

# New Enabling Technologies

Optics Micro Nano

in the Berlin-Brandenburg Capital Region

# New Enabling Technologies

## Impulses for the Growth Markets of the Future

- 1 Photonics Centre at Berlin-Adlershof, City of Science, Technology and Media  
[www.adlershof.de](http://www.adlershof.de)
- 2 NLG New Laser Generation at Teltow Technology Centre  
[www.tz-teltow.de](http://www.tz-teltow.de)
- 3 Wuhlheide Innovation Park, Berlin  
[www.ipw-berlin.de](http://www.ipw-berlin.de)
- 4 Synthetic engineering at the Fraunhofer Institute for Applied Polymer Research (IAP) at Golm Science Park  
[www.wpgolm.uni-potsdam.de](http://www.wpgolm.uni-potsdam.de)
- 5 Technology and Founder's Center Havelland, Rathenow  
[www.tgz-havelland.de](http://www.tgz-havelland.de)
- 6 IHP Innovations for High Performance Microelectronics at Ostbrandenburg Technology Park in Frankfurt (Oder)  
[www.technologiepark-ostbrandenburg.de](http://www.technologiepark-ostbrandenburg.de)

### Optical Technologies

Berlin's history is full of "bright ideas". Industry giants such as Werner von Siemens and Emil Rathenau transformed Berlin into an "Electropolis", while scientists such as Max Planck and Albert Einstein, working in Berlin, revolutionized modern physics with their theories of light quanta. Rathenow in Brandenburg has emerged as a leading center for precision mechanics and the optical industry. Today, the Berlin-Brandenburg region represents one of the leading German locations for optical technologies with 30 research institutes, 270 companies and approximately 12,000 employees. The region's expertise ranges from biomedicine and internet applications to traffic, aerospace, laser and x-ray technologies.

### Microtechnology

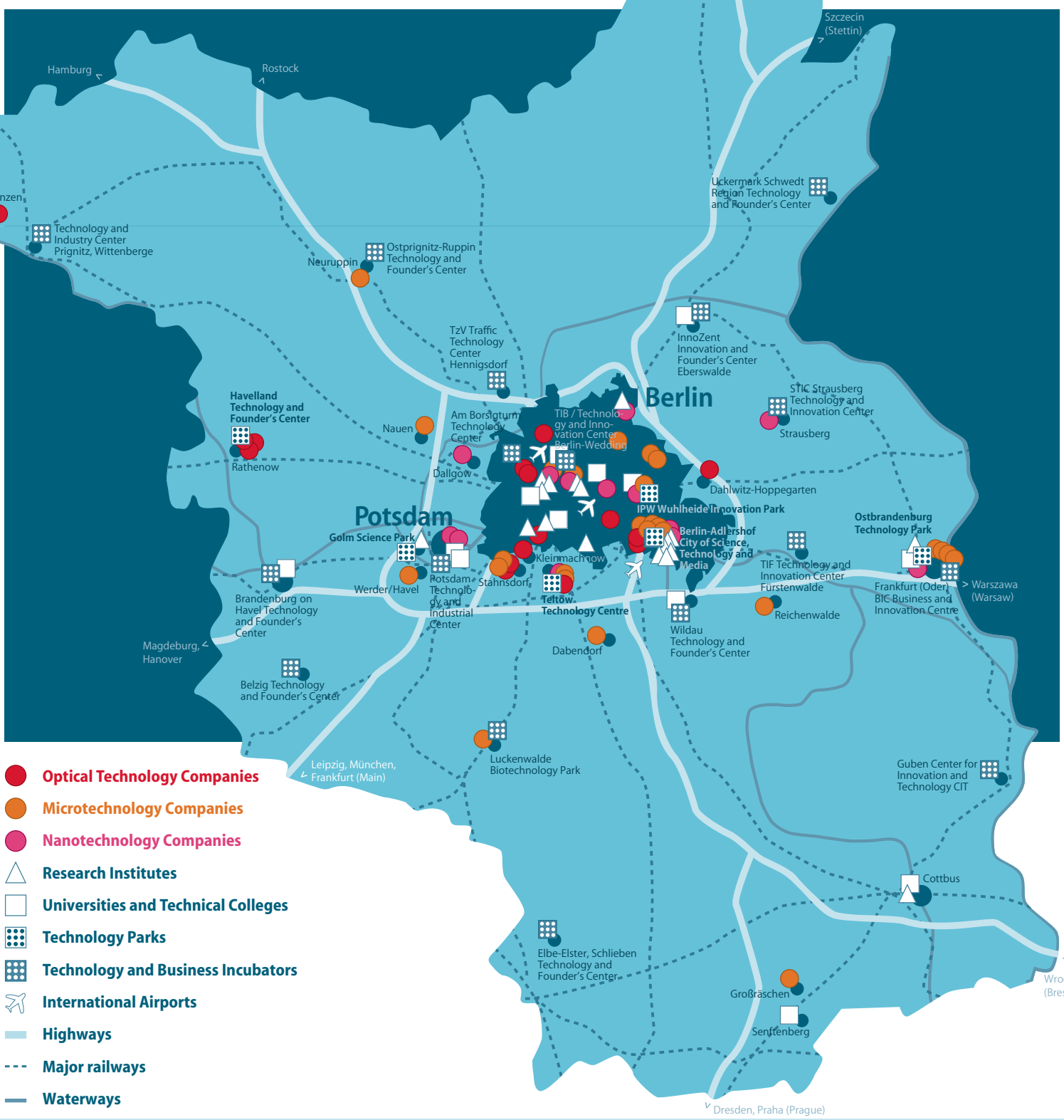
The mini-machines of microtechnology are conquering ever more fields, including non-invasive surgery, communication technologies and material processing. The Berlin-Brandenburg region boasts several important research institutes that make it a thriving location for microtechnology in Germany. In Berlin, these include the Technical University (TU), the Fraunhofer Institute for Reliability and Microintegration and the Ferdinand Braun Institute for High Frequency Technology (FBH), all of whom work very closely with local industry. Brandenburg excels in the field of semiconductor technologies, for example at the IHP Research Institute in Frankfurt (Oder) and at Teltow / Stahnsdorf, home of SeCoS Semiconductor Technology Stahnsdorf, the company that recently won the coveted Innovationspreis (Innovation Prize). Transfer initiatives, such as the Centre for Microsystems Technology (ZEMI) in Berlin-Adlershof, facilitate cooperation between science and industry.

### Nanotechnology

Nanotechnology improves the characteristics of materials; it makes them harder, lighter, more energy efficient. The massive potential of this enabling technology in the Berlin-Brandenburg region lies in research as well as in the founding of innovative high-tech companies. At the Centre for Nanophotonics located at the Technical University Berlin (TU), new optic-electronic elements are developed on the basis of nanostructures. Young companies convert this cutting-edge research into new products. The Berlin-Köpenick company micro resist technology is a leader in the field of nano-imprint-lithography (NIL), a new embossing technology for chip production. The company W. C. Heraeus in Potsdam produces a fine metal powder that optimizes soldering processes in microelectronics.



# The Berlin-Brandenburg Capital Region Location for New Enabling Technologies



- **Optical Technology Companies**
- **Microtechnology Companies**
- **Nanotechnology Companies**
- △ **Research Institutes**
- **Universities and Technical Colleges**
- ▣ **Technology Parks**
- ▤ **Technology and Business Incubators**
- ✈ **International Airports**
- **Highways**
- - - **Major railways**
- **Waterways**

# Networks, Companies, Events

## A Selection

### Optics

#### Network

Optec Berlin Brandenburg (OpTecBB)  
optecbb@optecbb.de  
[www.optecbb.de](http://www.optecbb.de)

#### Companies

Berliner Glas KGaA  
[www.berlinerglas.com](http://www.berlinerglas.com)

eagleyard photonics GmbH  
[www.eagleyard.com](http://www.eagleyard.com)

Essilor GmbH  
[www.essilor.de](http://www.essilor.de)

Highyag Lasertechnologie GmbH  
[www.highyag.de](http://www.highyag.de)

HOLOEYE Photonics AG  
[www.holoeye.de](http://www.holoeye.de)

Jenoptik Diode Lab GmbH  
[www.diodelab.com](http://www.diodelab.com)

Katana Technologies GmbH  
[www.katanalaser.com](http://www.katanalaser.com)

Krone GmbH  
[www.krone.com](http://www.krone.com)

LTB Lasertechnik Berlin GmbH  
[www.ltb-berlin.de](http://www.ltb-berlin.de)

Merge Optics GmbH  
[www.mergeoptics.de](http://www.mergeoptics.de)

NLG – New Laser Generation Teltow  
[www.new-laser.com](http://www.new-laser.com)

OECA Opto-Elektronische Komponenten  
und Applikations GmbH  
[www.oeca.de](http://www.oeca.de)

OEG Gesellschaft für Optik, Elektronik,  
Gerätetechnik mbH  
[www.oeg-messtechnik.de](http://www.oeg-messtechnik.de)

OPTPOTEC Optotechnischer Gerätebau GmbH  
[www.optotec-rathenow.de](http://www.optotec-rathenow.de)

Osram GmbH  
[www.osram.de](http://www.osram.de)

RO Rathenower Optik GmbH  
[www.fielmann.com](http://www.fielmann.com)

SIEMENS Department Communications  
Com FN T M PE 3  
[www.networks.siemens.de](http://www.networks.siemens.de)

Spectra Physics GmbH  
[www.spectra-physics.com](http://www.spectra-physics.com)

### Microtechnology

#### Network

ZEMI – Zentrum für Mikrotechnik Berlin-Adlershof  
zemi@zemi-berlin.de  
[www.zemi-berlin.de](http://www.zemi-berlin.de)

#### Companies

AEMtec GmbH  
[www.aemtec.com](http://www.aemtec.com)

Aktiv Sensor GmbH  
[www.aktiv-sensor.de](http://www.aktiv-sensor.de)

alpha microelectronics GmbH  
[www.alpha-microelectronics.de](http://www.alpha-microelectronics.de)

AVM Computersysteme Vertriebs GmbH  
[www.avm.de](http://www.avm.de)

ELBAU GmbH  
[www.elbau-gmbh.de](http://www.elbau-gmbh.de)

First Sensor Technology GmbH  
[www.first-sensor.com](http://www.first-sensor.com)

GED Gärtner-Electronics-Design GmbH  
[www.ged.de](http://www.ged.de)

Hymite GmbH  
[www.hymite.com](http://www.hymite.com)

IXYS Berlin GmbH  
[www.ixys.de](http://www.ixys.de)

MAF Microelectronic Assembly Frankfurt (Oder) GmbH  
[www.maf-gmbh.de](http://www.maf-gmbh.de)

MAZ Brandenburg GmbH  
[www.mazbr.com](http://www.mazbr.com)

microtech GmbH electronic  
[www.microtech-teltow.de](http://www.microtech-teltow.de)

MSF Microtechnology Services Frankfurt (Oder) GmbH  
[www.msfg.de](http://www.msfg.de)

Nanotron Technologies GmbH  
[www.nanotron.de](http://www.nanotron.de)

Pac Tech GmbH  
[www.pactech.de](http://www.pactech.de)

SeCoS Halbleitertechnologie GmbH Stahnsdorf  
[www.secosgmbh.com](http://www.secosgmbh.com)

SENTECH Instruments GmbH  
[www.sentechn.com](http://www.sentechn.com)

Silicon Sensor GmbH  
[www.silicon-sensor.com](http://www.silicon-sensor.com)

Spree Hybrid- und Kommunikationstechnik GmbH  
[www.spree-hybrid.de](http://www.spree-hybrid.de)

Swissbit Germany AG  
[www.swissbit.com](http://www.swissbit.com)

TELE FILTER GmbH  
[www.vectron.com](http://www.vectron.com)

### Nanotechnology

#### Network

NanOp – Nanotechnologie für die Optoelektronik  
nanop@sol.physik.tu-berlin.de  
[www.nanop.de](http://www.nanop.de)

#### Companies

Allresist GmbH  
[www.allresist.de](http://www.allresist.de)

Atugen AG  
[www.atugen.com](http://www.atugen.com)

Capsulation Nano Science AG  
[www.capsulation.de](http://www.capsulation.de)

IDM Institut für Dünnschichttechnologie  
und Mikrosensorik e.V.  
[www.idm-teltow.de](http://www.idm-teltow.de)

IHP Innovations for High  
Performance Microelectronics GmbH  
[www.ihp-microelectronics.com](http://www.ihp-microelectronics.com)

JPK Instruments AG  
[www.jpk.com](http://www.jpk.com)

micro resist technology GmbH  
[www.microresist.com](http://www.microresist.com)

Nanolytics Gesellschaft für  
Kolloidanalytik mbH  
[www.nanolytics.de](http://www.nanolytics.de)

PharmaSol GmbH  
[www.pharmasol-berlin.de](http://www.pharmasol-berlin.de)

PlasmaChem GmbH  
[www.plasmachem.com](http://www.plasmachem.com)

Schering AG  
[www.schering.de](http://www.schering.de)

Triple-O-Microscopy GmbH  
[www.triple-o.de](http://www.triple-o.de)

W. C. Heraeus GmbH, Facility Potsdam  
(Welco Finest Solder Powders)  
[www.4cmd.com](http://www.4cmd.com)

### Trade Fairs and Congresses

AMAA 2005  
[www.amaa.de](http://www.amaa.de)

Microsys Berlin  
[www.microsys-berlin.com](http://www.microsys-berlin.com)

Electronic goes Green  
[www.egg2004.izm.fraunhofer.de](http://www.egg2004.izm.fraunhofer.de)

IHP Wissenschaftstag  
[www.ihp-microelectronics.com](http://www.ihp-microelectronics.com)

# Science and Research

## Number 1 in Germany



Tiny giants – Microsystems on the move

### ||||| Prominent Examples

Optical technologies from Berlin are currently orbiting the planet Mars. Sensational 3-D images from the red planet are supplied by the space camera HRSC (high resolution stereo camera), which was developed at the German Aerospace Centre (DLR) at the Berlin-Adlershof City of Science, Technology and Media. DLR camera technology is also used in the early recognition of forest fires. The IHP in Frankfurt (Oder) achieved a world record in silicon electronics speed – a pulse cycle of 3.6 pico seconds – with its new generation of bipolar transistors. The capital region's science infrastructure is attractive to international investors. The Danish company Hymite set up its German headquarters at Berlin-Adlershof due to the location's optimal surroundings for the production of optic-electronic elements. With its participation in the Teltow company Celon AG, the Japanese optics giant Olympus has established one of its three international research and development centers in Brandenburg.

### ||||| Know-how

With seven universities, 12 technical colleges and 70 non-university research institutes, the Berlin-Brandenburg region boasts the highest research density in Germany. Universities offer outstanding study programs in basic subjects and engineering sciences. New course of studies such as the "Masters of Engineering in Photonics", jointly offered by three technical colleges in Berlin and Brandenburg, take into account all current developments in the field. Special emphasis is placed on support for start-up companies from the academic field. In addition to the largest German start-up competition at the university level ("The Business Plan Competition"), well-aimed support for the field of optical technology exists in the form of the "Optics Accelerator".

### ||||| Networks

Well-organized networks promote the close cooperation of research and business in the region. These include the Berlin-Brandenburg Optical Technologies Network (OptecBB) – with over 80 members, it is the largest of the nine state-wide networks – the Centre for Microsystems Technology (ZEMI), the Berlin-Brandenburg Laser Association, the Centre for Microelectronics Frankfurt (Oder), and the Rathenow Centre for Optics KOR. The Institute for Solid State Physics at the Technical University Berlin (TU) supports and coordinates the national Nano-Optical Technology Centre ("NanOp"). With their program "JointLab", the IHP Frankfurt (Oder) and the Cottbus Technical College in Brandenburg bring together basic research and university-level instruction.

### ||||| Institutes: A Selection

#### Optics

Cottbus Technical College  
[www.physik.tu-cottbus.de](http://www.physik.tu-cottbus.de)

German Aerospace Centre (DLR)  
[www.dlr.de/Berlin](http://www.dlr.de/Berlin)

Ferdinand Braun Institute for High Frequency Technology  
[www.fbh-berlin.de](http://www.fbh-berlin.de)

Fraunhofer Institute for Telecommunications HHI  
[www.hhi.fraunhofer.de](http://www.hhi.fraunhofer.de)

ISAS Institute for Analytical Sciences  
[www.ansci.de](http://www.ansci.de)

Max Born Institute  
[www.mbi-berlin.de](http://www.mbi-berlin.de)

PTB National Institute of Standards and Technology  
[www.ptb.de](http://www.ptb.de)

Potsdam University  
[www.physik.uni-potsdam.de](http://www.physik.uni-potsdam.de)

#### Microtechnology

Bessy Assistance in Microsystem Engineering (AZM)  
[www.azm.bessy.de](http://www.azm.bessy.de)

Cottbus Technical College  
[www.physik.tu-cottbus.de](http://www.physik.tu-cottbus.de)

Fraunhofer Institute for Reliability and Microintegration (IZM)  
[www.izm.fhg.de](http://www.izm.fhg.de)

IHP Innovations for High Performance Microelectronics  
[www.ihp-microelectronics.com](http://www.ihp-microelectronics.com)

#### Nanotechnology

BAM Federal Institute for Materials Research and Testing  
[www.bam.de](http://www.bam.de)

FMP Research Institute of Molecular Pharmacology  
[www.fmp-berlin.de](http://www.fmp-berlin.de)

Fraunhofer Institute for Applied Polymer Research IAP  
[www.iap.fraunhofer.de](http://www.iap.fraunhofer.de)

Fraunhofer Institute for Reliability and Microintegration IZM  
[www.epc.izm.fraunhofer.de](http://www.epc.izm.fraunhofer.de)

Fritz Haber Institute  
[www.fhi-berlin.mpg.de](http://www.fhi-berlin.mpg.de)

Max Planck Institute of Colloids and Interfaces  
[www.mpikg-golm.mpg.de](http://www.mpikg-golm.mpg.de)

PTB National Institute of Standards and Technology  
[www.ptb.de](http://www.ptb.de)

TU Technical University Berlin, Stranski Laboratory  
[www.tu-berlin.de](http://www.tu-berlin.de)

# Strategic Location

## The Berlin-Brandenburg Capital Region

1 Quadriga and Dome of the Reichstag in Berlin

2 Potsdamer Platz in Berlin

3 Sanssouci Palace in Potsdam

4 Bridges near Frankfurt (Oder)

Title:

100 µm solder bumps from the firm Pac Tech GmbH – Packaging Technologies, Nauen



### ||||| Economic Facts that Count

- Central location in the booming European market
- Highest research density and largest university location in Germany
- Modern infrastructure (airports, highways, train, telecommunications)
- Highest potential of flexible and well-trained specialists
- Well-situated and low-priced commercial space
- Favorable tax rates and high investment assistance
- Dynamic start-up landscape

### ||||| A Great Place to Live

- Berlin, pulsating capital city with international flair
- Brandenburg, fascinating region with great development potential
- Over 170 museums, 150 stages, diverse music and art scenes
- Excellent nature locations for sport and recreation
- Important German and European historical sites
- Famous castles and gardens

[www.blc.berlin.de](http://www.blc.berlin.de)

[www.invest-in-brandenburg.com](http://www.invest-in-brandenburg.com)

#### Contacts in Berlin-Brandenburg



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