

Nano-Careers

Bright prospects for academics in tomorrow's companies

A new study shows how selected nano-companies prepare their academics for future challenges and what they expect from the next generation. The study, commissioned by the Federal Ministry of Education and Research (BMBF) and managed by the VDI Technologiezentrum, goes on to state that nanotechnology promises young academics successful careers in research into and the implementation of nanoproducts.

Entitled "Qualifications for Academics in the Field of Nanotechnology – Case Studies of Best Practice among Companies", the study was carried out by the isw-Institut in Halle and was based on nationwide interviews in twelve nano-companies. To this end, six innovative areas within nanotechnology were identified and, for each, two successful companies were surveyed. There is a large demand for expert staff with scientific and engineering qualifications and this will rise dramatically, according to the interviewees' prognoses. Qimonda in Dresden, for example, has 70 jobs for engineers that need filling. New, attractive jobs are thus being created for highly qualified young people.

Nano-challenges – Tasks in the area of research

The six innovative investigated areas within nanotechnology are aligned with what the BMBF terms leading innovations decisive for promoting nanotechnology. Many promising results in R&D are expected to lead to new business areas with excellent economic potential. Thus, new jobs as part of and as a result of research into nanotechnology are opening up good career possibilities in such sectors and technologies as

- Pharmacy, medical technology, bio- and food- and environmental technology,
- Optical technologies, laser technology, modern LEDs, display technologies,
- Chemical and processing industries, new joining materials,
- Automotive industry, process engineering, microsystems-, coating- and plastics technology,
- Semiconductors, information and communications technology, nanoelectronics,
- Fundamental research, nanoanalytical systems, quality assurance, etc.



Nano-skills are in demand – opening up opportunities for future academics. (Source: Qimonda)

Nano-skills – Much in demand among companies

Successful nano-companies are competing internationally for the best developments, products and excellent personnel. The study shows that staff developments, training and recruiting the next generation are the main factors for success if a company is to remain dynamic. So as to make the on-the-job training as effective as possible, nano-companies often make use of experienced people within the com-

pany who the recruits can identify with as mentors or inspiration. Good contacts to research are of central importance and of considerable advantage to newcomers in the profession.

Nano-expectations – Young people with the best chances

With regard to their HR needs, nano-companies will in future be increasingly dependent on young people, who will

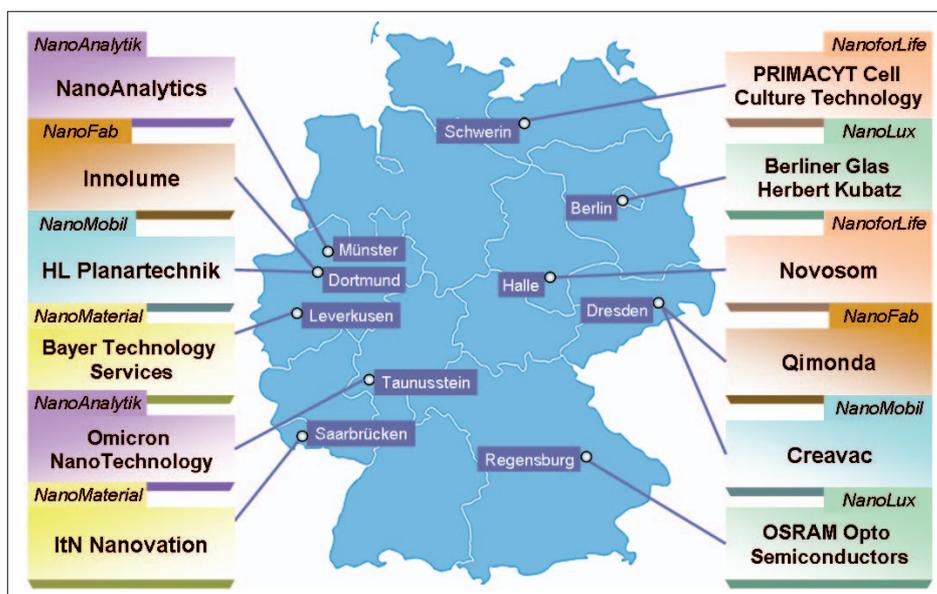


Fig. 1: Nationwide interviews were carried out in twelve nano-companies for the study on qualifications for academics in the field of nanotechnology. (Source: isw)



Fig. 2: An insight into various laboratory tasks (Source: Novosom)



Fig. 3: Primacyt in Schwerin offers internships for school pupils, so as to awaken an interest in technology and natural science at an early stage. (Source: Primacyt CCT)

develop their interest for nano- and future technologies. The companies interviewed expect excellent expert knowledge and sound scientific knowledge from their new recruits in the interdisciplinary fields. In addition, personal skills, such as corporate thinking, flexibility and team abilities, offer the best chances. A good knowledge of English as well as intercultural skills are an important prerequisite for academics in these international companies if they are to enjoy success in their work. Specializations during their studies, such as semiconductors, microsystems technology or process engineering will increasingly be in demand. Nano-companies are also bonding students to the company before they graduate, by way of internships, supervising projects and diplomas as well as doctor-

ates, which the students see as a stepping stone to promising careers. Furthermore, Primacyt in Schwerin offers internships for school pupils, so as to awaken an interest in technology and the natural sciences at an early stage.

Nano-training – Factor for success

Apart from close contacts to research the companies interviewed saw regular training as a very important factor for success. However, courses specially tailored towards nanotechnology are the exception thus far. At present, the focus is on the individual shaping of courses in line with the companies' own special demands. For example, the acquisition of knowledge and skills takes place by way of national and international conferences, meetings and workshops. Alongside expert literature, Internet and database research, external networks are used as well as corporate

ones in the case of larger companies. Berliner Glas, for example, has its own person responsible for training, who devises and coordinates internal and external courses, while also supporting the staff in their self-learning activities.

Furthermore, such demanding development projects often require external collaboration between companies. Professional project heads manage not only the development process of innovation, but also act simultaneously as moderators and supporters of the acquisition of knowledge and skills within the team. The study clearly shows that nano-companies invest in the acquisition of qualifications, offering individual and self-organized ways of shaping the learning process and thus achieving corporate success.

Outlook and further initiatives

The successful implementation of nanotechnological knowledge in products and future markets is dependent on strong support on the part of politicians, business and education. Some initiatives have been launched nationwide to help secure the foreseeable need for qualified personnel in nanotechnology.

The nanoTruck roadshow run by the BMBF illustrates how technological performance using nanotechnology advances the economy and employment in Germany and reaches some 100,000 mainly young people on site every year. The BMBF supports also future natural scientists who have already qualified by way of the NanoFutur competition, allowing them to develop their own young talent over a period of five years.

■ Download the study:
www.techportal.de/docs/training/Nano_Akadem_isw_final.pdf

■ Future technology with a vision:
www.bmbf.de/de/nanotechnologie.php

Nano-markets – Facts and potential

A market volume exceeding one billion euros is anticipated for products based on nanotechnology by 2015. In the past year alone, the BMBF has invested around 134 million euros in funding projects in nanotechnology. Germany is the leading nanotechnology nation within Europe. Currently there are already 620 German companies involved in the development, application and distribution of nanotechnological products, of which some 500 are SMEs. In Germany, around 50,000 jobs are already dependent on the business of developing nanotechnologies. An increase in jobs is to be expected especially among start-ups and SMEs.



Commissioned by the BMBF, **Dr. Waldemar Baron** works at the VDI Technologiezentrum, Future Technologies Division, on training concepts, transfer of knowledge and PR work in nanotechnology.

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Uwe Schumann worked on the study and, at the isw Institut, is concerned with educational research in such technology-oriented areas as nanotechnology.

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