Media information

Pathbreaking model for cooperation between science and industry

Oerlikon endows chair for an up-and-coming professor of terahertz photonics

***Pfäffikon SZ, August 7, 2008* – Oerlikon Group is endowing a five-year chair for an up-and-coming professor of terahertz (THz) photonics at Goethe University in Frankfurt am Main, Germany. The Ferdinand Braun Institute of Very High Frequency Technology (FBH) in Berlin, an institute of the Leibniz-Gemeinschaft scientific community, will also be involved in the joint research. Priority is intended to be given to the study and development of new sources and detectors for THz radiation and their possible industrial applications. Terahertz radiation occupies that part of the electromagnetic spectrum between infrared and microwave radiation. Terahertz photonics, as technical applications of this radiation are called, could well prove to be a key technology, particularly for surface technology and quality control.**

"The agreement between the research facilities and Oerlikon is a pathbreaking model of cooperation between science and industry," says Oerlikon CEO Dr. Uwe Krüger. "Here we are bringing the top researchers of two world-famous institutes together with our leading engineering expertise in surface technology," says Krüger. University President Rudolf Steinberg thanked the founders and pointed out, "that foreign founders have hitherto rarely got involved with Goethe University. OC Oerlikon's involvement in our Physics Department shows, however, that even outside Germany, Goethe University is indeed perceived to be an attractive cooperation partner. This should encourage other potential cooperation partners to get involved themselves". The endowed chair corresponds to a W2 endowment, is limited to five years and will be funded with € 400,000. The official selection procedure got under way last week.

Terahertz radiation occupies a borderline area lying outside the ranges of both high-frequency receivers and optical sensors. Terahertz radiation penetrates many materials, yet does not have an ionising effect owing to the low energy of its photons – in the range of but a few MeV. Hence, theoretically speaking, a wide variety of applications of great interest to industry and business are conceivable, as for surface analysis and quality assurance in the production of solar panels and textiles, or for screening packaging materials. Being closely related to radar,

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it may also be useful in such applications as three-dimensional imaging. So far, however, there are no compact, low-cost transmitters with sufficient output power, as are available for lower frequencies in the microwave range or for higher frequencies in the infrared range. Receiver technology also requires further development before more sensitive receivers will be able to detect even weaker signals.

Here is exactly where the "Goethe-Leibniz-Oerlikon-Nachwuchsprofessur für THz-Photonik" – as the official title of the newly endowed chair reads – is intended to take effect. The Physics Institute at Goethe University already has a study group on ultrafast spectroscopy and terahertz physics headed by Dr. Hartmut Roskos, thus offering an ideal environment for studies in this field. “We have long been studying basic questions to help improve THz technology, and have always pursued potential applications. The endowed chair will substantially strengthen our capacities in both endeavours,” explains Roskos. Frankfurt University is going to provide the rooms and teaching aids for the chair, which is also associated with the function of a department head at the Ferdinand Braun Institute.

The Ferdinand Braun Institute, an institute of the Leibniz-Gemeinschaft, is one of the world's leading institutions for industry-oriented, applied research in microwave technology and optoelectronics. To help advance cooperation between the institutions, the FBH is going to further expand its activities in the field of terahertz applications, since one of the duties of the endowed chair is to head the new Department of Terahertz Photonics at the FBH. "This is already the third cooperation scheme of this nature we have been involved in, and is part of our strategic orientation," explains Dr. Günther Tränkle, Director of the Berlin Institute of Cooperation. "In this way, we network outstanding scientists at renowned institutions of higher learning with our expertise in technology transfer and implementation in applications useful to industry," Tränkle adds. Professor Ernst Th. Rietschel, President of the Leibniz-Gemeinschaft, extolled the initiative. "This is a path-breaking model for cooperation between science and industry." Moreover, this sort of chair for up-and-coming young professors goes extremely well with our recently established Leibniz-Humboldt Professorship, added Ernst Rietschel.

Cooperation with the world's two leading research institutions takes on exemplary character in the context of decentralised, networked innovation management. "The days of centralised

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research and development are past," emphasises Dr. Andreas Widl, Executive Vice President of R&D and responsible for the group-wide coordination of research and development at Oerlikon. He notes that the subject matter nowadays is simply too complex, is developing too rapidly and requires ever greater investments in laboratory equipment for research. "That is why we are counting on networking with top researchers and deliberately entering into cooperation agreements with select institutions," says Widl. This approach has already proved worthwhile in the past. The breakthrough in thin film silicon technology Oerlikon Solar is currently enjoying was in part enabled by basic research at Neuchâtel University's Institute of Microtechnology – likewise one of Oerlikon's close cooperation partners.

In order to achieve this kind of success systematically in future, Oerlikon Group reoriented its innovation management in early 2008. At the beginning of the year, the company founded a Scientific Advisory Board (SAB) consisting of five well-known researchers to advise Oerlikon in scientific-technical questions and on the future potential of new technologies. "Innovations are the key to our worldwide corporate development," says Oerlikon CEO Krüger, who has a Ph.D. in physics himself. "Now we have to get the projects under way which in five years' time are going to give us the same kind of success as we have had with solar technology."

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Oerlikon *(SWX: OERL) is one of the world's most successful high-tech industrial groups specializing in machine and plant engineering. The company is a leader in the field of industrial solutions and innovative technologies for textile manufacture, thin-film solar and thin-film coating, drive, precision and vacuum systems. With roots in Switzerland and a long tradition stretching back 100 years, Oerlikon is a global player with a workforce of more than 19,000 at 170 locations in 35 different countries. The company's sales amounted to CHF 5.6 billion and it ranks either first or second in the respective global markets.*

Goethe University *is a strongly research-oriented institution of higher education in Europe's financial metropolis of Frankfurt. Founded by the citizens of Frankfurt 94 years ago, it is today one of Germany's ten biggest universities. By returning to its historic roots as a "Stiftungsuniversität" (university funded by a foundation), it has gained a unique level of autonomy. At the present time, the most beautiful campus in Germany is under construction in the area surrounding the historic Poelzig Complex at a cost of around € 600 million. With 48 endowed chairs and guest professorships established through funds raised since 2000, Goethe University takes first place in Germany. Three successive research rankings of the CHE and the Excellence Initiative of the German Federal Ministry of Education and Research show Goethe University to be one of the best universities when it comes to research.*

The ***Ferdinand-Braun-Institut für Höchstfrequenztechnik*** *(FBH) is one of the leading institutes in Europe for applied research in microwaves and optoelectronics. Based on III-V semiconductors it manufactures high-frequency devices and circuits for communication and sensor technology. High-power diode lasers with excellent beam quality are produced for materials processing, laser technology, medical technology and high-precision metrology. FBH also conducts basic investigations on nitrides for future applications such as short-waved UV light sources or transistors for very high voltages. In order to assure rapid transfer of technology FBH works closely with partners and customers in industry and the scientific community. The institute has a staff of 230 employees and a budget of 17.1 million Euro. It is part of the Forschungsverbund Berlin e.V. (FVB) and is a member of the Leibniz Association. FBH plays an active role in various networks, for example in OpTecBB, a competence network for optical technology, and in ZEMI, the center for microsystems technology in Berlin.*
www.fbh-berlin.de

The ***Leibniz Association*** *is a network of 82 scientifically, legally and economically independent research institutes and scientific service facilities. Leibniz Institutes foster close co-operations with universities, industry, and other research institutes. Leibniz researchers strive for excellent scientific solutions for major social challenges. The tasks undertaken range from humanities, regional research, and economics to the social and natural sciences, life sciences, engineering, environmental research, and are characterized by an interdisciplinary approach. Nearly 14,000 people work within the Leibniz Association, the total budget of all institutes amounts to 1.1 billion Euro. Leibniz Institutes are jointly funded by the German federal government and the states ("Bundesländer").*
www.leibniz-gemeinschaft.de

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