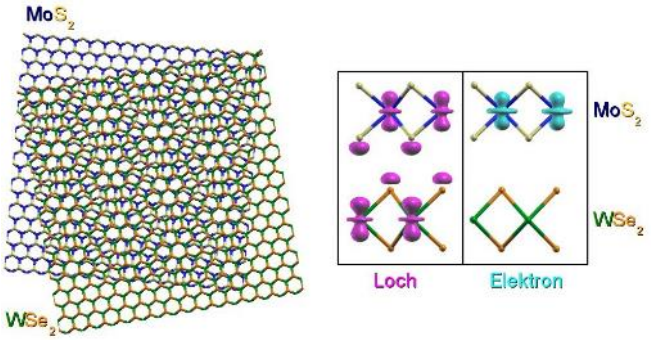
CONTENT

RESEARCH

Long-distance relationships of particles: Electron-hole pairs in two-dimensional crystals

When light of specific frequency hits a semiconductor crystal, it is absorbed and produces an excitation.
In two-dimensional crystals, which consist of only a few atomic layers, so called "excitons" are the protagonists of these processes: These excitations from light incidence consist of one particle of positive charge and one of negative charge. Yet, two-dimensional crystals host a sheer zoo of excitons, making it hard to tell the kind of excitons dealt with in specific situations. Researchers of TU Dresden, in collaboration with an international team, now identified the nature of interlayer excitons in two-dimensional crystals. Their findings were published in the journal *Nature Physics*.
They were able to show, amongst others, "that particles of positive charge can be found in both layers," says **Dr. Jens Kunstmann** from the Chair of Theoretical Chemistry of TU Dresden, "and thence, the interlayer excitons are bound to each other in a much stronger way than presumed formerly." The complete press release can be found here.



A two-dimensional crystal from molybdenum disulfide (MoS2) and Tungsten diselenide (WSe2) (left: top view, right: side view). © Jens Kunstmann

APPOINTMENTS

Prof. Dr. Stefan Scherbaum, Chair of Psychological Methods and Computational Cognitive Modelling

Prof. Dr. Stefan Scherbaum has been appointed the Chair of Psychological Methods and Computational Cognitive Modelling at the Faculty of Psychology on 1st April. After a diploma of Computer Science in Media and a master's degree in Cognitive Science, he did his doctorate at TU Dresden, writing on „Making Decisions under conflict with a continuous mind". Ever since, he has been researching here in Dresden, being appointed Junior Professor of Research Methods in Psychology & Computational Cognitive Modelling in 2014. His methodic focus is on computational modelling of cognitive processes, methods of measuring dynamics of cognitive processes such as mouse tracking or dynamic EEG as well as reproductible science. As for content issues, Prof. Scherbaum is working on decision making processes, cognitive control and cooperative decision making.

Prof. Dr. Stefan Scherbaum. © Jürgen Lösel

Prof. Dr. Thomas Heine. © TU Dresden

Prof. Dr. Thomas Heine, Chair of Theoretical Chemistry

Prof. Dr. Thomas Heine has been appointed the Chair of Theoretical Chemistry on 1st April. After obtaining his doctorate at the TU Dresden's Institute of Theoretical Physics in 1999, Prof. Heine had been researching in Bologna and Geneva, and teaching at the TU Bergakademie Freiberg, before he habilitated, back at TU Dresden, in Physical Chemistry in 2006. He proceeded working at universities in Bremen and, lately, in Leipzig. His working group at TU Dresden develops computational tools for describing chemical and physical phenomena at an atomistic level, applying these methods in the investigation of advanced materials in order to complement experimental data which is often unavailable or incomplete.

EVENTS

Future Lab # 6
"Career Lane or Brain Drain?"

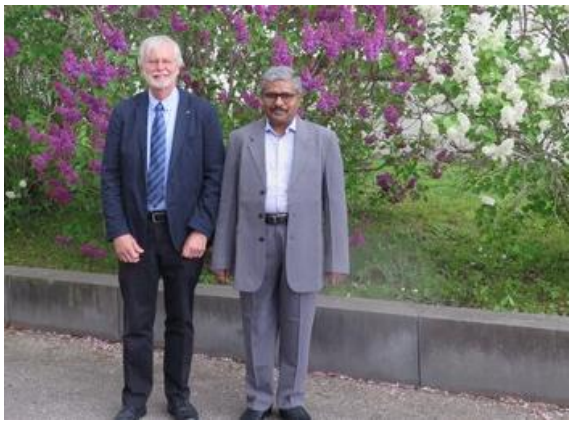
The last Future Lab within the event series will focus on personnel development, career paths and the promotion of young researchers. What is necessary for successful personnel development and which qualification opportunities and offers of assistance are vital for academic careers and for the professional development of support staff? At the same time, we would like to assess our definition of good leadership as well as the extent of employees' individual responsibility. Furthermore, one topical group will discuss career possibilities in cooperation with Dresden partners. All teaching and researching staff, students and employees of TU Dresden as well as of DRESDEN-concept institutions are welcome to join.

Thursday, 31st May 2018,
9-13 a.m.
Festsaal Dülferstraße

Information and registration (registration deadline: 18th May): https://tu-dresden.de/zukunftslabore

GUESTS

Investigating mechanisms of nanoplasticity: AvH Bessel awardee Prof. Satyam Suwas



Guest professor Suwas (r.) and Prof. Skrotzki are now intensifying their long-standing cooperation in Dresden until October. © Susann Lederer

A guest at TU Dresden since April, **Prof. Dr. Satyam Suwas** is researching on phenomena of nanoplasticity: To achieve maximum strength without loosing much ductility, the mechanisms of nanoplasticity have to be understood. This problem is what Prof. Suwas from the Indian Institute of Science, Bangalore, is working on in the course of the Friedrich Wilhelm Bessel Research Award, given by the Alexander von Humboldt Foundation.
During his research stay of seven months at TU Dresden, Prof. Suwas is hosted by the Chair of Metal Physics, **Prof. Dr. Werner Skrotzki**, at the Institute of Solid State and Materials Physics. "Prof. Skrotzki and I have been researching in the same fields and exchanging ideas for almost 15 years. In 2003, we published our first paper together," Prof. Suwas explains. The professors are now intensifying this long-standing cooperation in Dresden until October – afterwards they will continue to work on the research problem at their respective institutes, Prof. Skrotzki at the Technische Universität, and Prof. Suwas at the Indian Institute of Science in Bangalore, where he is heading the Laboratory for Texture and Related Studies. The complete article can be found here.

DIVERSITY

Girls' Day 2018: Clouds of mist from dry ice and fog chambers

On 26 April, Girls' Day opened doors for 130,000 youths to institutions and companies – among others, at the Faculties of Chemistry and Physics – in order to give them an informed introduction to potential careers.
16 participants experienced the fascination of cosmic particles in a two-part workshop at the Institute of Nuclear and Particle Physics (IKTP). After an introductory lecture on astroparticle physics, particle physics and cosmology, the schoolgirls then formed groups and built several small cloud chambers in which they were able to record a lot of movement from space. The fascination of tracing the cosmic particles in the luminous chambers made these particles more tangible to the schoolgirls, bringing the experience to a successful conclusion.
Ten committed ninth-graders made the most of the open lab doors at the Faculty of Chemistry. This was the fourth time that staff of the 1708 priority programme had prepared a varied and informative day, which included five workstations providing insights into the world of chemistry. Among the experiments that the girls mastered with flying colours and great enthusiasm were experiencing the chemical behaviour of swirling dry ice, creating gilded coins or coloured salt beads, shimmering golden rain, fluorescent colours and small silver trees. Along with their newly-acquired knowledge, the girls were able to take home small souvenirs from the lab experiments and their certificates of participation in new shoulder bags.

Schoolgirls at the IKTP saw lots of cosmic particles wafting through the haze in their do-it-yourself cloud chambers, © Anne Feuerhack

In working groups, the participants discussed problems and solutions for several aspects of gender topics © Nadine Günther

"MEHRWERT durch mehr Perspektiven" Project: Workshop at School of Science

The workshop of the project "MEHRWERT durch mehr Perspektiven" (Added value through added prospects) at the School of Science posed gender questions that surprised some participants: in addition to the issues of gender equality and dynamics in working culture, power relations and gender-and-diversity-appropriate research mediation, the event provided food for thought in areas in which gender and role understanding creep in – and work unconsciously. Does our dualistic understanding of gender lead to a restrictive view in research in the natural sciences? Are the tendencies towards certain research questions and interests gender-controlled? Lively group discussions of the problems and possible solutions provided inspiration for more gender equality and caution in research in order to shape science in a timely and forward-looking manner.

AWARDS

Certificate of recognition for Dr. Thea Lautenschläger as part of the Kurt Schwabe Prize

Dr. Thea Lautenschläger from the Institute of Botany at TU Dresden received a certificate of recognition as part of this year's Kurt Schwabe Prize. The Kurt Schwabe Prize of the Saxon Academy of Sciences in Leipzig is awarded for outstanding scientific or technical achievements and for great services in the conservation of nature and its resources. Both the certificate for Dr. Lautenschläger and the prize for Dr. Agnes Schulze from the Leibniz Institute of Surface Engineering were awarded at the public spring meeting of the Academy on 13th April.

LECTURES

Mathematical dimensions: Lectures on 3D printing sculptures and musical insights from mathematics

Two public lectures held at the Faculty of Mathematics at the end of April and the beginning of May, brought surprising facets of mathematics alive for the audience. On 19th April, **Prof. Stefan Neukamm** explained how mathematical music is – and, vice versa, how musical mathemetics is – in his lecture entitled "Mathematik(er) spielt die erste Geige" (Mathematic(ian)s call(s) the tune), accompanied by virtuoso violin playing and sound samples. His rhetorical arc spanned fundamental questions about the nature of sounds and tones, their visualisability, and the mathematical description and modelling of music. Afterwards, together with his wife **Sae Shimabara** from the Sächsische Staatskapelle Dresden, Prof. Neukamm provided glimpses behind the scenes of their artistic-mathematic life and personal insights into music, mathematics, creativity and structure.

Barth's sextic. 3D print by Oliver Labs. © Oliver Labs

Mathematician and designer **Oliver Labs** gave a talk on "3D-Druck-Skulpturen aus Mathematik" (3D printing sculptures made of maths) on 9th May. Mathematical models can be produced with high precision, thanks to computer software and 3D printers. Labs calculated, designed and produced many hundreds of those equitation-based objects – and brought with him 45 new models for the TU Dresden's collection of mathematical models.

Publisher: *Prof. Clemens Kirschbaum, Chairman for the School of Science. Office hours by prior arrangement: Wednesdays, 9.30 to 10.30 a.m., Tel.: 0351 463 37512.*
Editing: *Nicole Gierig, Susann Lederer - Public Relations*
Contact: *Nicole.Gierig@tu-dresden.de, Tel. 0351 463 39504; Susann.Lederer@tu-dresden.de, Tel. 0351 463 39501*