

July 31, 2020



### Latest News

#### **New Chemistry for Ultra-thin Gas Sensors**

A Bochum-based team has developed a new process for zinc oxide layers that can be used for nitrogen oxide sensors as well as protection layer on plastic. The application of zinc oxide layers in industry is manifold and ranges from the protection of degradable goods to the detection of toxic nitrogen oxide gas. Such layers can be deposited by atomic layer deposition (ALD) which employs typically chemical compounds, or simply precursors, which ignite immediately upon contact with air, i.e. are highly pyrophoric.

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#### **Engineer Appointed to the Young Academy of the Leopoldina**

Anyone who is a member here has not only written an excellent dissertation, but has also done outstanding work beyond that - and has done so at a young age: Junior Professor Doris Segets from the Center for Nanointegration (CENIDE) at University of Duisburg-Essen (UDE) has been appointed to the Young Academy of the Leopoldina.

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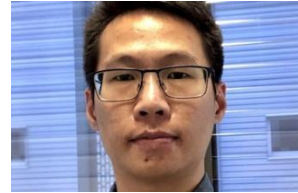
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#### **Humboldt Fellow at NETZ**

They combine the properties of metal and glass and thus reveal new possibilities: Among other features, metallic glasses have extraordinary catalytic properties. Dr. Shunxing Liang intends to exploit this for water splitting, i.e. the

production of hydrogen as an energy carrier. To this end, he wants to generate nanoparticles of this promising material by pulse laser ablation in liquids.

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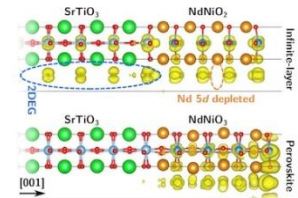


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## Superconducting Nickelates

Superconductors transmit electric current without loss at any distance and play an important role in quantum computers and medical imaging. Unfortunately, the stars among the electrical conductors work exclusively at extremely low temperatures. Since the discovery of high-temperature superconducting cuprates with their characteristic copper-oxygen plaquettes in 1986, scientists have been searching for similar behavior in other materials classes.

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## Position Paper from the Engineering Sciences

A technology-open approach on the way to a global climate-neutral energy system - this is what more than 50 professors from leading German universities and research institutions recommend, including Prof. Christof Schulz from the Center for Nanointegration (CENIDE) at University of Duisburg-Essen (UDE). A position paper drawn up jointly with engineering scientists from Darmstadt Technical University and RWTH Aachen University draws attention to the thermal use of chemical energy sources.

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## CAR becomes MOTION

The CAR Institute of University of Duisburg-Essen (UDE) is realigning itself and becoming considerably larger. "In the future, the fields of work will not be limited to automotive engineering and economics, but will also include other areas of mobility. These include ship technology and transport logistics," explains Prof. Dr. Dieter Schramm, Dean of Engineering Sciences. Consequently, additional members will strengthen the institute and it will be given a new name: MOTION - MObility TransformaTION.

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## Nanoparticles at the Push of a Button

Insert capsule, refill with water if necessary, switch on: The machine whirrs a little, and the precious item runs into the waiting vessel. This is not about coffee, but nano particles. Two scientists from the Center for Nanointegration (CENIDE) at University of Duisburg-Essen (UDE) will start the "AutoProNano" project in July, in which their particle production machine, for which a patent has already been applied for, will be made ready for the market. Their goal is to spin off the company at the beginning of 2022.

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## Publication Highlights

### **Influence of tailored surfaces and superimposed-oscillation on sheet-bulk metal forming operations**

Behrens, B.-A.; Tillmann, W.; Biermann, D.; Hübner, S.; Stangier, D.; Freiburg, D.; Meijer, A.; Koch, S.; Rosenbusch, D.; Müller, P.

*Journal of Manufacturing and Materials Processing* 4 (2020)

[more](#)

### **Investigation and equalisation of the flow distribution in a fuel cell stack**

Bürkle, F.; Moyon, F.; Feierabend, L.; Wartmann, J.; Heinzl, A.; Czarske, J.; Büttner, L.

*Journal of Power Sources* 448 (2020)

[more](#)

### **Processing of a single-crystalline CrCoNi medium-entropy alloy and evolution of its thermal expansion and elastic stiffness coefficients with temperature**

Laplanche, G.; Schneider, M.; Scholz, F.; Frenzel, J.; Eggeler, G.; Schreuer, J.

*Scripta Materialia* 177 44-48 (2020)

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Deutschland

+49 234 32 29919

[mc@uaruhr.de](mailto:mc@uaruhr.de)

[www.materials-chain.ruhr](http://www.materials-chain.ruhr)