TECHNISCHE UNIVERSITÄT DRESDEN

DRESDEN concept

EXCELLENCE NEWSLETTER

8th May 2020

TUD 2028 – SYNERGY AND BEYOND

EXCELLENCE & RESEARCH CLUSTER

Dear Readers,

The corona virus is once again the topic that is dominating the Excellence Newsletter. In collaboration with partners and research institutes, DRESDEN-concept provides valuable support to hospitals and other public institutions. There are also new findings from science that help to mitigate the spread of COVID-19 in developing countries.

As the protection of health has the highest priority, strict guidelines continue to apply at our university. For this reason, the 2020 summer semester began digitally for all students. Owing to the great commitment of everyone involved, we have succeeded in enabling digital teaching at our University of Excellence (#TUDDigital).

In this issue, you can find out how the Unit Internationalisation and the Graduate Academy are implementing the topic of digitalisation for themselves and what new research findings have been published.

The editorial team of the Excellence Newsletter can still be reached by email at exzellenz@tu-dresden.de. We look forward to your questions, wishes and comments. You are also welcome to recommend our Excellence Newsletter, which can be subscribed to with just a few clicks.

Current information about the effects of COVID-19 (Coronavirus SARS-CoV-2) on teaching, research and administration at TU Dresden as well as the steps towards reopening the university and commencing normal operation can be found on the following page: https://tu-dresden.de/corona.

Stay healthy!

Over 3,000 protective visors have been distributed

Private nursing services, the fire brigade and other public institutions are currently struggling with the same problems as clinics: Protective equipment is rare as the procurement of such equipment is extremely problematic due to supply shortages. The DRESDEN-concept partners distributed over 3,000 plastic protective visors, which were produced by 3D printing and injection moulding.

Internationalisation without mobility? Why not!

Cancelled flights, closed borders. The end of internationalisation? Not at all. Partnership work has shifted to the digital. Thus, the **development of a digital platform** is a focus of the growing partnership with the University of Stellenbosch in South Africa. The visit in February 2020 will not be followed by others in the near future, the next steps are now planned via video conference.

At **transCampus**, the participants are also looking to the future: At King's College London, a call for tenders for over £100,000 for joint projects has begun. Project ideas can also be submitted to TUD by email to Maike Heber until 15th June 2020. Further information can be found under Unit Internationalisation or transCampus.

Internationalisation also takes place "at home". International students and researchers can talk to an advisor in English about their personal situation by calling the hotline +49 174 437 6228.

In addition, the **Internationalisation Award for Welcome Culture** is intended to honour those who strive to live together on campus. The offer will be available as of June 2020.

The **language and intercultural qualification programme SprInt** now offers its English courses and intercultural workshops online, the latter also during the semester. In the future, they will also be open to other target groups.

Call for Applications for Eleonore Trefftz Programme extended

Due to the current situation, the deadline for submitting applications for the Eleonore Trefftz Programme has been extended to 15th June 2020. For enquiries, please contact: Katrin Tittel.

GA digital: Online formats for Early Career Researchers

With GA digital, the Graduate Academy (GA) offers its members **new online formats** as part of its qualification programme. PhD students and postdocs can not only lead e-learning courses and webinars on topics such as virtual teams, good scientific practice or time management, they can also participate in online writing weeks. The digital service of the GA will be expanded further.

5th GA Writing Retreat

From 6th to 11th September 2020, 20 PhD students and postdocs will once again have the opportunity to work - concentrated and without distractions - on their dissertations and academic work during the **5th Writing Retreat of the Graduate Academy** (GA) at the St. Marienthal Monastery. In addition, participants can discuss their individual questions and problems with the GA's trained writing advisors. Applications can still be submitted until 20th May 2020. The prerequisite is membership at the GA.

COVID-19 study on measures in developing countries

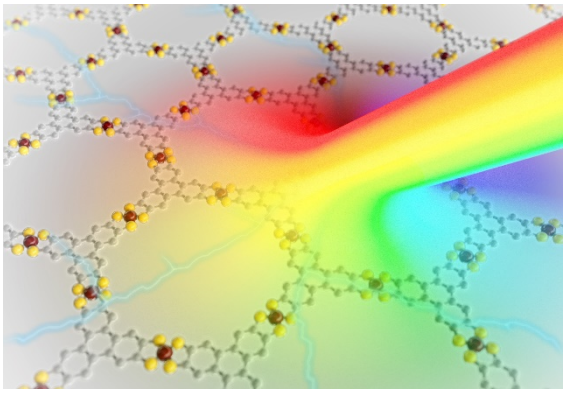
The Chair of Network Dynamics of Prof Marc Timme at the Center for Advancing Electronics Dresden (cfaed) investigated the **conditions of the spread of COVID-19 cases in developing and emerging countries** in cooperation with institutes in Göttingen and Cape Town/South Africa.

Their scenario analysis for a region in South Africa combines statistical socio-economic and travel survey data from more than 100,000 individuals together with a detailed 24-hour travel diary component and integrates them into an agent-based traffic simulation of the ongoing COVID-19 outbreak in the Nelson Mandela Bay Municipality. The findings suggest that **countermeasures are required to be especially rapid and severe** to keep the number of critical patients below the capacity set by locally available intensive care units.

Novel hybrid material proves an efficient photodetector

Digital cameras as well as many other electronic devices need light-sensitive sensors. In order to cater for the increasing demand for optoelectronic components of this kind, industry is searching for new semiconductor materials. They are not only supposed to cover a broad range of wavelengths but should also be inexpensive. A hybrid material, developed in Dresden, fulfils both requirements.

In a cooperation between Helmholtz-Zentrum Dresden-Rossendorf (HZDR) and Center for Advancing Electronics Dresden (cfaed) at TU Dresden scientists demonstrated that a **special metal-organic framework (MOF)** can be used as a **broadband photodetector**.



As it does not contain any cost-intensive raw materials, it can be produced inexpensively in bulk.

Master of Science “Organic and Molecular Electronics” (OME)

Organic and molecular electronics is an innovative class of electronics with huge market potential in four key application areas: **displays, photovoltaics, lighting, and integrated smart systems**. While the technology is novel it is already used in many current applications, providing reduced cost and low energy manufacturing processes.

The Master’s Program in Organic and Molecular Electronics strives to educate young professionals in this innovative field. The **international two-year full-time study program** is taught in English and coordinated by Institute of Applied Physics (IAP) and Center for Advancing Electronics Dresden (cfaed) at TU Dresden.

It offers an interdisciplinary study program comprising physics, chemistry, electrical engineering, and materials science. The close collaboration with industry partners enables a highly practice-oriented education. Find more information about the application deadline online.

Cells under stress? Molecular biologists reconstruct cell structure

Cells are often exposed to stressful conditions that can be life threatening, such as high temperatures or toxins. Fortunately, our cells are **masters of stress management** with a powerful response program: they cease to grow, produce stress-protective factors, and form large structures, which are called **stress granules**.

Scientists at the Biotechnology Center (BIOTEC) of the TU Dresden and the Max Planck Institute of Molecular Cell Biology and Genetics (MPI-CBG), together with partners in Heidelberg and St. Louis (USA) have investigated how these mysterious structures assemble and dissolve, and what may cause their transition into a pathological state as observed in neurodegenerative diseases such as ALS (amyotrophic lateral sclerosis). Their results were published in the renowned scientific journal Cell.

Corona support by research institutions in Dresden

35,000 pairs of disposable gloves, 200 respiratory protection masks, 100 mouth-nose-masks, etc. – this donation was handed over at the beginning of April 2020 to hospitals in Dresden by the scientists of the TU Dresden Johannstadt campus. The Center for Molecular and Cellular Bioengineering (CMCB) with its research institutes Center for Molecular Bioengineering B CUBE, Biotechnology Center BIOTEC and Center for Regenarative Therapies CRTD, as well as the Paul Langerhans Institute and the Buchholz-Lab of the Medical Faculty participated in the donation campaign that is organised by the alliances DRESDEN-concept und biosaxony.

The scientists also directly support the Dresden University Hospital: They provided a specialized qPCR device that also can **perform virus tests**. Together with that tool, two CMCB experts support the corona core team at the University Hospital.

Girls' Day in a different way

The Center for Molecular and Cellular Bioengineering (CMCB) at TUD has been inviting science interested girls to the dedicated Girls' Day for years. A multi-faceted programme was also planned for March 2020, but has to be cancelled due to the corona pandemic. So this year, the only way to present one of the female scientists, who the girls would otherwise have experienced live, is by virtual means:

See the interview with **Dr. Elisabeth Fischer-Friedrich**, Research Group Leader at the Biotechnology Center (BIOTEC) and the Cluster of Excellence Physics of Life (PoL) at TU Dresden.

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