International Association of Colloid and Interface Scientists

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I prefer to read the pdf.

From the IACIS President

I recently returned from the 2024 Annual Meeting of the Taiwanese Colloid and Interface Society and International Symposium on Nanomaterials and Colloidal Science. It was my first trip to Taiwan and I enjoyed both the science and the hospitality of my hosts immensely (although the heat and humidity less so, even as a break from a chilly Sydney winter). I hope that this newsletter is being read by some new IACIS members from there, as well as some of new members from among the Indian colleagues I also met.

Many of us are confronting the challenges presented by generative artificial intelligence (AI) and, particularly, the advent of large language models (LLMs) in our workplaces. Some journals and funding bodies have recently developed policies about the use of generative AI for writing manuscripts, proposals, or peer review. Where not prohibited entirely, many of these require a declaration of usage and, for example, explicitly prohibit granting co-authorship to AI.

I recently attended an workshop on various aspects of AI in teaching, which was illuminating but, in some ways, terrifying – at least in the context of my university's

assessment processes. Most striking was the number and variety of AI tools available, as well as the speed with which the landscape is shifting as these tools improve. We were, for example, introduced to one whose sole function is to convert AI-generated text into “undetectable” human-like text. The caveat “no academic misconduct” appears in quite small print that I didn’t see straight away.

The other takeaway from the workshop was that, unlike plagiarism, output from the latest generation of LLMs are not reliably detectable by people *or software*; Automated checkers yield high false positives and negatives. Of course, there are some well-known flaws that can be fact-checked, such as made-up references or quotations that only *appear* correct superficially. And there’s human error, like some widely-circulated examples of leaving the prompt or response “Here is an introduction for your paper…”

Much of the focus of journals, granting bodies, and universities is on detection and ethical usage of generative AI. While this is reasonable and important to consider, it also strikes me as often motivated by uncertainty, distrust, or fear. We also need to be curious about what these tools do well and do badly. Naturally then, I decided to ask my virtual LLM personal assistant “**What are the most important research questions in colloid and interface science today?**” Here’s what it said:-

“Colloid and interface science is a dynamic field with many important research questions. Here are some of the most significant areas of inquiry in the field today:

1. Nanomaterials and nanoparticles:

- How can we better control the synthesis and assembly of nanomaterials?
- What are the interfacial properties of nanoparticles and how do they affect their behavior?

2. Soft matter and complex fluids:

- How do we understand and predict the behavior of complex fluids like emulsions, foams, and gels?
- What are the mechanisms behind self-assembly in soft matter systems?

3. Biointerfaces:

- How do biological interfaces interact with synthetic materials?
- Can we design better biosensors and drug delivery systems based on interfacial phenomena?

4. Environmental applications:

- How can colloid science contribute to water purification and environmental remediation?
- What role do colloids play in the transport of pollutants in the environment?

5. Energy applications:

- How can we improve the efficiency of fuel cells and batteries using interfacial engineering?
- What role can colloids play in next-generation solar cells and energy harvesting devices?

6. Advanced materials:

- How can we design smart, responsive materials based on colloidal principles?
- What are the interfacial properties of 2D materials like graphene and how can we exploit them?

7. Theoretical and computational advances:

- How can we better model and predict colloidal interactions and assembly processes?
- Can machine learning and AI contribute to understanding complex colloidal systems?

8. Measurement and characterization:

- How can we develop new techniques to study interfaces and colloidal systems in situ and in real-time?
- What can we learn from single-particle and single-molecule studies of colloidal systems?

9. Non-equilibrium phenomena:

- How do we understand and control far-from-equilibrium colloidal systems?
- What are the principles governing active colloidal systems?

10. Interfacial phenomena at extreme conditions:

- How do interfaces behave under extreme temperatures, pressures, or in unconventional solvents?"

As a child of the internet, it is not surprising that the AI gave me a *top-ten list*. Overall, I thought it did a solid job with no obvious flaws. The ten topics are all familiar as conference themes, for example. What do you think of its answer? Has it has trawled its database or the internet effectively and found today's most important questions?

Are you relieved that your research area is on the list, or aggrieved that it is not? Perhaps more importantly, what has it not done well? I was a little surprised that neither microplastics nor food science were mentioned in the sub-headings. By statistically aggregating over some time window ("today" is quite vague) rather than being curious, critical, or opinionated, has it overlooked something new and important?

Right now I'm going to get back to work on a paper about (2. Soft matter and complex fluids) as (6. smart, responsive materials) in (10. unconventional solvents). However, for any editors reading, I'll be writing that without input from my LLM personal assistant.

Greg Warr

FROM YOUR NEWSLETTER EDITOR

Welcome to IACIS Newsletter 84

If the potential of your work is not appreciated by Greg's virtual LLM personal assistant don't let it destabilise you! PhD students feel free to showcase your publication in our newsletter, this time we have an interesting contribution from KU Leuven.
In this newsletter you will further find information about the IACIS awards and upcoming conferences in our field.

Best regards,
Your newsletter editor Saskia Lindhoud

CALL FOR NOMINATIONS FOR THE IACIS AWARDS

IACIS Lifetime Achievement Award

Dear IACIS Member,

In 2010 IACIS introduced the IACIS Lifetime Achievement Award (LTAA). This prestigious award was established to recognize the awardee's outstanding lifetime contributions to colloid and interface science research, and also their contributions to IACIS.

We are seeking nominations for the award and the accompanying plenary lecture to be presented in June 2025 at the next IACIS conference in Edmonton, Canada (conference website https://colloids2025.com/).

The first IACIS Lifetime Achievement Award was made in Japan in 2012 to Tom Healy, followed by Björn Lindman (2015), Helmuth Möhwald (2018), and Kazue Kurihara (2023). This award replaced the previous "IACIS Lectureship" Award, the recipients of which were, in sequence: Hans Lyklema, Egon Matijevic, Bob Hunter, and Brian Vincent.

All IACIS members are eligible to nominate candidates for the Award. No member may nominate more than one candidate. Candidates should have been members of IACIS for at least 3 years.

*If you wish to make a nomination, please send the name of your nominee, together with the suggested paperwork, as stated here, to myself, as chair-person of the selection committee (cc IACIS Secretary wuge.briscoe@bristol.ac.uk), by **31 October 2024** at the latest. Seconders are not a requirement, but if you wish to add the names of other persons supporting a particular nomination, that is fine.*

Yours sincerely,

*Professor Kazue Kurihara (*kazue.kurihara.b7@tohoku.ac.jp)
Chair of the LTAA Committee

IACIS Emerging Investigator Award

The IACIS Emerging Investigator Award is an award for outstanding fundamental or applied research in the field of colloid and interface science. Three prizes will be presented every three years at the IACIS conference. Candidates should demonstrate their own profile by publications or patents and a presentation at the IACIS conference.

Prior to a IACIS conference, nominations can be made by the candidates themselves or by a nominator. Nominations should include a cover letter explaining the contribution of the candidate to the field of colloid and interface science, a CV including a list of publications and patents, information about teaching activities and outreach activities. Typically nominees are within 6 years of receiving their PhD, however career interruptions or other circumstances will be considered on a case by case basis by the jury. The jury will be nominated by the chair of the conference and comprising: one representative of the IACIS council, one member of the local organizing Committee, one representative selected from the plenary speakers and one member of the International advisory board.

Candidates are selected by the jury in two steps. Before the IACIS conference, from the nominations up to 15 candidates will be selected to present their work during the IACIS conference. During the conference the jury, will select the three award winners based on this presentation.

All presenters will receive a certificate "IACIS Early Career Researcher Award Finalist". The three award winners will receive a certificate and a generous cash award sponsored by KAO Corporation. Application procedure and deadlines will be announced in the next newsletter.

IACIS 2025

We are excited to share that the preparations for IACIS 2025 is progressing well, and that University of Alberta has been chosen for the site of the conference after careful consideration. As you know this is a joint conference with ACS's Colloid Symposium. Last time such a joint event was held, it proved to be a smashing success! So, we like to continue this by calling upon the community to write to us at cochair@colloids2025.com with their ideas about:

1. An early research career (within 10 years from PhD) that we should highlight in the program, consider the Diversity, Equity and Inclusion principles.
2. Nominating or Self-nomination for organizing special session within the joint conference.
3. Let us know which high profile researcher you want to see potentially to be invited as a Plenary Speaker.
4. The website for the conference is being constructed and its address is: https://colloids2025.com/

5. We welcome any suggestions you may have for making this conference a success whether on the scientific, professional, or social aspects, so write to us!
6. Please pass on the above messages to your students and postdoctoral fellows to get them involved as well. They are our future!

From Conference Co-Chairs
Alidad Amirfazli & Tian Tang

CALL FOR PROPOSALS VENUE AND ORGANIZATION FOR THE 19TH IACIS CONFERENCE IN 2028

Proposals should be sent to Wuge H. Briscoe, with a deadline on 1st April 2025.

To promote international co-operation among colloid and interface scientists, and to promote the stature and understanding of colloid and interface science, IACIS sponsors and supports the triennial IACIS Conference. A brief history of the conferences is here https://www.utwente.nl/en/iacis/iacis-conferences/#previous-conferences.

The immediate past 17th edition was held in Brisbane, Australia, in June 2022 (postponed from 2021 due to Covid-19). I am reminded to thank the Aussie organising committee for their heroic efforts in navigating through the minor inconvenience of the little rude virus, delivering a highly memorable event.

The 18th IACIS Conference will be in June 2025 in Edmonton, Alberta, Canada, jointly with the 98th American Chemical Society (ACS) Colloid and Surface Science Symposium. I hear from the organisers that an exciting update will be provided very soon.

We would now like to invite proposals from all IACIS members for the organization and venue for the 19th IACIS Conference in 2028. We will also publicise this invitation widely, reaching out to wider international colloids communities in different regions and countries. A guideline for the bid information and the procedure for selection are below, and questions can be directed to any of the Standing Committee members https://www.utwente.nl/en/iacis/about/.

Information in the proposal should include:

- Proposer(s): Titles, names, affiliations, and current positions
- Place and time: City, country, and dates in 2028
- A brief description of the development and present state of colloid and interface science in this country, and research groups involved in the organization (1 A4 max)
- Brief CV of the chair(s) of the Conference
- Members of the Organizing Committee (preliminary)

- Members of the Scientific Committee and International Advisory Board (preliminary)
- Main conference topics (preliminary)
- Venue: A brief description of facilities (for plenary lectures and parallel sessions)
- Accommodation: Hotels, dormitories/hostels, and estimated prices
- Estimated registration fees
- Potential financial support and possible sponsors

The proposals received will be sent to all IACIS Council members for discussions and consultation, with the provision for a voting process in the event of multiple bids. The Standing Committee will take the final decision before 1st June 2025.

From IACIS Honorary Secretary & Treasurer

SHOWCASE YOUR PUBLICATION

During the pandemic there was a lack of opportunities for young scientists to present their work at international conferences. Therefore we started to invite PhD students to showcase recent publications in the IACIS Newsletter. We have decided to continue this Newsletter item, because it gives an opportunity for young scientists to explain their recent discoveries. The idea is to write a short text in which you explain about your PhD topic, your recent publication and why it is interesting for our community. Detailed guidelines can be found here.
The aim is to include 2 or 3 showcase texts in each Newsletter, preferably from three different continents. The next Newsletter will appear in July, the deadline for submitting your showcase text is September 15

Your Newsletter Editor, Saskia Lindhoud

Enhanced Contact Flexibility from Nanoparticles in Capillary Suspens

I am Lingyue Liu, a researcher in the Department of Chemical Engineering at KU Leuven (Belgium), working within the group Softmatter, Rheology, and Technology (SMaRT), under the supervision of Prof. Erin Koos.

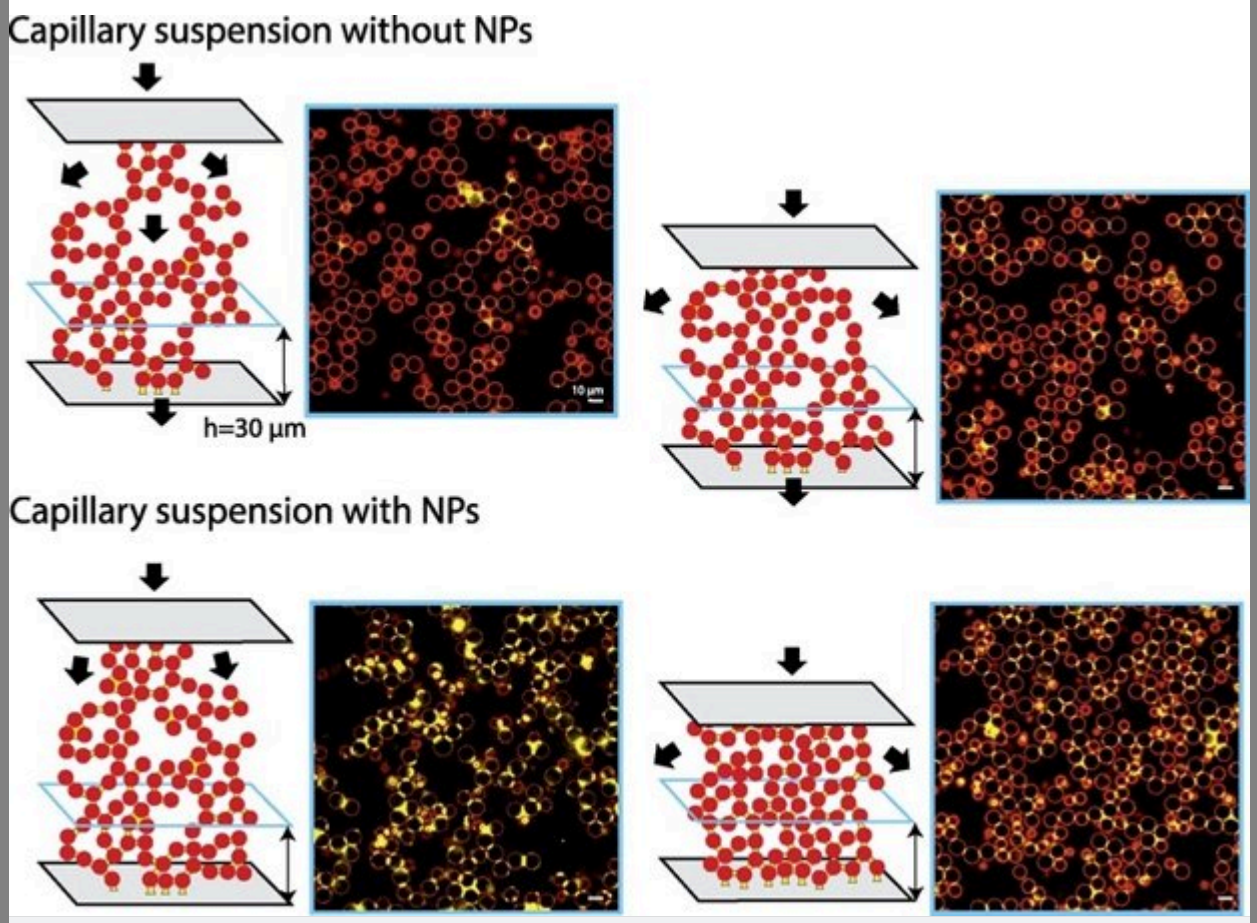
My PhD explores the intriguing effects of nanoparticles on the rheological properties and structural dynamics of capillary suspensions exposed to external forces (compression, shear), potentially with different shapes.

This article investigates how nanoparticles can be applied to adjust the yield stress and shear moduli of capillary suspensions. By examining the role of nanoparticles in modifying microparticle interactions and bridge formations, our findings illuminate pathways to designing materials with more homogeneous structures. The combined effect is especially suitable for 3D printing of porous ceramics.

I am particularly proud of this work because it extends a fundamental understanding of nanoparticle-microparticle-liquid interactions, demonstrating how small-scale

manipulations can result in significant alterations in particle wettability and material performance. Our research highlights the potential of nanoparticles in enhancing the flexibility of particle networks, which is crucial for various industrial applications.

L. Liu, J. Allard, E. Koos, JCIS, 665, 643-654 (2024) : doi.org/10.1016/j.jcis.2024.03.103



CONFERENCE ANNOUNCEMENTS AND UPDATES

Below an overview of interesting conferences for the IACIS community.
Include your conference?

CONTACT THE NEWLETTER EDITOR

The registration of ECIS 2024 in Copenhagen has been opened.

The conference is organised by the following scientific themes:

- Colloids at Interfaces, Membranes and Biointerfaces, Emulsions and Foams
- Design and Synthesis of Colloidal Systems, Nanoparticles and Novel Materials
- Self-Assembly: New structures, Dynamics and Supramolecular Hierarchical Assemblies
- Colloids in Biomaterials and Biomedical Applications
- Polymers, Polyelectrolytes, Gels and Ionic Liquids
- Composite, Hybrid and Magnetic Colloidal Materials
- Wetting Phenomena and Surface Forces
- Colloidal Robotics, Devices, and Actuated Materials
- Rheology, Flow, and Phase Behavior of Complex Liquids
- Colloid and Interface Phenomena in Food and Pharma
- Theory and Multi-scale Modeling of Colloids and Interfaces
- Colloidal Active Matter
- Advanced Colloid Science for Applications and Products
- Neoteric Fluids: Liquid Metals, Porous fluids, and Other Emerging Solvents
- Nanopaint theme: Nanoparticle Interactions in Dense Suspensions
- Artificial Intelligence and Machine Learning in Colloid Science
- ESS theme: Developments in Neutron and X-ray Methods and Novel Characterisation Approaches

For more information, registration and abstract submission visit: https://ecis2024.org/

TOPICS

- Surfactant Science, Membranes, Foams, Microemulsions, Emulsions, Amphiphilic Copolymers
- Polyelectrolytes
- Gelation, Hydrogels, responsive colloids
- Nanoparticles
- Theory / Modelling / Simulation of Colloids and Interfaces including Predictive Modelling and Artificial Intelligence / Deep learning approaches
- Applications and Sustainable Formulations of Colloidal Systems
- Wetting Phenomena
- Functional Interfaces and Bio-Interfaces
- Particle based functional materials: Towards Device Integration

- Polyelectrolyte Coacervates Renaissance

Visit the conference website for more information

Topics include:

- Behaviour of food biopolymers during digestion.
- Hydrocolloid design for delivering optimal nutrition.
- Polysaccharide structures and gut microbiome.
- Bioactive polysaccharides and human health.
- Future sustainable sources of natural hydrocolloids for food and non-food applications.
- Functional hydrocolloids for plant-based dairy and meat alternatives.
- Alternative proteins in new product development.
- Hydrocolloids in pharmaceuticals and health/personal care products.

Vistit the website of 17th International Hydrocolloids Conference for more information

Third International Conference on Nature Inspired Surface Engineering (NISE 2024), will be held on November 20-22, 2024 at the University of Granada, Granada, Spain.

Topics include:

- Fundamental understanding of surface and interface science and phenomena such as wetting, adhesion, adsorption, desorption, friction, (bio)tribology, wear, corrosion, biofouling, icing/deicing, phase changes, heat/energy transfer, electrochemistry, optics/photonics, etc.
- Material processing and fabrication techniques for functional surfaces including novel techniques such as 3D printing and self-assembly
- Surface modification and coating techniques for functional surfaces
- Machine Learning (ML) and Artificial Intelligence (AI) for surface engineering

- Hydro-, aero, ice-, and oleo-phobic/philic surfaces
- SLIPS (slippery liquid infused porous surfaces) and LIS (lubricant impregnated surfaces)
- Stimuli-responsive and adaptive materials and surfaces
- Self-healing/self-repairing materials and surfaces
- Surface engineering in energy applications
- Surface engineering in water-related applications
- Surface engineering in biomedical applications
- Surface engineering in optical and electrical applications
- Surface engineering in industrial applications
- Surface characterization and metrology
- Novel phenomena and applications of engineered surfaces/coatings

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