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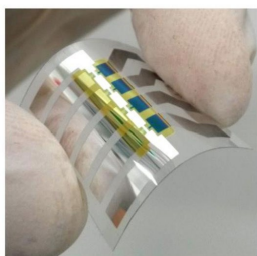
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RESEARCH

PHYSICS

[Physicists develop printable organic transistors](#)



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Scientists at the Institute of Applied Physics have come a step closer to the vision of a broad application of flexible, printable electronics. The team around Dr Hans Kleemann has succeeded for the first time in developing powerful vertical organic transistors with two independent control electrodes. The results have recently been published in the renowned online journal „[Nature Communications](#)“.

„Up to now, vertical organic transistors have been seen as lab curiosities which were thought too difficult to be integrated in an electronic circuit. However, as shown in our publication, vertical organic transistors with two independent control electrodes are perfectly suited to realize complex logic circuits while keeping the main benefit of vertical transistors devices, namely the high

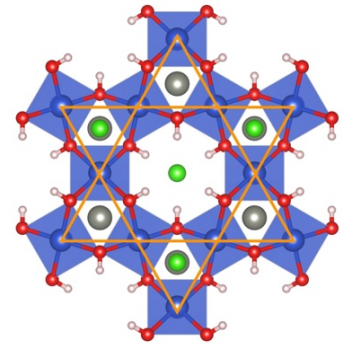
switching frequency“, says Dr Hans Kleemann, head of the Organic Devices and Systems Group (ODS) at the Dresden Integrated Center for Applied Photophysics (IAPP), Institute of Applied Physics.

[Quantum honey from black holes](#)

Researchers at the Cluster of Excellence *Complexity and Topology in Quantum Matter* (ct.qmat) have proposed a new quantum material in which electrons move as a viscous liquid - resembling a kind of quantum honey. The research results have been published in the journal [Nature Communications](#).

If the material can be produced with sufficient purity, the effect will be three times stronger than in the "wonder material" graphene. Thanks to the low resistance of this electron liquid, new perspectives could open up for microelectronics and storage media. In addition, magnetic fields can be precisely switched on and off by the vortex formation in this liquid. This discovery was only possible because the scientists

combined the previously completely separate theories of quantum gravity and solid state physics. For this purpose, the physicists have equated the temperature of black holes ("Hawking temperature") with the temperature of electrons in the quantum material. This has led to the concrete prediction of a quantum material in which these effects can occur more strongly: "Scandium-Herbertsmithite" (Sc-Hb) with trivalent scandium atoms instead of divalent zinc.



Lattice structure of the mineral "Herbertsmithite". If it is possible to replace the grey zinc atoms by scandium atoms, the electrons in this quantum material will be much more strongly bound together than in graphene. This can lead to a new type of electronic components.

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PSYCHOLOGY

[Project to decipher neuronal mechanisms of congenital prosopagnosia launched](#)

At the Chair of Cognitive and Clinical Neuroscience, a new DFG-funded project on the neuronal basis of congenital facial recognition disorder (prosopagnosia) has started. For a total of 36 months, Prof. Katharina von Kriegstein and Dr. Corrina Maguinness want to gain new insights into the mechanisms of face recognition in the brain by means of extensive behavioral tests and investigations. Congenital prosopagnosia is a disorder in which the ability to recognize people by their face is impaired. The disorder is life-long and socially very restrictive. In Europe alone there are about 14 million people affected.

"In our project we will test the contradictory predictions of two different neuro-scientific theories on the development of congenital prosopagnosia. For this purpose, we will perform extensive behavioral tests and examinations with a newly developed imaging sequence in a MRI scanner. With the extensive experiments and the new imaging sequence, the studies may not only bring important advances in our understanding of congenital prosopagnosia, but also in our understanding of how facial identity processing is implemented in the typically developed human brain," explains Prof. Katharina von Kriegstein.

WELCOME AT THE SCHOOL OF SCIENCE

Appointment of Professor Ellen Henke as professor at the Institute for Algebra

Since August 1, Prof. Ellen Henke holds a professorship at the Institute for Algebra of the Faculty of Mathematics. Her field of research is finite groups. She has already made important contributions to a program that aims at a new proof of the classification of finite simple groups. "At TU Dresden, I would like to continue my research in the field of fusion systems, especially with the goal of a simplified proof of the classification of finite simple groups. At the same time I would like to extend my mathematical expertise and hope that there will be links to the research areas of my new colleagues. Furthermore, I plan to offer a wide range of lectures. In the current situation, I see it as a special challenge to find good ways to conduct my lectures on-line. Personally, I am looking forward to taking advantage of the rich cultural offerings of the city of Dresden. I am particularly interested in classical music," says Prof. Henke.



Prof Ellen Henke.
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Eleonore Trefftz guest professor Olga Klimecki



Dr Olga Klimecki.
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Dr Olga Klimecki from the University of Geneva is a one-year guest in the team of Philipp Kanske, Professor of Clinical Psychology and Behavioral Neuroscience. She describes her research focus as follows: "I am fascinated by the fact that people can also change in adulthood. Therefore, I am investigating the extent to which interventions have an impact on our well-being, the biological processes involved and our social behavior. In recent years, I have been particularly interested in how we can promote healthy aging through interventions such as meditation, health training, or learning a foreign language. Also, together with my team, we are researching how interventions can help us to better cooperate with each other and to overcome conflicts between people and groups. For my time at TU Dresden I am especially looking forward to meeting the scientists and students of TU Dresden and together, to

reflecting on current issues of living together in a global multicultural society. It would be great to start our first joint research projects in this area. Moreover, I would also be very happy to cooperate more closely with the [DZNE](#) in the research on healthy ageing in the future".

EQUAL OPPORTUNITIES

4th application round for equal opportunities funds until November 15

All members of School of Science have the possibility to submit applications for funding of activities that serve to implement the equal opportunities mission of the School until November 15. The declared ten goals in the use of the equal opportunity funds include increasing the proportion of women in professorships and in the mid-level faculty, promoting female scientists in their academic careers, supporting women and men in their participation in academic self-administration, and improving the compatibility of family, studies, and work. As a result of the corona pandemic, it is also possible to submit applications for a "compensation of corona-related inequalities".

Previously, a total of six applications had been submitted in the 3rd round of funding, all of which were approved. Detailed information and documents can be found on the [equal opportunities website](#).

EVENTS

Hairy business: Showcase of research at the Technischen Sammlungen

On September 12, the new permanent exhibition "Showcase of Research" was launched at the Technische Sammlungen Dresden, in which Dresden's scientific institutions present their research contents. The kick-off was made by the Cluster of Excellence Complexity and Topology in Quantum Matter (ct.qmat) and the Barkhausen Institute. What does a hairy donut have to do with quantum physics? Can a sphere be combed without creating a single vortex? These and other exciting questions can be explored with the whole family in interactive exponents. Visitor information: www.tsd.de



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GRADUATE OF THE MONTH

Dr Andreas Kurth from the Faculty of Biology

At the beginning of each month, the "Graduate of the Month" is presented as part of a campaign by the Alumni Relations Office. Graduate of the month September is the virologist Dr. Andreas Kurth. He studied

biology at TU Dresden and is now head of a high-security laboratory of the highest protection level. How can you do research on viruses and African bats and still wear flip-flops? Dr Kurth will tell the answers in the [graduate magazine of TU Dresden](#).



STUDY

[Project TUDo! starts large-scale employee survey](#)



TUDo! is the name of the joint research project of the Institute and Polyclinic for Occupational and Social Medicine and the Institute for Clinical Psychology and Psychotherapy, supported by the AOK PLUS. The aim of the project is to assess the health situation of employees at TU Dresden and to find out where they see special requirements for their health and how they assess and use the existing prevention programs at TU Dresden. For a meaningful data basis, a large employee survey starts on 5 October, whose results are to be basis for a need-based adjustment of the university prevention offers. All information on the TUDo! project and the link to the study (open from 5 October onwards) can be found on the [homepage of the project TUDo!](#).

RETROSPECTIVE VIEW

[From Mieze Schindler to Joachim Gauck: project day of the School of Science](#)

On September 24, this year's joint project day of the school administration and the dean's offices of the five



Strawberry gene bank.
© Sandra Scherber

faculties brought the roughly 30 participants to Pillnitz. During a guided tour of the open-air grounds of the Julius Kühn Institute (JKI), we learned a lot of interesting, useful, strange and entertaining facts about fruit breeding research at the Pillnitz site. We saw a huge gene bank of strawberry plants with partly exotic names. Would you have known that Otto Schindler, a horticulture teacher from Pillnitz, named a strawberry he had bred after his wife? The "Mieze Schindler" is a very aromatic garden strawberry, which, however, due to its pressure sensitivity, has poor storage capacity and is therefore not suitable for trade.

Still today the JKI is registering new breeds. Probably the most famous bearer of the name of a recent Pillnitz fruit variety is the former German President Joachim Gauck.



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On his retirement in 2017, the Office of the Federal President offered him a small apple tree of the new variety "Joachim Gauck", which was bred in Pillnitz and, upon request, named after the former Federal President. After the guided tour at the JKI, the group hiked through the Friedrichsgrund to the Meixmühle, where picnics were held under the open sky and with sufficient distance. *At this point, a heartfelt thank you to the staff of the Dean's Office of Biology for organizing this great excursion.*

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