowsky\*

#### 6945



# Study of the interfacial viscoelasticity of human serum albumin microcapsules using a viscoelasto-electrohydrodynamic technique

Sneha Puri\* and Rochish M. Thaokar

#### 6958

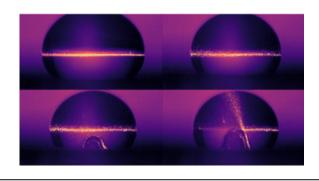
# Development of furan-2,5-dicarboxylic acid (FDCA)-based organogelators

Dorian Rabaud, Paul Dussart, Guylaine Ducouret, Pierre-Antoine Albouy, Jérémy Forté, Benjamin Isare\* and Laurent Bouteiller\*

#### 6968

# A double rigidity transition rules the fate of drying colloidal drops

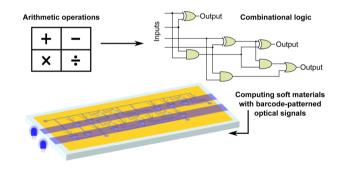
Matteo Milani, Ty Phou, Christian Ligoure, Luca Cipelletti and Laurence Ramos\*



# 6978

### Optomechanical computing in liquid crystal elastomers

Haley M. Tholen,\* Cedric P. Ambulo, Kyung Min Lee, Philip R. Buskohl and Ryan L. Harne\*



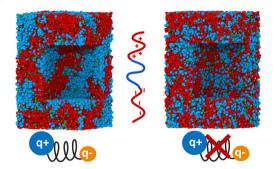
# 6987

Covalent segmented polymer networks composed of poly(2-isopropenyl-2-oxazoline) and selected aliphatic polyesters: designing biocompatible amphiphilic materials containing degradable blocks

Bartosz Kopka, Bartłomiej Kost, Andrzej Pawlak, Agata Tomaszewska, Agnieszka Krupa and Malgorzata Basko\*



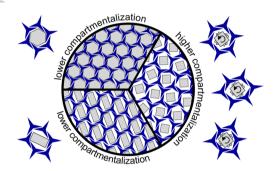
#### 7000



# The effect of monomer polarizability on the stability and salt partitioning in model coacervates

Zuzanna M. Jedlinska and Robert A. Riggleman\*

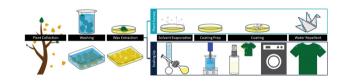
#### 7011



# Tunable assembly of host-guest colloidal crystals

Tobias Dwyer, Timothy C. Moore, Joshua A. Anderson and Sharon C. Glotzer\*

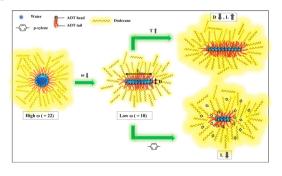
#### 7020



# Plant-based, aqueous, water-repellent sprays for coating textiles

Sara K. Fleetwood, Sydney Bell, Reinhard Jetter and E. Johan Foster\*

# 7033



# Modulating shape transition in surfactant stabilized reverse microemulsions

Preetika Rastogi, Dirk Honecker, Diego Alba Venero, Najet Mahmoudi, Niket S. Kaisare\* and Madivala G. Basavaraj\*