Optics and Photonics in Berlin and Brandenburg - brief portrait of a regional research landscape
development, status, perspectives

Optische Technologien aus Berlin und Brandenburg

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Berlin - Brandenburg a region with historic milestones in optical technologies

- 1801 Rathenow – birth place of the German optical industry

- 1850 Berlin – Centre of microscope construction: 60 companies until

  ~ 1900 in close interaction with medical/pathological research at the clinical centre Charité

  Rudolph Virchow (1821-1902)

- 1900 Berlin- „City of light“ ... Siemens, Osram
Optical technologies in Germany prior to 2000

• Strong basic research in a wide range of optics and photonics
• "Homegrown" concentration of sciences and industry in certain regions of Germany
• Hardly any public effort or political recognition of optics/photonics and its economic potential
• except for laser research and its industrial applications
• In many regions optics and photonics were quite unknown
Changes in Germany since 2000

Systematic strategic process to strengthen optical technologies:

• Nation-wide discussions & workshops
• German agenda for optical technologies
• Funding program for optical technologies 2002 to 2006

• structural measures:

Formation of German Competence Networks for Optical Technologies (2001)
Key fields of action according to German agenda

Optical Technologies for:
- Information & Communication
- LifeScience & Biomedics
- Lighting & Energy
- Optical production techniques & sensors
- Optical components & systems
- Application-oriented R&D
- Training & further education
Future research topics in OT

Within the national funding program for Optical Technologies the BMBF (German Federal Ministry of Education and Research) sponsors research projects on:

- OLEDs
- Biophotonics
- Optical components/systems incl. large-scale production technologies
- Metrology and sensor technology
- [Terahertz technology]
Facts & figures on the German photonics market

- 100,000 jobs are directly dependent on photonics
- 11.1% of the annual turnover is spent on R&D
- 66.6% of the turnover is made with innovative products
- High export rate of 66.8% in 2004 (2003: 65.1%)
- 40% of the light sources used worldwide in material processing and 25% of laser systems come from Germany

source:
SPECTARIS
Total revenue of the laser and optical components industry 2000 - 2004

2000: 3.74 billion EURO
2001: 3.93 billion EURO
2002: 3.96 billion EURO
2003: 4.00 billion EURO
2004: 4.49 billion EURO

Courtesy of SPECTARIS e.V. and German Federal Statistical Office
Export of laser and optical components in 2004

Brackets: variation of the (absolute) export rate compared with 2003

- New EU countries: 3.5% (+2.8%)
- Africa: 2.0% (+48.2%)
- South and Middle America: 2.2% (+48.6%)
- Others: 0.8% (-0.5%)
- Middle East: 2.9% (+14.9%)
- Asia: 13.7% (+11.8%)
- North America: 14.7% (+15.5%)
- 15 EU countries (EU-15): 47.6% (+8.0%)
- Other European countries: 12.6% (+26.6%)
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Brexit: variation of the (absolute) export rate compared with 2003

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Courtesy of Market Survey
Market Survey

Expectations for the future – OT in Germany

• increased revenues for the next five years (~ 10% per year)
• photonics as a pillar of economic growth in Germany
• more jobs in the German photonics sector
  23% (60%) expect a strong (slight) growth in employment
• several applications are still to be opened up for photonics (e.g. EUV lithography) → great market potential to be tapped
• future opportunities for Germany:
  - specialization on high-quality products (e.g. photonic crystals, lasers, miniaturization)
  - timely engagement in market niches
The OpTecBB Association

Fostering Research and Development between Brandenburg gate and Einstein tower

Optische Technologien aus Berlin und Brandenburg

South Korea, Seoul 02.11.2006

Ingolf Hertel
Embedded in a broader context

Competence Networks for Optical Technologies

more in the talk of Dr. Weidner
Optical technologies - sites in Berlin-Brandenburg

- Rathenow
- Potsdam-Golm
- Teltow
- Stahnsdorf
- Henningsdorf
- Berlin
- Frankfurt/Oder
- Cottbus, TU