



Newsletter 9 | Summer 2023

Highlights and updates from the Cluster of Excellence Living, Adaptive and Energy-autonomous Materials Systems (livMatS)

Dear livMatS Community, dear Colleagues and Friends,

New people, a new lecture format and a new building: livMatS is growing and flourishing in all areas, much to our delight. We would like to inform you about these developments and more in this newsletter.

Three new researchers have joined the cluster in recent months and will enrich its work: [Dr. Laura Comella](#), who is developing sensor cells as a new junior research group leader, [Prof. Laura Hartmann](#), who has taken up the professorship of Macromolecular Chemistry and is researching biomimetic polymers, and [Dr. Edoardo Milana](#), who is designing soft robotic systems as part of the tenure-track professorship "Soft Machines". We warmly welcome all three and look forward to collaborate! We have also seen growth in the area of early career researchers. [30 new doctoral and postdoctoral students](#) have joined us in recent months.

The ["Core" lecture format](#) aims to provide young researchers with basic knowledge about core aspects of research in the different disciplines represented in livMatS and facilitate collaboration between the cluster's research areas. The lectures take place once a month on Wednesdays at 4 pm.

A highlight of the last few months, also thanks to your contributions, was certainly [the first conference of the cluster](#). More than 180 international researchers and excellent speakers came to Freiburg to exchange ideas across disciplinary boundaries.

We also take this opportunity to say goodbye to a very valued colleague: [Prof. Rainer Gießhammer is retiring from his position](#) as Principal Investigator in Research Area D. As a strong advocate of sustainability, he has had a decisive influence on the Research Area. We are very sorry to see him go, but wish him all the best for his future projects in the field of sustainability!

Looking to the near future, we would like to highlight the inauguration of the livMatS Biomimetic Shell @ FIT. The inauguration will take place on 17 July and we would be delighted to celebrate the opening with you from 12:15 pm with refreshments and snacks - you can still register until 30 June.

The livMatS Spokesperson Team
Jürgen Rühle, Anna Fischer, Thomas Speck

Inauguration of the //iMatS Biomimetic Shell @ FIT



On July 17, 2023, we will celebrate the inauguration of the the "//iMatS Biomimetic Shell @ FIT" research pavilion, which has been built in collaboration with the IntCDC cluster of excellence in Stuttgart. A press conference will be held at 11 am. Afterwards, a reception with refreshments will take place in front of the FIT at around 12:15 pm. Participation is only possible after binding registration, the last chance to register is 30 June. [Register here](#)

Rainer Grießhammer retires from his position as Principal Investigator



Prof. **Rainer Grießhammer**, Ökoinstitut e.V. and Honorary Professor for Sustainable Products at the University of Freiburg, is retiring from his position as Principal Investigator in the cluster. Grießhammer led projects on sustainability assessment and on the interdisciplinary [sustainability assessment method TAPAS](#) in Research Area D. Dr. **Martin Möller** has now completed his PhD under Grießhammer and will be supporting the Cluster's work in the field of sustainability as Responsible Investigator.

Laura Comella is a new research group leader at //iMatS



The electrical engineer Dr. **Laura Comella** started as a junior research group leader within the Agnes Pockels junior research group program at //iMatS in February 2023. Comella is developing sensor cells that are distributed in materials systems as a communicating network and function in a similar way to the nervous system of living beings. [Read More](#)

"Core" lecture series starts



To facilitate collaboration between the cluster's research areas, a new lecture series is starting: "Core" aims to provide early career researchers with basic knowledge about core aspects of research in the different disciplines represented at //iMatS. [Read More](#)



The //iMatS research data management policy provides recommendations on how to store, maintain, archive and publish data. The cluster's board approved the first policy in September 2022. Data management plans are now available that complete this policy, and all scientists at //iMatS will be required to work with these plans as of September 18, 2023. [Read More](#)

Tenure-track professorship for Soft Machines established at the University of Freiburg



Dr. **Edoardo Milana** has been appointed Tenure-track professor for Soft Machines at the Department of Microsystems Engineering at the University of Freiburg as of May 1, 2023. The newly established professorship focuses on the development of soft robotic systems made of deformable and adaptive materials. Milana will strengthen the research of //iMatS and work closely with scientists from the FIT and FMF. [Read more](#)

//iMatS welcomes new early career scientists



30 new doctoral and postdoctoral researchers have started their research journey at //iMatS over the last months. On April 24 and 25, 2023, the cluster welcomed them with an early career researcher's boot camp that provided important insights and tools for interdisciplinary projects. [Read more](#)

Conference brings scientists to Freiburg for interdisciplinary exchange



The **1st International Conference and Scientific Exhibition on Living Materials Systems** aimed to promote exchange between researchers across disciplinary borders. The concept was a success: More than 180 international scientists attended the first conference of //iMatS from March 21 to 24 to discuss current developments in the field of living materials systems. [Read more](#)

Chemist Laura Hartmann becomes professor at the University of Freiburg



Prof. Dr. **Laura Hartmann** is becoming Professor of Macromolecular Chemistry at the University of Freiburg from March 1, 2023. A focus of her professorship will be on researching active soft materials, in particular those known as biomimetic polymers. Hartmann will work closely with //MatS, FIT and FMF. [Read more](#)

Lucia Brunold supports the cluster in the area of visualization and public outreach



We would like to officially welcome Lucia Brunold to the cluster. Brunold joined //MatS in December 2022 and works in the areas of visualization and public outreach. Her remit includes the creation of scientific illustrations for the cluster's researchers, graphics and photos for science communication and website management. [Contact Lucia Brunold](#)

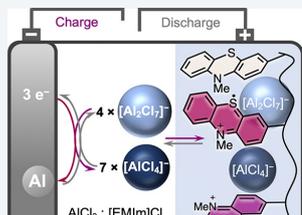
SAB member elected for National Academy of Engineering



We congratulate our SAB member Prof. **Christopher Kemper Ober** from Cornell University, who has been elected a member of the American National Academy of Engineering. As the reason for election, the academy cites his invention of new photoresist families enabling high-resolution lithography in microelectronics manufacturing. [Read more](#)

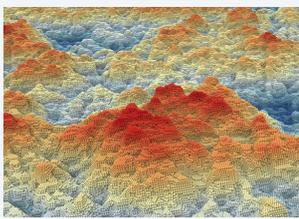
Highlighted Publications

Aluminium-ion batteries with improved storage capacity



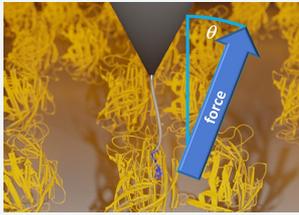
A research team headed by **Gauthier Studer** and led by Prof. **Birgit Esser** of the University of Ulm and Prof. **Ingo Krossing** as well as Prof. **Anna Fischer** of the University of Freiburg has now developed a positive electrode material consisting of an organic redox polymer based on phenothiazine. In the experiment, aluminium batteries with this electrode material stored a previously unattained capacity of 167 milliampere hours per gram (mAh/g). The results appeared in the journal *Energy & Environmental Science*. [Read more](#)

A Diamond in the Rough(ness)



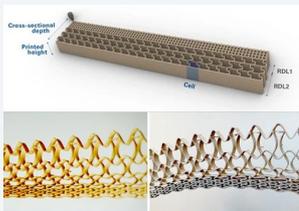
A special issue of the Journal *MRS Bulletin*, co-edited by Prof. **Tevis Jacobs** from the University of Pittsburgh and Prof. **Lars Pastewka**, offers an exciting opportunity disguised as a problem: Surfaces are much more complex than they appear. [Read more](#)

New Type of Friction Discovered in Ligand-Protein Systems

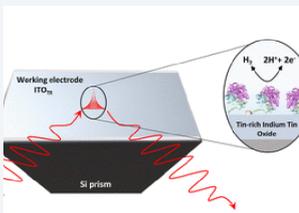


An interdisciplinary research team of the Institutes of Physical Chemistry and Physics of the University of Freiburg and the Max Planck Institute of Biophysics in Frankfurt-am-Main with *iMatS* researchers Prof. **Thorsten Hugel** and Dr. **Bizan Balzer** has discovered a new, direction-dependent friction in proteins called anisotropic friction. The results have been published as cover story in the scientific journal *Nano Letters*. [Read more](#)

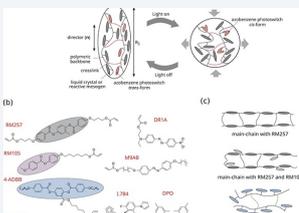
Further Publications



Sahin, E. S., Cheng, T., Wood, D., Tahouni, Y., Poppinga, S., Thielen, M., Speck T. & Menges, A. (2023). Cross-Sectional 4D-Printing: Upscaling Self-Shaping Structures with Differentiated Material Properties Inspired by the Large-Flowered Butterwort (*Pinguicula grandiflora*). *Biomimetics*, 8(2), 233. doi: /10.3390/biomimetics8020233 [Read more](#)



Davis, V., Heidary, N., Guet, A., Zerball, M., Schulz, C., Michael, N., von Klitzing, R., Hildebrandt, P., Frielingsdorf, S., Lenz, O., Zegber, I. & Fischer, A. (2023). Immobilization of O₂-tolerant [NiFe] hydrogenase from *Cupriavidus necator* on Tin-rich Indium Oxide Alters the Catalytic Bias from H₂ Oxidation to Proton Reduction. *ACS Catalysis*, 13, 6312-6327. doi: 10.1021/acscatal.2c06334 [Read more](#)



Lall, J., & Zappe, H. (2023). Understanding Photomechanical Behavior of Liquid Crystalline-Based Actuators. *Macromolecular Materials and Engineering*, 2300063. doi: 10.1002/mame.202300063 [Read more](#)

[Find all *iMatS* publications here](#)

Upcoming Events

Writer's Studio

Jun 29 2023

Writer's Studio

Writing in the Sciences (WiTS) workshop
4-part workshop series on academic writing



Jul 5 2023

//iMatS Colloquium

Prof. James Kermode | Warwick School of Engineering
Multiscale and data-driven methods for the simulation of material failure

CORE LECTURES PROGRAM

Jul 12 2023

//iMatS Core Lecture

Prof. Andrea Kiesel | University of Freiburg
Acceptance of emerging technologies - assessment strategies including cognitive affective maps (CAM)

The //iMatS Events Calendar

We welcome feedback and comments on the newsletter and suggestions for the next issues (pictures, texts or topics). Please contact sonja.seidel@livmats.uni-freiburg.de.

Living, Adaptive and Energy-autonomous Materials Systems (*//iMatS*) is an interdisciplinary, DFG-funded Cluster of Excellence at the University of Freiburg.



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