



NANOTECHNOLOGY IN THE CZECH REPUBLIC

The field of nanotechnology has a long history in the Czech Republic. The first measurement of particles on the nano scale in the country occurred in the middle of the twentieth century. In 1949 Professor Armin Delong presented the first electron microscope and subsequently introduced it into production. At that time, only five countries were capable of manufacturing electron microscopes. The microscope was soon awarded a gold medal at the World's Fair in Brussels and today Professor Delong is globally recognised as the father of the electron microscope.

The cradle of nanotechnology research and development in the Czech Republic is the **TECHNICAL UNIVERSITY OF LIBEREC**, which employs outstanding workers and possesses top-quality technical equipment. In recent decades, the university's Faculty of Textiles has focused on nanofibres and research thereof. The university's most important representative in the field is Professor Oldřich Jirsák, who holds more than forty patents relating to fibres and non-woven textiles, on the basis of which companies in the United States, Great Britain, Australia and China manufacture products. In 2004 Professor Jirsák and his team developed the world's first machine for industrial production of nanofibres. The university's international standing is founded on a number of agreements on cooperation with foreign partners, such as that concluded with Shinshu University in Japan in autumn 2011. ***Representatives of the Technical University of Liberec will participate in the Nanofibres 2012 conference in Tokyo.***

Another major university involved in the field of nanofibres in the Czech Republic is **BRNO UNIVERSITY OF TECHNOLOGY**, which hosts the **Materials Research Centre**. This regional centre focuses primarily on applied research in the area of anorganic materials, transport systems for healthcare and sensors based on organic semiconductors. ***Representatives of the Materials Research Centre will participate in the Nanofibres 2012 conference in Tokyo.***

The absolute majority of Czech firms involved in nanotechnology are so-called born global companies which internationalise and seek business partners abroad. TESCANA and Delong Instruments are examples of such companies. Both companies' electron microscopes and devices are present throughout the world and in use with, for example, the American National Aeronautical and Space Administration, the University of Tennessee and the Massachusetts Institute of Technology.

Probably the most well-known Czech company involved in the nanofibre industry and nanotechnology generally is **ELMARCO**, which in 2007 introduced its Nanospider machine for industrial-scale production of nanofibres and subsequently became the world leader in this field. The company has branches in the United States and Japan, and has delivered machines to the Research Triangle Institute (USA), Kyoto Institute of Technology (Japan), Shinshu University (Japan), National University of Singapore (Singapore), King Saud University (Saudi Arabia) and Moscow State Textile University A.N. Kosygin (Russia), among others. ***Representatives of Elmarco will participate in the Nanofibres 2012 conference in Tokyo.***



Ministry of Foreign Affairs
of the Czech Republic



CONTIPRO, which among other things focuses on medical nano-biotechnology, ranks among the most significant Czech firms in the nanotechnology sector. The company has celebrated worldwide successes thanks, for example, to its device for three-dimensional arrangement of nanofibres. Directionally oriented nanofibres can be the basis for achieving control of cell growth, for example in the regeneration of nerve or muscle fibres. ***Representatives of Contipro will participate in the Nanofibres 2012 conference in Tokyo.***

Advanced Materials-JTJ is another Czech nanotechnology firm that has achieved success abroad. In recent years the company has scored highly in domestic competitions and successfully presented its technology at international conferences around the world, including the extraordinarily successful international trade fair Nanotech 2012 in Japan. Photocatalytic coatings developed by the company and sold worldwide under the FN brand are intended for forming highly sanitary wall surfaces, removal of chemicals and allergens from the air, protection of buildings, self-cleaning facades and roofs, and treatment of wood and other materials. FN coatings are sold in, for example, Poland, Spain, Portugal, New Zealand, Australia, Canada, the United States, Vietnam, Ireland, Russia and South Africa.

There are several start-up companies in the Czech Republic whose establishment was preceded by successful development of new technologies at local universities. Nanolron produces elementary iron nanoparticles which are uniquely important in groundwater-treatment processes. NANOPROTEX manufactures nanofibre membranes which won the prestigious ISPO Award in 2012.

The latest milestone of the Czech nanofibre industry was the establishment of **NAFIGATE CORPORATION**, which last year commenced operation of the first global nanofibre portal and is building a global centre of excellence. The NanoFibre Gateway at nafigate.com is a platform which enables the inception of new projects and groups engaged in the development of modern applications using nanofibres. Within the CzechAccelerator 2011-2014 project, Nafigate Corporation spent several months in Singapore with the intention of penetrating the Asian market. ***Representatives of Nafigate Corporation will participate in the Nanofibres 2012 conference in Tokyo.***