



FASCINATION OF LIGHT

- Campaign for Education in Optical Technologies -

sponsored by the Federal Ministry for Education and Research (BMBF)

Young people will be essential to successful innovation in the future, as technologies of tomorrow will require skilled and creative employees.

In order to fully utilize the chances offered by the economy and science in the young field of **Optical Technology** (OT), it is necessary to make information and knowledge available in education and occupation, stimulate fascination and awaken interest among the broad public. Presently, there is a shortage of young professionals in this branch. Based on this background, the cooperative campaign "**Fascination of Light**" – light for the schools – for basic and advanced training in the optical fields has been initiated. The official start of this national campaign was in February, 2003 in Berlin on the occasion of the convention "Optical Technologies – Future for the German Economy". The sponsors for this event were the Federal Ministries for Economy and Labor (BMWA) and for Education and Research (BMBF), the VDI and the industrial associations VDMA and Spectaris.

Under the motto "Fascination of Light", children, students and teachers, trainees and trainers, as well as the general public will be informed, made aware and fascinated by the impressive potential of light by **optical technology days**, events, presentations, holiday games, introductory courses, science days and exhibitions. Effective support here is also provided particularly by a **traveling exhibition** on the subject spectrum of optical engineering. It is designed for schools and was also opened in Berlin. The exhibition will be available to the wide public at fairs, in museums and special events. This offer will be completed by specialized discussions and workshops with teachers and those responsible at all levels of education as well as occupational forums for school leavers.



The Federal Ministers Wolfgang Clement and Edelgard Bulmahn opened up the exhibition „Fascination of Light“ on 20th February 2003 at the convention „Optical Technologies – Future for the German Economy“ in Berlin.

The campaign will provide a contribution of introducing students to an interesting futuristic field of new technologies with attractive occupational perspectives at an early stage and

establish an additional offer for students and teachers. The “Fascination of Light” campaign also serves for the establishment of long-term relationships (e. g. sponsorships) between the schools, academic education facilities, institutions for research in the field of natural science and industrial enterprises.

This close co-operation is intended to provide a contribution and to significantly improve “**Public Understanding of Science and Technology**”.



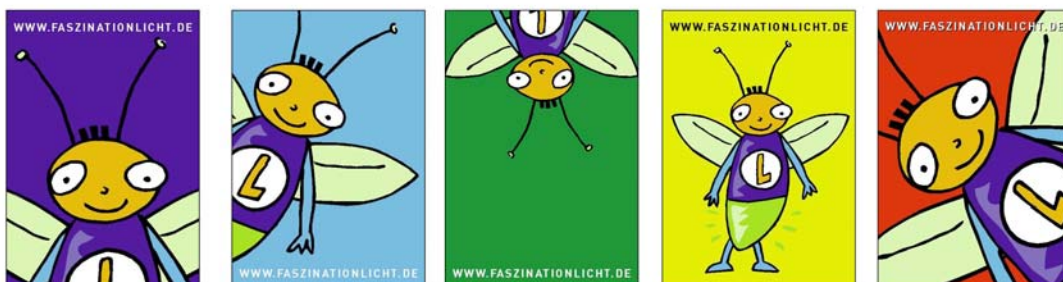
Pupils are experimenting in the exhibition „Fascination of Light“.

“Fascination of Light” is a **co-operative campaign**. Several organisations and societies such as the German Society for Applied Optics (DGaO), the German Physical Society (DPG), OptecNet Germany., the Industrial Association Spectaris, the Association of German Engineers (VDI), the Society of German Machine and System Construction (VDMA), the Scientific Association for Laser Technology (WLT) and the Competency Network Optical Technologies as well as the Deutschlandfunk, the International LASER Fair and the trade journal Photonik are already actively involved in the campaign. Additional partners and supporters, especially on European level, are encouraged to join.

Numerous activities are already in progress at universities and in companies, in trade unions and professional societies. Within the scope of this campaign, to give a comprehensive overview of events from all regions, an event calendar is provided. In fact, various activities only become visible by incorporating them into a common campaign with ongoing events for the wide public and the media. This increases the success of the individual events, provides stimulus for new measures and attracts further support.

The central internet site **www.faszinationlicht.de** provides further information on the campaign including an event calendar which will be updated continuously.

The VDI Technology Center in Düsseldorf is co-ordinating this campaign on behalf of the Federal Ministry for Education and Research (BMBF) which is also the principal project sponsor.



Luka – the glowworm shows younger children the wonderworld of light.

Information on the Exhibition

By nature, young people are eager to learn. Still, conventional lectures and school books often do not provide sufficient encouragement and stimulation. On the other hand, practical experience, active participation and exciting insights are key factors for achieving reliable and sustainable knowledge.

The technologies involved with light are simply fascinating. Everyone of us, confronted with the innovative products of daily life, also comes into contact with optical engineering almost without noticing it. "Fascination of Light" provides for the first time in Germany, an educationally conceived hands-on exhibition on optical technologies. It is subdivided into 5 categories:

Where does light come from ?

What is light ?

Laser – a special type of light

How does it work ? – Light in daily life products

Light games (for elementary school children)



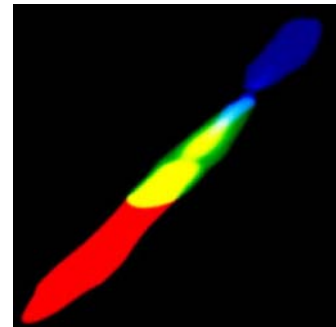
The exhibition offers answers, explanations and demonstrations to an array of questions with regard to light and its applications, e. g.: What is a photon? Where does light come from? How can we utilise and apply its unique properties? What is the scale of light? How small is a nanometer? Where does optical technology play a role in our daily lives? How much energy can be saved with modern LED's? How thick would a copper cable have to be to transport the same quantity of data as a wafer-thin fiber-optic cable? How does fiber optic cable transport light? How does the laser in a DVD player work? How can a laser weld a ship, drill the smallest, deepest hole in the world or be used as a precision surgical instrument? How can genetic fingerprints become legible by means of light?

The exhibition consists of hands-on exhibits, functional models, visual aids, multimedia stations, posters and simple experiments, which may provide inspirations for teaching. Students can experience an entire series of differing production steps and applications for optical engineering with the trend example of cellular telephones alone. Two accompanying videos, one CD with software on the most important exhibits and a brochure are available for "taking home and studying". Furthermore, the campaign internet site (see above) contains a lot of additional information, materials and virtual experiments.

Where the traveling exhibition is currently being presented as well as booking information and available dates can be found on the internet site. The exhibition is supported and sponsored by companies, organisations, institutes and the Federal Ministry for Education and Research (BMBF).

Information on Optical Technologies

Optical Technologies are pacemaker technologies for our modern economy and society. They act as so-called “enabling technologies” in nearly all branches of German core competencies, such as machine, automotive, marine and aeronautic construction, the micro-electronic industry, the pharmaceutical and medical product industry as well as the lighting industry. Optical Technologies fortify the strength of the German economy and ensure its competitive ability.¹



The trend of the future is to accomplish as much as possible with light, i. e. with photons. Only the photon has the technological potential for solving today’s challenges. As with the electron during the past decades, it will increasingly become the decisive factor for innovation.

Germany has developed into a world market leader in many areas of Optical Technologies. The labor market potential is accordingly high: even today, the Optical Technologies in Germany affect approx. 16 % of all jobs in the processing industry;² this corresponds to approx. 1.000.000 employees; approx. 110.000 people are employed directly in the area of optical engineering.

Germany has a well-trained research environment in the area of Optical Technologies and, with LASER in Munich, it offers the global business event which represents the leading world exhibition for optical engineering. Optical Technology is a large “branch” important for the economic location of Germany.

The “**German Agenda – Optical Technologies for the 21. Century**”³, a strategic process for designing and utilising this important economic field, was accomplished by several hundred experts from industry, economy, research and innovation during the years 1999/2000. In February 2002, the **new funding program “Optical Technologies – Made in Germany”**³ of the **Federal Ministry for Education and Research (BMBF)** was started which, besides research funding, also puts emphasis on the promotion of innovation key factors, such as basic and advanced training.

Contact partner:

Dr. Eckhard Heybrock
VDI-Technology Center
Laser and Optics Research Department
Graf-Recke-Straße 84
D-40239 Duesseldorf
Tel.: +49-211-62 14-5 81
Fax: +49-211-62 14-4 84
E-mail: heybrock@vdi.de

www.optischetechnologien.de
www.faszinationlicht.de

¹Josef Auer; Wachstumsbranche Lasertechnik: Deutschland vorne, Deutsche Bank Research (Selbstverlag), Frankfurt, 2000.

²Rainer Frietsch, Hariolf Grupp: Technologische Leistungsfähigkeit Deutschlands auf dem Gebiet der Optischen Technologien, ISI Studie, Januar 2002.

³Available from VDI Technology Center