

Nanotechnology - Made in Germany

NANO 2006, Bangalore, India
August 20 - 25, 2006

Strong partners for a
prosperous co-operation





Technologiezentrum

VDI Technologiezentrum GmbH

Graf Recke Str. 84
D-40239 Duesseldorf
Germany

Phone: (+)49 - 21 16 21 44 01

Fax: (+)49 - 21 16 21 44 84

E-Mail: vditz@vdi.de

Web: www.vditz.de

www.nanonet.de

www.nanoforum.org

www.nano-in-germany.com

AN INITIATIVE OF THE



Federal Ministry
of Education
and Research

Federal Ministry of Education and Research

Hannoversche Str. 28-30
D-10115 Berlin
Germany

Friedrichstr. 130 B
D-10117 Berlin
Germany

Heinemannstr. 2
D-52175 Bonn - Bad Godesberg
Germany

Phone: (+)49 - 18 88 570
Fax: (+)49 - 18 88 57 83 601
E-Mail: bmbf@bmbf.bund.de
Web: www.bmbf.de



International Bureau of the Federal Ministry of Education and Research

Department of Asia, Australia and New Zealand

















Königswinterer Str. 522 - 524
D-53227 Bonn
Germany

Phone: (+)49 - 22 83 82 14 07
Fax: (+)49 - 22 83 82 14 44
E-Mail: gerold.heinrichs@dlr.de
Web: www.internationales-buero.de

List of companies

Page

	AC Serendip Ltd.	4
	Anfatec Instruments AG	5
	AQUANOVA - German Solubilisate Technologies (AGT) GmbH	6
	attocube systems AG	7
	AXO Dresden GmbH	8
	Bioni CS GmbH	9
	Degussa AG Creavis Gesellschaft	10
	EPG Engineered nanoProducts Germany AG	11
	FOCUS GmbH	12
	FRT GmbH	13
	HA Hessen Agentur GmbH hessen-nanotech	14
	Innowep GmbH	15
	ION-TOF GmbH	16
	JE PlasmaConsult GmbH	17
	JenLab GmbH	18
	LayTec GmbH	19
	Leybold Vacuum GmbH	20

List of companies	Page
 NanoConsulting	21
 NANOCRAFT <i>exploring nanospace</i>	22
 nanofocus [®] see more	23
 np [®] NANOPPOOL	24
 nanoproofed [®] SURFACE COATINGS	25
 nano start [®] INVESTMENTS	26
 Nascatec Nanoscale Technologies GmbH	27
 NETZSCH	28
 NTGL	29
 Palas [®] Aerosoltechnologie	30
 phoenix x-ray	31
 Raith	32
 SPECS	33
 SÜD-CHEMIE Creating Performance Technology	34
 supracon [®] SQUID and Microfabrication Technologies	35
 VDI Technologiezentrum	36
Table of Companies' Specifications	37

**Principal Office**

AC Serendip Ltd.
Fahrenheitstrasse 1
D-28359 Bremen
Germany
Phone: (+)49 - 42 12 20 81 00
Fax: (+)49 - 42 12 20 81 50
E-Mail: info@ac-serendip.com
Web: www.ac-serendip.com

Contact Person

Mr. Sören SCHEID
Manager Product Development
Phone: (+)49 - 42 12 20 81 00
Fax: (+)49 - 42 12 20 81 50
E-Mail: soeren.scheid@ac-serendip.com

Nanoemulsions

Current technologies for the production of Nanoemulsions suffer from several drawbacks such as limited adaptability to process conditions, inefficient droplet break-up, cooling requirements, poor scalability and limited tool lifetimes.

With these topics in mind we at Serendip have invented a new dispersing technology to produce emulsions with droplet sizes in the range of a few nanometres, which overcomes these limitations. The Serendip Low Pressure Homogenizer technology (LPH) is based on well known high pressure homogenizing technology and combines the advantages of both nozzle and valve based dispersion devices. The core of our technology is a new pressure cell that is designed according to latest academic know-how, considering the optimised effects of shear forces, turbulence and cavitation.

The Serendip LPH allows immediate full economical market access for micro-emulsions in the fields of cosmetic, pharmaceutical and food products.

Our technology is fully developed and the market potential has been evaluated. Serendip is currently seeking for a potential manufacturing partner to introduce the LPH equipment to the market. A pilot unit was built and presented with experimental data at the AICHEMA 2006.

For further interest in this technology or co-operation please contact Sören Scheid directly.

AC Serendip LTD

Serendip develops solutions and processes that combine advanced technology with environmental sustainability, providing high added value for manufacturers of dispersed systems in the life science sector. We facilitate new production processes for pharmaceutical and cosmetic products such as creams, gels, lotions and ointments.

Further information

More information can be found at www.ac-serendip.com and www.emulsiondays.com.

**Principal Office**

Anfatec Instruments AG
Melanchthonstr. 28
D-08608 Oelsnitz
Germany
Phone: (+)49 - 37 42 12 42 12
Fax: (+)49 - 37 42 12 42 21
E-Mail: mailbox@anfatec.de
Web: www.anfatec.de

Contact Person

Dr. Falk MUELLER
Managing Director & Engineering
Phone: (+)49 - 37 42 12 42 35
Fax: (+)49 - 37 42 12 42 21
E-Mail: fmuller@anfatec.de

Contact Person

Dr. Anne-D. MUELLER
Sales & Marketing
Phone: (+)49 - 37 42 12 42 12
Fax: (+)49 - 37 42 12 42 21
E-Mail: mailbox@anfatec.de

The Anfatec Instruments AG is an established German company producing and distributing instrumentation for surface science. It was founded in 1996 by two scientists of the Chemnitz University of Technology.

We develop and produce in our own facilities the following instruments:

- AFM (Atomic Force Microscopes)
- STM (Scanning Tunneling Microscopes)
- PC based, versatile and affordable price SPM controllers as well as
- parts and accessories for scanning probe microscopes

These nanotechnology products are completed with electronic measurement equipment built on the highest level available on the market:

- digital LockIn amplifiers
- LockIn amplifiers on PCI-board technology
- micro-mounting services

In addition, Anfatec is a partner for product development in the field of PC based electronic control units including high voltage amplifiers, LockIn technique, and computer board development for the implementation in PC based controllers.

Anfatec is the German and one of the European distributors for MikroMasch, a supplier for silicon cantilevers and gratings.

**Principal Office**

AQUANOVA
German Solubilisate Technologies (AGT) GmbH
Birkenweg 8-10
D-64295 Darmstadt
Germany
Phone: (+)49 - 61 51 66 96 90
Fax: (+)49 - 61 51 66 96 929
E-Mail: agt@aquanova.de
Web: www.aquanova.de

Contact Person

Mr. Frank BEHNAM
Corporate Development Manager
Phone: (+)49 - 61 51 66 96 915
Fax: (+)49 - 61 51 66 96 929
E-Mail: frank.behnam@aquanova.de

Contact Person

Mrs. Andrea LISTL
Sales Assistant
Phone: (+)49 - 61 51 66 96 914
Fax: (+)49 - 61 51 66 96 929
E-Mail: andrea.listl@aquanova.de

Via solubilization of raw materials and active substances AQUANOVA oversteps functional and technical borders. Based on own product development AQUANOVA offers many substances in their water- and at the same time fat-soluble form: Vitamins, fatty acids, coenzyme Q10, isoflavones, flavonoids, carotinoids, phyto extracts, essential oils, preserving agents, etc.

The solubilisates have a key character and offer as well functional and physiological as well as technical advantages: Chemically unmodified substances, crystal clear, liquid solutions, water and fat solubility at the same time, new optimized galenic, significantly enhanced bioavailability, less substance creates identical effect, mechanically, thermally and pH stable, ready to use for production, processing without additives, patent protected formulas.

Basis for the unique solubilisate features is their nano structure: the so called „product micelle“. It serves as a carrier system for lipophilic and/or hydrophilic raw materials and active substances and exhibits an average diameter of only approx. 30 nm (1 nanometer equals a billionth of a meter). This nano structure allows all solubilisates to appear crystal clear, because the wavelength of light is even bigger than the size of the micelle. All solubilisates can be directly and homogenously integrated into end products without additives or additional production steps.

Even in comparison to conventional formulations and microencapsulation (e.g. liposomes) solubilisates are superior: they are thermally, mechanically and pH stable even in gastric acid and show a significant smaller structure on nano level. The nutritional and physiological advantages have been demonstrated by recognized studies. The micelle structure of solubilisates guarantees a optimal, up to four times higher and better resorption („bioavailability“) of the raw material / active substances.

By means of these characteristics the AQUANOVA solubilisates can be utilized for a wide range of applications for various industries, e.g. dietary supplements, functional food, beverages, cosmetics or pharmaceutical products. Marketing of the crystal clear solutions is done in cooperation with industry leaders (e.g. BASF, Degussa) in the raw material area and with selected partners in end product sectors.

Principal Office

attocube systems AG
Königinstraße 11a (Rgb)
D-80539 München
Germany
Phone: (+)49 - 89 28 77 80 90
Fax: (+)49 - 89 28 77 80 919
E-Mail: info@attocube.com
Web: www.attocube.com

Contact Person

Mr. Dirk M. HAFT
CEO
Phone: (+)49 - 89 28 77 80 90
Fax: (+)49 - 89 28 77 80 919
E-Mail: dirk.haft@attocube.com

Ultra-high precision spatial positioning of objects is of prime importance in the emerging field of nanotechnology. attocube systems' patented new type of precision-positioning technology is based on an innovative concept that meets those market demands. The ultra-compact Titanium translation stages allow operation under extreme environmental conditions as cryogenic temperatures (10 mK – 300 K), high magnetic fields (+28 T) and ultra high vacuum environments ($5 \cdot 10^{-11}$ mbar). This attribute presents a revolutionary advancement for the positioning market leading to new research in numerous areas.

Applications of these outstanding nanopositioning modules, well-known in many labs around the world, include scanning probe techniques such as scanning electron microscopy, confocal microscopy, scanning force microscopy, scanning tunneling microscopy and near-field optical microscopy, to name just a few. Furthermore, they are suitable for general beam manipulation applications involving optical fibers and solid state waveguides.

The product line of attocube systems AG ranges from stand-alone simple positioning components for laboratory applications to complete automated and integrated solutions for low temperature- / UHV- scanning probe microscopy (SPM). The product range includes different species of Confocal Microscopy (CFM), Atomic Force Microscopy (AFM), Near-field Scanning Optical Microscopy (NSOM) and Scanning Tunneling Microscopy (STM) offering operation modes down to 300 mK as well as high magnetic field and vacuum compatibility.

The product range is completed by innovative and highly flexible control systems for multiple SPM modes. Various SPM hardware and software modules make image acquiring a simple task. 2D and 3D software allow image processing for visually appealing, professional and publishable results.

As a market leader for low-temperature Scanning Probe we continuously work on supporting our customers to achieve reliable scientific results efficiently. Thus, our aim is to open up new possibilities ranging from scientific research to industrial applications.



AXO DRESDEN GmbH
Applied X-ray Optics
Röntgenoptik und Präzisionsbeschichtung

Principal Office

AXO DRESDEN GmbH
Siegfried-Rädel-Straße 31
D-01809 Heidenau
Germany
Phone: (+)49 - 35 29 53 51 40
Fax: (+)49 - 35 29 53 51 41
E-Mail: contact@axo-dresden.de
Web: www.axo-dresden.de

Office Dresden

AXO DRESDEN GmbH
Winterbergstraße 28
D-01277 Dresden
Germany
Phone: (+)49 - 35 12 58 32 49
Fax: (+)49 - 35 12 58 33 14
E-Mail: contact@axo-dresden.de
Web: www.axo-dresden.de

Contact Person

Mr. Reiner DIETSCH
Managing Director
Phone: (+)49 - 35 12 58 32 49
Fax: (+)49 - 35 12 58 33 14
E-Mail: reiner.dietsch@axo-dresden.de

Contact Person

Mr. Thomas HOLZ
Managing Director
Phone: (+)49 - 35 12 58 32 50
Fax: (+)49 - 35 12 58 33 14
E-Mail: thomas.holz@axo-dresden.de

AXO DRESDEN GmbH - Applied X-ray Optics and High Precision Deposition – stands for the development and production of high quality single multilayer X-ray optics and complex X-ray optical systems for a wide field of applications both in the hard X-ray and in the soft X-ray regime.

AXO DRESDEN has installed flexible and efficient technologies to provide our worldwide customers in the fields of X-ray analysis, lithography, astronomy, spectroscopy and medicine with serial products for industrial manufactures of X-ray instrumentation and analytical equipment and with single solutions for research and industries.

Our production program contains both single multilayer X-ray optics and complex X-ray optical systems to generate high intensive 1- and 2- dimensional collimated or focussed monochromatic X-ray beams, monochromators on flat and curved substrates, special customized depositions and applications in X-ray reflectometry, X-ray diffraction and X-ray fluorescence analysis.

To produce nanometer thin films and multilayers showing sub-nanometer precision across large substrates up to 500mm in length or 200mm in diameter, AXO DRESDEN is applying and developing different complementary high precision deposition techniques like magnetron and ion beam sputtering and pulse laser deposition.

As a Spin-off of the Fraunhofer Institute Material and Beam Technology (IWS) Dresden, Germany, AXO DRESDEN is an independent supplier of X-ray optics and represents more than 15-years experience in the fields of high precision deposition and design, development and application of multilayer X-ray optics. To guaranty our customers high quality solutions and innovative products also in the future we are working in close collaboration with the Fraunhofer IWS, other Fraunhofer Institutes, the University of Technology Dresden and with several national and international research institutions to ensure our position as a leading supplier for multilayer X-ray optics and high precision deposition.



Principal Office

Bioni CS GmbH
Lessingstr. 21
D-46149 Oberhausen
Germany
Phone: (+)49 - 20 86 21 75 53
Fax: (+)49 - 20 86 21 75 55
E-Mail: info@bioni.de
Web: www.bioni.de

Contact Person

Mr. Sven KNOLL
Managing Director
Phone: (+)49 - 20 86 21 75 53
Fax: (+)49 - 20 86 21 75 55
E-Mail: s.knoll@bioni.de

Contact Person

Mrs. Nicole GROSS
Marketing and Sales Director
Phone: (+)49 - 20 86 21 75 53
Fax: (+)49 - 20 86 21 75 55
E-Mail: n.gross@bioni.de

Bioni CS GmbH - Intelligent Coatings Based on Leading Edge Technology

Based in Oberhausen in Germany, Bioni CS GmbH is a company located in what is known as the cradle of the industrial Ruhr region. Bioni's core business is the development, production and marketing of multifunctional paints and coatings to enhance the walls, facades and roofs of all manner of buildings. We produce intelligent coatings meeting the highest standards of quality, adding real value to what our professional users do and benefiting our customers. To achieve these targets we work in close cooperation with leading scientific institutes on developing new products. The starting point for every research project is a need found in the marketplace, for example the formation of mould and mildew inside buildings, or the growth of algae on facades. Based upon the latest scientific findings in nanotechnology and together with the researchers at the Fraunhofer Institute for Chemical Technology, we have developed an effective nano-filler combination, which when used in both interior and façade paints, permanently prevents the formation of bacteria, mould, mildew and algae and destroys antibiotic-resistant hospital-germs by 99.6 - 99.99%. These invaluable new coating properties neither negatively affect the health of the residents nor pose a threat to the environment.

Coatings Possessing Nano-Functionality

Bioni Interior Nano-Coatings permanently prevent the formation of mould and mildew, effectively destroy germs and bacteria, do not contaminate the air in the room (TÜV Certified), improve the level of hygiene in the room, are permeable to water vapour, non-flammable, have an excellent wet abrasion resistance, are environmentally friendly and pose no risks to health.

Bioni Exterior Nano-Coatings have optimal moisture and regulation properties, reduce the thermal load on the building, protect the facade permanently, permanently prevent the growth of algae, have a variable permeability to water vapour, repel water excellently, bridge cracks, are flame retardant and are highly resistant to UV, weather and airborne contaminants.

Both in Germany and abroad our customers and partners include prestigious property developers, consultants and companies of architects, craftsmen, project management firms, construction companies, building materials trade, hospitals, town and city councils, private households.



creating essentials

Principal Office

Degussa AG
Paul-Baumann Str. 1, Science to Business Center
D-45764 Marl
Germany
Phone: (+)49 - 23 65 49 46 66
Fax: (+)49 - 23 65 49 80 46 66
E-Mail: infocreavis@degussa.com
Web: www.creavis.com

Contact Person

Mrs. Silvia DRESSEN
Creavis Technologies & Innovation
Phone: (+)49 - 23 65 49 66 38
Fax: (+)49 - 23 65 49 80 66 38
E-Mail: silvia.dressen@degussa.com

Degussa is a multinational corporation consistently aligned to high-yield specialty chemistry. It stands for innovation, reliability, excellence and intelligent linking. As its claim "creating essentials" expresses, its products and system solutions are valuable and indispensable for the success of its customers. In fiscal 2004 its 45,000 employees generated sales of 11.2 billion euros, and operating profits (EBIT) of 965 million euros.

Degussa's commitment to research and development is indispensable for its strategy to generate profitable growth. Degussa has around 2,900 employees working in R&D at more than 40 research locations worldwide. Degussa maintains more than 500 co-operations with universities so that it can swiftly transfer scientific expertise into the company. About 20 percent of Degussa's sales are based on products and technologies that are less than five years old. The Science to Business Center Nanotronics in Marl, Germany, is the latest showcase of Degussa's research strength. Degussa uses the new center to develop innovative system solutions for the electronics industry based on nanomaterials.

You will find more information about Degussa AG and Innovations at:

www.degussa.com
www.degussa.com/en/innovations.html

Principal Office

EPG Engineered nanoProducts Germany AG
Im Helmerswald 2
D-66121 Saarbrücken
Germany
Phone: (+)49 - 68 19 50 260
Fax: (+)49 - 68 19 50 26 79
E-Mail: email@e-p-g.de
Web: www.e-p-g.de

Contact Person

Prof. Dr. Helmut SCHMIDT
CEO
Phone: (+)49 - 68 19 50 260
Fax (+)49 - 68 19 50 26 79
E-Mail: email@e-p-g.de

Technological Progress at the Highest Level Through Nanomaterials

Highly developed technical products and processes are being decisively influenced by new kinds of materials. Here, chemical nanotechnology offers a particularly high innovation potential because this new form of material is now made useable for completely new technologies and your specific and tailor-made applications. High-tech companies can cross hitherto technical boundaries using this key technology.

EPG offers you the important complete service – the one stop shop from basic technology up to series production. EPG is developing innovations on this technological basis and afterwards also takes over series production of components. New materials on the basis of nanotechnology are the key to innovation, the quality-ensured production of new products is the key to added value.

Since 2005 in India:

Joint Development Center ARCI / EPG (JDC) in Hyderabad

To facilitate specific developments for the Indian markets, the joint development center between EPG and ARCI (International Advanced Research Centre for Powder Metallurgy and New Materials) will provide the appropriate RDT services up to the production of the partners tailor-made product needs (one stop shop):

- Identification of the appropriate business model
- Identification of new product / production
- RDT: product and production development
- Production and delivery
- Identification of the appropriate partner
- Installation of the process and the partners of location
- Licensing



Principal Office

FOCUS GmbH
Neukircher Straße 2
D-65510 Hünstetten-Kesselbach
Germany
Phone: (+)49 - 61 26 40 140
Fax: (+)49 - 61 26 40 14 10
E-Mail: m.schicketanz@focus-gmbh.com
Web: www.focus-gmbh.com

Contact Person

Mr. Michael SCHICKETANZ
Product Manager
Phone: (+)49 - 61 26 40 14 15
Fax: (+)49 - 61 26 40 14 10
E-Mail: m.schicketanz@focus-gmbh.com

Since the foundation in 1990, the company FOCUS GmbH is engaged in the development and creation of instruments for electron spectroscopy and surface analysis. The main part of the FOCUS products is distributed all over the world by the company OMICRON GmbH in Taunusstein/Germany.

The product range includes usual surface science instruments like electron spectrometers and VUV-light sources. Beside the evaporators, which are used for the preparation of nanoscaled structures, FOCUS has developed a nanoanalytic instrument, the **FOCUS PEEM**. It is a compact photoelectron microscope, which is used for the electron optical mapping of surfaces down to the resolution range of 40 nm. The instrument can be enhanced by an optional energy filter, which introduces simple methods for energy selective PEEM imaging (spectromicroscopy) and spectra of local energy distribution (microspectroscopy). A high performance filter is invented as the PEEM Nano-ESCA system. The instrument is at present under further development to allocate a standard for nanoanalytic and science. On the one hand stands the enhancement of the lateral resolution, on the other hand there is the opening of a new application range beside the classical surface science and magnetism. The application of the PEEM together with other nanoanalytic instruments like STM/AFM is warranted by compatible sample transfer systems. The PEEM can be used for visualisation of nanoscaled workfunction contrast, magnetic surface domains and lateral distribution of compounds.

The patented instrument **FOCUS-SPLEED**, a detector for spin analysis of electrons, enables together with a scanning electron microscope the imaging of nanoscaled magnetic domains (**SEMPA**).



Principal Office

FRT, Fries Research & Technology GmbH
Friedrich-Ebert-Strasse
D-51429 Bergisch Gladbach
Germany
Phone: (+)49 - 22 04 84 24 30
Fax: (+)49 - 22 04 84 24 31
E-Mail: info@firt-gmbh.com
Web: www.firt-gmbh.com

Contact Person

Dr. Thomas FRIES
Managing Director
Phone: (+)49 - 22 04 84 24 30
Fax: (+)49 - 22 04 84 24 31
E-Mail: info@firt-gmbh.com

FRT – Setting the Standard in Surface Measurement

Your partner – helping you succeed

Whatever your product, whatever the material or quantity, superior quality is a key to longterm success. From development to full-scale production, quality has to be continuously monitored to help you stay on top.

We can help you stay on top. We are FRT, the only company worldwide which offers you:

- standard surface analysis systems
- custom made, automated surface analysis and control systems
- contract surface analysis measurement

Control is good – with FRT it is better

Generally, all measurements or checks are performed optically, meaning non-contact and non-destructively. Several features can be simultaneously checked during one measurement, processes can be streamlined, and the number of line operators can be significantly reduced. Optimal control with a minimum of investment during the production process.

In addition to the measuring instruments, FRT also develops specialized control and evaluation software. Each of your information requirements can be specifically met. A variety of key data about a surface are chosen in 2D or 3D mode. Also, automated measurements and analysis of production related data are possible.

Applications are in the production using metal, plastics, glass, semiconductors and others.

FRT provides solutions for automotive, electronics, semiconductor (front end and back end), optics, metal industries and more.



Principal Office

HA Hessen Agentur GmbH
Abraham-Lincoln-Straße 38-42
D-65189 Wiesbaden
Germany
Phone: (+)49 - 61 17 74 81
Fax: (+)49 - 61 17 74 83 85
E-Mail: info@hessen-agentur.de
Web: www.hessen-agency.com

Contact Person

Mr. Sascha SCHAEFER
Location Advisory Services – Foreign Trade
Phone: (+)49 - 61 17 74 86 55
Fax: (+)49 - 61 17 74 83 85
E-Mail: sascha.schaefer@hessen-agentur.de

Contact Person

Mr. Alexander BRACHT
hessen-nanotech
Phone: (+)49 - 61 17 74 86 14
Fax: (+)49 - 61 17 74 86 20
E-Mail: alexander.bracht@hessen-agentur.de

Hessen is an excellent location for major advanced technologies and at the same time, with Frankfurt, an international finance centre situated in the heart of Europe.

With around 100 companies providing or using nanotechnology and over 200 firms engaged in the adjoining fields of materials and surface technology, microsystems technology and optical technology, Hessen is already in an excellent position. Research in these areas is also being performed at top international level at all of the region's universities, where about 80 working groups have been organised in the NanoNetwork of Hessen's universities.

The state-initiative hessen-nanotech of the Hessian Ministry of Economics is the central platform for nanotechnology in Hessen. It provides support for companies and facilities active in nanotechnology and the adjoining fields of materials and surface technology, microsystems technology and optical technology, and at the same time for potential users of these technologies

- by presentation of competence
- by dissemination of information on current knowledge and technological trends
- in matters of project and company development

It also acts as a “pilot” to various competence centres in Hessen, e. g. for

- technology transfer between universities and companies
- technology transfer with European partners
- funding and location advisory services

You will find more information about nanotechnology in Germany's Hessen at:

www.hessen-nanotech.de
www.nanotech-hessen.de

Our location advisory service team helps you finding attractive business locations in Hessen. We advice you individually and comprehensively, from the research for laboratory, office or production space to a detailed site selection analysis.

General information on Germany's Hessen – The Business Location can be found at:

www.invest-in-hessen.de

**Principal Office**

Innowep GmbH
Haugerring 6
D-97070 Würzburg
Germany
Phone: (+)49 - 93 13 22 980
Fax: (+)49 - 93 13 22 98 12
E-Mail: info@innowep.com
Web: www.innowep.de

Sales Representative India

KG Projects & Equipment Marketing Co. Pvt. Ltd.
703 Meghdoot, 94 Nehru Place
110 019 New Delhi
India
Phone: (+)91 - 11 26 41 77 54
Fax: (+)91 - 11 26 22 77 40
E-Mail: contact@kgpemco.com

Contact Person

Mr. Marc VETTER
International Sales Director
Phone: (+)49 - 93 13 22 980
Fax: (+)49 - 93 13 22 98 12
E-Mail: info@innowep.com

Contact Person

Mr. Ganapati H. NAIK
Managing Director
Phone: (+)91 - 11 26 41 77 54
Fax: (+)91 - 11 26 22 77 40
E-Mail: contact@kgpemco.com

INNOWEP Measuring & Testing is a German company that since its foundation in 1990 has become a leading specialist for surface-, material- and functional testing.

INNOWEP develops and manufacture innovative measuring and testing methods, equipment and up-to-date industrial solutions. This technology is applicable for R&D, QA and the manufacturing process.

INNOWEP cooperates with top level companies in different branches as well as established international institutes and has its own worldwide distributor network.

The company's products have been adopted as international and corporate standards for research and quality.

Products:

- UST[®]: Universal testing unit for the continuous micro mechanical characterization of material and functional properties on flat and structured surfaces. UST[®] enables objective statements about various material characteristics, e.g.: haptics, micro abrasion, scratch resistance, wear behaviour, micro tribology, elasticity & plasticity, damping, softness, micro hardness, roughness and micro friction
- ABREX[®]: standardized and reproducible soft-chemo mechanical hand abrasion test according to DIN EN 60068-2-70 / IEC 68-2-70. It enables a real life testing procedure on nearly all surfaces and materials like textile, lacquers and printings. ABREX[®] offers the possibility to simulate the high complex viscoelastic procedure of hand abrasion including the simulation of the chemical environment
- OptoTop[®]: Optical surface measuring system for quick and contact less measurement of topography, geometry (micro and macro geometry) and roughness values on flat, structured and curved surfaces through chromatic confocal sensor.

Besides the development and production of testing instruments, INNOWEP also provides service measurements and contract R&D in its own laboratory.



Principal Office

ION-TOF GmbH
Heisenbergstr. 15
D-48149 Münster
Germany
Phone: (+)49 - 25 11 62 21 00
Fax: (+)49 - 25 11 62 21 99
E-Mail: sales@iontof.com
Web: www.iontof.com

Contact Person

Mr. Sven KAYSER
Sales and Marketing Manager
Phone: (+)49 - 25 11 62 21 70
Fax: (+)49 - 25 11 62 21 99
E-Mail: sven.kayser@iontof.com

ION-TOF is the leading European manufacturer of Time-of-Flight Secondary Ion Mass Spectrometers (TOF-SIMS) for surface analysis. The company was founded by Prof. Alfred Benninghoven, Dr. Ewald Niehuis and Mr. Thomas Heller in 1989 to commercialise the original research carried out by Prof. Benninghoven and his team at the University of Muenster in Germany from the early 80's. Since the original conception, the contribution of Muenster by its academics and entrepreneurs to the development and spread of the TOF-SIMS technique has been significant and unceasing. Muenster is certainly the place to visit if you want to know the latest about TOF-SIMS. TOF-SIMS has become a standard requirement for a surface analysis laboratory, and has overtaken other longer established surface techniques, both in the performance and the number of units now being sold.

Since the technique became commercially viable ION-TOF has made many product improvements, and more than 100 instruments are in operation in industrial and academic laboratories worldwide. ION-TOF's success is based on the longstanding SIMS experience and skills of our scientists and engineers, the support given to our customers and the close co-operation with them, and a dedication to supply a good, efficient product to match the demands of the modern users.

ION-TOF's engineers are not solely involved in developing equipment; basic research is also carried out. Consequently ION-TOF is part of the national German competence centre "nanoanalytics". The ION-TOF premises are in a science park close to the University, the Technologiehof, the Centre for Nanotechnology (CeNTech) and the Max-Planck Institute for Cell Biology, which is practical for collaboration and provides a stimulating working environment.

The involvement in nanoscience projects enables us to understand the instrumental requirements for nanoscience and design them into our instruments. ION-TOF is also an important partner in many other national and international surface science projects.

ION-TOF continues to make considerable development effort. Its policy to build the most innovative ion beam technology for surface science, and the continued investment in the development of our instruments will produce new instruments with even better performance.

In particular ION-TOF works in close co-operation with its sister company TASCAN, located in the same building, set up to provide analytical services, and provide demonstration and applications facilities. The co-operation with TASCAN's applications experts enables us to investigate new applications for the TOF-SIMS technique to expand its use even further.

Plasma Consult

Principal Office

JE PlasmaConsult GmbH
Rainer-Gruenter-Str. 21, Geb. FN
D-42119 Wuppertal
Germany
Phone: (+)49 - 20 22 83 970
Fax: (+)49 - 20 22 83 97 123
E-Mail: contact@plasmaconsult.de
Web: www.plasmaconsult.com

Contact Person

Mr. Ralf SLABY
Product Engineer
Phone: (+)49 - 20 22 83 97 125
Fax: (+)49 - 20 22 83 97 123
E-Mail: slaby@plasmaconsult.de

JE Plasma Consult GmbH was founded in 1991 as a spin-off of the Microstructure Research Centre - fmt - in Wuppertal, Germany. For over 15 years JE PlasmaConsult GmbH offers innovative plasma and ion sources, plasma systems and processes for a wide range of industrial applications. Our own experts and the close scientific and technical cooperation with the fmt provide a know-how in plasma technology which is always on the leading edge of this rapidly developing field.

Growing costs and the increasingly quality standards, new products and stricter environmental legislation are new challenges for your company. Plasma applications offer you new innovative solutions.

There are many problems in research, production and quality assurance which can be solved innovatively and cost efficiently with the help of plasma technology.

Take advantage of our know-how to open the doors to new technologies.

Our products and services:

- Microwave and radio frequency plasma sources
- Plasma diagnostic systems, such as Langmuir double probe systems and Microwave Interferometers
- Development and construction of components as well as complete plasma systems for research and industry

Plasma processes:

- Consulting in plasma technology
- Customer specific process development
- Feasibility studies of plasma based materials processing
- Diagnostic, evaluation and optimisation of customer plasma equipment and processes
- Plasma processing job orders



Experts in Femtosecond Laser Technology
for Biomedical Applications

Principal Office

Jenlab GmbH
Schillerstr. 1
D-07745 Jena
Germany
Phone: (+)49 - 36 41 47 05 01
Fax: (+)49 - 36 41 47 05 43
E-Mail: info@jenlab.de
Web: www.jenlab.de

Contact Person

Dr. Andrei TCHERNOOK
Project Manager
Phone: (+)49 - 36 41 47 05 01
Fax: (+)49 - 36 41 47 05 43
E-Mail: tchernook@jenlab.de

Contact Person

Dr. Sven MARTIN
Project Manager
Phone: (+)49 - 68 94 99 03 815
Fax: (+)49 - 68 94 99 03 817
E-Mail: martin@jenlab.de

JenLab GmbH founded in 1999 in Jena (Germany) employs now app. 10 employees, mainly operating in R&D. JenLab is member of the Clusters BioRegio Jena e.V. and OptoNet e.V.

The product range of JenLab includes a wide field of scientific equipment and supplementary products for optical Nanotechnologies based on femtosecond lasers, particularly for applications in biotechnology, cell biology and medicine. Different types of cell chambers for high-resolution microscopy are also provided.

DermaInspect[®] is a novel in vivo multiphoton laser scanning system for non-invasive optical biopsies of human skin with sub-cellular spatial resolution. It is based on multiphoton-excitation of the autofluorescence by tunable femtosecond lasers in the near infrared. The device is designed for tomography of human skin and can be used for early detection of melanoma as well as for the in vivo detection of pharmaceutical and cosmetic components. By the use of fluorescence lifetime imaging (FLIM) various fluorophores can be differentiated.

The scanning microscope JenLab Scan is a system for specific fs-laser based investigation techniques in biological and medical basic research.

TauMap[®] provides spatial (submicrometer) and temporal (100ps-range) resolved fluorescence analysis and measurement of fluorescence decay times in single living cells. TauMap[®] can be used particularly for detection of protein-protein-interactions based on two-photon Förster resonance energy transfer (FRET).

femt-O-cut[®] is the latest product of JenLab. It is suitable for nano-surgery, optical gene transfer and nano-processing with nJ and μ J laser pulses.

Application fields of JenLab products are micro- and nano-surgery, optical gene transfer, refractive, tumor and neuronal surgery as well as in evolutionary biology. The expertise of JenLab is growingly applied in the field of laser fabricating of nanostructures in transparent and nontransparent solids as polymers and semiconductors.



Principal Office

LayTec GmbH
Helmholtzstrasse 13-14
D-10587 Berlin
Germany
Phone: (+)49 - 30 39 80 08 00
Fax: (+)49 - 30 39 80 08 080
E-Mail: info@laytec.de
Web: <http://www.laytec.de>

Contact Person

Mr. Michael B. BESENDAHL
Sales Engineer
Phone: (+)49 - 30 39 80 08 00
Fax: (+)49 - 30 39 80 08 080
E-Mail: besendahl@laytec.de

As a leader in the field of in situ epitaxy sensors, **LayTec** offers a wide range of real-time monitoring tools for MOCVD, MBE and other thin-film processes. **LayTec's EpiRAS[®] 2000 TT** (True Temperature) is the most advanced multi-wafer in situ sensor available today, and **EpiTT** is the first choice for LED production world-wide. Our sophisticated real-time monitoring tools measure epitaxy growth properties such as growth rate, layer thickness, doping levels, ternary material composition, and wafer surface temperature with extreme precision – already during the deposition process. A brand new curvature sensor **EpiCurve**, which combines true temperature, growth rate and wafer bowing measurements, complemented our product range recently.

The enhanced knowledge of the epitaxy growth process achieved through in situ monitoring dramatically reduces development cycles and enables superior methods of quality control.

- We are presently the world's only company with long-standing in-house expertise in both optical sensor technology and semiconductor epitaxy.
- With approximately 30 percent of our sensors in use at state-funded research institutions and a well-established R&D network in Europe, we have a continuous supply of ground-breaking discoveries about materials and processes that helps keep our sensors ahead of our competitors.
- A profound knowledge of sensor technology and the fields of sensor application (semiconductor epitaxy, device technology and material science) drives new developments at LayTec.
- LayTec's precision tools are highly customisable. We provide our customers with a profound support they need to use our products to their full potential. Our multi-lingual customer service department is always available to assist you with your particular application requirements.
- Software is regularly updated and improved to address new applications and to integrate the latest database parameters. An advanced online support service is available to registered LayTec customers.
- Our sensors help to reduce production costs by improving yield and lowering time to market, as proven on a daily basis in production line MOCVD systems at major LED and LASER manufacturing facilities world-wide, even for highly sophisticated devices like quantum dot VCSELS.

**Principal Office**

Leybold Vacuum GmbH
Bonner Str. 498
D-50968 Köln
Germany
Phone: (+)49 - 22 13 470
Fax: (+)49 - 22 13 47 12 50
E-Mail: info@leybold.com
Web: www.leybold.com

Contact Person

Mr. Dieter MUELLER
International Business Development
Phone: (+)49 - 22 13 47 12 81
Fax: (+)49 - 22 13 47 31 281
E-Mail: dieter.mueller@leybold.com

Activity

Leybold Vacuum offers a broad range of advanced vacuum solutions for use in manufacturing and analytical processes, as well as for research purposes. The Segment's core capabilities center on the development of application- and customer-specific systems for the creation of vacuums and extraction of processing gases. Areas of application are to be found in the coating of microchips, CDs and DVDs during production, as well as in the manufacturing of optical glass that can only be coated in a vacuum.

Market

The market of relevance to Vacuum Solutions comprises roughly half of the world's total CHF 5.5 billion market for vacuum-related applications. With a 14-percent share of that market, Vacuum Solutions ranks among the top three providers in its specific business segments. After a weak start to the year, a marked revival of demand emerged starting in the fourth quarter. The trend toward "dry" solutions in the fore vacuum area and in pump systems continued, especially in the process industry segment. Stronger demand was also to be seen in terms of magnetically levitated turbomolecular pumps, which, thanks to their maintenance-free attributes, afford significant advantages over pumps with mechanical rotor suspension. Additional services such as guidance and monitoring also gained in significance during 2005.

Milestones

Vacuum Solutions in 2005 put the breadth of its know-how to the test in various challenging projects. Among other things, the business unit delivered the vacuum pumps for the world's largest television factory in South Korea and for the pan-Chinese natural gas pipeline, as well as pump units for vacuum ovens in which engine components for the new oversized Airbus A380 are treated. In parallel, Vacuum Solutions pressed ahead with innovation and launched a new series of products. Its position in the key Asian marketplace was resolutely strengthened. Aside from its partnership with a leading Far Eastern manufacturer, the business unit opened a subsidiary in India and expanded its existing production plants in China.

Outlook

Depending on the specific region, 2006 should witness a sound growth in vacuum related applications. For 2006, the business unit's focus will be placed on expanding its manufacturing, sales and service activities in Asia and the USA.

NanoConsulting

Principal Office

NanoConsulting
Primelweg 3
D-76297 Stutensee
Germany
Phone: (+)49 - 72 49 91 33 32
Fax: (+)49 - 94 15 99 29 13 33
E-Mail: info@nanoconsulting.de
Web: www.nanoconsulting.de

Contact Person

Prof. Dr. Dieter VOLLATH
CEO
Phone: (+)49 - 72 49 91 33 32
Fax: (+)49 - 94 15 99 29 13 33
E-Mail: dieter.vollath@nanoconsulting.de

NanoConsulting closes the gaps between science and technology, strategic planning and technical realization in the field of nanomaterials. This may be directed to application, production, or science of these materials.

NanoConsulting educates your co-workers in science and application of nanomaterials. Only co-workers with broad knowledge create new and innovative products.

NanoConsulting advises companies how to apply nanomaterials. This is not at least directed to safe handling.

NanoConsulting studies possibilities of nanomaterials' applications in your company in connection with long term strategic planning.

NanoConsulting helps to improve your products using nanomaterials or to develop new products.

NanoConsulting evaluates your activities on nanomaterials. These evaluation answers the question if your R&D expenses are properly allocated.

Working Scheme of NanoConsulting

Step 1: Discussions with the leading persons of your company to identify possible fields of application.

Step 2: Developing a group of selected employees to a level of competence for further detailed discussions.

Step 3: Preparation of studies on the application and the potential of nanomaterials, each within the framework and the constraints of your company.

Step 4: Accompanying your company during the development of the new or improved products.

Prof. Dr. Dieter Vollath, a well-known scientist and university teacher in the field of nanomaterials and ceramic materials, founded NanoConsulting in 2003. Due to close contacts to industry and academia, NanoConsulting provides you with the latest results of science and technology.

For more information, please visit: www.nanoconsulting.de

NANOCRAFT

exploring nanospace

Principal Office

NanoCraft
Turmstrasse 4, Innovationcenter Engen
D-78234 Engen
Germany
Phone: (+)49 - 77 33 94 84 45
Fax: (+)49 - 94 15 99 20 77 33
E-Mail: info@nanocraft.de
Web: www.nanocraft.de

Contact Person

Dr. Sabri AKARI
CEO
Phone: (+)49 - 77 33 94 84 45
Fax: (+)49 - 94 15 99 20 77 33
E-Mail: akari@nanocraft.de

User oriented research for technical and biological surfaces

The NanoCraft was founded in 2001 as a Spin Off from Max-Planck-Institute of Colloids and Interfaces (MPI-KGF) by Dr. Sabri Akari.

Specialization: Nanotechnology and Surface Analyses

We perform research and development projects in the region of Nano-, Bio- and Surface Technologies in cooperation with universities and industrial partners. A large number of first class companies from different industrial branches are already working with us and use the obtained information for their own development with high satisfaction.

Chemical Force Microscopy in combination with Digital Pulsed Force Mode:

NanoCraft (Research & Development) combined the self developed Chemical Force Microscopy with the Digital Pulsed Force Mode, this opened for the first time the possibility of chemical and also biological force mapping of technical and biological surfaces on nano- and μ -scale. It is now possible to determine and image several interaction forces like H-Bonds, van der Waals, hydrophobic, ionic and polar interactions. Parallel to Adhesion Force Imaging it is also possible to image further physical properties like elasticity and viscosity. With the options of LFI (Low Force Imaging), HRI (High Roughness Imaging) and the possibility of measuring in different media, the investigation of interfaces is getting a new dimension of quality. This unique analytical service is offered exclusively by NanoCraft in the frame of mission oriented research.

A selection of our developments of novel Nanocoatings (patented):

- Ultra thin conductive protection layer for electrical contacts
- Ultra thin protection layer for jewellery

Awards:

- Innovation Award Baden-Württemberg, Germany, 2003
- International Technology Award euregio.bodensee, 2004

**Principal Office**

NanoFocus AG
Im Lipperfeld 33
D-46047 Oberhausen
Germany
Phone: (+49) - 20 86 20 000
Fax: (+49) - 20 86 20 00 99
E-Mail: sales@nanofocus.de
Web: www.nanofocus.de

Contact Person

Mr. Heinz-Peter HIPPLER
Director Sales
Phone: (+49) - 20 86 20 00 50
Fax: (+49) - 20 86 20 00 99
E-Mail: hippler@nanofocus.de

NanoFocus AG, Optical Surface Measurement in Micro and Nano Meter Range

NanoFocus is a high tech company and technology leader in the sector of directly process-related optical surface measurement in the micro and manometer range. NanoFocus has long-term and patented know-how in the development of optical procedures, precision mechatronics and scientific software algorithms. This expertise allows NanoFocus to provide solutions for production, quality control research and development. The core components of the NanoFocus systems – which are used both in laboratory environments and in production oriented process control – are innovative optical procedures with resolutions up to the manometer range.

The systems are characterized by: • Maximum spatial precision • High repeatability and reliability • Suitability for application in laboratories as well as in production environment • Integration capability

Besides micro geometrical examination (such as form, outline, and flatness) and roughness analysis, the focus lies on analysis of the structural topological properties of modern functional surfaces. The modular NanoFocus soft- and hardware technology facilitates the customization and automation of measurement processes. E.g. surface control of micro-components (MEMS, micro fluidics), bearings and drive components as well as in electronics production (IC packaging, solder printing).

Product offers up to 100 times faster measurements than tactile measurement methods.

Company profile: founded 1994; employees 30; headquarter in Oberhausen, Germany; branch office Asia, Singapore; subsidiary: Richmond, USA,

Our existing clientele is comprised of a large number of well-known enterprises from the automotive and electronics industry, as well as research institutes.

More than 260 systems sold world-wide.



NANOPOOL

Principal Office

nanopool GmbH
Saarlouiser Strasse 69
D-66265 Heusweiler
Germany
Phone: (+)49 - 68 06 60 36 27
Fax: (+)49 - 68 06 60 36 28
E-Mail: info@nanopool.biz
Web: <http://www.nanopool.eu>

Contact Person

Sascha SCHWINDT
CEO
Phone: (+)49 - 68 06 60 36 27
Fax: (+)49 - 68 06 60 36 28
E-Mail: info@nanopool.biz

Nanopool was founded in 2001 and has developed into one of the leading companies in the ultra thin layer industry, a discipline within in the wide range of nanotechnology. The company is located in Heusweiler, Southwest Germany.

Nanopool offers ultra thin layers for nearly every surface and several applications which will have a positive impact on many facets of life.

The basic principle of nanopool states that not only creativity and innovation, but also cooperation in these fields will ensure success on the long run.

Therefore we are working in partnership with world leading companies and offer innovative, cost conscious and environmental friendly solutions for industrial applications as well as for the consumer market.

All nanopool products are state of the art products based on the latest scientific insights of nanotechnology research and offer great value.

The effectiveness of the environmental friendly products was tested by accredited research laboratories and documented by official certificates.

You will find more information about nanopool at:

www.nanopool.biz
www.nanopool.eu



Principal Office

nanoproofed ® Illing GbR
Am Schmiedeberg 1 b
D-23701 Süsel OT Gothendorf
Germany
Phone: (+)49 - 45 21 77 66 66
Fax: (+)49 - 45 21 77 66 11
E-Mail: info@nanoproofed.de
Web: www.nanoproofed.de

Contact Person

Mr. Alexander ILLING (junior)
Manager for Sales and Marketing
Phone: (+)49 - 45 21 77 66 10
Fax: (+)49 - 45 21 77 66 11
E-Mail: sales@nanoproofed.de

Contact Person

Mr. Dieter ILLING (senior)
Manager for Coating and Presentation
Phone: (+)49 - 45 21 77 66 66
Fax: (+)49 - 45 21 77 66 11
E-Mail: coating@nanoproofed.de

nanoproofed® GbR is a company producing nanotechnical coatings. We are merchandising, applying and offering service functioning of nanotechnical coating products throughout Germany. Our aim is to find individual solutions for every customer, who uses special coatings. In cooperation with our laboratories, we are capable to additionally develop non-standard products for special surfaces.

Under our name of the registered trade-mark "**nanoproofed®**" we have partnership distributors all over Germany. General importers in several foreign countries are our representatives for our international sales. We are supporting not only industry, trade and craftsmanship but also - through our sales partners- private customers with long-lasting nanotechnical surface sealings of completely variable materials. As experts in our field and as international traders of nanotechnical sealings, we are concentrating on these fields of activity:

- We are offering consulting for exploiting all products' application possibilities.
- We are supporting the product choice procedure to find your individual sealing.
- We are supporting you integrating the sealing technology into your production process.
- We are offering to sell our products for your own use.
- We are constantly recruiting sales partners worldwide.

Our product range encloses the products offered in the shop for final consumers as well as sealing products who are conceived by a little more complex application (as for example thermal fixation) especially for industrial use. These products are extremely loadable and show the optimum of that what is available today in the nanotechnical sealing. Appeal to us, we consult you with pleasure.

nanoproofed ® has ordered from safety standards authority Thüringen (Germany TÜV) a study, with which under scientific conditions of independent, skilled place the effectiveness ours **nanoproofed ®** protection glass and ceramics sealing was tested. The result is exceedingly positive and unequivocal - **nanoproofed ®** protection glass and ceramics sealing is convincing on whole line and now wears officially the " certificated effectiveness proof " of safety standards authority Thüringen (Germany TÜV).

You will find additional information in the internet presence under:

www.nanoproofed.de
www.nanoproofed.com

**Principal Office**

Nanostart AG
Goethestrasse 26-28
D-60313 Frankfurt am Main
Germany
Phone: (+)49 - 69 21 93 96 00
Fax: (+)49 - 69 21 93 96 22
E-Mail: info@nanostart.de
Web: www.nanostart.de

Contact Person

Mrs. Katja LINDENLAUB
Financial Analyst
Phone: (+)49 - 69 21 93 96 17
Fax: (+)49 - 69 21 93 96 22
E-Mail: inquiry@nanostart.de

Company profile

Nanostart AG is Europe's leading expert in the area of nanotechnology and investments. Founded in 2003, the company operates in two independent areas: the first area is the nanotechnology portfolio business. In this division, Nanostart AG invests in dynamically growing nanotechnology companies which, with the backing of Nanostart AG's capital and know-how, are given the opportunity to radically transform existing markets with their innovative nanotechnology. In the second area, the Financial Services division, Nanostart AG provides advice to companies of the financial sector when investing in the nanotechnology sector. As sub-advisor, Nanostart AG has an advisory mandate for, among other things, one of the world's first nanotechnology equity funds.

Nanostart as an investment partner

Nanostart AG views nanotechnology as a technological breakthrough that can radically alter the economy and society. This breakthrough represents a historical opportunity not only for large-scale industrial conglomerates and established companies but also and, in particular, for innovative small and medium-sized companies to profit to a substantial degree from the unfolding of nanotechnology. Nanostart AG does not merely set these companies up with capital; it also actively links them up in a network of potential clients, cooperation partners and Research Institutions that spans the entire globe. In this way, they gain access to a new source of additional potential for securing, strengthening and accelerating their own growth.

Unlike other investment companies, Nanostart AG can also draw on its financial market competence which makes it a unique company in the international nanotechnology scene. Its knowledge about current developments on global stock exchanges and know-how as nanotechnology specialist generates not only opportunities and possibilities but also responsibility. By regularly staging information events for entrepreneurs, market players and investors, Nanostart AG exercises its responsibility and contributes towards objectifying the discussion over the potential and the risks of this new technology. Portfolio companies of Nanostart AG are (excerpt): Arrayx, Inc., BioMicro Systems, Inc., ItN Nanovation AG, Lumiphore, Inc., MagForce Nanotechnologies AG, NanoDynamics, Inc., NanoFocus AG, NanoOpto Corp., Nanosys, Inc.



Nascatec

Nanoscale Technologies GmbH

Principal Office

Nascatec GmbH
Ludwig-Erhard-Str. 10
D-34131 Kassel
Germany
Phone: (+)49 - 56 19 20 88 300
Fax: (+)49 - 56 19 20 88 309
E-Mail: info@nascatec.com
Web: www.nascatec.com

Contact Person

Mr. Wolfgang BARTH
Managing Director
Phone: (+)49 - 56 19 20 88 302
Fax: (+)49 - 56 19 20 88 309
E-Mail: barth@nascatec.com

Contact Person

Dr. Thomas DEBSKI
Managing Director
Phone: (+)49 - 56 19 20 88 301
Fax: (+)49 - 56 19 20 88 309
E-Mail: debski@nascatec.com

The Nascatec GmbH (Nanoscale Technologies GmbH) is a young high tech company. Our core business ranges from developing and prototyping to producing SPM, AFM, SNOM sensors, micro- nanogrippers and micromechanics for application in R&D, characterisation of surface topography, process control, micro- nanomanipulation and bioanalytics.

Many years of experience in the field of silicon micromachining, MEMS, SPM, AFM, SNOM techniques, piezoresistive applications and related fields are combined in our high tech company. Our production is located in a Class 10 to 1000 Cleanroom that allows wafers from 3 to 6 inch to be produced. Our R&D and our medium volume production has access to many standard MEMS and micromachining processes as well as standard CMOS processes like wet chemical etching, dry etching, deep silicon etching, high aspect ratio micromachining, oxidation, diffusion metallisation, thin film coating.

Individual prototyping can be carried out in best time, using our special technical equipment.

In addition to the upper ongoing partnerships, the Nascatec has numerous projects and collaborations all over the globe with universities, R&D institutions and companies in order to meet the needs of our customers in this rapidly growing market of MEMS, MOEMS and nanotechnology.

In collaboration with the European Space Association, Nascatec built the first piezoresistive AFM-Probes for the "ROSETTA" Space-Mission. Our products are using: NASA, DARPA, Pirelli, Seiko, Motorola, Seagate and many others.

Nascatec GmbH is best source for scanning probe microscopy sensors, because offers design, technology development and fabrication.

The team that founded the Nascatec combines experience in physics, micro electronics and economics by Mr. W. Barth, Dr. T. Debski and Mr. C. Reitner.

**Principal Office**

NETZSCH-Feinmahltechnik GmbH
Sedanstraße 70
D-95100 Selb
Germany
Phone: (+)49 - 92 87 79 70
Fax: (+)49 - 92 87 79 71 49
E-Mail: info@nft.netzsch.com
Web: www.netzsch-grinding.com

Representative India

NETZSCH Technologies India Private Ltd.
Plot Nr. 1159, Anna Nagar West End Colony
Mogappair, IND-Chennai 600 050
India
Phone: (+)91 - 98 40 16 23 90
Fax: (+)91 - 44 26 25 06 02
E-Mail: a.benjamin@nti.netzsch.com

Contact Person

Dr. Stefan MENDE
Product Manager
Phone: (+)49 - 92 87 79 72 15
Fax: (+)49 - 92 87 79 71 49
E-Mail: stefan.mende@nft.netzsch.com

Contact Person

Mr. Anton BENJAMIN
Technical Sales
Phone: (+)91 - 98 40 16 23 90
Fax: (+)91 - 44 26 25 06 02
E-Mail: a.benjamin@nti.netzsch.com

The companies NETZSCH-CONDUX Mahltechnik GmbH in Hanau, Germany, and NETZSCH-Feinmahltechnik GmbH with its headquarters in Selb, Germany, form up the Business Unit Grinding & Dispersing within the NETZSCH Group. Many years of experience, the daily contact with our customers and the consequent development work resulting in more than 100 patents secure the technical competence and represent the quality awareness of our Business Unit.

NETZSCH-Feinmahltechnik GmbH is one of the world's market leaders in wet grinding technology. The concentration of know-how in process engineering and the comprehensive range of products from laboratory size and production size mills up to complete production lines is unique worldwide. Custom-made mixers, kneaders or dispersers for low or high-viscosity products are available for a multitude of applications just as well as a large number of wet grinding systems for different grinding tasks even down to the nano range.

Machines and systems manufactured by NETZSCH-Feinmahltechnik GmbH are mainly used for chemical products, inks and paints, pigments, inorganic materials/minerals, sealants and adhesives, ceramics as well as in life science for pharmaceutical, food or biotechnological applications.

The headquarters of the company are located in Selb/Germany. In addition to our professional and knowledgeable administration and sales departments the Selb facility is also home to one of the most modern grinding and dispersing applications laboratories that is also available to our customers. The machines and systems are manufactured in our Tirschenreuth manufacturing facilities in Germany and abroad in our manufacturing facilities in Brazil, Russia, China and the United States. Being part of the NETZSCH Group we offer a worldwide sales and service network for convenient customer service.

**Principal Office**

NTGL Nano Technologie Leipzig GmbH
Permoserstr. 15
D-04318 Leipzig
Germany
Phone: (+)49 - 34 12 35 29 31
Fax: (+)49 - 34 12 35 32 59
E-Mail: info@ntgl.de
Web: www.ntgl.de

Contact Person

Prof. Dr. Reinhard SCHWABE
Senior Researcher
Phone: (+)49 - 34 12 35 31 20
Fax: (+)49 - 34 12 35 32 59
E-Mail: reinhard.schwabe@ntgl.de

The NTGL Nano Technologie Leipzig GmbH, the OPTEG GmbH Leipzig, and the Leibniz-Institute for Surface Modification e. V. Leipzig are closely co-operating in the field of ion beam technology for high-precision figuring and polishing as well as local nano-metre precise thin film correction of high-end products used in optics and microelectronics. The so-called ion-beam finishing is applied to large-area workpieces such as lenses for stepper objectives, mirrors for synchrotron or satellite application and silicon wafers up to 8 inches in diameter.

The NTGL, the OPTEG, and the Institute for Surface Modification, usually called IOM, are members of the Science Park Permoserstraße/Leipzig e. V.

The IOM is a research establishment strongly interacting with the University of Leipzig. The IOM has more than 20 years experience of plasma physics, applications of ion beams for polishing and figuring of solid state materials as well as development of ion beam sources.

NTGL and OPTEG are start-up's founded in 1999 and 2001, respectively. NTGL Nano Technologie Leipzig GmbH is a subsidiary company of the NTG Neue Technologien GmbH & Co. KG, an experienced mechanical engineering company in Gelnhausen near Frankfurt on the Main. NTGL mainly aims at the development and fabrication of specially designed ion-beam plants applicable for ion- and plasma-beam machining. Operating the plants, sales and marketing, application engineering, and technical service are inherent parts of its business concept.

The OPTEG GmbH works in the fields of software controlling for ion-beam plants, sensor technology, for example, PSD-based sensor modules for high-precise positioning of motion systems, Faraday-cup amplifiers for measuring ion-beam profiles, and fibre-optic based low-coherence interferometers. Moreover, the OPTEG has a branch in Taiwan providing support and representation to European enterprises on the Taiwanese market.

Both, NTGL and OPTEG have developed and fabricated the first industrial suitable ion-beam plant possessing software for the complete ion-beam figuring and polishing process.

**Principal Office**

Palas GmbH
Greschbachstr. 3b
D-76229 Karlsruhe
Germany
Phone: (+)49 - 72 19 62 130
Fax: (+)49 - 72 19 62 13 33
E-Mail: mail@palas.de
Web: www.palas.de

Contact Person

Mrs. Patricia KESSLER
Marketing Manager
Phone: (+)49 - 72 19 62 130
Fax: (+)49 - 72 19 62 13 33
E-Mail: kessler@palas.de

The company Palas[®], since more than 20 years an internationally successful manufacturer in the field of aerosol technology, stands for experience of many years in the aerosol generation and particle measurement – also in the nanometer range. Palas[®] develops and builds aerosol generators, particle measuring devices, dilution systems and complete filter test systems better than the standard. The company offers also services as well as annually taking place training courses and seminars.

Palas[®] products offer special advantages for nano applications, e.g. for

- environmental technology (filter testing, emission and immission measurements, etc.)
- automobile industry (test systems for oil separators, diesel soot filters, motor filters, pollen filters)
- chemical industry (particle generation, quality control, monitoring)
- pharma / medicine (characterisation of inhalation aerosols, test of protective materials)
- filtration/separation industry (filter testing, research and development, collection and control of smallest particles)
- nano analytics (generation and measurement of nano particles, quality assurance)

Palas[®] offers a broad range of aerosol generators for the reproducible generation of defined test aerosols within different particle size ranges, e.g. for the generation of finest droplets, dust particles or soot particles. The newest innovation is the Variable Soot Generator VSG-3000 which generates real soot particles within the nanometer range. For the exact and reliable particle measurement, Palas[®] offers the award-winning measuring system welas[®]. The modularly built measuring system measures in high resolution and with very good classification accuracy within particle size ranges of 180 – 40 000 nm. For the measurement of smaller particles from approx. 5 nm, the system can be supplemented simply and low-priced with a newly developed CNC module which was filed for a patent.

Palas[®] – "Count, what it is countable, measure what is measurable, and what is not measurable, make measurable!" (Galileo Galilei)

**Principal Office**

phoenix|x-ray Systems + Services GmbH
Niels-Bohr-Str. 7
D-31515 Wunstorf
Germany
Phone: (+)49 - 50 31 17 20
Fax: (+)49 - 50 31 17 22 99
E-Mail: info@phoenix-xray.com
Web: www.phoenix-xray.com

Contact Person

Mr. Thomas PAUL
Sales Director Asia
Phone: (+)49 - 50 31 17 20
Fax: (+)49 - 50 31 17 22 99
E-Mail: tpaul@phoenix-xray.com

phoenix|x-ray Systems + Services is the leading manufacturer of microfocus and nanofocus[®] X-ray systems for 2D-inspection and computed tomography. Founded 1999 in Wunstorf close to Hanover, Germany, the enterprise possesses over branch offices in Stuttgart and Munich/Germany, St. Petersburg/USA, Manila/The Philippines and representations in most industrialised countries world-wide.

2D X-ray inspection systems

phoenix|x-ray supplies application oriented microfocus and nanofocus X-ray systems and complete customised inspection solutions for the automated 2D-inspection in the electronics, semiconductor, automotive, aerospace and many other industries. Main fields of applications are semiconductor packaging, PCB assembly, multilayer PCB production, micromechanics and electro mechanics.

Computed tomography with submicron resolution

In addition to 2D-inspection systems phoenix|x-ray offers a wide range of high resolution computed tomographs. The nanotom for example is the first 160 kv nanofocus system which is tailored completely to applications in the material science, micro mechanics, electronics, geology and biology. It is suitable for the 3D-examination of the microstructure of material samples in every type like synthetic materials, ceramics, composite materials, metal or rock samples and much more.

Leading in technology

As one of the most innovative companies in the industry phoenix|x-ray has invented some breaking novel technologies and systems. The enterprise has been awarded the co-operation award of the province of Lower-Saxony in 2004 and the Frost & Sullivan Product Line Strategy Leadership Award 2005 as well as in 2006 the award "entrepreneur of the year" of the German Federal Association of young entrepreneurs and the German Association of independent businessmen.

phoenix|x-ray puts high priority on customer service and great investments in the development of easy-to-use systems and software solutions in order to provide all inclusive and versatile support to customers, establishing mutually beneficial, long-term partnerships.



Principal Office

Raith GmbH
Hauert 18
D-44227 Dortmund
Germany
Phone: (+)49 - 23 19 75 00 00
Fax: (+)49 - 23 19 75 00 05
E-Mail: postmaster@raith.de
Web: www.raith.com

Contact Person

Mr. Dirk BRÜGGEMANN
International Sales & Marketing Director
Phone: (+)49 - 23 19 75 00 032
Fax: (+)49 - 23 19 75 00 05
E-Mail: dbrueggemann@raith.de

Representative India

SIMCO Materials International House Ltd.
14 Bhawani Kunj, Behind Sector D-II Wu Dao
110 070 New Delhi - Vasant Kunj
India
Phone: (+)91 - 11 26 89 02 11
Fax: (+)91 - 11 26 89 41 01
E-Mail: simcogroup@sify.com

Contact Person

Mr. Navin SINGHAL
President
Phone: (+)91 - 11 26 89 02 11
Fax: (+)91 - 11 26 89 41 01
E-Mail: simcogroup@sify.com

Key words: nanolithography, nano manipulation, nano engineering

Raith manufactures a variety of electron beam lithography systems for research and development applications. The tools are designed to meet the needs of researchers, designers, and engineers in both university and industry settings. Our family of lithography products range from PC driven pattern generator attachments for SEMs or FIBs, to complete systems with full wafer and mask handling capabilities.

e_LiNE, an ultra high resolution electron beam lithography system, is a state-of-the-art tool for universities and other academic institutions. Selected options for nanomanipulation, EBID and EBIE expand this system to a versatile nano engineering workstation. The state-of-the-art e_LiNE electron column matches perfectly with a number of key applications in CNT research, thin film engineering, photonic crystals and EBID

Raith GmbH also manufactures ultra-high precision sample stages and software navigation packages for failure analysis applications. ESCOSY Plus is the navigation solution for all your analytical tools featuring: Defect-Review, CAD navigation, Bit-Fail Map review and Metrology in one economical package. ASEM's (Application Specific SEMs) with specialized functions, such as reverse engineering or high-precision metrology, are examples of Raith expertise for design and manufacturing of advanced, leading edge, systems.

Since about 5 years Raith GmbH is operating its own application laboratory in Dortmund for continuously increasing the EBL process knowledge and the performance of Raith EBL tools.

A global network of service and sales partners is supporting our customers.

Annual events like user meetings, trainings courses and the Raith NANO seminar are announced on our web site.

In 2005 Raith GmbH has celebrated its 25th anniversary. We thank all our customers for their trust in Raith products!

**Principal Office**

SPECS GmbH
Voltastraße 5
D-13355 Berlin
Germany
Phone: (+)49 - 30 46 78 240
Fax: (+)49 - 30 46 42 083
E-Mail: support@specs.de
Web: www.specs.de

Contact Person

Dr. Winfried HEICHLER
Authorized Officer
Phone: (+)49 - 30 46 78 24 30
Fax: (+)49 - 30 46 42 083
E-Mail: heichler@specs.de

SPECS - A Story of Constant Innovation

Located in the middle of Berlin, Germany - a center for the development of modern technology - SPECS GmbH designs and manufactures cutting-edge components and systems for surface analysis and nanotechnology, based on ion and electron spectroscopic methods like XPS, UPS, AES, SNMS, LEED, HREELS and STM. Holding 20 worldwide patents, SPECS stands for constant innovation in technology and quality. More than 40 people work in the headquarters in Berlin, most of them hold a PhD degree and have a scientific background in surface science.

The results of SPECS' continuing research efforts are integrated into applications relevant to scientific research laboratories and the industry. SPECS excitation sources, analyzers and complete surface analysis systems are used i.e. for the control of wafer surface composition, depth profiling of chemical concentration with nanometer resolution or polymer surface composition checks.

With the STM 150 Aarhus SPECS offers an instrument of unique stability and speed for surface mapping with atomic resolution. Atomic growth and catalytic processes on surfaces at different temperatures can be equally observed as the atomic structure of surfaces.

As worldwide sales representative of VTS-CreaTec SPECS also offers a LT-STM for atomic/molecular manipulation used i.e. for lateral manipulation of atoms, formation of atomic scale structures or the controlled change of molecules.

Recently a Low Energy Electron Microscope (LEEM) has joined the SPECS product line allowing in-situ studies of surface dynamical processes, growth and structures. In specially customized systems SPECS also combines different analysis methods to meet even most sophisticated needs of scientists and industry.

Know-How, experience, close contact to influential scientists from all over the world, customer orientation and reliable quality control are the keys to success at SPECS.

An international network of cooperation-, sales- and support partners is ready to assist SPECS customers worldwide.

Please visit our Website www.specs.de or contact SPECS GmbH directly for further information.

Principal Office

Süd-Chemie AG
Ostenriederstrasse 15
D-85368 Moosburg
Germany
Phone: (+)49 - 87 61 82 369
Fax: (+)49 - 87 61 82 713
E-Mail: plastic-additives@sud-chemie.com
Web: www.sud-chemie.com

Contact Person

Mrs. Gertraud KEIL
Customer Service
Phone: (+)49 - 87 61 82 369
Fax: (+)49 - 87 61 82 713
E-Mail: gertraud.keil@sud-chemie.com

Süd-Chemie

A global company with tradition

Süd-Chemie is an independent group active in the field of special-purpose chemistry. Based on a long tradition, it is today operating on a global scale and regards itself as a specialist in the sector of chemistry for surface comprising finest-grained inorganic matter. The Group owns more than sixty production and sales companies throughout the world, employing some 4.500 staff from varying linguistic and cultural backgrounds. Numerous patents have originated from the Research and Development Departments of Süd-Chemie. These innovations form the basis of successful brand names that have been produced for many years on a worldwide scale.

One example of this is Nanofil®, a new nanocomposite additive. The cable compound containing Nanofil® was developed by Süd-Chemie and reduces substantially the amount of aluminium trihydroxide used, the traditional flame retardant substance. It also offers better protection by adding a higher degree of elasticity and durability to cables, in this way helping to prevent cables snapping and creating a danger of fire. Additionally improvement of barrier properties against gases and solvents, adjustment of mechanical properties enable the plastic industry to launch new products based on the delaminated organic modified Bentonite nanoparticles of the Nanofil® product range.

**Principal Office**

Supracon AG
Wildenbruchstrasse 15
D-07745 Jena
Germany
Phone: (+)49 - 36 41 67 53 80
Fax: (+)49 - 36 41 67 53 87
E-Mail: info@supracon.com
Web: www.supracon.com

Contact Person

Mr. Matthias MEYER
Managing Director
Phone: (+)49 - 36 41 67 53 83
Fax: (+)49 - 36 41 67 53 87
E-Mail: meyer@supracon.com

Contact Person

Mr. Michael LORENZ
Technical Director Microfabrication
Phone: (+)49 - 36 41 67 53 81
Fax: (+)49 - 36 41 67 53 87
E-Mail: Lorenz@supracon.com

Supracon is a globally operating high tech company which has specialized in the development, fabrication, and marketing of ultra-sensitive superconductive sensors and is offering services which utilise state-of-the-art micro-and nanostructure technology.

Supracon was founded on the 1st January 2001 as a spin-off from the Department of Cryoelectronics at the Institute for Physical High Technology Jena (IPHT). Supracon maintains close links with the IPHT. Together a highly sophisticated thin-film technologies have been developed. These include different deposition methods for metallic and dielectric films, pattern definition by optical or e-beam lithography, and pattern transfer into the films by wet chemical or dry etching methods.

The nano- and microfabrication processes require very complex equipment which are installed in a modern clean room in the IPHT.

The following microfabrication services can be offered:

- performing of highly specialized process steps as part of a customer`s device production cycle,
- complete thin film technological fabrication of customer devices,
- development of customer-specific microfabrication steps or complete processes including technology transfer to the customer.

Different nanoengineered devices like photonic crystals (in polymer- and in metal oxide waveguides), nano-imprint master, devices for quantum computing, and metrological standards for use in the nanoscale (nanoscale linewidth/pitch standard, nanoscale CD standard, AFM-tip-characterizer) are fabricated in running R&D projects.

You will find more information about Supracon at:

www.supracon.com



Technologiezentrum

Principal Office

VDI Technologiezentrum GmbH
Graf Recke Str. 84
D-40239 Düsseldorf
Germany
Phone: (+)49 - 21 16 21 44 01
Fax: (+)49 - 21 16 21 44 84
E-Mail: vditz@vdi.de
Web: www.vditz.de

Contact Person

Dr. Gerd BACHMANN
Consultant
Phone: (+)49 - 21 16 21 42 35
Fax: (+)49 - 21 16 21 44 84
E-Mail: bachmann@vdi.de

Contact Person

Dr.-Ing. Frank SICKING
Consultant
Phone: (+)49 - 21 16 21 45 87
Fax: (+)49 - 21 16 21 44 84
E-Mail: sicking@vdi.de

The VDI Technologiezentrum GmbH is a subsidiary company of the VDI (The Association of Engineers).

Since 1973 we are working on behalf of the Ministry of Research and Technology (BMBF) and for other institutions and enterprises.

Our activities aim at increasing the technological efficiency and competence of industry and scientific research.

Committed to taking societal responsibility we link competencies to assist in the search, analysis and evaluation of technologies that help to solve ecological, economic and social problems and promote research, development and innovation.

The networked knowledge of our engineers, economists, natural and social scientists supports our clients in making decisions that shape the future.

- We transfer latest results from basic and applied research to new technical products, processes and applications; within project partnerships we support the BMBF and other public bodies by expertise, consultancy and management.
- We transfer knowledge and information from scientific research to a broad implementation.
- We process and evaluate scientific and technological information.
- We provide technological consultancy.
- We analyse and evaluate future technologies.

You will find more information about German and European nanotechnology at:

www.nanonet.de
www.nanoforum.org
www.nano-in-germany.com

Table of Companies' Specifications

	Association / NGO	Coatings	Investor	Nanoanalytics	Nanobiotechnology	Nanochemistry / Nanomaterials	Nanoelectronics / Nanophotonics	Nanolithography	Network	Toolmaker	Ultraprecision	Page
AC Serendip Ltd.			✓		✓	✓				✓		4
Anfatec Instruments AG				✓						✓		5
AQUANOVA GmbH					✓	✓						6
attocube systems AG							✓				✓	7
AXO Dresden GmbH		✓									✓	8
Bioni CS GmbH		✓				✓						9
Degussa AG Creavis Gesellschaft						✓						10
EPG Engineering nano Products GmbH		✓		✓	✓						✓	11
FOCUS GmbH		✓		✓								12
FRT GmbH							✓			✓	✓	13
HA Hessen Agentur GmbH/ hessen nanotech	✓							✓				14
Innowep GmbH		✓		✓						✓	✓	15
ION-TOF GmbH		✓		✓		✓	✓					16
JE PlasmaConsult GmbH		✓								✓		17
JenLab GmbH				✓	✓					✓		18
LayTec GmbH				✓								19
Leybold Vacuum GmbH										✓	✓	20
NanoConsulting						✓	✓					21
NanoCraft		✓		✓	✓	✓						22
NanoFocus AG							✓	✓		✓	✓	23
nanopool GMBH		✓	✓			✓					✓	24
nanoproofed © Illing GbR		✓			✓	✓						25
Nanostart AG			✓									26
NASCATEC GmbH				✓	✓		✓				✓	27
NETZSCH-Feinmahltechnik GmbH					✓	✓	✓			✓		28
NTGL Nano Technologie Leipzig GmbH							✓	✓			✓	29
Palas GmbH				✓	✓	✓						30
phoenix x-ray Systems + Services GmbH				✓		✓	✓					31
Raith GmbH												32
SPECS GmbH				✓		✓				✓	✓	33
Süd-Chemie AG						✓						34
Supracon AG							✓					35
VDI Technologiezentrum GmbH	✓							✓				36