NINa-News

North German Initiative Nanotechnology SH

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Wir fördern Wirtschaft

EU.SH

Landesprogramm Wirtschaft: Gefördert durch die Europäische Union - Europäischer Fonds für regionale Entwicklung (EFRE), den Bund und das Land Schleswig-Holstein

Schleswig-Holstein. Der echte Norden.

Dear Reader,

Prof. Dr. Franz Faupel

The North German Initiative Nanotechnology is quickly expanding its activities to the Baltic Sea region. As a consequence, we have decided to publish our periodical from now on in English as well. With this first issue of our English newsletter, we welcome all readers from abroad to be inspired by the latest trends and developments from our nanotechnology network, NINa SH.

Our organization received a grant of 515,000 Euros from the EU and the state of Schleswig-Holstein, Germany, to further enhance our networking activities. For the time being, we are focusing our efforts on involving more key technologies and expanding in the whole Baltic Sea region. In addition to the English newsletter, we have organized the international conference, NIBS 2019, which will take place in Poznan (Poland) in June. It is already the third conference in the series "Nanotechnology and Innovation in the Baltic Sea Region".

Apart from international efforts, we continuously intensify our domestic network in Northern Germany. In this issue, we present two examples from the cities of Bremen and Lübeck. Additionally, we have a parliamentary congress in Berlin on April 10th to put the nanotechnology made in Schleswig-Holstein into a wider German perspective.

I wish you pleasant and informative reading with our first newsletter in English. And if you are not already involved, it would be a pleasure to welcome you to our extensive network as a new member.

Franz Faupel

1st Chairman of NINa SH e.V.

NINa SH on the way to becoming a technology-cluster

Minister Dr. Buchholz hands over the grant certificate to the board of directors and the executive manager of NINa SH.

NINa SH receives 515,000 Euro grant due to the tremendous relevance of nanotechnology for the state of Schleswig-Holstein.

"I see great potential for innovation, and thus for new, high-quality employment in this", concluded Minister Dr. Bernd Buchholz while presenting the grant certificate.

With the funding, the state supports the setup of an "Innovative Network Nanotechnology" to facilitate technology transfer and foster growth in Schleswig-Holstein's future technologies. The funds are provided by the state and the EU. Further development of the network into an international nanotechnology-cluster can be of great benefit to science and industry in the state.

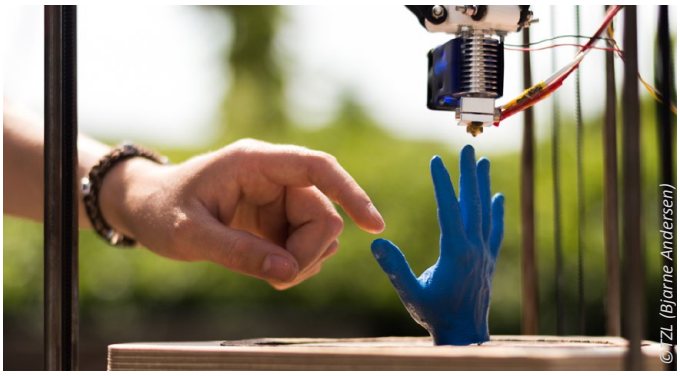
North German innovation through co-operation

Workspace, co-operation partners, innovations and modern production equipment: technology-oriented start-ups and innovative companies find support and a place in the technology center TZL in Lübeck.

The TZL (www.tzl.de) is a joint venture of companies from Lübeck's regional economy. Since 1986 its mission has been to support innovation, technology transfer and the founding of enterprises. It is the first, and for the time being the largest, technology and foundation center in the state of Schleswig-Holstein. To support start-ups and young companies, it has twenty buildings at three different sites in Lübeck on offer. A total of 54,000 m² of office space, laboratories and production areas can be flexibly scaled. The TZL offers one-stop service, ranging from the support of co-operations between universities and companies, the initiation and supervision of technology transfer projects and the incubation of innovative business ideas. Young companies gain access to a widespread network thanks to the TZL's central location on the science campus and its close proximity to Lübeck's centers of higher education, research institutions and the University hospital. Besides these ideal conditions for technology transfer and innovation, an accelerator will be established in the near future in order to further support company founders. In addition to the above activities, the TZL is a project and network partner involved in numerous initiatives. The project "StartUp SH", for instance, established the website "Gründerviertel" (www.gruenderviertel.de) which offers founders, companies and research institutions a joint information portal. To promote ideas and innovation across national borders, the TZL takes part in international EU development and co-operation projects.

The 10 multifunctional centers of the TZL

The TZL academy



The mission of the TZL academy (https://akademie.tzl.de) is to transfer know-how in the latest technologies and developments into companies of the region so that they are able to make practical use of it. Currently, the academy offers training for entrepreneurs, apprentices and other people interested in becoming a 3D-printing user within three days. The workshop participants learn how to create a CAD-drawing of a component and how to prepare and finally conduct the 3D-print. In addition, the week of September 9th to the 13th will be dedicated to 3D-printing. Please find further information on www.3dweek.org and in the highlights on page 4 of this newsletter.

The FabLab Lübeck in the TZL

Ambitious technology inventors, entrepreneurs and start-ups can use the available high-tech workshop, FabLab Lübeck, (www.fablab-luebeck.de) to inexpensively develop prototypes for their projects. The FabLab offers fast and easy access to modern production technologies such as 3D-printers, a UV-printer, a laser cutter, a CNC milling cutter and a CNC lathe. All technology enthusiasts are invited to the OpenLab Day every Friday from 6 to 10pm. Furthermore, the FabLab Lübeck organizes tournaments with home-made robots or other projects like inMoov - a completely 3D-printed, life-sized robot.

Innovative materials thanks to applied nanotechnology

Printable sensors, biocompatible implants and fast-curing adhesives are only a few examples of the development activities of the Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM. Within the different core competencies of the Fraunhofer IFAM, nanotechnology takes a central, cross-sectional key role with great potential for further technological progress.

The main site of the IFAM in the Bremen Technology Park

© Fraunhofer IFAM

With its main site located in the city of Bremen, the institute is one of Europe's most significant independent research facilities when it comes to adhesives, surfaces, molding and functional materials. Its strong position on the research market is based on seven core-competencies (see infobox on the right) that are the foundation for beneficial developments for the future needs of society.

The development tools available in-house include nanoscale modelling, chemical and physical methods for the production of thin films, particles, nano-composites and adhesives as well as printing structures with nanoscale dispersions.

In all research fields of the IFAM, nanotechnology is involved as a central cross-disciplinary technology. Due to the key role of nanotechnology, the IFAM organized the networking event „Nanotechnology in Bremen" together with NINa SH in November 2018.

To apply nanoparticles successfully and achieve the desired material properties, specific modification of the particles and the right processing technique are of major importance. Modified particles are used for the fabrication of adhesives, lacquers and matrix resins for composite materials.

Thanks to these particles, material properties can be improved significantly. For instance, they can improve both the rigidity and the failure strain at the same time.Furthermore, flow properties and fire behavior of materials can be tailored at the IFAM thanks to nanoparticles.

Systematic product development is based on comprehensive analytical methods used to characterize the properties of newly created materials. Besides application specific tests, instrumental analytics are an essential tool in the advancement of materials. Accordingly, the Fraunhofer IFAM has all important methods for characterization of materials available in-house.

Examples of current nanotechnological developments of the IFAM are shown at the bottom of this page.

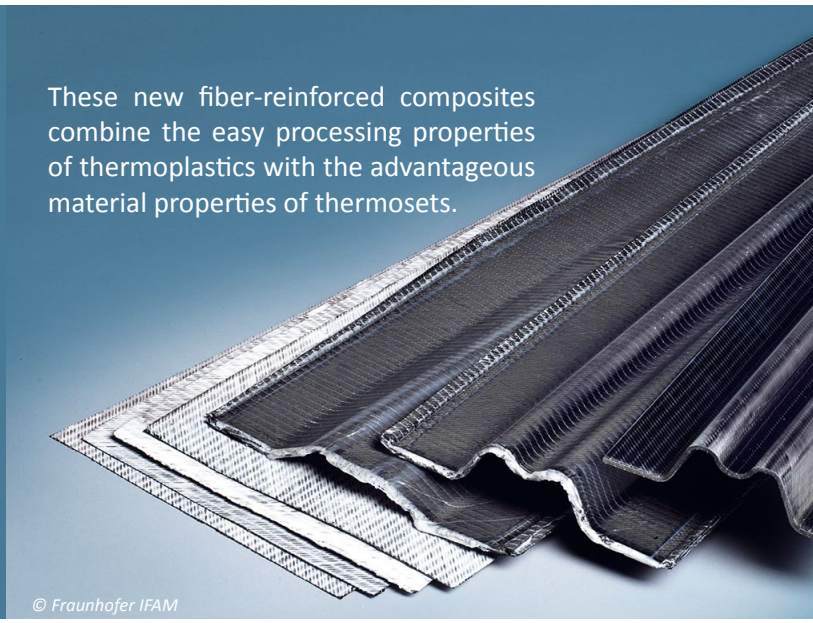
At IFAM a staff of 650 employees focus their technical and scientific know-how on seven core competencies:

- *metallic materials*
- *polymers*
- *surface technology*
- *adhesives*
- *molding and functionalization*
- *electromobility*
- *automation and digitalization*

Current nanotechnological developments at IFAM

- A new process generates biocompatible and antimicrobial films for application on implants, catheters and other medical products.
- Sensors can be printed directly on surfaces thanks to nanoparticles in inks and pastes.
- Adhesive bonding can be cured within seconds using the temperature-dependent interaction between magnetic nanoparticles and electromagnetic radiation.

These new fiber-reinforced composites combine the easy processing properties of thermoplastics with the advantageous material properties of thermosets.



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NINa‘s Highlights

On this page, NINa SH presents current highlights from the field of nanotechnology and news from science and industry. You can inform the network about your activities here, too - send us your highlight.

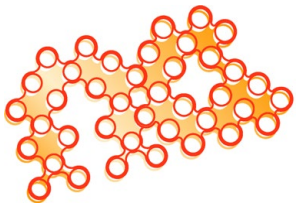
©TZL (Bjarne Andersen)

Save-the-date: 3D-week Lübeck

3D-printing offers completely new ways for the development and manufacturing of innovative products. Thus, the Technology Center Lübeck (TZL) has organized a 3D-printing week from September 9th to the 13th, 2019, together with the University of Lübeck and Infinite Science. The diverse agenda includes workshops on additive manufacturing and the conference "Additive Manufacturing Meets Medicine" addressing the potential of 3D-printing in medicine. In addition, a 3D-printing symposium offers information about 3D-printing tailored to the needs of small and medium-sized companies.

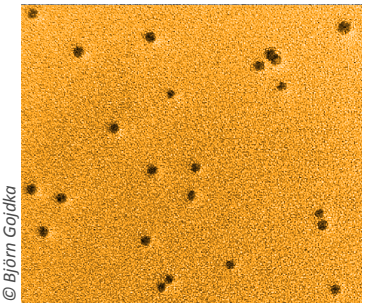
Conference NIBS 2019 in Poznan (Poland)

The conference series NIBS – "Nanotechnology and Innovation in the Baltic Sea Region" will take place for the third time, this year from June 5th to the 8th in Poznan, Poland. The conference is organized by NINa SH in cooperation with the Mads Clausen Institute of the University of Southern Denmark, the Kaunas University of Technology and Kiel University. NIBS 2019 offers a diverse program from the field of nanotechnology, including expert talks and networking events.



NINa SH meeting of members and 3D-printing workshop

NINa SH heartily invites all members of the network and all those interested in a membership to the meeting of members on March 21st, 2019. Shape the future of nanotechnology in Northern Germany together with us. The meeting will take place at the Technology Center Lübeck (TZL). The TZL is offering at that time a 3D-printing workshop from March 19th to the 21st.



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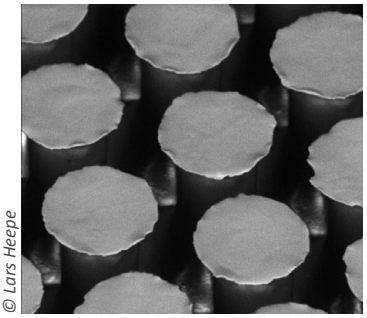
Safe nanotechnology with CheckNano

Nanoparticles are currently being used to improve product properties in numerous industries, such as cosmetics, nutrition, medical technology and pharmaceutics. However, knowledge of the size and shape of the nanoparticles is essential to apply them safely.

The project "CheckNano - Nanosafety Fast Test" develops prototypes for rapidly testing for and identifying toxic nanoparticles. The project is led by the Mads Clausen Institute of the University of Southern Denmark and is supported by NINa SH which participates as a project partner.



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No posion - no fouling

When organisms like clams and barnacles settle on offshore-facilities and on the hulls of ships they can damage the surfaces or lead to increased fuel consumption. Traditional paint coatings against so-called fouling contain toxic substances that are released into the environment.

Researchers at Kiel University developed a coating made of nontoxic silicone which effectively prevents fouling with its microstructure. The research is part of the cluster of excellence "The Future Ocean" and was published in the Journal of the Royal Society Interface.

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