



Invitation

6th NRW Nano-Conference

1st + 2nd December 2014

Kongresszentrum Westfalenhallen Dortmund





Dear Ladies and Gentlemen,

We have to make progress happen. We need development, innovation and the advances these lead to in order to master the global challenges such as climate change, energy transition and eco-friendly resources-management. E. g. in the fields of energy and health, new materials and electronics, progress would be unthinkable without new technologies such as nanotechnology.

They enable innovative developments which are both intelligent and sustainable. It is only through key technologies like these, that real progress is possible. Progress, which is a fundamental requirement for the sustainable development of our society.

That is why nanotechnology, along with other key technologies, is at the focus of North Rhine-Westphalia's research policy. As an industrial state with high levels of skill and productivity, North Rhine-Westphalia has a special responsibility here: we must join forces with the scientific, business and political communities to tackle these global challenges together.

On 1st and 2nd December 2014, Dortmund will be home to the 6th NRW Nano-Conference, which will consider NRW's chances in these areas. The conference is being hosted by the North Rhine-Westphalian Ministry for Innovation, Science and Research in cooperation with the City of Dortmund Economic Development Agency and the Clustermanagement NanoMikroWerkstoffePhotonik.NRW.

This year's conference will be addressing the latest developments in nanotechnology and focussing on six main topics: "new materials", "health", "energy", "architecture & civil engineering", "safety & society", and "electronics". Once again the conference will highlight how nanotechnology can solve key issues for the future. The conference and accompanying exhibition provide excellent opportunities to strengthen existing cooperations and to make new contacts as well.

I wish the 6th NRW Nano-Conference all success and may all participants enjoy a fruitful exchange of ideas and a successful time at the conference.



Svenja Schulze

Minister for Innovation, Science and Research for the
State of North Rhine-Westphalia

FOREWORD



Dear Reader,

Nanotechnologies are now part of our everyday lives, for companies and individuals alike. Thanks to their versatility, they offer opportunities and prospects for growth in a large number of fields and open up excellent areas for research. In addition to the high-calibre international speakers invited to this conference, for the first time this year research and development work selected through the “call for presentations” will also be presented.

Six exciting topic areas are the focus of the 6th NRW Nano-Conference – to which I warmly invite you. Take advantage of this opportunity to discuss the latest trends and developments with the experts and find out about current products and applications in the accompanying exhibition. Dortmund is just the right place for this conference as it has developed into one of Europe’s leading locations for micro and nanotechnology.

The NRW Nano-Conference, now taking place in Dortmund for the sixth time, has established itself as a platform for innovative technologies and is the biggest conference for nanotechnologies in Germany. I wish you all the best for a successful conference and hope you enjoy interesting discussions.

A handwritten signature in black ink, appearing to read 'Thomas Westphal', written in a cursive style.

Thomas Westphal

Chief Executive Officer, City of Dortmund Economic
Development Agency

FOREWORD



Dear Ladies and Gentlemen,

The ever-changing environmental conditions and the fast pace of our society increase the demand for innovative technologies and sustainable solutions. Nanotechnology is indispensable for this. It is one of the key technologies of our time and involves far-reaching potential for future global challenges.

Particularly in the highly industrialized state of North Rhine-Westphalia nanotechnology strongly affects economic strength. Due to its excellent research institutes, universities and companies, NRW has developed into a top location for the field of nanotechnology in Germany.

The NRW Nano-Conference will show the multi-faceted potential of nanotechnology and provides the opportunity to network, discuss and collect information about the latest findings of this cross-sectional technology.

I wish you two exciting and successful days at the 6th NRW Nano-Conference.

A handwritten signature in black ink, appearing to read 'H. Cremer', written in a cursive style.

Harald Cremer

Managing Director, NanoMicroMaterialsPhotonics.NRW

ADVISORY BOARD

The Advisory Board for the 6th NRW Nano-Conference was inaugurated at the beginning of the year 2014. It comprises high-ranking representatives from business, science and society and, among other things, makes decisions on topics and the programme for the Nano-Conference.

The Members:

Dr. Lutz Aschke, LIMO Lissotschenko Mikrooptik GmbH | **Dr. Gerd Bachmann**, VDI-TZ Consulting | **Dr. Michael Bäcker**, Deutsche Nanoschicht GmbH | **Prof. Dr.-Ing. Stephan Barcikowski**, University of Duisburg-Essen | **Prof. Dr. Manfred Bayer**, TU Dortmund | **Dr. Michael Berkei**, BYK-Chemie | **Prof. Dr. -Ing. Görge** Deerberg, Fraunhofer UMSICHT | **Prof. Dr. Cornelia Denz**, WWU University of Münster | **Prof. Dr. Elke Dopp**, IWW Water Centre, | **Dr. Antje Grobe**, DIALOG BASIS | **Dr. Birgit Hagenhoff**, tascon GmbH | **Prof. Dr. Michael Heuken**, Aixtron SE | **Prof. Dr. Dr. Rafaela Hillerbrand**, Delft University of Technology | **Prof. Dr. Stefan Jockenhövel**, RWTH Aachen | **Prof. Dr.-Ing. Klaus Kallis**, TU Dortmund | **Dr. Matthias Kretschmer**, Sachtleben Chemie GmbH | **Dr. Péter Krüger**, Bayer MaterialScience | **Dr. Thomas Kuhlbusch**, IUTA e.V. | **Prof. Dr. Max Lemme**, University of Siegen | **Prof. Dr. Peter Loosen**, Fraunhofer Institute for Laser Technology | **Prof. Dr. Sanjay Mathur**, University of Cologne | **Dr. Dieter Ostermann**, ODB-Tec GmbH & Co. KG | **Andrea Reinhardt**, microTEC-Gesellschaft für Mikrotechnologie | **Ulrike Schell**, Consumer Advice Centre | **Guido Vogel**, Innolume GmbH | **Prof. Dr. Henning Zoz**, Zoz Group

- 09:00 am **Registration**
- 09:30 am **Opening of the exhibition**
Svenja Schulze, Minister for Innovation, Science and Research for the State of North Rhine-Westphalia
Thomas Westphal, Chief Executive Officer City of Dortmund Economic Development Agency
- 10:30 am **Opening of the conference**
Greeting and moderation
Harald Cremer, Clustermanager NMWP.NRW
Welcoming speeches
Svenja Schulze and Thomas Westphal
- 11:00 am **H2020: Leadership in enabling and industrial technologies (LEIT) nanotechnologies & advanced materials**
Christos Tokamanis, Directorate D – Key Enabling Technologies, Head of Department D.3 – Advanced Materials and Nanotechnologies, European Commission, Directorate General for Research and Innovation, Brussels
- 11:30 am **Keynote: Carbon nanomaterials by design**
Prof. Dr. Klaus Müllen, Director at the Max Planck Institute for Polymer Research, Mainz
- 12:00 **Keynote: Graphene flagship: working together to turn scientific excellence into societal impacts**
Prof. Dr. Jari Kinaret, Director Graphene-Flagship-Initiative, Chalmers University of Technology, Göteborg, Sweden
- 12:30 pm **Lunch break**, networking, accompanying exhibition and posters
- Nanotechnology Business Pitches in Hall 4 and 5**
(01:00 - 01:30 and 02:00 - 02:30 pm)

Monday, 1st December 2014

Session 1: New Materials

Chair: Prof. Dr. Max Lemme, University of Siegen

02:45 pm

Rapid nanoparticle polymer composites prototyping by laser ablation in liquids

Prof. Dr.-Ing. Stephan Barcikowski
University of Duisburg-Essen

Graphene – balancing the elephant

Dr. Günther Ruhl, Infineon Technologies AG, Regensburg

Nano and macro porous membranes á la carte

Monika Lelonek, SmartMembranes GmbH, Halle (Saale)

Carbon nanomembranes - the other carbon-based 2D-material

Dr. Albert Schnieders, CNM Technologies GmbH,
Bielefeld

04:05 pm

Coffee break, networking, accompanying exhibition and posters

04:35 pm

Nanotechnology-based coatings for engineering metals – from fundamentals to applications

Prof. Dr.-Ing. Guido Grundmeier, University of Paderborn

High mobility graphene grown by chemical vapor deposition

Stephan Engels, RWTH Aachen

Innovative nanotechnology from Dortmund-Wickede: 22 years of high-precision surface machining

Dr. Paul Harten, LIMO Lissotschenko Mikrooptik GmbH, Dortmund

05:35 pm

End of session

06:00 pm

EVENING EVENT in the Dortmunder U

- Shuttle service – there and back
- Guided tour of the “Dortmunder U” (15 min.)
- Awards for the three best exhibitors and exhibits
- Buffet and get-together with musical accompaniment

Monday 1st December 2014

Session 2: Health

Chair: Prof. Dr. Elke Dopp, IWW Water Centre, Mülheim an der Ruhr

02:45 pm

Textile materials for biohybrid implants

Prof. Dr. med. Stefan Jockenhövel, RWTH Aachen University and University Hospital Aachen

Physico-chemical characterization of extracellular vesicles; improvement of the ZetaView particle tracking process for novel requirements in diagnostics

PD Dr. Bernd Giebel, University Hospital Essen

Potential of nanoparticles for the immunization against viral infections

Dr. Viktoriya Sokolova, University of Duisburg-Essen

Functionalized gold nanoparticles as analytical tools for protein conformational disorders

Carmen Streich, University of Duisburg-Essen

04:05 pm

Coffee break, networking, accompanying exhibition and posters

04:35 pm

Nanobiophotonics4Health: SERS Microscopy for Tissue-Based Cancer Diagnostics

Prof. Dr. Sebastian Schlücker, University of Duisburg-Essen

Nanotechnology in wound healing – advances and perspectives

Dr. Renate Förch, Fraunhofer ICT-IMM, Mainz

Spectrometry of surfaces using ion beams: Molecular mapping of (bio)polymers

Dr. Birgit Hagenhoff, tascon GmbH, Münster

05:35 pm

End of session

06:00 pm

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Tuesday 2nd December 2014

Session 3: Energy

Chair: Prof. Dr.-Ing Stephan Barcikowski, University of Duisburg-Essen

- 09:00 am **Registration**
- 09:30 am **Chemical nanotechnologies:
From molecules to functional nanostructures
for energy and health applications**
Prof. Dr. Sanjay Mathur, University of Cologne
- Nano-structured catalysts for chemical energy
conversion**
Prof. Dr. Malte Behrens, University of Duisburg-
Essen
- Thin film photovoltaics based on earth abundant
nanoparticles**
Maurice Nuys, Forschungszentrum Jülich
- 10:30 am **Coffee break**, networking, accompanying exhibition
and posters
- 11:00 am **Implementation of graphene electrodes in
nanoparticle-based light emitting devices**
Dr. Ekaterina Nannen, University of Duisburg-Essen
- Template-realized three-dimensional functional
nanostructures of semiconductors for high-
performance device applications**
Dr. Yang Xu, Ilmenau University of Technology
- Nanostructured catalysts for flameless gas
combustion**
Dr. Dieter Ostermann, neoxid GmbH, Neuss
- 12:00 **Lunch break**, networking, accompanying
exhibition and posters
- Nanotechnology Business Pitches in Hall 4 and 5**
(01:00 - 01:30 and 02:00 - 02:30 pm)
- 02:15 pm **Keynote: The future of nanoelectronics**
Dr. habil. Walter Riess, Department Head Science &
Technology, IBM Research, Zürich

Tuesday 2nd December 2014

Session 4: Architecture & Civil Engineering

Chair: Dr. Ralf Fellenberg, VDI TZ GmbH, Düsseldorf

09:00 am

Registration

09:30 am

Architecture and nano – it's a small world

Sylvia Leydecker, 100% interior, Köln

Nanostructurally-controlled binder for ultra high performance concrete UHPC

Thomas Deuse, Dyckerhoff GmbH, Wiesbaden

Thermally insulating materials based on aerogel-honeycomb composites

Dr. André Berkefeld, Zentrum für Luft und Raumfahrt e.V. (DLR), (German aeronautics and space research centre), Cologne

10:30 am

Coffee break, networking, accompanying exhibition and posters

11:00 am

Photo catalytic active coatings for the degradation of pollutants

Lutz Gradewald, NADICO Technologie GmbH, Langenfeld

FuturBeton - sustainable material with highly reactive ground granulated blast furnace slag through high kinetic processing by Simoloyer® technology

Birgit Funk, Zoz Group, Wenden

Light management using micro and nanostructures in architecture

Dr. Oliver Humbach, temicon GmbH, Dortmund

12:00

Lunch break, networking, accompanying exhibition and posters

Nanotechnology Business Pitches in Hall 4 and 5
(01:00 - 01:30 and 02:00 - 02:30 pm)'

02:15 pm

Keynote: The future of nanoelectronics

Dr. habil. Walter Riess, Department Head Science & Technology, IBM Research, Zürich

Tuesday 2nd December 2014

Session 5: Safety & Society

Chair: Dr. Thomas Kuhlbusch, IUTA e.V., Duisburg

03:00 pm

The Danish register for mandatory registration of nanoproducts

Dr. Flemming Ingerslev, The Danish Environmental Protection Agency, Copenhagen

Work safely with nano and advanced materials

Dr. Rolf Packroff, Federal Institute for Occupational Safety and Health, BAuA Dortmund

Responsibilities between evidence and negotiation

Dr. Jutta Jahnel, The Institute for Technology Assessment and Systems Analysis (ITAS)

04:00 pm

Coffee break, networking, accompanying exhibition and posters

04:30 pm

Nano risk governance. Experiences from regulatory approaches including expert dialogues

Dr. André Gaszó, Austrian Academy of Sciences, Vienna

The nanoparticle-protein corona - implications for nano-safety and -technology

Prof. Dr. Roland Stauber, Mainz University Medical Centre

Nanomaterial safety – recent developments from single materials to complex composites

Dr. Jürgen Schneckeburger, WWU University of Münster

05:30 pm

End of the event

Tuesday 2nd December 2014

Session 6: Electronics

Chair: Prof. Dr. Manfred Bayer, TU Dortmund

03:00 pm

**Intelligent micro and nanosystems –
when visions become reality**

Prof. Dr.-Ing. Klaus Kallis,
TU Dortmund

Graphene for future sensor applications

Dr. Robert Rölver, Robert Bosch GmbH, Gerlingen

**Flexible electronics on foils using ZnO nano
particles**

Prof. Dr.-Ing. Ulrich Hilleringmann,
University of Paderborn

04:00 pm

Coffee break, networking, accompanying exhibition
and posters

04:30 pm

IC-development and manufacturing in 3D

Armin Grünewald, University of Siegen

**Investigations on band-to-band tunnelling in
2D materials**

Prof. Dr. Joachim Knoch, RWTH Aachen

**Non-linear nano-optoelectronics for information
processing and for labs-on-a-chip - visions for
integrated circuits of tomorrow**

Prof. Dr. Cornelia Denz, WWU University of Münster

05:30 pm

End of the event

Nanotechnology Business Pitches

There will be Nanotechnology Business Pitches at lunch-time on both days of the conference in Halls 4 and 5

Contributors include:

- Bartels Mikrotechnik GmbH
- camLine GmbH
- Center for Optoelectronics and Photonics Paderborn CeOPP
- EO Elektronen-Optik-Service GMBH
- FRT GmbH
- Hysitron, Inc.
- MEAS Deutschland GmbH
- Nanoscribe GmbH
- ORONTEC
- Raith GmbH

Awards for the best exhibits and exhibitors

For the first time awards will be presented for the best exhibits and exhibitors as part of the evening event on 1st December in the Dortmunder U. A panel of experts will select the winners.

Selection criteria will include:

- What is the visual appearance of the stand?
- What is the content of the scientific and technical information?
- Are up-to-date developments shown which are relevant for society?
- Are the presenters convinced of their own work and are they inspiring?

Please find more information about the accompanying exhibition, the Business Pitches and the awards at www.nanokonferenz.de

DIRECTIONS/CONTACT

By car:

Direct connections via the B 1 (A 40) from the autobahns A 1 (Hansalinie), A 45 (Sauerlandlinie), A 2 (Berlin-Hannover-Dortmund-Oberhausen), A 42 (Duisburg-Dortmund), B 1 (A 44) (Dortmund-Kassel). Parking spaces for approx. 8,500 cars directly next to the Westfalenhallen.

By public transport:

Take the U 45 subway train from the main railroad station (Hauptbahnhof Dortmund) to the Westfalenhallen Kongresszentrum

By train:

By ICE, Intercity, Eurocity and InterRegio trains from almost all large cities to Dortmund main railroad station (Hauptbahnhof Dortmund).

By plane:

Direct connections from Dortmund Airport. About 12 km to the Westfalenhallen Dortmund.

Hotel reservations:

Hotel rooms can be booked through www.nano-konferenz/service.de

Venue:

Kongresszentrum
Westfalenhallen
Dortmund
Rheinlanddamm 200
44139 Dortmund

REPLY

I would like to confirm my binding reservation for the following events:

- 6th NRW Nano-Conference
- Evening events

- Session 1: New Materials
- Session 2: Health
- Session 3: Energy
- Session 4: Architecture & Civil Engineering
- Session 5: Safety & Society
- Session 6: Electronics

There is no fee for participating in the conference or for visiting the accompanying exhibition and poster sessions.

Please send us your registration by **20th Nov. 2014** by post or fax to: **+49 (0) 231/50-2 41 12.**

Online registration at: www.nanokonferenz.de

Name, first name

Company/organisation

Street, no.

Postcode, town

Telephone

Email

Date, signature

Company stamp

- You may publish my name in the list of participants
- Unfortunately I cannot take part.**

Please affix
stamp here

6th NRW Nano-Conference
dortmund-project
Töllnerstr. 9-11
44122 Dortmund



City of Dortmund
Economic Development
Agency

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