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RESEARCH

Towards new quantum technologies: Spatial control of superconductivity opens up new possibilities

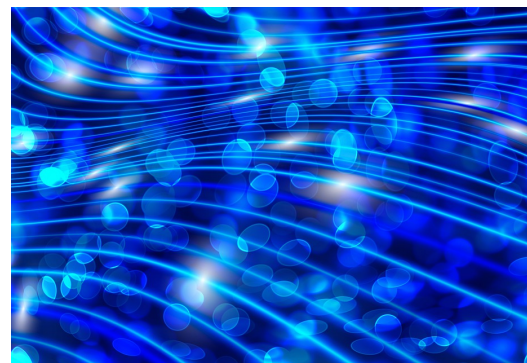
An international team of scientists, including physicist Dr. Tobias Meng from TU Dresden, has succeeded in producing a material in which superconductivity can be spatially controlled - an important milestone on the way towards new superconducting technologies. The researchers have made a surprising discovery with the metal CeIrIn5, which becomes superconducting at very low temperatures (about -273°C): they succeeded in producing the material in such a way that it has both superconducting and normal conducting regions. In



Dr. Tobias Meng.
©ProBild Fotografie

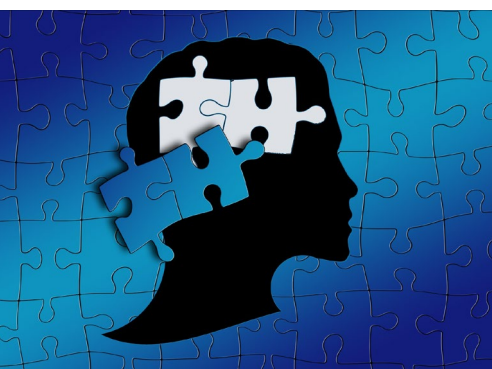
a next step, the scientists have developed a detailed model that enables them to design complex superconducting patterns and distribute them in a controlled manner by varying the temperature in the material. "The fact that superconductivity can be specifically switched on and off in different regions of a microchip without changing the material itself, opens up completely new technological possibilities, for example in the construction of Josephson junctions, which are also important for quantum computers," explains physicist Dr. Tobias Meng, head

of the Quantum Design group at TU Dresden, which contributed to the theoretical treatment of the experimental findings. <https://tu-dresden.de/mn/der-bereich/news/auf-dem-weg-zu-neuen-quantentechnologien-raeumliche-kontrolle-von-supraleitung-eroeffnet-neue-moeglichkeiten>



Symbol image quantumphysics © pixabay.com

Current Psychology studies – participation welcome



Symbol image © pixabay.com

- **Promoting mental health:** Participants wanted for free prevention project in case of **anxiety attacks**. Head of study: Prof. Dr. Katja Beesdo-Baum, Chair of Behavioural Epidemiology. www.panik-was-nun.de
- **Prosopagnosia:** How well do you recognise faces? Head of study: Prof. Dr. med. Katharina von Kriegstein, Chair of Cognitive and Clinical Neuroscience. <https://tu-dresden.de/mn/psychologie/ifap/kknw/forschung/prosop>
- **Refresh:** How to find to a better sleep. Head of study: Dipl. Psych. Bianka Vollert, Chair of Clinical Psychology and E-Mental-Health. <https://tu-dresden.de/mn/psychologie/ikpp/e-mental-health/forschung/refresh>
- **New study on the research of dyslexia.** Head of study: Prof. Dr. med. Katharina von Kriegstein, Chair of Cognitive and Clinical Neuroscience. <https://tu-dresden.de/mn/der-bereich/news/neue-lrs-studie>
- **MeinAusgleich:** For better management of stress through mindfulness. Head of study: Dipl. Psych. Bianka Vollert, Chair of Clinical Psychology and E-Mental-Health. <https://tu-dresden.de/mn/psychologie/ikpp/e-mental-health/forschung/meinausgleich>

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ERC Grants for chemist Dr. Renhao Dong and TUD Young Investigator Dr. Julian Thiele

The European Research Council (ERC) is funding two research projects by young scientists at the School of Science with up to 1.5 million euros each over a period of five years. Within the EU Framework Programme for Research and Innovation "Horizon 2020", these grants are awarded to excellent scientists for innovative projects with a focus on fundamental research.



European Research Council
Established by the European Commission



Dr. Renhao Dong develops 2D materials for novel electronic devices ©private

Why think three-dimensionally when it works better with 2D? In his research project at the interface between Chemistry, Materials Science and Physics, Dr. Renhao Dong aims to develop single- and few-layer magnetic (semi-)conductive C2DMOF films/nanosheets and accomplish electronic/magnetic structure engineering for functions in electronics and spintronics. As the key achievements, it is expected to establish novel electronic/magnetic structures and general synthesis strategies, delineation of reliable structure-transport relationships and superior device performance of C2DMOFs.

Project: C2DMOF – Development of Functional Conjugated Two-Dimensional Metal-Organic Frameworks

Partners: Faculty of Chemistry and Food Chemistry / Chair of Molecular Functional Materials (TU Dresden); Center for Advancing Electronics Dresden (cfaed)

Expected start: 1.2.2020. More information and contact:

<https://tu-dresden.de/mn/chemie/mc/mc2/die-professur/gruppenleiter/dr-renhao-dong>

TUD Young Investigator Dr. Julian Thiele also received an ERC Starting Grant amounting 1.5 million euros for his project „3D-Part-Form“. Over the next five years, the ERC will support the development of a novel approach in additive manufacturing that meets the complex requirements of polymer materials in sensor technology, information processing, robotics and bio-inspired structures. Since 2015, Dr. Thiele has been working as an independent junior research group leader at the Leibniz Institute for Polymer Research Dresden (IPF). The University Executive Board awarded him the status of TUD Young Investigator at the Faculty of Chemistry and Food Chemistry in 2017. Information and contact: <https://thielelab.com/>



Dr. Julian Thiele is an independent junior research group leader at the IPF. ©Daniel Koch

ORGANISATION

University elections 2019 on 26 and 27 November (for students until 28 November)



The University elections 2019 will take place on 26 and 27 November.

At the School of Science, there will be elections for the following offices:

- the members of the **Senate** and the **Extended Senate**
- the **Deputy Equal Opportunities Officer** of the School of Science
- the **Deputy Equal Opportunities Officer** of the Faculty of Physics

Voting at the School of Science will take place on both days from 9:00 a.m. to 4:00 p.m. at a central location in the **Willers-Bau, Room C 207**. All current official information and forms for the elections can be found at:

<https://tu-dresden.de/tu-dresden/organisation/wahlen/universitaetswahlen/universitaetswahlen-2019>

Information for students: The election in the group of students takes place separately and independently of the elections in the other member groups **from 26 to 28 November 2019**. This is organised by the students themselves. More information on the respective times and places can be found at: <https://www.stura.tu-dresden.de/wahlen>

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SELECTED EVENTS

- 2.11. **Physik am Samstag**
Experimenting with ultrasound
 Prof. Dr. Gesche Pospiech
 10 am, Physik lecture hall, Trefftz-Bau
tu-dresden.de/physik/samstag
- 5.11. **Biological Colloquium**
Zelltod durch Apoptose und Nekrose
 Dr. Olaf Berger
 5 pm, ASB 28
- 7.11. **Presentation Cluster of Excellence ct.qmat**
 GWT Open House
 5 pm, B Cube (Tatzberg 41)
 Registration at:
veranstaltungen@gwtonline.de
- 13.11. **Bühlercolloquium**
Kann der Konsum von Pornographie zur Sucht führen? (Prof. Rudolph Stark)
 5 pm, FAL 158
- 13.11. **Dresden Mathematical Seminar**
Asymptotic Analysis of a Parabolic Problem with a Rough Fast Oscillating Interface (Prof. Parizia Donato)
 5 – 6 pm, WIL B 321
<https://tu-dresden.de/mn/math/die-fakultaet/veranstaltungen/dms>
- 18./19.11. **Workshop Science Communication**
 for Docs and Post-Docs
 Info and registration at:
<https://tu-dresden.de/mn/physik/iktp/das-institut/news/news/komplexe-themen-auf-den-punkt-gebracht>
- 26.11. **Career prospects in biology and biotechnology**
 Orientierungsplattform Forschung und Praxis (OFP)
 5 pm, Bio E33/E34
tu-dresden.de/deinstudienerfolg/ofp
- 27.11. **Panel discussion Children- and Youth Psychology**
 OFP
 4.40 – 6.10 pm, BZW A253
tu-dresden.de/deinstudienerfolg/ofp

AWARDS

Food chemist Dr. Jana Raupbach receives the KlarText Prize for Science Communication

On 10 October 2019, the Klaus Tschira Foundation awarded the KlarText Prize for Science Communication to six researchers who wrote a generally understandable article about their doctoral thesis. Dr. Jana Raupbach (née Rückriemen) from TU Dresden is one of the prizewinners. Dr. Raupbach received the 5,000 Euro prize in the Chemistry category for her article "Süße Fälschung" (Sweet Counterfeit), in which she describes the possibility of chemically proving the authenticity of Manuka honey. Jana Raupbach is aware of the social relevance of her dissertation topic, and so she found the idea exciting to break down her five years of intensive research work for the KlarText Prize into two pages of generally understandable text. Her supervisor, Prof. Thomas Henle, also sees great potential in science communication, especially in the field of food chemistry: "High-quality food and healthy nutrition play a central role in our society. For food chemistry, therefore, an understandable but scientifically founded communication of knowledge is of outstanding importance. If we succeed in sharing our knowledge with the majority of the population, we can contribute to motivating people to be more conscious and aware in their use of food". <https://tu-dresden.de/mn/der-be-reich/news/suesse-faelschung-dr-jana-raupbach-von-der-tu-dresden-erhaelt-den-klartext-preis-fuer-wissenschaftskommunikation>



Dr. Jana Raupbach now works as a scientific assistant at the German Institute for Nutrition Research in Potsdam-Rehbrücke. © KTS/Badge

CURRENT CALLS

- **Femtec.Careerbuilding-Programm** – Apply until 6 November! *Individual advice. Exclusive business contacts. Decisive impulses for female students of natural sciences.* <https://tu-dresden.de/femtec>
- **Dresden Excellence Award** – For scientific theses with excellent success. Application deadline: 10 November 2019. <https://www.dresden.de/de/wirtschaft/wissenschaft/dresden-excellence-award.php>
- **Artist in Residence im Schaufler Lab@TU Dresden:** Application deadline: 30 November. <https://tu-dresden.de/kustodie/ressourcen/dateien/Schaufler-Residency-TU-Dresden-Ausschreibung-Announcement.pdf?lang=de>
- **Deutscher Studienpreis 2020** for dissertations with social relevance. Application until 1 March 2020. <https://www.koerber-stiftung.de/deutscher-studienpreis>

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