



A nanometre is a billionth of a metre

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NANOCZECH

INTRODUCING CZECH NANO TECHNOLOGIES





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WELCOME TO THE CZECH REPUBLIC, THE COUNTRY WHERE THE INDUSTRIAL PRODUCTION OF NANOFIBERES WAS BORN, A COUNTRY THAT STILL HOLDS THE STATUS OF THE WORLD'S NANOTECHNOLOGY INCUBATOR.

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A nanometre is a billionth of a metre

		<p style="text-align: right;">#nanoczech</p> <h2 style="text-align: center;">Introduction</h2>
<p>The catalogue has been published as part of the NanoCzech 2023 conference, to mark 20 years since the Technical University of Liberec gave the world the technology of industrial nanofibre production.</p> <p>The Liberec Region has been intricately linked to nanotechnologies for those two decades. Nanotechnologies gained a positive media image in the region below Ještěd Mountain and throughout the Czech Republic during the COVID-19 pandemic, with the university, companies, and the Liberec Region all playing a key role at the onset of the pandemic in broadening the production of protective equipment throughout the Czech Republic.</p>		
<p style="text-align: right;">www.nanoczech.cz</p>		

Nanotechnologies from Liberec

The Technical University of Liberec and its Faculty of Mechanical Engineering (1953) and Faculty of Textile Engineering (1960) have since their foundation traditionally engaged in research and development that covers the entire spectrum of materials and in the development of technologies for the production of those materials.

The Department of Nonwovens and Economics of the Textile Industry, now the Department of Nonwovens and Nanofibrous Materials, was established at the Faculty of Textile Engineering at TUL in 1968. Its main areas of research have included the production of basic fibre layers and their mechanical or chemical reinforcement, with a view to designing new ways of producing nonwoven fabrics.

The discovery of the technique of electrical spinning from the free surface of a polymer

solution with direct current in 2002 [patented in 2003] moved electrical spinning on from the laboratory to industrial equipment. This discovery can surely be considered a breakthrough in terms of the availability of electrostatic spinning technology.

A genuine boom in nanoscience and nanotechnology can be expected in the near future as a result of the human ability to create nano-devices of this kind. We believe that by researching the production of nanomaterials (in our case nanofibres), we can open the door to the next generation of researchers.

Patenting the invention provided TUL with the opportunity to pass this technology on. Elmarco obtained an exclusive patent licence from TUL, thereafter choosing a strategy of selling laboratory and industrial equipment structured on the principle

of electrostatic spinning on the global market. Thanks to TUL and Elmarco, the availability of machines for the production of nanofibre layers accelerated interest in research, development, production and the application of nanofibrous materials at TUL and at other scientific research institutions and universities in general.

Alternating current electrospinning was then discovered in 2013. Alternating current electrospinning forms polymer jets from the open surfaces of polymer solutions and provides a highly-productive nanofibre trail. This time, TUL chose a different path of "commercialisation", one based on the search for new methods of production and the construction of devices, with massive, long-term support from the Nanoprogess cluster. This primarily resulted in test equipment for the pilot test production of linear nanofibrous materials based on the discovery of AC electrospinning.

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Helena Langšádlová, Minister of Science, Research and Innovation

"The transfer of scientific results into practice is one key way of developing a knowledge-based economy and of effectively exploiting the research potential of Czech workplaces. The NanoCzech Conference offers up the unique opportunity to connect the worlds of business and academic research, and my hope is that those attending can build new contacts to help in the application of great and unique ideas. Nanotechnology and nano-industry have a tradition in the Czech Republic, and in Liberec in particular, and I hope they will continue to develop and benefit the Czech and European economy," says Minister of Science, Research and Innovation Helena Langšádlová



Martin Půta, Governor of the Liberec Region

"From a historical perspective, the Liberec Region is mainly tied to the textile, glass-making, and engineering industries. In fact the region was once a global hub of industry and trade in these fields, particularly in the 19th and 20th centuries. And it was the tradition of textile manufacturing that brought the invention of industrial nanofibre production to the world at the beginning of this century. As a representative of the Liberec Region, I am fully aware of the importance of modern technologies and innovations to maintaining the competitiveness of the region, one reason why I am so happy for international projects such as NanoCzech Liberec 2023." Martin Půta, Governor of the Liberec Region

The potential of using applications based on spinning technologies, in medical and technical applications in particular, will over time lead to the involvement of other departments at TUL on common R&D issues and the tabling of new issues - in the field of bioengineering, material engineering, the construction of machines and special devices, analyses of material properties, and testing developed materials. And in the field of research into treating waste water from wastewater treatment plants based on the use of biomass carriers made of nanofibres/microfibres to facilitate fast and stable fixation (Cxl Institute).

The catalogue provides an overview of the nanotechnology companies and organisations presenting themselves at the NanoCzech 2023 conference. The wide range of companies presented demonstrates the scope of nanotechnology use, and its potential.

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Presentation of nanocentre

We have top European and world-class scientific institutions in the Czech Republic, many of them having been established between 2007 and 2013. They have state-of-the-art technologies and international research teams and are centres that focus on applied fields in engineering, biotechnology, optics, sensory systems, and in particular nanotechnology and advanced materials. These centres have been able to establish cooperation with the sphere of application and join prestigious international consortia. The NanoCzech Liberec 2023 conference features nano experts from the following 5 top research centres:

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WORLD-CLASS SCIENTIFIC INSTITUTIONS

Institute for Nanomaterials, Advanced Technologies and Innovation, Technical University of Liberec

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Czech Advanced Technology and Research Institute - CATRIN Palacký University

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Faculty of Science, Jan Evangelista Purkyně University

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Nanotechnology Centre CEITEC Brno University of Technology

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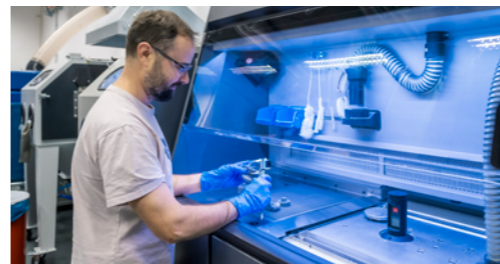
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WE HAVE TOP EUROPEAN AND WORLD-CLASS
SCIENTIFIC INSTITUTIONS IN THE CZECH REPUBLIC.

A nanometre is a billionth of a metre



**Institute for Nanomaterials,
Advanced Technologies and
Innovation, Technical University
of Liberec**

About the Institute for Nanomaterials, Advanced Technologies and Innovation (part of Technical University of Liberec): Research at the Top. Studentská 1402/2 | 461 17 Liberec 1 | Czech Republic E: cxi@tul.cz | T: +420 485 353 006 or +420 725 836 913 The Institute for Nanomaterials, Advanced Technologies and Innovation is a leading R&D centre that is active throughout the Czech Republic and Europe. We undertake comprehensive and efficient research and provide services in the fields of Nanomaterials, Engineering, and Information Technologies and Nanomaterials. We develop customised and innovative solutions for producers, technology companies, and other research institutions. Our well-established teams of experts provide professional services in the field of technical and cross-disciplinary research, breaking down ambitious ideas into innovative experiments using state-of-the-art equipment. Our experts also prepare analyses, develop and manufacture prototypes, and perform tests, trials, and measurements at various stages of product development and innovation. The Institute currently employs approximately 210 employees and is located in Liberec. You can find out more about us here: <https://cxi.tul.cz/>

Czech Advanced Technology
and Research Institute
- CATRIN Palacký University

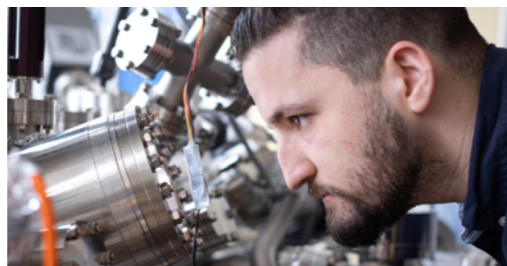


CATRIN - RCPTM is a scientific centre committed to nanomaterials and chemical research, since 2020 as part of the Czech Advanced Technology and Research Institute (CATRIN) at Palacký University Olomouc. CATRIN - RCPTM focuses on the development of nanomaterials and nanotechnologies for energy extraction and storage, environmental applications, catalysis, and applications in biomedicine and biotechnology. Our research covers a wide range of low-dimensional carbon materials, 2D nanostructures, quantum dots, and metal-based materials with unique magnetic, optical, electrical, or biological properties.

www.catrin.com

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Faculty of Science,
Jan Evangelista Purkyně
University

The research team at the UJEP Centre for Nanomaterials and Biotechnology develops nanofibrous membranes for a wide range of uses, from filtration and separation media (Li-battery separators) to protective membranes that degrade toxic pollutants or selectively capture CO₂ and H₂, going as far as catalytic and photocatalytic functionality (photocatalytic conversion of CO₂). Our nanofibre laboratory is equipped for electrospinning from a free surface, as well as needle and coaxial spinning, electrospraying included, with temperature and humidity control in the spinning chamber. The chemical modification of nanofibres is carried out directly from the spinning solution or by subsequent chemical treatment. In addition to basic analytical methods of diffraction, spectroscopic (IR, XPS, NMR) and HRSEM and TEM microscopy, we have equipment for the characterisation of nanofibrous membranes, meaning the measurement of air and liquid breathability and tensile tests.

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www.cenab.ujep.cz/en

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Technical University of Ostrava,
Centre for Energy and
Environmental Technologies,
Nanotechnology Centre

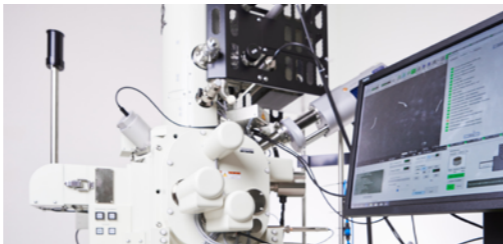


The CEET Nanotechnology Centre focuses on research and development in the field of nanomaterials, nanocomposites, nanostructured materials, and other advanced materials, for subsequent application in electrical-energy storage, solar-energy conversion, catalysts, photocatalysts and sorbents, membranes and filters for gas and water separation and purification, coatings and antimicrobial surfaces, and nanocomposites for biomedical applications. Laboratories are equipped with sophisticated instrumentation for chemical, structural, and phase analysis, and for application testing, including the validation of experimental results using computer simulations based on molecular mechanics and dynamics.

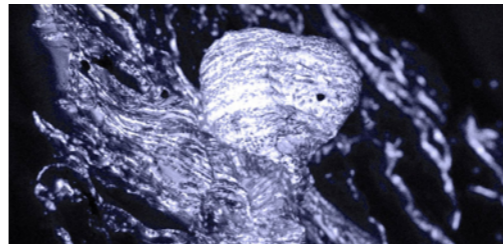
www.ceet.vsb.cz/en

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CEITEC
Brno University of Technology

Scientists at CEITEC Brno University of Technology are currently engaged in three areas of research, those being Advanced Nanotechnology and Microtechnology, Advanced Materials and Technical Cybernetics, and Instrumentation and Systems Integration. The main priorities at CEITEC Brno University of Technology include cooperating on international research and being interdisciplinary in character. Shared CEITEC Nano laboratories, which operate in open-access mode, provide ideal conditions for addressing multidisciplinary issues as their facilities can also be utilised by users, institutions, or industry partners from outside.

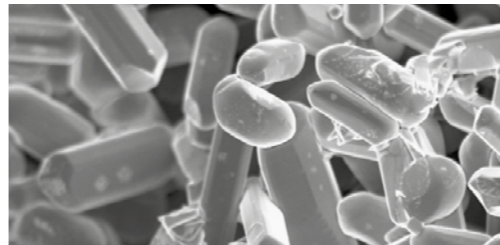
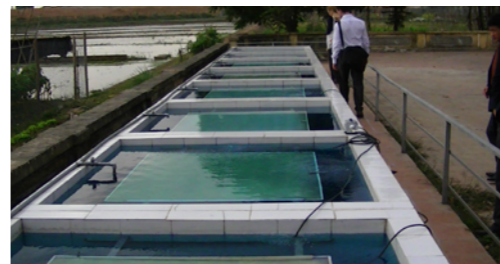
www.ceitec.cz

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PRESENTATION OF NANOTECHNOLOGY COMPANIES

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ADVANCED MATERIALS - JTJ

Advanced Materials-JTJ is a well-established innovation business in the Czech Republic. Our technologies, innovations, products, and services all focus on protecting human health and the environment. FN NANO[®] photocatalytic coatings improve the quality of life by removing pollutants, allergens, toxins, harmful bacteria, mould, and viruses from the environment. Our subsidiary, NanoTio, has also developed and patented a manufacturing process to produce high quality TiO₂ nano particles at a fraction of the cost of the technologies currently available. This patented technology enhances the economy of FN NANO[®] photocatalytic products for air depollution and water purification. Example: imagine that coating a surface area of only 15 m² with FN NANO[®] coating compensates the environmental impact of one diesel or three petrol-engine cars in a polluted city! There is no other known technology that can erase a car's environmental footprint in this way. Our renowned lithium battery technology platform - HE3DA[®] - comes from the same Advanced Materials research laboratory. And there is plenty more in the pipeline from Advanced Materials-JTJ.

Contipro



Contipro is one of the world's leading manufacturers of hyaluronic acid (HA) and derivatives thereof for the pharmaceutical and cosmetic industries. We focus on cutting-edge innovations and technologies created at our own research centre. Our product portfolio also includes dietary supplements and medical devices for veterinary and human use. We developed 4SPIN® technology for the production of ultra-fine nanofibres from HA and other polymers using electrospinning. Our unique devices, 4SPIN® LAB and 4SPIN® CONTI, facilitate the processing of a wide range of polymer materials, thus opening up wider opportunities in relation to the application potential of nanofibres in cosmetics and medicine. As for cosmetics, NanoDeliveryHA is an innovative delivery system based on nanofibres which is free of stabilisers, preservatives, and any other possible allergens. The NanoDeliveryHA ultrapure mask and NanoDeliveryHA ultrapure serum deliver HA and other incorporated active substances to the deeper layers of the skin.

www.contipro.com

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Czech Nanotechnology Industries Association

The Czech Nanotechnology Industries Association was founded on 27 November 2014 and brings together Czech companies from various industries for which nanotechnology is their core business, from the textile industry to biotechnology, environmental applications, optics, and energy. Some members of the Association use nanotechnologies in their production processes, while others focus on the development and production of nano products, or applications thereof. We have 39 members - small and medium-sized nanotechnology businesses - and we continue to grow. The Association is a partner to the Office of the Government of the Czech Republic, ministries, and other government organisations in relation to developing the economic strategy of the Czech Republic. The objective is to build the image of the Czech Republic as one of the world's leading nanotechnology incubators, a country that stands at the forefront of the industrial application of nanotechnologies and the availability of consumer products.

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www.nanoasociace.cz/en



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Elmarco



Elmarco has been active in the electrospinning-machine market since 2004, when we entered into a licencing agreement with the Technical University of Liberec in relation to the revolutionary concept of electrospinning from a free surface, which we named Nanospider™. We delivered the first industrial production line based on Nanospider™ technology in 2006 and established our own 3000 m² R&D centre in 2008. Nanospider™ machines are able to produce nanofibres from a wide range of polymers. Our product portfolio includes lab equipment intended for in-house research and development, semi-industrial equipment for high-value and low-volume products, and fully-industrial equipment capable of high-volume production.

www.elmarco.com

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eNecont
nano4house.cz
naplisne.cz

We at eNecont s.r.o. have been working intensively on innovations in the field of the indoor microclimate of buildings since 2015. Our main task is to integrate modern IoT technologies, automation, and advanced nanotechnologies, enabling us to achieve significant improvements in air quality and comfort for building users. Not only are we dedicated to eliminating problematic phenomena such as Sick Building Syndrome, we also effectively combat mould that can appear on the facades of buildings and indoors. Our approach means that we can set new hygiene standards thanks to solutions that not only meet, but often exceed international standards such as WELL Building Standard and RESET. It is important to us that our systems work around the clock, which is why they function 24 hours a day, 7 days a week, guaranteeing the stable quality and control of the indoor climate. Our greatest mission, and our primary motivation, is to create the healthiest and most comfortable environment for people who spend most of their time in such places, whether living or working. We believe that each and every one of us deserves the best possible conditions.

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www.nano4house.cz - www.naplisne.cz

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FN-NANO

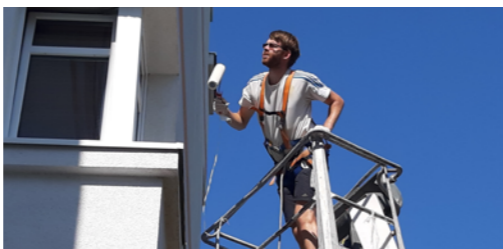


FN NANO® photocatalytic protective coating transforms every building into a gigantic air purifier. The active surface is powered by the energy of light (the Sun). The coating decontaminates huge quantities of pollutants from traffic and industry and eliminates low level ozone, each and every day. The same levels of pollutants can be found indoors as out on the streets, but with FN NANO coatings on your walls and ceiling, you and your family can breathe perfectly-clean air even in a highly-polluted part of a city. For instance, 15m2 of FN NANO® coating eliminates the same quantity of pollution as generated by a diesel passenger car, literally wiping out its environmental impact. As for one of the most polluted places in the Czech Republic - Legerova Street in Prague - a mere 2,500 m2 of the coating could remove one ton of NOx pollutants and 700 kg of ozone per year, generating environmental benefits worth over CZK 2 million. The environmental effect covers the cost of the coating within one year.

www.fn-nano.com

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H2O nanotec

H2O nanotec produces household water filters, which clean drinking water using carbon nanoparticles and remove pesticides, hormonal disruptors, microplastic particles, etc., from the water. The product was tested at the Technical University of Liberec. We also sell other water-cleaning technologies, such as ultrafiltration, reverse osmosis, and water softeners. H2O nanotec is continually improving its products and is currently working on a new and even more efficient sorption material for its filters. Our nano-carbon filter is unique on the market, and we already have hundreds of satisfied customers.



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www.h2onanotec.cz

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HE3DA

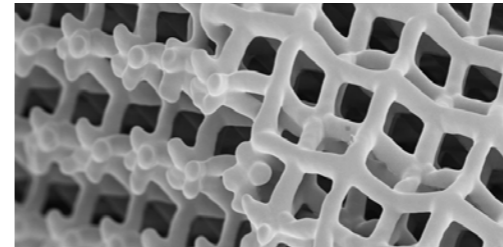
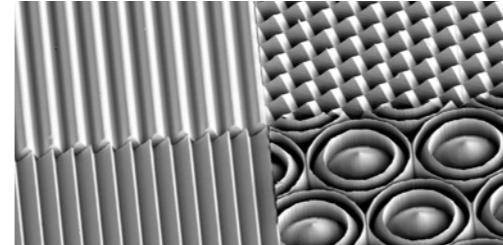


HE3DA® new lithium battery manufacturing platform • Unprecedented safety • Inexpensive manufacturing • Fully recyclable • Long life, excellent under extreme conditions • Designed for large-scale energy storage. A technology with global potential that is capable of firing the Czech Republic up among the leading economies in the world. How? Each of the 14 regions in the Czech Republic builds a 15 GWh generating plant chain with a total capacity of 210 GWh. The cost of building the chain is estimated at CZK 650 billion, but the gross sales generated stand at CZK 2.6 trillion, with expected gross profit of over 1 billion a year. Impossible? Not on an energy storage market expected to reach 1 TWh by next year. Safety comes first in large energy silos and cannot be compromised, and no other lithium battery is inherently safe by design.



IQS Group

We are architects in the nanoworld. We use nanostructures designed and calculated with sophistication to give materials and products amazing new functions and features. Companies in the IQS Group supply the international market with innovative products and technologies in areas ranging from counterfeit protection, nanostructured optics, and 3D printing to medical applications.



Jimiplet

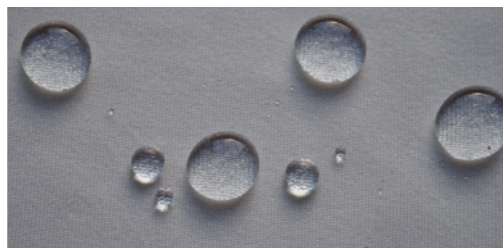
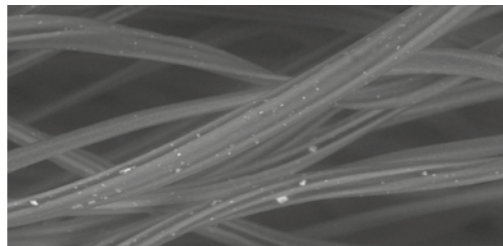


The use of nanotechnologies in the production of knitted fabric, as a raw material for other processing companies, NanoAg, NanoAg membrane, NanoAg carbon.

www.jimiplet.cz

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LADA



The LADA fashion brand, founded by Czech designer Lada Vyvialová, is the only company on the market that designs multifunctional models for everyday use, including police uniforms, sportswear, corporate T-shirts, and formal dress. Production at LADA is based on sustainability and slow fashion. Nano fabric with a Czech patent is produced by Czech companies and all models are sewn by seamstresses from Příbor. What is more, these innovative materials are highly functional and antibacterial and eliminate odours, thus significantly reducing maintenance requirements and in turn energy and water consumption. LADA works with brands such as Škoda Auto, TONAK, Baťa, and Starbucks and presents its design pieces at fashion events in the Czech Republic and abroad (e.g. Tokyo or Copenhagen). Lada Vyvialová is currently working with Brno-based digital sculptor Helena Lukášová on the Auversum collection, which combines nanotechnology and augmented reality.

www.ladavyvialova.cz

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LIFETECH



A Czech technology company with global reach that has cutting-edge know-how in the field of treating swimming-pool water, drinking water, and waste water. It also works on nanoparticle applications, using photocatalysis, ozone, UV, and AOP (Advanced Oxidation Process) technology. It has already developed and manufactured the smallest medium-pressure UV lamp - Profi-Pure - and a highly-economical AOP device - LifeOX® M - which breaks down organic material from water. It also removes pharmaceuticals and hormones from water, reducing the chemical consumption and operating costs of water treatment.

www.chcicistybazen.cz
www.lifeox-m.lifetechozone.com

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NAFIGATE Park

An EXPERT and a leading company in the development and production of nanofibre coatings and multilayer nanofibrous laminates. Our main focus is on optimising nanofibrous media for filtration applications such as HVAC, gas-turbine air intake, industrial dust collection, synthetic HEPA, automotive-engine intake, cabin air, face masks, window screens, and other applications where nanofibres can be utilised. Our know-how, built up over many years, our in-house R&D centre, and our testing capability enable us to develop new nanofibre products precisely in line with our customers' requirements and needs using a wide range of polymers (including biodegradable and/or high-temperature resistant), even outside the filtration sector. Our 1.6m-wide industrial nanofibre production lines and 20 years of experience in electrospinning mean that we can manufacture customised nanofibre products to meet the customer's needs and satisfy the requirements of a variety of filtration applications and beyond.

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www.nafigatepark.cz

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Nano4people



We clean air using nanotechnologies and light. We transform building exteriors into air purifiers and develop and manufacture air purifiers for the needs of metropolitan public transport, school and pre-school facilities, doctors' surgeries, waiting rooms, and more. We use FN-nano technology to create self-cleaning surfaces.

www.nano4people.cz

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Nano Medical



Nano Medical is a world leader in the area of research, development, and the industrial use of nano technologies in textiles. Our team has a collective 16 years of experience under its belt and has worked on research and patents. We provide innovative solutions for air and liquid filtration, for the pharmaceutical industry (protection of airways, peroral products based on nano soluble films), for medical devices (advanced covers for wounds), and for cosmetics (patented healing face and body masks) and create a variety of technical textiles using nano-elements. Nanofibres are the future of the textile industry.

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www.nanomedical.cz



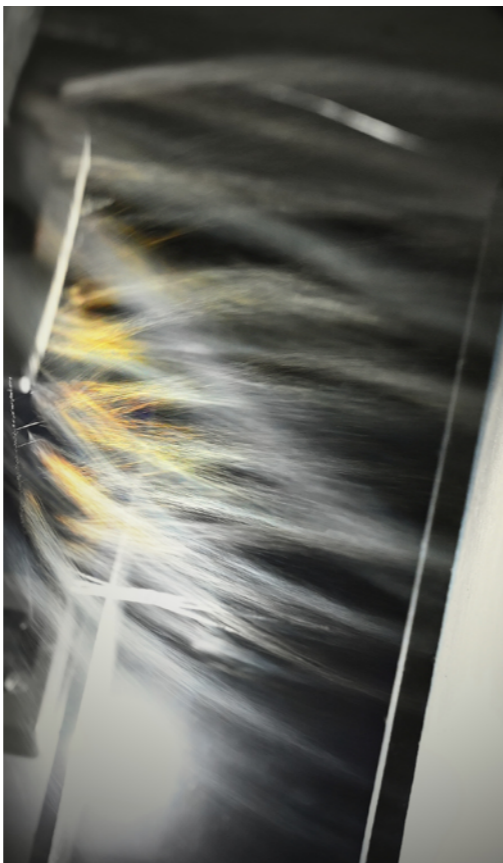
Nanopharma



Nanopharma, a.s. is a Czech nanomaterial company with more than ten years on the European market which focuses on the commercialisation of solutions in the field of nanomaterial and biomaterial engineering. The company is intensively engaged in research and development in relation to 2D and 3D nanofibrous structures for clinical and technical applications and has built up strong know-how in the electrospinning of a wide range of natural and synthetic polymers, as well as subsequent functionalisation and the delivery of specific properties to nanofibrous materials. Nanopharma is expanding locally and internationally as a research and development partner to a number of industrial and research organisations, helping those partners with the implementation of their own innovation plans, from concept to pilot testing. Nanopharma has successfully commercialised two nanofibre-based products - the nanoMatrix3D® range of cellular scaffolds and the nanoBeauty range of nanofibre dry facial masks.

www.nanopharma.cz

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NANOPROGRESS

Nanoprogess has been providing support to the nanotechnology industry in research and development, building joint R&D infrastructure, and engaging in internationalisation, lobbying, and marketing and PR for more than 10 years now. Over the past decade, we have developed sophisticated methodologies to functionalise nanofibrous structures, have built new technological equipment based on globally-unique AC electrospinning technology, and have identified the application potential of a wide range of nanofibrous structures in various industries. What is more, Nanoprogess has taken its place in leading European cluster organisations, significantly boosted research of excellence, consolidated a network of European partners, established a sustainable European metacluster organisation, CEDEG, established its first cluster spin-off company, Nanotech dynamics, and much more.

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www.nanoprogess.eu/en



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nanoSPACE



nanoSPACE is a Czech, family-run business that in 2012 became the world's first manufacturer of anti-dust-mite covers, blankets, and pillows using a nanofibrous membrane. Since entering the market in 2012, we have been developing and selling products with a nanofibrous membrane for people who suffer from allergies and asthma. In 2016, we introduced anti-dust-mite bedding and blankets made of nano cotton, combining the functionality of the material with high-quality cotton satin. Our e-shop sells the largest range of certified products using Czech nanofibrous membrane in the Czech Republic. During the 2020 coronavirus epidemic, we employed our many years of know-how in the field of nanofibre materials to launch the production of nanofibre masks and antivirus gaiters. We are a founding member of the Czech Nanotechnology Industries Association.

www.nanospace.cz

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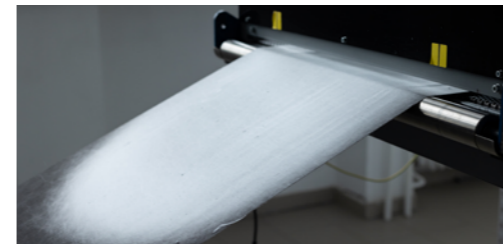
nanoSPACE Technology

nanoSPACE Technology is a start-up that engages in research, development, and the production of nanofibre-based materials and products. It is based in the town of Most and currently operates a R&D and production facility in Kralupy n. V, Czech Republic. In 2022 we developed and patented the unique Nano Hybrid Spray NT hybrid spinning technology, a technology that combines several principles used in nanofibre production on an industrial scale. A unique dual spinning head allows us to produce combined polymer membranes in a single production step. We can even spin different solvent-system polymers in one production step, combining, for example, water-soluble and non-soluble polymers in one step. Products and services: nanofibre development - making nanofibres from various types of polymers; nanofibre production - upscaling lab results into the industrial production of membrane-like materials; application development - supporting customers in developing final applications using nanofibre membranes; machine development, design, and production - we design and build production machines for the material developed.

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www.nanospace.technology

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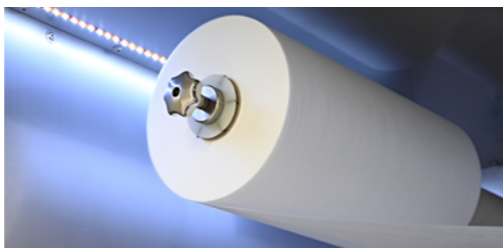
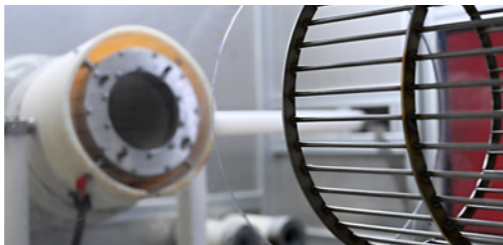
Nanotech dynamics



A dynamic company whose core business concentrates on the development and commercialisation of highly-innovative devices and products primarily based on a revolutionary technology for the preparation of nanofibrous structures that utilises AC electrospinning. We rely on the expertise of our team, expertise acquired over the last decade of research and development in the field of nanomaterials and nanotechnologies at prestigious institutions. We pride ourselves on providing tailor-made solutions to the customer, from the specification of input materials, through the delivery of technological solutions and manufacturing equipment, to final application.

www.ntdynamics.com

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NanoTrade

NanoTrade has been developing and producing the innovative and environmentally-friendly products of the nanosilver and SKI365 brands since 2004, combining the recycling of materials and the use of nanotechnology and selling in both B2B and B2C segments. As functional clothing, nanosilver has many properties - it is lightweight, it dries quickly, it eliminates odours, and it is cooling or warming, in different climatic conditions and for any activity. For overweight people who sweat more, for everyday activities and fashion, for active athletes, and for employees, helping them put in a steady performance in comfort. SKI365 technology is used for year-round skiing. It is ideal for the teaching and performance training of winter sports, for sports clubs, ski resorts or sports complexes, for professional skiers, cities, and race organisers. SKI365 supports the environment and increases the number of ways of improving and growing skills and fitness.

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www.nanosilver.eu, www.ski365.eu

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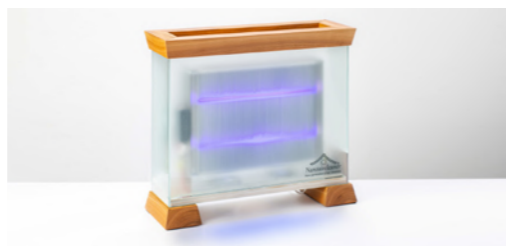


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RETAP



Cleaning with a nano cleaner without hepa filters, using a nano layer of titanium and UVA light.



www.nanocisticky.cz

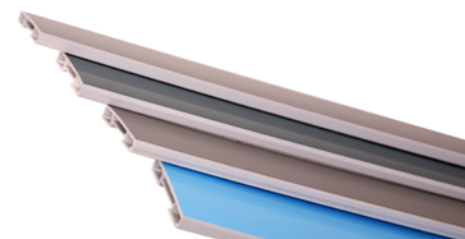
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SPUR

SPUR a.s. - a plastics processing company with a long tradition and modern technologies. The unique properties of plastics enable us to produce a wide range of materials and products. Our product range includes: • SPURTEX nanomembranes, designed for efficient air and water filtration • TUBEX insulation materials for piping systems • SPURO packaging materials, to protect products from damage • PETEX mats, to protect flooring surfaces • HDPE cable protectors and microtubes, for the protection of telecommunication cables • RETROX retroreflective materials, to increase safety • HARDEX PP foams, suitable for sandwich panels and composite materials. As a result of the experience we have gathered from many years of research and development, we know how to lighten foams, improve the properties of plastics, and filter ultrafine particles in gases and liquids. We adhere to the principles of sustainability - we try to save primary resources as much as possible and manufacture using recycled materials, returning all the waste produced back to production. Our ambition is to become carbon-neutral by 2030 at the latest.



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www.spur.cz

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TESCAN GROUP



TESCAN facilitates nanoscale investigation and analysis in the material, geoscience, life-science, and semiconductor industries. The company has a 30-year history of developing innovative electron microscopy, micro-computed tomography, and related software solutions for customers in research and industry worldwide. As a result, TESCOAN has earned a leading position in the world of micro- and nanotechnology. For more information visit: www.tescan.com. TESCOAN ORSAY HOLDING was established in 2013 as a result of long-term expansion and the establishment of subsidiaries worldwide. It includes ORSAY PHYSICS (Fuveau, France), a world leader in customised focused ion and electron beam technologies. TESCOAN GROUP, a.s., has its headquarters, production plant, and the majority of its R&D in Brno, Czech Republic. Every TESCOAN microscope is expertly produced in Brno and shipped to customers worldwide.

www.tescan.com

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VÚTS

VÚTS was founded in 1951, focusing on R&D in relation to textile machines. To this day we work intensively in the field of weaving technology for the production of technical fabrics. For more than 25 years now, the company's activities have reached beyond textile machinery alone, diversifying into other fields and areas. We focus on research and the development and production of machinery and equipment for the manufacturing industry and engage in the automation, development, design, and construction of special single-purpose machines. We also transfer our know-how to the field of nanotechnology, where we work with our partners in converting knowledge into an industrially-usable form by designing and manufacturing industrially-applicable machines and equipment. We provide a comprehensive range of services, from research and development and design development to the execution of a complete technological unit.

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www.vuts.cz



ORGANISATIONS SUPPORTING NANOTECHNOLOGY

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A nanometre is a billionth of a metre

<p>Regional Development Agency - ARR</p> 	<p>Liberec Region</p> 
<p>ARR provides expert support to residents, entrepreneurs, and institutions in the area in cooperation with the Liberec Region. ARR focuses on grant management, development projects, support for science, research, and innovation, support for entrepreneurship, startup businesses, and other areas of interest. These include nanotechnology, one of the main areas of specialisation in the Liberec Region. Together with other partners, we create an innovative environment, both within the region itself and with ties to other regions in the Czech Republic and the EU.</p> 	<p>The Liberec Region has a fine tradition of industry, particularly in the fields of engineering, the textile industry, and the glass industry. The region was a global hub of industry and trade in the world of textiles, glass, and costume jewellery, particularly in the 19th and 20th centuries. Then, at the beginning of the 21st century, the tradition of textiles gave rise to the world invention of industrial nanofibre production. The current representatives of the Liberec Region, headed by the Governor and the Regional Council, are fully aware of the importance of modern technologies in maintaining the competitiveness of the region. It is only natural, then, that they should provide considerable support to initiatives such as NanoCzech Liberec 2023.</p> 
<p>www.arr-nisa.cz/en</p>	<p>en.kraj-lbc.cz</p>

Technical University of Liberec



CzechInvest



The Technical University of Liberec offers a wide range of study programmes, from engineering through design, economics, teaching, and architecture to mechatronics and nursing. Its tradition stretches back to 1953, when it was founded as the University of Mechanical Engineering. The school was divided into the Faculty of Mechanical Engineering and the Faculty of Textiles in 1960 and was renamed the University of Mechanical Engineering and Textiles in Liberec (VŠST). And it is on the grounds of these faculties (and elsewhere) that remarkable feats are now being achieved in nanofibre research and development.



CzechInvest supports projects with high added value that bring know-how and innovation to the Czech Republic. It helps large, medium-sized, and small businesses, startups, and individuals with good ideas. Because that's where it always begins.



www.tul.cz/en

www.czechinvest.org/en

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Czech Nanotechnology Industries Association



Association for Foreign Investment - AFI



Since 2014, Nanoassociation has been an umbrella for Czech companies from various sectors for whom nanotechnology is their main line of business, from the textile industry through biotechnology, environmental applications, and optics to energy.



Nanotechnology is an important sector for a number of reasons: it is a fast-growing sector, one that is also cross-sectional in the sense that its applications are used in a wide range of industries, and in human life. It also stands that the Czech Republic is among the global elite in certain fields of nanotechnology, meaning that our companies contribute to shifting the Czech economy towards higher added value. It is therefore entirely natural that AFI should be interested in nanotechnology and support the sector, and those companies in it. The Association for Foreign Investment - AFI - is a non-governmental and non-profit association that supports foreign investors in the Czech Republic and Czech investments abroad and that tries to pressure public administration into improving the investment environment in the Czech Republic.



Sdružení pro zahraniční investice

www.nanoasociace.cz/en

www.afi.cz/en

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NANOCZECH



The Liberec Region is a world leader in the development of industrial technology for the production of nanofibres and related nanotechnologies.



Spolufinancováno
Evropskou unií



MINISTERSTVO ŠKOLSTVÍ,
MLÁDEŽE A TĚLOVÝCHOVY



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