

## Dear *livMatS*-Community,

The cluster has reached flight altitude: Many exciting projects and cooperations are underway, and *livMatS* has grown to 107 researchers across all career levels.

Just in time for the summer holidays, an important milestone for the outreach concept *Learning from Nature... In Nature* has been reached: The "***livMatS* Pavilion**" in the Botanic Garden Freiburg is now open to the public.

It is a joint project by researchers from *livMatS* and the Cluster of Excellence IntCDC at the University of Stuttgart, together with the ITKE, ITECH master's students, and the FibR GmbH Stuttgart.

The pavilion is the first building ever with a load-bearing structure that is entirely made of robotically wound flax fibre, a material that is naturally renewable, biodegradable, and regionally available. The lightweight structure was inspired by the saguaro cactus (*Carnegiea gigantea*) and the prickly pear cactus (*Opuntia sp.*), which are characterized by their special wood structure with intergrown elements.

The successful project has been widely picked up by the media, and has for example been featured [on TV](#) and in an article on [biooekonomie.de](#), an initiative by the Federal Ministry of Education and Research. A video giving insights into the design and building process can be found [here](#).

We invite you to visit the *livMatS* Pavilion in your own time and be inspired by its aesthetic combination of biological and technical materials systems.



## Updates

### Website

In the [member's area on our website](#), new teaching and training video resources have been added for master's students, PhDs and postdocs. They cover skills such as writing, presenting, and creating graphics.

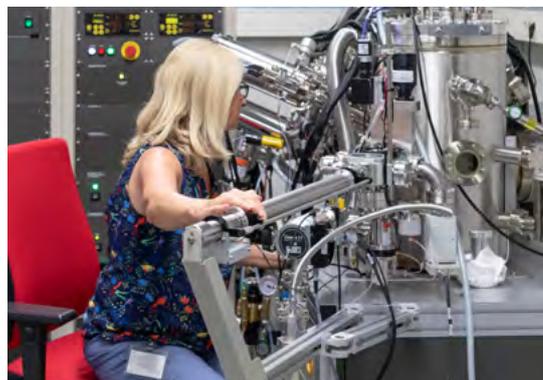
Generally, the member's area aims at being a useful resource for all researchers in *livMatS*. It contains templates and administrative forms for download. Please address ideas for further improvement to [Michal Rössler](#).

### Outreach

*livMatS* will have a stand at the [Science Days at Europapark](#) from 21 to 23 October 2021. Contact [Michal Rössler](#) if you are interested in participating or have ideas for fun *livMatS*-related outreach activities.



### New equipment



A new surface analytical tool is available for *livMatS* members: **The X-ray photoelectron spectrometer (XPS)** allows for the determination of the chemical composition of surfaces. The instrument is equipped with microspot capabilities and sputtering units for depth profiling. Measurements can be done on spots as small as 10  $\mu\text{m}$  and elements can be detected at a surface concentration of well below 0.5 Atom%. Further extensions are UPS, LEIPS and REELS which are methods that specifically target semiconductive and conductive materials. For further information please email [Dr. Oswald Prucker](#).

### Current calls by *livMatS*



The third [livMatS Master Lab](#) will start in the winter term 2021/22. Interested master's students can still apply until 22 August (extended deadline). For more information please email [Gregg Dubow](#).

The Virtual Kick-off Meeting of the [Freiburg Rising Stars Academy](#) will be on 19 October 2021. The Freiburg Rising Stars Academy is a DFG-funded research marketing initiative that brings together highly talented early career researchers with top-level scientists within the strongest disciplines of the University of Freiburg. Nine Rising Stars host PIs are *livMatS* scientists, representing the University's profile field Functional and Bioinspired Materials.



International Call  
Agnes Pockels  
Junior Research Group Program

*livMatS* is currently accepting applications within its [Agnes Pockels Junior Research Group Program](#). The call targets female researchers within three to five years of their postdoctoral experience in the areas of philosophy of technology, technology assessment and/or sustainability research. Application deadline is 05 September. We appreciate if you multiply our advertisement on [Twitter](#) and [LinkedIn](#).

## News



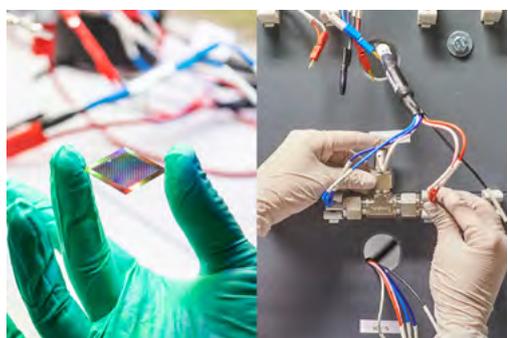
Doctoral students from *livMatS* and Penn State co-organized a virtual workshop and poster session „**from PhDs for PhDs**“.

The event focused on fostering scientific exchange between graduate students of both universities. In addition to exploring exchange opportunities, the two-day online-event was successful in initiating discussions and identifying common research themes and complementary research methods and techniques. [read more](#)



*livMatS* took part in the „**Freiburger Wissenschaftsmarkt**“ from June 7 to 26.

The popular outreach event usually happens on the Münstermarkt in the Freiburg city center, but took place online this year. Visitors could support *livMatS* PI Dr. Viacheslav Slesarenko by conducting mechanical experiments, and were introduced to the world of smart materials by doctoral researcher Moritz Katzmeyer from Dr. Céline Calvino's group. Even though the event is already over, content can still be viewed [here](#).



The Eva Mayr-Stihl Foundation is funding a **new Saltus! group** at the University of Freiburg.

Prof. Birgit Esser, Prof. Anna Fischer, Prof. Ingo Krossing, and Dr. Severin Vierrath will head the project. With its funding, the group will launch new joint projects, substantively further the profile fields 'Environment and Sustainability' and 'Functional and Bioinspired Materials', and boost the attractiveness and visibility of Freiburg as a home for international scientists. [read more](#)



**Junior research group leader Dr. Céline Calvino** joined *livMatS* in January, shortly after our JRG leaders Dr. Charalampos Pappas and Dr. Viacheslav Slesarenko. The chemist is researching adaptive materials that can be recycled with the help of light.

Calvino completed her PhD at Adolphe Merkle Institute at the University of Fribourg, Switzerland, and worked as a postdoctoral researcher at the Pritzker School of Molecular Engineering at the University of Chicago, USA. We are happy to welcome her within the Agnes Pockels Junior Research Group Program. [read more](#)

## Selection of current publications

Raisch, M., Maftuhin, W., **Walter, M.**, & Sommer, M. (2021). **A mechanochromic donor-acceptor torsional spring.** Nature Communications, 12: 4243. <https://doi.org/10.1038/s41467-021-24501-1>



Kost, J., **Bleiziffer, A.**, **Rusitov, D.**, & **Rühe, J.** (2021). **Thermally Induced Cross-Linking of Polymers via C, H Insertion Cross-Linking (CHic) under Mild Conditions.** Journal of the American Chemical Society. <https://doi.org/10.1021/jacs.1c02133>

About the Cover: A diazo cross-linker polymerized with various co-monomers to form prepolymers allows thermally induced formation of surface-attached polymer networks at mild temperatures by C,H insertion reactions. Protein-repellent coatings are formed inside a medical tube, and structured surfaces can be obtained by hot contact. Image by Michal Rössler/livMatS.

Cheng, T., Tahouni, Y., Wood, D., Thielen, M., Poppinga, S., Buchholz, L., Steinberg, T., Menges, A. & **Speck, T.** (2021): **Bio-inspired Motion Mechanisms: Computational Design and 4D-printing of Self-adjusting Wearable Systems.** Advanced Science: 2100411. <https://doi.org/10.1002/advs.202100411>

About the Cover: The technical transfer of plant movement principles offers vast potentials for the development of novel, autonomously actuated structures. In article number 2100411 by Tiffany Cheng, Achim Menges, and co-workers introduces a design and material programming approach for 4D-printing adaptive material systems through a case study of biomimetic design. Based on the force generating mechanism of the air potato (*Dioscorea bulbifera*), the authors demonstrate the manufacture of a self-tightening orthotic device.



**Möller, M.**, **Höfele, P.**, **Reuter, L.**, **Tauber, F. J.**, **Grießhammer, R.** (2021). **How to assess technological developments in basic research?** TATuP - Zeitschrift für Technikfolgenabschätzung in Theorie und Praxis, 30(1), 56-62. <https://doi.org/10.14512/tatup.30.1.56>

Breddemann, U., Sicklinger, J., Schipper, F., Davis, V., **Fischer, A.**, Huber, K., Erickson, E.M., **Daub, M.**, Hoffmann, A., Erk, C. Markovsky, B., Aurbach, D., Gasteiger, H.A., **Krossing, I.** (2021). **Fluorination of Ni-Rich Lithium-Ion Battery Cathode Materials by Fluorine Gas: Chemistry, Characterization, and Electrochemical Performance in Full-cells.** Batteries & Supercaps, 4, 632-64. <https://doi.org/10.1002/batt.202000202>

Find all livMatS-funded and associated publications [on our website](#).

Please remember to always inform [Sonja Seidel](#) of new publications that qualify for livMatS **publication incentives**. The science communication team at livMatS also is happy to support you in communicating your research to wider audiences, and to assist in creating and editing illustrations and graphics for you publications.