9th International Conference on Nanotoxicology

New tools in risk assessment of nanomaterials

18 – 21 September 2018
Dorint Kongresshotel Düsseldorf/Neuss
Germany

www.nanotox2018.org
The global nanotechnology market is expected to exceed US$ 125 Billion by 2026 [Research and Markets, 2018]. However, the health effects of nanomaterials have not been thoroughly investigated. Here we aim to develop standard measurement techniques for nanomaterial characterization and toxicity testing, and also prepare and supply certified reference materials for reliable nanosafety evaluation.

**General Information**

- **Establishment**: 1st of May, 2014 (10 year project)
- **Budget**: 4 million US/year
  - (Government 2.5 MUS/year + KRiSS 1.5 MUS/year)
- **Staffs**: 97 persons
  - KRiSS 51 persons (31 regular and 20 contracted)
  - Participating Labs, 46 persons

**Certified Reference Materials (CRM)**

- TiO₂ powder (57.00 ± 1.32 m²/g, AEROSIL® TiO₂ P25)
- SiO₂ NPs (20 & 50 nm)
- Au NPs (30 & 80 nm)

**Support domestic nanindustry to cope with nano-regulation**

**Development of synthetic protocol for (certified) reference nanomaterials**

**Support of international standardization in ISO/TC 229**

**Development of standard nanomaterial characterization and toxicity evaluation**

**Experimental results of nanomaterial characterization and toxicity evaluation**

---

"Along with the increased use of nanomaterials and nanoproducts, concerns about the safety of nanomaterials also become a rising issue. To assess the nanomaterial safety, establishment of reliable measurement methods for nanomaterial characterization and toxicity testing is essential. In this context, we are trying to develop standard measurement techniques for nanomaterial characterization/toxicity testing that can be agreed worldwide as well as in Korea."

- **Dr. Lee**, Ph.D.
  - Head, Center for Nanosafety Metrology

**Korea Research Institute of Standards and Science**

**NANOSAFETY METROLOGY CENTER**

tglee@kriss.re.kr
T. 82-42-868-5129
F. 82-42-868-5032
## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamble</td>
<td>4</td>
</tr>
<tr>
<td>Sponsors</td>
<td>5</td>
</tr>
<tr>
<td>Committees</td>
<td>6</td>
</tr>
<tr>
<td>Lecture Programme</td>
<td></td>
</tr>
<tr>
<td>Tuesday, September 18, 2018</td>
<td>7</td>
</tr>
<tr>
<td>Wednesday, September 19, 2018</td>
<td>8</td>
</tr>
<tr>
<td>Thursday, September 20, 2018</td>
<td>11</td>
</tr>
<tr>
<td>Friday, September 21, 2018</td>
<td>13</td>
</tr>
<tr>
<td>Poster Programme</td>
<td>16</td>
</tr>
<tr>
<td>Exhibition</td>
<td>31</td>
</tr>
</tbody>
</table>

**Wifi in the Stadthalle area:**
SSID: DECHHEMA  
PW: Nanotox2018

**Wifi in the hotel area:**
SSID: DorintHotelWiFi  
Select Konferenz -> Dorint  
Password: neuss
Dear Conference Participants,

In the name of the International Advisory and the Scientific Committees we welcome all of you to our 9th International Conference on Nanotoxicology in Germany.

It is 12 years ago when in 2006 the first conference on Nanotoxicology took place in Miami. The series was continued in Zurich (2008), Edinburgh (2010), Beijing (2012), Antalya (2014) and Boston (2016) and was completed by two intermediate meetings in Venice, thus this conference is the 9th in this series. 12 years of science in the field of nanomaterial-biology-interactions is leaving its mark across the globe especially in toxicology and materials risk assessment. We made strong progress in the research of nanomaterials and their biological effects, but we also face the situation that there exist a large number of published data on nanotoxicology without a sufficient relationship to “real-life” and the usefulness of many of these data is still questionable.

Thus, we may take some time to summarize the research of the last decade, but we also have to look ahead on what’s to come. The Nanotoxicology community will discuss during the forthcoming 9th International Conference on Nanotoxicology in more detail where we will go within the next decade and how appropriate are the assays we use to make our decisions about hazard and exposure of nanomaterials. The International Scientific Committee set the focus of the “NanoTox 2018” to “New tools in risk assessment of nanomaterials” such as read-across, grouping and categorization. With 14 plenary lectures presented by well-known distinguished experts on topics ranging from nanomedicine to systems toxicology, from predicting models to responsibility of data and further 12 parallel sessions spanning from tissue barriers to exposure assessment to databases to adverse outcome pathways and much more, we hope the program reflects our intent to bring together current research leaders in the field of nanotoxicology but also material scientists and chemists, manufacturers and regulators. This conference will offer a platform for all interested scientists, industry partners and regulatory bodies to talk about their thoughts on the latest results and developments in nanosafety research. The interdisciplinarity of nanotoxicology is a chance to discuss and act together with all key players of the different topics and share our knowledge. Especially, we encourage all of you to meet at the 2 afternoon poster sessions to have some drinks and snacks during your discussion of the impressive high-quality submissions. Furthermore, there will be an OECD workshop on the use of adverse outcome pathways as tool for monitoring and prediction of activities.

We are pleased to welcome participants from more than 30 countries all around the globe and we hope that you all enjoy also the beautiful conference venue, you may have the chance to visit the surrounding highlights in the region, such as the historical city of ZONS and the Old Town of Düsseldorf with its specialties, and you take the opportunity to interact with your colleagues and the young scientists and students.

On behalf of the organizers, we wish to thank all invited plenary speakers, the session speakers and poster presenters, as well as the session chairs for their support and for sharing their experience with us. Our special thanks go to the international scientific advisory board and the local scientific board who helped us to manage the organization of this event. Without their fundamental support, the congress would not have been possible.

Welcome to Nanotox2018!

Harald F. Krug
Chair of Nanotox 2018
NanoCASE GmbH
Engelburg, Switzerland

Christoph E. Steinbach
on behalf of DECHHEMA e.V.
Frankfurt/Main, Germany
SPONSORS / SUPPORTERS / MEDIA PARTNERS

PLATINUM SPONSOR

KRISS

Korea Research Institute of Standards and Science (KRISS)
Yuseong, Daejeon/PRC

GOLD SPONSOR

EBRC Consulting GmbH
Hannover/D

BRONZE SPONSOR

Sanofi-Aventis Deutschland GmbH
Frankfurt am Main/D

SUPPORTERS

BASF SE, Ludwigshafen/D
National Centers of Competence in Research (NCCR) Bio-inspired Materials, Fribourg/CH
Fonds der Chemischen Industrie im Verband der Chemischen Industrie e.V., Frankfurt am Main/D
NanoCASE GmbH, Engelburg/CH

MEDIA PARTNERS

Future Markets, Inc., Edinburgh/UK
Environmental Science: Nano, a publication of the Royal Society of Chemistry, Cambridge/UK
Nanoscale, a publication of the Royal Society of Chemistry, Cambridge/UK
Particle and Fibre Toxicology, a Springer Nature journal, London/UK
Toxicology Research, a publication of the Springer Nature journal, London/UK
### COMMITTEES

**LOCAL SCIENTIFIC BOARD AND ORGANIZING COMMITTEE**

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nils Bohmer</td>
<td>DEHEMA e.V., Frankfurt am Main/D</td>
</tr>
<tr>
<td>Tina Buerki-Thurnherr</td>
<td>Empa, St. Gallen/CH</td>
</tr>
<tr>
<td>Flemming R. Cassee</td>
<td>Utrecht University/NL and National Institute for Public Health and the Environment (RIVM), Bilthoven/NL</td>
</tr>
<tr>
<td>Andreas Förster</td>
<td>DEHEMA e.V., Frankfurt am Main/D</td>
</tr>
<tr>
<td>Cordula Hirsch</td>
<td>Empa, St. Gallen/CH</td>
</tr>
<tr>
<td>Harald Krug (Chair)</td>
<td>NanoCASE GmbH, Gaiserwald/CH</td>
</tr>
<tr>
<td>Karin Krug</td>
<td>NanoCASE GmbH, Gaiserwald/CH</td>
</tr>
<tr>
<td>Dana Kühnel</td>
<td>Helmholtz-Zentrum für Umweltforschung – UFZ, Leipzig/D</td>
</tr>
<tr>
<td>Thomas Kuhlbusch</td>
<td>Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA), Dortmund/D</td>
</tr>
<tr>
<td>Katja Nau</td>
<td>Karlsruher Institut für Technologie – KIT/D</td>
</tr>
<tr>
<td>Matthias Neumann</td>
<td>DEHEMA e.V., Frankfurt am Main/D</td>
</tr>
<tr>
<td>Matthias Rösslein</td>
<td>Empa, St. Gallen/CH</td>
</tr>
<tr>
<td>Roel Schins</td>
<td>IUF - Leibniz Institute for Environmental Medicine, Düsseldorf/D</td>
</tr>
<tr>
<td>Christoph Steinbach</td>
<td>DEHEMA e.V., Frankfurt am Main/D</td>
</tr>
<tr>
<td>Tobias Teckentrup</td>
<td>University of Duisburg-Essen/D</td>
</tr>
<tr>
<td>Klaus-Michael Weltring</td>
<td>Gesellschaft für Bioanalytik Münster e.V./D</td>
</tr>
</tbody>
</table>

**INTERNATIONAL SCIENTIFIC ADVISORY BOARD**

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alba Graciela Avila Bernal</td>
<td>Universidad de los Andes, Bogotá/COL</td>
</tr>
<tr>
<td>Alison Elder</td>
<td>University of Rochester, NY/USA</td>
</tr>
<tr>
<td>Ayse Basak Engin</td>
<td>Gazi University, Ankara/TR</td>
</tr>
<tr>
<td>Anders Baun</td>
<td>University of Copenhagen/DK</td>
</tr>
<tr>
<td>Chunying Chen</td>
<td>CAS - Chinese Academy of Sciences, Beijing/CHN</td>
</tr>
<tr>
<td>Erdem Coskun</td>
<td>NIST - National Institute of Standards and Technology, Gaithersburg, MD/USA</td>
</tr>
<tr>
<td>Philip Demokritou</td>
<td>Harvard T.H. Chan School of Public Health, Boston, MA/USA</td>
</tr>
<tr>
<td>Albert Duschl</td>
<td>Paris Lodron University of Salzburg/A</td>
</tr>
<tr>
<td>Bengt Fadeel</td>
<td>Karolinska Institutet, Stockholm/S</td>
</tr>
<tr>
<td>Gaku Ichihara</td>
<td>University of Tokyo/J</td>
</tr>
<tr>
<td>Val Kagan</td>
<td>University of Pittsburgh, PA/USA</td>
</tr>
<tr>
<td>Rawiwan Maniratanachote</td>
<td>National Nanotechnology Center (NANOTEC), Bangkok/THA</td>
</tr>
<tr>
<td>Bernd Nowack</td>
<td>Empa, St. Gallen/CH</td>
</tr>
<tr>
<td>Jonathan Powell</td>
<td>MRC Elsie Widdowson Laboratory, Cambridge/UK</td>
</tr>
<tr>
<td>Barbara Rothen-Rutishauser</td>
<td>Adolphe Merkle Institute, University of Fribourg/CH</td>
</tr>
<tr>
<td>Kai Savolainen</td>
<td>Finnish Institute of Occupational Health, FIOH, Helsinki/FIN</td>
</tr>
<tr>
<td>Otmar Schmid</td>
<td>Helmholtz Zentrum München/D</td>
</tr>
<tr>
<td>Anna Shvedova</td>
<td>National Institute of Occupational Safety and Health (NIOSH), Morgantown, WV/USA</td>
</tr>
<tr>
<td>Justin Teeguarden</td>
<td>Pacific Northwest National Laboratory, Richland, WA/USA</td>
</tr>
<tr>
<td>David Warheit</td>
<td>The Chemours Company, Wilmington, DE/USA</td>
</tr>
<tr>
<td>Peter Wick</td>
<td>Empa, St. Gallen/CH</td>
</tr>
<tr>
<td>Yuliang Zhao</td>
<td>CAS - Chinese Academy of Sciences, Beijing/CHN</td>
</tr>
</tbody>
</table>
## TUESDAY, 18 SEPTEMBER 2018

**Stadthalle**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00</td>
<td><strong>OPENING CEREMONY</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Chair:</strong> A. Duschl¹; ¹ University of Salzburg, Salzburg/A</td>
</tr>
<tr>
<td>15:00</td>
<td><strong>PLENARY LECTURE</strong>&lt;br&gt;History and future perspectives of Nanoparticles as Nanomedical Tools&lt;br&gt;J. Kreuter¹; ¹ University of Frankfurt, Frankfurt am Main/D</td>
</tr>
<tr>
<td>15:30</td>
<td><strong>PLENARY LECTURE</strong>&lt;br&gt;From particles to fibres to plates – everything nano?&lt;br&gt;M. MacFarlane¹; ¹ University of Cambridge, Leicester/UK</td>
</tr>
<tr>
<td>16:00</td>
<td><strong>COFFEE BREAK</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Chair:</strong> T. Kuhlbusch¹; ¹ German Federal Institute of Occupational Safety and Health (BAuA), Dortmund/D</td>
</tr>
<tr>
<td>16:30</td>
<td><strong>PLENARY LECTURE</strong>&lt;br&gt;The road to the market: Safer by design and grouping&lt;br&gt;A. Sips¹; ¹ National Institute of Public Health &amp; the Environment, Bilthoven/NL</td>
</tr>
<tr>
<td>17:00</td>
<td><strong>PLENARY LECTURE</strong>&lt;br&gt;Nanomaterials cytotoxicity assessment by biomechanics and risk management plan for nanomaterials implemented at Universidad de los Andes&lt;br&gt;H.F. Pastrana Rendon¹; ¹ Universidad de los Andes, Bogotá/CO</td>
</tr>
<tr>
<td>17:30</td>
<td><strong>KEYNOTE LECTURE</strong>&lt;br&gt;What we see is what we get? Reliability in (Nano)Science!&lt;br&gt;Nathan Nordland¹; ¹ European Institute of Technology and Scientific Assessment, Frankfurt am Main/D</td>
</tr>
<tr>
<td>18:00</td>
<td><strong>Informal Get Together (18:00 – 20:00)</strong></td>
</tr>
</tbody>
</table>
**9TH INTERNATIONAL CONFERENCE ON NANOTOXICOLOGY 2018 · NEW TOOLS IN RISK ASSESSMENT OF NANOMATERIALS**

**LECTURE PROGRAMME**

**WEDNESDAY, 19 SEPTEMBER 2018**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td>PLENARY LECTURE</td>
</tr>
<tr>
<td></td>
<td><strong>Dosimetry: The unsolved mystery in inhalation toxicology</strong></td>
</tr>
<tr>
<td></td>
<td>O. Schmid¹; ¹ Helmholtz Zentrum München, Munich/D</td>
</tr>
<tr>
<td>09:45</td>
<td>PLENARY LECTURE</td>
</tr>
<tr>
<td></td>
<td><strong>Statistics and harmonisation – unwanted tools</strong></td>
</tr>
<tr>
<td></td>
<td>J. Elliott¹; ¹ National Institute of Standards and Technology, Gaithersburg/USA</td>
</tr>
<tr>
<td>10:30</td>
<td>COFFEE BREAK</td>
</tr>
<tr>
<td>11:00</td>
<td>PLENARY LECTURE</td>
</tr>
<tr>
<td></td>
<td><strong>Advanced analytical approaches in understanding biological interactions of nanomaterials</strong></td>
</tr>
<tr>
<td></td>
<td>C. Chen¹; ¹ Chinese Academy of Science, Beijing/CN</td>
</tr>
<tr>
<td>11:30</td>
<td>PLENARY LECTURE</td>
</tr>
<tr>
<td></td>
<td><strong>Systems toxicology for nanomaterial safety</strong></td>
</tr>
<tr>
<td></td>
<td>T. Hartung¹; ¹ The Johns Hopkins University Bloomberg School of Public Health, Baltimore/USA</td>
</tr>
<tr>
<td>12:00</td>
<td>LUNCH BREAK</td>
</tr>
</tbody>
</table>

**Stadthalle**

<table>
<thead>
<tr>
<th>Chair:</th>
<th>A. Basak Engin;¹ Gazi University, Ankara/TR</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td><strong>PLENARY LECTURE</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Dosimetry: The unsolved mystery in inhalation toxicology</strong></td>
</tr>
<tr>
<td></td>
<td>O. Schmid¹; ¹ Helmholtz Zentrum München, Munich/D</td>
</tr>
</tbody>
</table>

**Stadthalle Heinrich-Heine 1-4**

<table>
<thead>
<tr>
<th>Chair:</th>
<th>A. Shvedova¹; Y. Zhao¹; ¹NIOSH/CDC, Morgantown/USA; ² National Center for Nanoscience and Technology of China, Beijing/D</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:00</td>
<td><strong>Nanomaterial-Microbe Crosstalk: Principles and Relevance for Sustainable Nanotechnology</strong></td>
</tr>
<tr>
<td></td>
<td>R. Stauber¹; ¹ Universität Mainz, Mainz/D</td>
</tr>
<tr>
<td>13:20</td>
<td><strong>Towards Nanomaterial Grouping: Linking physico-chemical Properties to Toxicity</strong></td>
</tr>
<tr>
<td></td>
<td>A. Haase¹; ¹ German Federal Institute for Risk Assessment (BfR), Berlin/D</td>
</tr>
<tr>
<td>13:40</td>
<td><strong>Systems toxicology approaches to ENM classification and prioritization</strong></td>
</tr>
<tr>
<td></td>
<td>P. Kinare¹; G. Scala²; V. Marwah³; A. Serra³; V. Fortino³; D. Greco¹; ¹ University of Tampere, Tampere/FIN</td>
</tr>
<tr>
<td>14:00</td>
<td><strong>Grouping of nanomaterials regarding their risk to the environment</strong></td>
</tr>
<tr>
<td></td>
<td>D. Köhnel¹; M. Herrchen²; K. Hund-Rinke³; C. Nickel³; E. van der Zalm⁴; Helmholtz-Zentrum für Umweltforschung (UFZ), Leipzig/²; Fraunhofer Institute for Molecular Biology and Applied Ecology IME, Schmallenberg/³; Institute for Energy and Environmental Technology e.V. (IUTA), Duisburg/⁴; German Federal Environmental Agency (UBA), Berlin/⁴</td>
</tr>
<tr>
<td>14:15</td>
<td><strong>Oxidative Potential of nanomaterials and associated oxidative stress responses determined by multiple assays</strong></td>
</tr>
<tr>
<td></td>
<td>B. Helack¹; T. Kuhlbusch²; L. Santiago-Aragao³; S. Boland³; A. Baez–Squiban⁴; A. Neumeyer-Sickinger⁵; C. Albrecht⁵; R. Schins⁶; ¹ Institute for Energy and Environmental Technology e.V. (IUTA), Duisburg/²; ² Federal Office for Occupational Safety and Occupational Medicine, Dortmund/³; ⁴ University Paris Diderot (UPD) (Sorbonne Paris Cité), Unit of Functional and Adaptive Biology, UMR CNRS 8251, Paris/F; ⁵ IUF–Leibniz Research Institute for Environmental Medicine, Duesseldorf/D</td>
</tr>
</tbody>
</table>

14:30 COFFEE BREAK
**LECTURE PROGRAMME**

**WEDNESDAY, 19 SEPTEMBER 2018**

### Stadthalle

**Adverse outcome pathways as a framework for risk assessment**

**Chair:** J. Shatkin¹; S. Halappanavar²; ¹Vireo Advisors LLC, Boston/USA; ²Health Canada, Ottawa/CDN

**15:00**

**Adverse Outcome Pathways as Tools for the Risk Assessment of Nanomaterials**

J. Ede¹; J. Shatkin²; ¹ Vireo Advisors, Edmonton, Alberta/CDN; ²Vireo Advisors, Boston/USA

**15:15**

**An approach for identifying potential key events for Adverse Outcome Pathway development using available nanotoxicity literature in a risk assessment context**

S. Halappanavar¹; ¹ Health Canada, Ottawa/CDN

**15:35**

**Relationship between inflammasome activation in vitro by engineered nanomaterials and inflammatory responses in vivo**

R. Vandebriel¹; ¹ National Institute for Public Health and the Environment, Bilthoven/NL

**15:55**

**Developing key events for Adverse Outcome Pathways from the nanotoxicity literature: considerations from an extensive literature review**

I. Lynch¹; ¹ The University of Birmingham, Birmingham/UK

**16:15**

**An adverse outcome pathway for ENM-induced risk of developing atherosclerotic plaques**

U. Vogel¹; S. Poulsen²; K. Knudsen²; A. Saber²; N. Jacobsen²; H. Wallin²; S. Halappanavar³; ¹ National Research Centre for the Working Environment, Copenhagen/DK; ² Statens Arbeidsmiljøinstitutt, Oslo/N; ³ Health Canada, Ottawa/CDN

### Heinrich-Heine 1-4

**Young women in science**

**Chair:** B. Rothen-Rutishauser¹; C. Hirsch¹; ¹ Adolphe Merkle Institute, University of Fribourg/CH; ²Empa - Swiss Federal Laboratories for Materials Science and Technology, St. Gallen/CH

**15:00**

**Introduction**

B. Rothen-Rutishauser¹; ¹ Adolphe Merkle Institute, University of Fribourg/CH

**15:10**

**Physico-chemical properties of different ZnO nanoparticles during artificial digestion**

L. Voss¹; P. Saloga¹; V. Stock¹; L. Boehmert¹; C. Kaestner¹; A. Breaunig¹; A. Thuenemann¹; S. Halappanavar¹; ¹ German Federal Institute for Risk Assessment, Berlin/D; ² German Federal Institute for Materials Research and Testing, Berlin/D

**15:27**

**Intestinal Absorption of Food Additive Nanoparticles and Microparticles by Human Volunteers**

A. Barreto da Silva¹; D. Koller¹; K. Kessler¹; R. Hewitt¹; R. Jugdaohsingh¹; J. Powell¹; ¹ Department of Veterinary Medicine, University of Cambridge, Cambridge/UK

**15:44**

**The Role of Disease State and Environmental Exposures on Gold Nanoparticle Brain Accumulation in Mice**

C. Wong¹; B. Gelein¹; A. Kennell¹; G. Oberdörster¹; A. Elder¹; ¹ University of Rochester, Rochester, NY/USA

**16:01**

**Investigating Alternative Models to Evaluate the Impact of Nanomaterials on Neutrophils during Inflammation**

R. Verdon¹; D. Brown¹; S. Gillies¹; A. Rossi¹; C. Tucker¹; V. Stone¹; H. Johnston¹; ¹ Heriot-Watt University, Edinburgh/UK; ² University of Edinburgh, Edinburgh/UK

**16:18**

**Conclusion**

C. Hirsch¹; ¹ Empa, St. Gallen/CH

**16:30**

**POSTERSESSION** (16:30 – 18:00)
EXTERNAL EVENT: EXPERT WORKSHOP

Wednesday, 19 September 2018 19:00

EXPERT WORKSHOP
Advancing Adverse Outcome Pathway (AOP) Development for Nanomaterial Risk Assessment and Categorization

Workshop Outline
This workshop stems from an Organisation for Economic Cooperation and Development Working Party on Manufactured Nanomaterials (WPMN) project that aims to advance the relevance of Adverse Outcome Pathways (AOP) for risk assessment of nanomaterials. The focus is to gain insights from, government, academic and industry experts on the current status, use, and future needs for AOPs as tools for the risk assessment of nanomaterials. Building on a plenary session on nanomaterials and AOP, the workshop is presented by the WPMN Project Team in collaboration with the H2020 SmartNanoTox Project expert group meeting.

The workshop will bring expert focus to the current status and future use of AOPs for the risk assessment of nanomaterials. Discussions will include technical, scientific and research hurdles in AOP development as well as knowledge gaps and data needs necessary for use of AOP frameworks for the risk assessment of MNs. The workshop format will be interactive and includes two panel discussions, deliberations, and vetting of ideas; one panel will focus on AOPs through the lens of nanotoxicology; the other on the use of AOPs for the risk assessment of MNs. Audience participation and feedback is essential for the success of this expert workshop.

AGENDA

<table>
<thead>
<tr>
<th>1. Introduction (Dr. Jo Anne Shatkin)</th>
<th>5 Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. The Two Faces of Inflammation: Adverse vs Normal Tissue Response</td>
<td></td>
</tr>
<tr>
<td>Point of view discussion with Dr. David Warheit and Dr. Bengt Fadeel</td>
<td>15 Minutes</td>
</tr>
<tr>
<td>3. Panel 1 Examining AOPs through the lens of nanotoxicology: technical, scientific and research questions</td>
<td>50 Minutes</td>
</tr>
<tr>
<td>(Chair: Dr. Sabina Halappanavar)</td>
<td></td>
</tr>
<tr>
<td>(a) NanoAOP Project Presentation</td>
<td>(10 Minutes)</td>
</tr>
<tr>
<td>(b) Deliberation: panel members discuss NanoAOP project and charge questions</td>
<td>(20 Minutes)</td>
</tr>
<tr>
<td>(c) Audience Questions and Discussion</td>
<td>(20 Minutes)</td>
</tr>
<tr>
<td>4. Panel 2 on the application and use of the AOP framework for the risk assessment of nanomaterials</td>
<td>50 Minutes</td>
</tr>
<tr>
<td>(Chair: Dr. Harald Krug)</td>
<td></td>
</tr>
<tr>
<td>(a) Deliberation: Panel members respond to charge questions</td>
<td>(30 Minutes)</td>
</tr>
<tr>
<td>(b) Audience Questions and Discussion</td>
<td>(20 Minutes)</td>
</tr>
</tbody>
</table>
THURSDAY, 20 SEPTEMBER 2018

Stadthalle

Chair: D. Kühnel1; 1 Helmholtz-Zentrum für Umweltforschung (UFZ), Leipzig/D

PLENARY LECTURE
Predicting nanomaterial flows to the environment: state of the art and new developments
B. Nowack¹; ¹ Empa-Swiss Federal Laboratories, St. Gallen/CH

PLENARY LECTURE
Nanoimaging of Tissue Materials and in situ Characterization
U. Graham²; ² University of Kentucky, Lexington/USA

PLENARY LECTURE
Results of a Long-term inhalation study with Ceria and Bariumsulphate nanoparticles
R. Landsiedel¹; ¹ BASF SE, Ludwigshafen/D

PLENARY LECTURE
In vitro models – the new in vivo?
S.H. Doak¹; ¹ Swansea University Medical School/UK

12:00 LUNCH BREAK

Stadthalle

Chair: O. Schmid 1; 1 Helmholtz Zentrum München GmbH, Neuherberg/D

Databases and nanoinformatics

Chair: H. Krug¹; K. Nau²; ¹ NanoCASE GmbH, Engelburg/CH; ² Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D

13:00 How Nature Indexing Helps You Find Nanotechnology Literature and Data Efficiently
A. Gheisi¹; ¹ SpringerNature, Heidelberg/D

13:20 DaNa2.0 - reliable information on the safety of nanomaterials
C. Steinbach³; N. Bohmer³; H. Krug²; K. Nau³; C. Marquardt²; D. Kühnel²; ³ DECHHEMA e.V., Frankfurt am Main/D; ² Karlsruhe Institute of Technology, Karlsruhe/D; ¹ Helmholtz Centre for Environmental Research GmbH – UFZ, Leipzig/D

13:40 eNanoMapper solutions for FAIR sharing of nanosafety data
E. Willighagen¹; ¹ Maastricht University, Maastricht/NL

14:00 Advanced tools for grouping and data quality curation for nanoregulation
C. Carnovale¹; B. Balusamy¹; S. Sabella¹; ¹ Istituto Italiano di Tecnologia, Genova/I

14:15 Literature Evaluation on Nanotoxicology – the Big Surprise
H. Krug¹; ¹ NanoCASE GmbH, Engelburg/CH

14:30 COFFEE BREAK
### Lecture Programme

#### Thursday, 20 September 2018

**Stadthalle**

**Long-term low dose exposure**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Authors/Institutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:00</td>
<td>Comparative multi-generation study of long-term effects of pristine and wastewater-borne silver and titanium dioxide nanoparticles on reproduction in Daphnia magna</td>
<td>K. Witte¹; S. Hartmann¹; R. Louch²; R. Zeumer³; C. Schlechtriem³; ¹ University of Siegen, Siegen/D; ² Faculty of Biology, Medicine and Health, University of Manchester/UK; ³ Fraunhofer IME, Schmallenberg/D</td>
</tr>
<tr>
<td>15:00</td>
<td>Optical Observation and Hyperspectral Characterization of Nanomaterials in Ex-vivo Tissue and Other Complex Matrixes</td>
<td>B. Cheatham¹; ¹ CytoViva Inc., Auburn/USA</td>
</tr>
<tr>
<td>15:20</td>
<td>Markers of oxidative stress in researchers of nanocomposites</td>
<td>D. Pelclova¹; V. Zdimal²; P. Kacer³; D. Bello⁴; ¹ 1st Medical Faculty, Charles University, Prague/CZ; ² Institute of Chemical Process Fundamentals of the CAS, Prague/CZ; ³ Biocv, 1st Faculty of Medicine, Charles University, Prague/CZ; ⁴ UMass, Lowell, Department of Biomedical and Nutritional Sciences, Zuckerber College of Health Sciences, Lowell/USA</td>
</tr>
<tr>
<td>15:20</td>
<td>ToxTracker reporter cell lines as a tool for mechanism-based (geno)toxicity screening of nanoparticles and read across</td>
<td>H. Karlsson¹; S. McCarrick¹; F. Cappellini¹; R. Derr²; J. Hedberg³; I. Odnevall-Wallinder³; G. Hendriks²; ¹ Karolinska Institutet, Stockholm/S; ² Toxys, Leiden/NL; ³ KTH Royal Institute of Technology, Stockholm/S</td>
</tr>
<tr>
<td>15:40</td>
<td>Outcome of an extended 90-day inhalation study with CeO₂ nanoparticles for prediction of long-term effects</td>
<td>D. Schwotzer¹; H. Ernst¹; M. Niehof¹; D. Schaudien¹; H. Kock¹; J. Knebel¹; D. Ritter¹; T. Hansen¹; O. Creutzenberg¹; ¹ Fraunhofer Institut für Toxikologie und Experimentelle Medizin ITEM, Hannover/D</td>
</tr>
<tr>
<td>15:40</td>
<td>A multiparametric platform for safety testing of nanoparticles</td>
<td>J. Fleddermann¹; J. Susewind²; H. Peuschel¹; J. Przibilla²; S. Kiefer¹; A. Kraegeloh¹; ¹ INM - Leibniz Institute for New Materials, Saarbrücken/D; ² Pharmacelsus GmbH, Saarbrücken/D</td>
</tr>
<tr>
<td>16:00</td>
<td>Effects of longterm exposures of primary human bronchial epithelial cells in air-liquid interface cultures to atmospheric particulate matter or cerium oxide nanoparticles</td>
<td>S. Boland¹; ¹ University Paris Diderot (Sorbonne Paris Cité), Paris cedex 13/F</td>
</tr>
<tr>
<td>16:00</td>
<td>NanoGenotox – Automatable Determination of the Genotoxicity of Nanoparticles with DNA-based Optical Assays</td>
<td>M. Wegmann¹; D. Geißler¹; T. Jochum²; M. Hannemann³; V. Somma¹; K. Hoffmann¹; J. Niehaus¹; D. Roggenbuck¹; U. Resch-Genger²; ¹ Federal Institute for Materials Research and Testing (BAM), Berlin/D; ² Centrum of applied nanotechnology - Hamburg GmbH, Hamburg/D; ³ MEDIPAN GMBH, Dahlewitz/Berlin/D</td>
</tr>
<tr>
<td>16:15</td>
<td>RNA-sequencing reveals long-term effects of silver nanoparticles on human lung cells indicative of oncogenic cell transformation</td>
<td>A. Gliga¹; S. Di Bucchianico¹; J. Lindvall¹; B. Fadeel¹; H. Karlsson¹; ¹ Institute of Environmental Medicine, Karolinska Institutet, Stockholm/S; ² Science for Life Laboratory, Stockholm University, Stockholm/S</td>
</tr>
<tr>
<td>16:15</td>
<td>Precision Cut Liver Slices as a promising ex vivo model for nanosafety studies</td>
<td>R. Bartucci¹; Y. Boersma³; C. Åberg³; P. Olinga³; A. Salvati²; ¹ University of Groningen, Groningen/NL; ² Groningen Research Institute of Pharmacy (GRIP), University of Groningen (RUG), Groningen/NL</td>
</tr>
</tbody>
</table>

**Heinrich-Heine 1-4**

**Cheap and robust tests**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Authors/Institutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:00</td>
<td>Comparatives multi-generation study of long-term effects of pristine and wastewater-borne silver and titanium dioxide nanoparticles on reproduction in Daphnia magna</td>
<td>Chair: R. Schins¹; A. Elder²; ¹IUF – Leibniz Research Institute for Environmental Medicine, /D; ²University of Rochester/USA</td>
</tr>
<tr>
<td>15:00</td>
<td>Comparative multi-generation study of long-term effects of pristine and wastewater-borne silver and titanium dioxide nanoparticles on reproduction in Daphnia magna</td>
<td>Chair: A. Duschl¹; C. Chen²; ¹ University of Salzburg, Salzburg/A; ² Chinese Academy of Science, Beijing/CN</td>
</tr>
<tr>
<td>15:20</td>
<td>Optical Observation and Hyperspectral Characterization of Nanomaterials in Ex-vivo Tissue and Other Complex Matrixes</td>
<td>Chair: A. Duschl¹; C. Chen²; ¹ University of Salzburg, Salzburg/A; ² Chinese Academy of Science, Beijing/CN</td>
</tr>
<tr>
<td>15:20</td>
<td>ToxTracker reporter cell lines as a tool for mechanism-based (geno)toxicity screening of nanoparticles and read across</td>
<td>Chair: A. Duschl¹; C. Chen²; ¹ University of Salzburg, Salzburg/A; ² Chinese Academy of Science, Beijing/CN</td>
</tr>
</tbody>
</table>

### Conference Dinner

19:30

**Vogthaus Neuss, Münsterplatz 10, Neuss**

(separate registration necessary)
FRIDAY, 21 SEPTEMBER 2018

Stadthalle

Read across of nanomaterials and risk assessment

Chair: T. Kuhlbusch¹; A. Oomen²; ¹ German Federal Institute of Occupational Safety and Health (BAuA), Dortmund/D; ² The Dutch National Institute for Public Health and the Environment (RIVM), Bilthoven/NL

09:00 The nanoGRAVUR framework to group (nano)materials for their occupational, consumer, environmental risks based on a harmonized set of material properties
W. Wohlleben¹; B. Funk²; D. Göhler³; A. Haase⁴; B. Hellack⁵; K. Hund-Rinke⁶; C. Schumacher⁷; M. Wiewmann⁸; T. Kuhlbusch⁹; ¹ BASF SE, Ludwigshafen/D; ² ZOZ GmbH, Wenden/D; ³ TU Dresden, Dresden/D; ⁴ German Federal Institute for Risk Assessment (BfR), Berlin/D; ⁵ Institut für Energie- und Umwelttechnik e.V. (IUTA), Duisburg/D; ⁶ Fraunhofer Institute IME, Schmallenberg/D; ⁷ Institut für Arbeitsschutz der Deutschen Gesetzliche Unfallversicherung (DGUV-IFA), St. Augustin/D; ⁸ IBF R&D Institute for Lung Health gGmbH, Münster/D; ⁹ Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA), Dortmund/D

09:20 Developing a framework for assessing the human health risks of nanomaterials in commerce in Canada
C. Lemieux¹; D. Vladisavljevic¹; Y. Zhang¹; M. Hill¹; ¹ Health Canada, Ottawa/CDN

09:40 Nano Toxicity Ranking – Pathway-based Bench Mark Dose Response Modelling to Rank Inflammogenic and Pro-fibrotic Responses of Nanomaterials
S. Halappanavar¹; J. Nikota¹; D. Wu¹; A. Williams¹; U. Vogel¹; ¹ Health Canada, Ottawa, Canada/CDN; ² Health Canada, Ottawa/CDN; ³ National Research Center for the Working Environment, Copenhagen/DK

10:00 Computational approaches to support nanomaterial grouping
A. Bahl¹; W. Wohlleben²; B. Hellack³; M. von Bergen⁴; P. Nollau⁵; F. Chainiaux⁶; M. Salmon⁷; A. Dinischiotu⁸; J. Laloy⁹; M. Wiewmann¹⁰; A. Haase¹¹; B. Renard¹²; ¹ German Federal Institute for Risk Assessment (BfR) & Robert Koch Institute, Berlin/D; ² BASF SE, Ludwigshafen am Rhein, Germany, Ludwigshafen/D; ³ Institute for Energy and Environmental Technology e.V. (IUTA), Duisburg/D; ⁴ Helmholtz Centre for Environmental Research - UFZ, Leipzig/D; ⁵ University Medical Center Hamburg-Eppendorf, Hamburg/D; ⁶ University of Namur/B; ⁷ StratiCELL SA, Gembloux/B; ⁸ University of Bucharest/RO; ⁹ IBF R&D gGmbH Institute for Lung Health, Münster/D; ¹⁰ German Federal Institute for Risk Assessment (BfR), Berlin/D; ¹¹ Robert Koch Institute, Berlin/D

10:15 Weighted Gene Correlation Network Analysis to develop nanomaterial grouping strategies
I. Kratochvil¹; A. Bannuscher¹; K. Kettler¹; A. Haase²; M. von Bergen³; K. Schubert¹; ¹ Helmholtz-Centre for Environmental Research - UFZ, Leipzig/D; ² German Federal Institute for Risk Assessment (BfR), Berlin/D

10:30 COFFEE BREAK

Heinrich-Heine 1-4

Tissue barriers

Chair: T. Bürki-Thurnherr¹; H. Bouwmeester²; ¹ Empa - Swiss Federal Laboratories for Materials Science and Technology, St. Gallen/CH; ² Wageningen University, Wageningen/NL

09:00 Behavior and effects of nanoparticles at and beyond the blood-tissue barrier in vivo
M. Rehberg¹; F. Krombach²; ¹ Helmholtz Zentrum München GmbH, München/D; ² LMU Munich, München/D

09:20 Developmental effect of ENM: development of a novel in vitro model for the screening of nanomaterial toxicity to embryonic tissues
V. Lacconi¹; A. Pietroiusti¹; M. Massimiani¹; L. Campagnolo¹; ¹ University of Rome „Tor Vergata“, Rome/IT

09:40 Relevance of the pulmonary response for the extra-pulmonary effects of inhaled carbon nanoparticles
T. Stöger¹; ¹ Helmholtz Zentrum München GmbH, Neuherberg / München/D

10:00 Nanoparticles at the lung epithelial barrier – insights into particle uptake and immune responses
M. Geppert¹; R. Mills-Goodlet¹; B. Grotz¹; M. Sageder¹; M. Himly¹; A. Duschl¹; ¹ University of Salzburg, Salzburg/A

10:15 Gene expression profiling of an ex vivo human placenta perfusion model following exposure to engineered nanomaterials
S. Chortarea¹; P. Manser²; V. Fortino³; P. Wick³; D. Greco³; T. Bürki-Thurnherr¹; ¹ Empa - Swiss Federal Laboratories for Materials Science and Technology, St. Gallen/CH; ² Empa, St. Gallen/CH; ³ University of Eastern Finland, Joensuu/FIN; ⁴ University of Tampere, Tampere/FIN
### FRIDAY, 21 SEPTEMBER 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
<th>Chair</th>
<th>Presenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00</td>
<td>Silver nanoparticle deposition to the lung lobes of Sprague-Dawley rat</td>
<td>Stadthalle</td>
<td>F. Cassee¹; P. Demokritou²; ¹ National Institute for Public Health and the Environment, Bilthoven/NL; ² Harvard T. H. Chan School of Public Health, Boston/USA</td>
<td>I. Yu¹; J. Park²; J. Kim³; M. Jo³; Y. Kim¹; K. Jeon¹; J. Lee⁴; E. Fasutman; K. Ahn⁵; G. Oberdörster⁶; ¹ HCTm, Icheon/ROK; ² Chung-Ang University, Seoul/ROK; ³ Hoseo University, Asan/ROK; ⁴ University of Washington, Seattle/USA; ⁵ Hanyang University, Ansan/ROK; ⁶ University of Rochester/USA</td>
</tr>
<tr>
<td>11:00</td>
<td>In Vivo Interaction of Food-Grade Titanium Dioxide Particles with Intestinal Immune Cells</td>
<td>Heinrich-Heine 1-4</td>
<td>J. Powell¹; N. Krüger²; ¹ University of Cambridge/UK; ² Evonik Resource Efficiency GmbH, Hanau/D</td>
<td>J. Robertson¹; J. Wills²; M. Miniter²; R. Hewitt³; J. Powell²; ³ MRC - Elsie Widdowson Laboratory, Cambridge/UK; ² Department of Veterinary Medicine, University of Cambridge/UK</td>
</tr>
<tr>
<td>11:20</td>
<td>Assessing the dispersion of nanocellulose fibers and crystals in biological and environmental media and its role in bioactivity</td>
<td>Stadthalle</td>
<td>J. Powell¹; N. Krüger²; ¹ University of Cambridge/UK; ² Evonik Resource Efficiency GmbH, Hanau/D</td>
<td>J. Powell¹; N. Krüger²; ¹ University of Cambridge/UK; ² Evonik Resource Efficiency GmbH, Hanau/D</td>
</tr>
<tr>
<td>11:40</td>
<td>Dosimetry and monitoring of nanomaterials at single cell level by means of label-free techniques</td>
<td>Stadthalle</td>
<td>F. Cassee¹; P. Demokritou²; ¹ National Institute for Public Health and the Environment, Bilthoven/NL; ² Harvard T. H. Chan School of Public Health, Boston/USA</td>
<td>J. Estrela-Lopis¹; C. Merker²; J. Böttner³; T. Venus⁴; T. Meyer⁵; V. Calcagno; J. Keller; R. Landsiedel; D. Schwotzer⁶; O. Creutzemberg⁷; ¹ Universität Leipzig/D; ² BASF SE, Ludwigshafen/D; ³ Fraunhofer ITEM, Hannover/D</td>
</tr>
<tr>
<td>11:40</td>
<td>Water Solubility of non-surface treated Synthetic Amorphous Silica (SAS) using a dedicated OECD 105 protocol</td>
<td>Heinrich-Heine 1-4</td>
<td>J. Powell¹; N. Krüger²; ¹ University of Cambridge/UK; ² Evonik Resource Efficiency GmbH, Hanau/D</td>
<td>J. Nolde¹; T. Schuster²; N. Krueger³; ¹ AnaPath GmbH, Oberbuchsen/CH; ² Wacker Chemie AG, Munich/D; ³ Independent Consultant in Toxicology &amp; Pathology, Alconbury/UK; ¹ EPL Inc., Research Triangle Park, North Carolina/USA; ² Evonik Resource Efficiency GmbH, Hanau/D; ³ Solvay S.A., Brussels/B</td>
</tr>
<tr>
<td>12:00</td>
<td>Relationship between exposure and lung dose using MPPD models and particle concentration measurement techniques</td>
<td>Stadthalle</td>
<td>F. Cassee¹; P. Demokritou²; ¹ National Institute for Public Health and the Environment, Bilthoven/NL; ² Harvard T. H. Chan School of Public Health, Boston/USA</td>
<td>T. Hammer¹; H. Fissan²; J. Wang³; ¹ ETH Zürich/CH; ² Center for Nanointegration Duisburg – Essen (CENIDE), Duisburg/D</td>
</tr>
<tr>
<td>12:00</td>
<td>Evaluating toxicity of nanoparticle exposure in gastrointestinal tract: changes in microbiota composition and induction of colitis in mice</td>
<td>Heinrich-Heine 1-4</td>
<td>J. Powell¹; N. Krüger²; ¹ University of Cambridge/UK; ² Evonik Resource Efficiency GmbH, Hanau/D</td>
<td>W. Feng¹; ¹ Institute of High Energy Physics, Chinese Academy of Sciences (CAS), Beijing/China</td>
</tr>
<tr>
<td>12:15</td>
<td>Defining Dose Parameters of Airborne Particles in Toxicological Studies: Correlating in vivo and in vitro dosimetry</td>
<td>Stadthalle</td>
<td>F. Cassee¹; P. Demokritou²; ¹ National Institute for Public Health and the Environment, Bilthoven/NL; ² Harvard T. H. Chan School of Public Health, Boston/USA</td>
<td>G. Oberdörster¹; ¹ University of Rochester, NY/USA</td>
</tr>
<tr>
<td>12:15</td>
<td>Toxicokinetic and proteomic investigations to analyze the mode of action of silver nanoparticles</td>
<td>Heinrich-Heine 1-4</td>
<td>J. Powell¹; N. Krüger²; ¹ University of Cambridge/UK; ² Evonik Resource Efficiency GmbH, Hanau/D</td>
<td>S. Juling¹; A. Oberemm²; C. Meckert³; J. Potkura³; A. Niedzwiecka³; H. Sieg³; A. Braeuning³; A. Lampen³; ² German Federal Institute for Risk Assessment, Berlin/D</td>
</tr>
<tr>
<td>12:30</td>
<td>Lunch Break</td>
<td>Stadthalle</td>
<td>F. Cassee¹; P. Demokritou²; ¹ National Institute for Public Health and the Environment, Bilthoven/NL; ² Harvard T. H. Chan School of Public Health, Boston/USA</td>
<td>F. Cassee¹; P. Demokritou²; ¹ National Institute for Public Health and the Environment, Bilthoven/NL; ² Harvard T. H. Chan School of Public Health, Boston/USA</td>
</tr>
</tbody>
</table>

**Chair:** A. Haase¹; ¹ German Federal Institute for Risk Assessment (BfR), Berlin/D

**PLENARY LECTURE**

**Understanding Intestinal Absorption of Nanoparticles and Microparticles will Hail some of our Greatest Breakthroughs in Physiological, Therapeutic and Environmental Sciences.**

J. Powell¹; ¹ Department of Veterinary Medicine, University of Cambridge/UK

**PLENARY LECTURE**

**Future-proof approaches for NM risk assessment (or what is the information need from regulators and policymakers)**

M. Groenewold¹; ¹ RIVM, Bilthoven/NL

**AWARD CEREMONY**

15:15 End of the conference
The future is not what you dream, but what you make.

Our innovations help cities use less energy, make the air we breathe cleaner and turn electric transport into a practical reality. That’s why at BASF, we’re optimistic about the future.

Find out more at wecreatechemistry.com
Cheap and robust nanotox tests

P 01.01 Dermal exposure characterization of nanomaterials from Canadian cosmetics and personal care products
S. Halappanavar¹; A. Boyadiev²; D. Wu³; G. Shah⁴; C. Sutton⁵; ¹ Health Canada, Ottawa, Canada/CDN; ² Health Canada, Ottawa/CDN; ³ Laboratory for Skin Cancer Research, CHU-Q (CHUL) Res. Ctr., Quebec/CDN

P 01.02 Smart Tools for Nano Safety Assessment - Precision Cut Lung Slices Method for Screening Inflammogenic and Pro-fibrotic Nanomaterials
S. Halappanavar¹; L. Rahman²; K. Gelda³; J. Nikota³; D. Wu³; ¹ Health Canada, Ottawa, Canada/CDN; ² Health Canada, Ottawa/CDN

P 01.03 Investigation of the change in the toxicological properties of microelements in the synthesis of nanofertilizer
M. Anisovich¹; S. Azizbekyan²; E. Yurkevich¹; ¹ Republican Unitary Enterprise «Scientific and Practical Center of Hygiene»; Minsk/BLR; ² National Academy of Sciences of Belarus, Minsk/BLR

P 01.04 Effects of ultrasonic dispersion energy on the in vitro toxicity of amorphous SiO₂ Nanomaterials
M. Wiemann¹; A. Vennemann¹; G. Lindner²; U. Brinkmann³; N. Krueger³; T. Schuster³; M. Stintz⁴; R. Retamal Marin⁴; ¹ IBE R&D Institute for Lung Health gGmbH, Münster/D; ² Evonik Resource Efficiency GmbH, Wesseling/D; ³ Evonik Resource Efficiency GmbH, Hanau/D; ⁴ TU Dresden, Institut für Verfahrenstechnik und Umwelttechnik, Dresden/D

P 01.05 Silver Nanoparticles Lead to Antibiotic Resistance in Bacteria
C. Kaweeteerawat¹; P. Na Ubol¹; S. Sangmuang¹; S. Aueviriyavit¹; R. Maniratanachote¹; ¹ NANOTEC, Pathum Thani/T

P 01.06 The cellular effects of mesoporous silica nanoparticles are associated with their physicochemical properties
D. Breznan¹; D. Das²; C. MacKinnon-Roy²; J. O'Brien²; S. Nimesh²; S. Bernatchez³; A. Sayari³; N. DeSilva³; M. Hill³; P. Kumarathasan⁴; R. Vincent⁵; ¹ Health Canada, Ottawa/CDN; ² Health Canada, Ottawa/CDN

P 01.07 Human liver 3D spheroids as an advanced in vitro model for toxicity testing
E. Ejie¹; M. Dusinska¹; E. Mariussen¹; E. Rundén-Pran¹; ¹ NILU - Norwegian institute for air research, Kjeller/N

P 01.08 Pushing the limits in nanotoxicity in vitro testing: A label-free proliferation assay allows time-resolved detection of nanosilver cytotoxicity at high particle concentrations
S. Mues¹; I. Lilge¹; H. Schönherr¹; B. Kemper¹; J. Schnekenburger¹; ¹ Westfälische Wilhelms-Universität Münster, Biomedical Technology Center, Muenster/D; ² Universität Siegen, Physikalische Chemie, Siegen/D; ³ Westfälische Wilhelms-Universität Münster, Muenster/D

P 01.09 Assessment of nano particle induced DNA strand breaks using gTOXXs technique in vitro
D. Dressler¹; ¹ BioTeSys GmbH, Esslingen/D

P 01.10 Assessing cytotoxicity effects and the fate of quantum dots
F. Part¹; E. De Vito Francesco¹; S. Kücki¹; M. Debreczeny¹; M. Huber-Humer¹; E. Ehmoser¹; M. Fürhacker¹; ¹ University of Natural Resources and Life Sciences, Vienna (BOKU), Vienna/A

P 01.12 Label-free impedance analysis of the cytotoxic effects of nanomaterials under dynamic in-vivo like conditions
I. Rios Mondragon¹; T. Hare¹; A. Sauter¹; M. Bystrzejewski¹; I. Grudziński¹; M. Cimpan¹; ¹ University of Helsinki, Helsinki University/FIN; ² Royal Norwegian Naval Academy, Bergen/N; ³ University of Warsaw, Warsaw/PL; ⁴ Medical University of Warsaw, Warsaw/PL

P 01.13 Effects of nano-Dy, nano-Er and nano-Zn on basidiomycetous fungi to biodegrade xenobiotic aromatic dye compounds
M. Kähkönen¹; K. Hilden²; ¹ University of Helsinki, Helsinki University/FIN; ² University of Helsinki, Helsinki/FIN

P 01.14 A pipeline for high throughput analysis of nanoparticle genotoxicity
L. Bobyk¹; A. Tarantini¹; F. Dusser¹; D. Beat¹; T. Douki¹; E. Valsami-Jones¹; I. Lynch¹; M. Carriere¹; ¹ CEA Commissariat à l’Énergie Atomique, Grenoble/F; ² Univ. Grenoble Alpes, Grenoble/F; ³ univ. of Birmingham, Birmingham/UK; ⁴ CEA Grenoble, Grenoble/F

P 01.15 Cryopreserved Assay Ready Cells used instantly for safety assessment of nanoparticles
V. Mazurov¹; O. Wehmeier¹; A. Loa¹; C. Gimmeler¹; ¹ acCELLerate GmbH, Hamburg/D; ² Zentrum für Angewandte Nanotechnologie CAN, Fraunhofer IAP, Hamburg/D

Databases and nanoinformatics

P 02.01 DaNa2.0 – Diverse and reliable information on environmental safety of nanomaterials
D. Kühnel¹; C. Steinbach²; N. Bohmer²; H. Krug³; K. Nau³; C. Marquardt⁴; ¹ Helmholtz-Zentrum für Umweltforschung (UFZ), Leipzig/D; ² DECHEMA e.V., Frankfurt a.M./D; ³ NanoCASE GmbH, Engelburg/CH; ⁴ KIT Karlsruhe, Karlsruhe/D

P 02.02 DaNa2.0 - A Concept Based Search Approach in the Area of Nanotoxicology
C. Marquardt¹; K. Nau¹; A. Schmidt²; ¹ Karlsruhe Institute of Technology (KIT), Karlsruhe/D; ² Karlsruhe Institute of Technology (KIT) and University of Applied Sciences Karlsruhe, Karlsruhe/D
P 02.04  **Systematic analysis of transcriptomics data to identify nano-specific toxicity profiles**  
M. Burkard¹; A. Betz²; K. Schirmer²; A. Zupanic²; ¹ Eawag Aquatic Water Science, Duebendorf/CH; ² Eawag Aquatic Water Science, Dübenodo/CH

P 02.06  **Nanomaterial safety data integration with eNanoMapper database**  
G. Tancheva¹; N. Ieliajkova¹; N. Kocher²; V. Paskaleva²; P. Nymark³; M. Apostolova³; A. Haase³; ¹ Ideaconsult Ltd, Sofia/BG; ² University of Plovdiv, Plovdiv/BG; ³ Karolina Institute, Institute for Environmental Medicine, Stockholm/S; ⁴ Institute of Molecular Biology – Bulgarian Academy of Sciences, Sofia/BG; ⁵ German Federal Institute for Risk Assessment (BfR), Department of Chemical and Product Safety, Berlin/D

**Developmental and degenerative effect of nanomaterials**

P 03.01  **Acute hepatic injury and renal injury of 50nm-polystyrene nanoparticles with cisplatin or paraquat in mice are reduced to surface charge and palladium**  
K. Isoda¹; T. Nozawa¹; Y. Taira¹; I. Taira¹; I. Ishida¹; ¹ Teikyo Heisei University, Tokyo/J

P 03.02  **Carbon nanoparticles induce cell cycle arrest, senescence and loss of gap junctional intracellular communication in lung epithelial cells**  
T. Spannbrucker¹; N. Ale-Agha¹; T. Hornstein¹; J. Haendeler²; K. Unfried²; ¹ IUF - Leibniz-Institut für umweltmedizinische Forschung, Düsseldorf/D; ² IUF - Leibniz-Institut für umweltmedizinische Forschung and Clinical Chemistry, University of Düsseldorf, Düsseldorf/D

P 03.03  **Perivascular accumulation of denatured proteins in the mouse brain following maternal exposure to carbon black nanoparticle**  
A. Onoda¹; Y. KONDO²; S. MIYAICA²; K. TAKEDA²; M. Umezawa³; ¹ Nagoya University Hospital, Nagoya, Aichi/J; ² Tokyo University of Science, Noda, Chiba/J; ³ Tokyo University of Science Yamaguchi, Sanyo-onoda, Yamaguchi/J; ⁴ Tokyo University of Science, Katsushika, Tokyo/J

P 03.05  **Toxicity studies of iron oxide and gold nanoparticles in planarians**  
M. Hesler¹; A. Tran¹; Y. Kohl³; ¹ Fraunhofer IBMT, Sulzbach/D

**Future perspectives for nanomaterials in medicine and medical technology**

P 04.02  **Polydopamine/Transferrin Hybrid Nanoparticles for Targeted Cell Killing**  
D. Hauser¹; A. Milosevic¹; L. Steinmetz¹; D. Vanhecke¹; D. Septiadi¹; A. Petri-Fink¹; V. Ball²; B. Rothen-Rutishauser²; ¹ University of Fribourg, Fribourg/CH; ² Université de Strasbourg, Strasbourg/F

P 04.03  **Graphene effects on mesenchymal stem cell differentiation**  
V. Bordoni¹; M. Orecchioni¹; G. Reina²; S. Thiele²; G. Cuniberti³; M. Rauner³; A. Bianco³; L. Delogu⁴; ¹ University of Sassari, Sassari/I; ² CNR-Institut de Biologie Moléculaire et Cellulaire, Strasbourg/F; ³ University of Technology Dresden, Dresden/D; ⁴ University of Trieste, Trieste/I

P 04.04  **The importance of the swine model for the immune characterization of graphene nanomaterials**  
V. Bordoni¹; N. CHAU¹; P. Nicolussi¹; A. Bianco¹; L. Delogu¹; ¹ University of Sassari, Sassari/I; ² CNRS-Institut de Biologie Moléculaire et Cellulaire, Strasbourg/F; ³ Istituto Zooprofilattico Sperimentale della Sardegna, Sassari/I; ⁴ CNRS-Institut de Biologie Moléculaire et Cellulaire, Strasbourg/F; ⁵ University of Trieste, Trieste/I

P 04.05  **Reduced Toxicity of Near-Infrared Fluorescent Nanoparticle by Covalent Modification of Poly(Ethylene Glycol) for Deep Bioimaging**  
M. Umezawa¹; M. Kamimura¹; A. Honda¹; K. Soga¹; ¹ Tokyo University of Science, Katsushika, Tokyo/J
P 04.06 | ZnO nanoparticles act as supportive therapy in attenuating colitis by editing of gut bacteria in mice
H. Chen¹; B. Wang²; Z. Chai³; Y. Zhao⁴; W. Feng¹; ¹ Institute of High Energy Physics, Chinese Academy of Sciences (CAS), Beijing/CN

P 04.07 | Effect of combined exposure to influenza A viral infection in the pulmonary response to graphene oxide sheets
A. Rodrigues¹; C. Bussy¹; ¹ The University of Manchester, manchester/UK

P 04.08 | Vibrational spectroscopic imaging to evaluate the nanotoxicity of magnetite particles on human cells
K. Eberhardt¹; J. Demut²; D. Cialla-May³; J. Clement³; C. Matthäus⁴; J. Popp⁴; ¹ Leibniz-Institut für Photonische Technologien e.V., Jena/D; ² Jena University Hospital, Jena/D; ³ Leibniz-Institut für Photonische Technologien, Jena/D; ⁴ Friedrich-Schiller-University Jena, Jena/D

V. Kagan¹; M. Shurin¹; G. Shurin¹; S. Burkert²; D. White¹; O. Kapralov¹; I. Vlasova¹; A. Shvedova²; A. Star¹; ¹ University of Pittsburgh, Pittsburgh/USA; ² NIOSH/CDC, Morgantown/USA

P 04.10 | Synthesis, redox activity and biocompatibility of elemental carbon nanoparticles for PDT/PTT therapy
I. Kokalari¹; E. Gazzano²; R. Gassino³; A. Giovannozzi⁴; L. Croin⁵; A. Rossi¹; G. Perrone¹; J. Ponti¹; M. Monopoli⁵; C. Riganti³; I. Fenoglio¹; ¹ University of Turin, Dept. of Chemistry, Turin/I; ² Politecnico di Torino, Dept. of Electronics and Telecommunications, Turin/I; ³ Leibniz-Institut für Photonische Technologien e.V., Jena/D; ⁴ Polish National Agency for Academic Exchange, Warsaw/PL; ⁵ University of Duisburg-Essen, Essen/D

P 04.14 | Superparamagnetic iron oxide nanoparticles (SPIONs) as biocompatible drug carriers for theranostic applications
C. Janko¹; K. Nguyen¹; H. Unterweger¹; M. Mühlberger¹; S. Lyer¹; R. Friedrich¹; M. Pöttler¹; R. Tietze¹; I. Cicha¹; C. Alexiou¹; ¹ Universitätsklinik Erlangen, Erlangen/D

P 04.15 | Novel tools towards deciphering pulmonary delivery and subsequent 3D cellular distribution of nanomaterials
L. Yang¹; ¹ Helmholtz Zentrum München / Technical University of Munich, Neuherberg/D

P 04.16 | Redox-active cerium oxide nanoparticles (CNP) as a new therapeutical tool in treatment of cancer
E. Aplak¹; L. Schäfer¹; P. Brenneisen¹; ¹ Biochemie und Molekularbiologie 1/Heinrich-Heine Universität, Düsseldorf/D

P 04.17 | Gold nanoparticle impact on B lymphocyte function in vitro
S. Hocevar¹; A. Tarantini¹; D. Beal¹; K. Wegner¹; D. Boutry¹; S. Motellier¹; G. Sarret²; M. Carrière³; ¹ CEA Commissariat à l’Energie Atomique, Grenoble/F; ² CNRS/ISTERRE, Grenoble/F; ³ CEA Grenoble, Grenoble/F

P 04.18 | Towards safer-by-design quantum dots
F. Dussert¹; A. Tarantini¹; D. Beal¹; K. Wegner¹; D. Boutry¹; S. Motellier¹; G. Sarret²; M. Carrière³; ¹ CEA Commissariat à l’Energie Atomique, Grenoble/F; ² CNRS/ISTERRE, Grenoble/F; ³ CEA Grenoble, Grenoble/F

P 05.01 | Genotoxic and epigenetic effects following long-term low-dose exposure of BEAS-2B cells to Ni and NiO nanoparticles
S. Di Bucchianico¹; A. Gliga²; H. Karlsson²; ¹ Helmholtz Zentrum München, München/D; ² Karolinska Institutet, Stockholm/S

P 05.04 | Nanotoxicity study using a computer-controlled nose-only inhalation exposure system
C. Chang¹; M. Lin²; M. Liu²; W. Chen²; C. Yang³; ¹ National Cheng Kung University, East Distract, Tainan City/R; ² National Cheng Kung University, Tainan/RC; ³ Cheng-Kung University, Tainan/RC

P 05.05 | Physicochemical predictors of Multi-Walled Carbon Nanotube-induced pulmonary histopathology and toxicity one year after pulmonary deposition of 11 different Multi-Walled Carbon Nanotubes in mice
K. Bram Knudsen¹; T. Berthing¹; P. Jackson¹; S. Poulsen¹; A. Mortensen¹; N. Raun Jacobsen¹; V. Skaug²; J. Szarek³; K. Sørig Hougaard¹; H. Wolff²; H. Wallin²; U. Vogel³; ¹ The National Research Centre for the Working Environment, Copenhagen/DK; ² STAMI, Oslo/N; ³ University of Warmin, Olomszy/PL; ⁴ FIOH, Helsinki/FIN

P 05.06 | CNT exposure to freshwater green algae Pseudokirchneriella subcapitata and Chlamydomonas reinhardtii: uptake and chronic effects
I. Politowski¹; M. Hennig¹; P. Regnery¹; A. Schaeffer¹; ¹ Institute for Environmental Research, RWTH Aachen University, Aachen/D

P 05.07 | Distribution of CeO2 and BaSO4 nanoparticles in the lung following low-dose long-term inhalation exposure
M. Wiemann¹; A. Vennemann¹; D. Dietrich¹; M. Grossgarten¹; U. Karst²; ¹ IBE R&D Institute for Lung Health gGmbH, Münster/D; ² Westfälische Wilhelms-Universität Münster, Institut für Analytische Chemie, Münster/D
<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 05.08</td>
<td>Long-term exposures up to 24h at the Air-Liquid Interface</td>
<td>S. Mülhopt¹; S. Diabatè²; M. Dilger¹; C. Weiss²; T. Krebs¹; H. Paur¹; ¹ Karlsruher Institut für Technologie (KIT), Institut für Technische Chemie (ITC), Eggenstein-Leopoldshafen/D; ² Karlsruhe Institute of Technology (KIT), Institut of Toxicology and Genetics (ITG), Eggenstein-Leopoldshafen/D; ³ VITROCELL Systems GmbH, Waldkirch/D</td>
</tr>
<tr>
<td>P 05.09</td>
<td>Impact of long-term aging and differing soil types on the ecotoxicity of low concentrated CuO-NP</td>
<td>J. Fischer¹; A. Eulainova³; J. Fliesser¹; ¹ Center for Environmental Research and Sustainable Technology (UFT), University of Bremen, Bremen/D</td>
</tr>
<tr>
<td>P 05.10</td>
<td>A dynamic in vitro model approach towards deducing the hazard of long-term nanomaterial exposure to the epithelial airway barrier</td>
<td>K. Meldrum¹; B. Rothen-Rutishauser³; G. Jenkins¹; S. Doak¹; M. Cliff¹; ² Swansea University Medical School, Swansea/UK; ³ Adolphe Merkle Institute, University of Fribourg, Fribourg/CH</td>
</tr>
<tr>
<td>P 05.11</td>
<td>Development, characterization and evaluation of 3D hepatic models for Nanoparticle toxicity testing in vitro.</td>
<td>S. Llewellyn¹; U. Shah¹; S. Evans¹; J. Rupp²; W. Moritz²; G. Jenkins¹; M. Cliff¹; S. Doak¹; ¹ Swansea University Medical School, Swansea/UK; ² InSpheiro AG, Schlieren/CH; ³ Inspheiro AG, Schlieren/CH</td>
</tr>
<tr>
<td>P 06.01</td>
<td>Effects of ultrasonic dispersion energy on the particle size distribution of amorphous SiO2 Nanomaterials</td>
<td>R. Retamal Marín¹; F. Babick¹; M. Stintz¹; M. Wiemann²; G. Lindner³; ¹ Technische Universität Dresden, Dresden/D; ² IBE R&amp;D Institute for Lung Health gGmbH, Münster/D; ³ Evonik Resource Efficiency GmbH, Wesseling/D</td>
</tr>
<tr>
<td>P 06.02</td>
<td>How to choose the cytotoxicity of a nanomaterial</td>
<td>S. Mues¹; D. Hahn¹; J. Schnekenburger¹; ¹ Westfälische Wilhelms-Universität Münster, Biomedical Technology Center, Muenster/D</td>
</tr>
<tr>
<td>P 07.01</td>
<td>Gold Nanoparticle-Peptide Hybrid Materials Inhibit Alzheimer's Disease-Related Protein Aggregation</td>
<td>C. Streich¹; C. Rehbock¹; L. Akkadi¹; T. Schrader¹; S. Barcikowski¹; ¹ University of Duisburg-Essen, Essen/D</td>
</tr>
<tr>
<td>P 07.02</td>
<td>Effects of SiO2 and CeO2 nanoparticles on the proteolytic processing of the Alzheimer-associated β-amyloid precursor protein</td>
<td>A. Sofrankova¹; R. Schins¹; T. Wahle¹; ¹ IUF – Leibniz Research Institute for Environmental Medicine, Düsseldorf/D</td>
</tr>
<tr>
<td>P 07.03</td>
<td>Investigations of the neurotoxic effects of engineered nanoparticles in the mouse brain – The N3RvousSystem project</td>
<td>A. Sofrankova¹; T. Wahle¹; H. Heusinkveld¹; D. Breitenstein¹; B. Stahlmecke¹; B. Hellack¹; C. Albrecht¹; R. Schins¹; ¹ IUF – Leibniz Research Institute for Environmental Medicine, Düsseldorf/D; ² Utrecht University, Utrecht/NL; ³ Tascon-GmbH Analytical Services and Consulting, Münster/D; ⁴ Institute for Energy and Environmental Technology e.V. (IUTA), Duisburg/D</td>
</tr>
<tr>
<td>P 07.04</td>
<td>Size dependent Nose-to-Brain Translocation and Biodegradation of Graphene Oxide Nanosheets</td>
<td>C. Bussy¹; ¹ The University of Manchester, manchester/UK</td>
</tr>
<tr>
<td>P 07.05</td>
<td>Cytotoxicity of metallic nanoparticles on T98G human glioblastoma cells</td>
<td>E. Fuster¹; J. Estévez¹; E. Del Rio¹; E. Vilanova¹; M. Sogorb¹; ¹ Miguel Hernández University, Elche/E</td>
</tr>
<tr>
<td>P 07.07</td>
<td>Toxicity mechanisms of titanium dioxide nanoparticles on neurons and monocytes/macrophages</td>
<td>A. Engin¹; ¹ Gazi University, Faculty of Pharmacy, Ankara/TR</td>
</tr>
<tr>
<td>P 08.01</td>
<td>The impact of synthetic amorphous silica (E 551) on advanced in vitro models of the human intestinal barrier</td>
<td>C. Hempel¹; J. Kaiser¹; A. Ripp¹; M. Kuck¹; P. Wick¹; T. Bürki-Thurnherr¹; C. Hirsch¹; ¹ Empa - Swiss Federal Laboratories for Materials Science and Technology, St.Gallen/CH</td>
</tr>
<tr>
<td>P 08.02</td>
<td>Impact of in vitro digestion on the physicochemical properties of silver nanoparticles and their transport through the intestinal barrier</td>
<td>A. Abdelkhaliq¹; M. van der Zande¹; A. Undas¹; I. Rietjens¹; H. Bouwmeester¹; ² RIKILT - Wageningen Research &amp; Division of Toxicology, Wageningen University, Wageningen/NL; ³ RIKILT –Wageningen Research, Wageningen/NL; ⁴ Division of Toxicology, Wageningen University, Wageningen/NL</td>
</tr>
</tbody>
</table>
P 08.04 Occurrence of nanoparticles in commercial E172 food additives
L. Voss¹; L. Boehmert²; P. Saloga³; V. Stock¹; C. Kaestner¹; A. Breunung¹; H. Sieg¹; A. Thuenemann¹; A. Lampen¹; ¹ German Federal Institute for Risk Assessment, Berlin/D; ² German Federal Institute for Materials Research and Testing, Berlin/D; ³ German Federal Institute for Risk Assessment, Berlin/D

P 08.05 Fluorescence labelling study of silver nanoparticles
C. Kaestner¹; L. Bòhmert²; H. Sieg¹; A. Braeunung¹; A. Lampen¹; A. Thuenemann¹; ¹ German Federal Institute for Materials Research and Testing, Berlin/D; ² German Federal Institute for Risk Assessment, Berlin/D

P 08.06 Silver nanoparticles inflammation on an in vitro intestinal barrier
M. Polet¹; A. Leurquín¹; Y. Schneider¹; ¹ Université Catholique de Louvain, Louvain-la-Neuve/B

P 08.07 Fate of silver nanoparticles in the human digestive system: an in vitro study
L. Laloux¹; Y. Schneider¹; ¹ UCL, Louvain-la-Neuve/B

P 08.08 The effects of pH variations on silver nanoparticles during human in vitro digestion as input for computational modelling approaches
A. Undas¹; H. Bouwmeester²; D. Rijkers³; G. van Bemmelen³; S. Munniks¹; M. van der Zande¹; ¹ RIKILT – Wageningen University & Research, Wageningen/NL; ² Wageningen University, Wageningen/NL

P 08.09 Characterization of toxic and protective properties of magnesium oxide nanoparticles
A. Mittag¹; ¹ Friedrich Schiller University Jena, Jena/D

P 08.10 Orally applied SiO2 and Ag nanomaterials alter gut microbiota in rats – implications for human health
R. Landsiedel¹; R. Buesen¹; S. Rehm²; W. Wohllibren²; D. Hahn³; J. Schneekenburger³; ¹ BASF SE Ludwigshafen, Ludwigshafen/D; ² HB Technologies AG, Tübingen/D; ³ Westfälische Wilhelms-Universität Münster, Biomedical Technology Center, Muenster/D

P 08.11 Do nanoparticles alter microvilli morphology in vitro?
J. Cabellos¹; C. Delpivo¹; S. Vázquez-Campos¹; G. Janer¹; ¹ LEITAT Technological Center, Barcelona/E

P 08.12 Role of composition, coating, and specific surface area on the biokinetics and toxicity of orally administered nanoparticles
J. Cabellos¹; I. Gimeno¹; J. Damásio¹; K. Aimonen²; G. Vales²; R. Alturi³; K. Jensen³; S. Vázquez-Campos¹; G. Janer¹; ¹ LEITAT Technological Center, Barcelona/E; ² Finnish Institute of Occupational Health, Helsinki/FIN; ³ National Research Centre for the Working Environment, Copenhagen/DK

P 08.13 Food grade titanium dioxide potentiates the cytotoxic effect of hydrogen peroxide and affects DNA repair efficiency
C. Rodríguez¹; Y. Chirino²; ¹ UNAM, Tlalnepantla de Baz, Mexico/MEX; ² Universidad Nacional Autónoma de México (UNAM), Tlalnepantla de Baz/MEX

P 08.14 Assessment of in vitro bioaccessibility of zinc oxide nanoparticles in food and its correlation with their in vivo bioavailability
D. Kang¹; H. Tang²; J. Zhang¹; A. Cao¹; Y. Liu²; H. Wang¹; ¹ Shanghai University, Shanghai/CN; ² Peking University, Beijing/CN

P 08.15 Toxicity of E171 food additive (TiO2) on in vitro models of intestinal epithelium
M. Dorier¹; C. Tissuye¹; F. Dussert¹; D. Beal¹; T. Douki¹; N. Léon¹; M. Carriere²; ¹ CEA Commissariat a l’Énergie Atomique, Grenoble/F; ² Université de Lyon, Lyon/F

P 08.16 Impact of gastro-intestinal pH conditions on nanoparticle-induced toxicity: Results of an in vivo-in vitro comparison
A. Kämpfer¹; M. Busch²; B. Stahlmecke³; B. Hellack²; T. Krebs²; A. Lenz²; T. Stöger³; O. Schmid³; ¹ IUF - Leibniz Research Institute for Environmental Medicine, Düsseldorf/D; ² Institute of Energy and Environmental Technology e. V. (IUTA), Duisburg/D

P 08.17 Nanomaterial-induced toxicity and barrier translocation in an in vitro co-culture model of the healthy and inflamed intestine
A. Kämpfer¹; P. Urbán²; R. La Spina²; U. Holzwarth²; I. Ojea Jiménez²; E. Bellido²; V. Stone³; A. Kinsner-Ovaskainen³; ¹ IUF - Leibniz Research Institute for Environmental Medicine, Düsseldorf/D; ² Joint Research Center of the European Commission, Ispra/IT; ³ Heriot-Watt University, Edinburgh/UK

P 08.18 Exposure assessment in a laboratory during explosion tests of carbon black and MWCNT
E. Bouhouille¹; H. Breulet¹; M. Dalle¹; O. Aguerre-Chariol¹; O. Le Bihan¹; ¹ ISSeP (Scientific Public Service Institute), Liège/B; ² INERIS, Verneuil-en-Halatte/F
<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 09.03</td>
<td>Prediction of inhalation exposure on the base of nanomaterial release data and propagation modelling</td>
<td>D. Göhler¹; M. Stintz¹; R. Gritski³; M. Rösler³; C. Felsmann³; R. Retamal Marín³; ¹ Research Group Mechanical Process Engineering, Technische Universität Dresden, Dresden/D; ³ Chair of Building Energy Systems &amp; Heat Supply, Technische Universität Dresden, Dresden/D; ³ Technische Universität Dresden, Dresden/D</td>
</tr>
<tr>
<td>P 09.04</td>
<td>Dosimetry for bridging in-vitro to in-vivo: supporting the next generation of nanosafety assessment tools in PATROLS</td>
<td>E. Ruggiero¹; R. Landsiedel¹; L. Ma-Hock¹; W. Wohlleben¹; ¹ BASF SE, Ludwigshafen am Rhein/D</td>
</tr>
<tr>
<td>P 09.06</td>
<td>Particle dose measurement on the surface of human lung cells exposed at the Air-Liquid Interface</td>
<td>S. Mülhopt¹; N. Teuscher¹; C. Schlager²; M. Berger²; T. Krebs²; H. Paur³; ¹ Karlsruher Institut für Technologie (KIT), Institut für Technische Chemie (ITC), Eggenstein-Leopoldshafen/D; ² VITROCELL Systems GmbH, Waldkirch/D</td>
</tr>
<tr>
<td>P 09.07</td>
<td>Getting the most out of the Effective Density Concept for Prediction of the Cell-Delivered Dose for Irregularly Shaped Nanoparticles</td>
<td>O. Schmid¹; ¹ Helmholtz Zentrum München, Neuherberg/Munich/D</td>
</tr>
<tr>
<td>P 09.08</td>
<td>Optimization of the Vitrocell 24/48 in vitro inhalation exposure system for nanoparticles</td>
<td>E. Frijns¹; J. Van Laer¹; A. Jacobs¹; S. Verstraelen¹; P. Berghmans¹; ¹ VITO - Flemish Institute for Technological Research, Mol/B</td>
</tr>
</tbody>
</table>

**EBRC Consulting GmbH**

Based in Hannover, Germany, EBRC is a consultancy specialised on services for the chemical, biocidal and agrochemical industries. Our company has more than 30 years of experience in regulatory science. Specialised scientific experience is available in all key disciplines relevant for product safety with respect to human health and environment.
POSTER PROGRAMME

P 10.03  Do surface treatments impact the toxicity of pigment-grade and nanoscale titanium dioxide particles?  
D. Warheit¹; S. Brown¹; ¹ The Chemours Company, Wilmington/USA

P 10.04  Whole-Genome Expression Analysis in THP-1 Macrophage-Like Cells Exposed to Nanoparticles  
T. Brzicova¹; E. Javorkova¹; H. Lilabalova¹; K. Honkova¹; K. Vrbova¹; I. Klem⁵; V. Holan¹; I. Topinka¹; P. Rossner¹; ¹ Institute of 
Experimental Medicine of the Czech Academy of Sciences, Prague/CZ; ² Czech Technical University in Prague, Prague/CZ

P 10.05  Toxicity of copper oxide nanoparticles to the tropical cladoceran Ceriodaphnia silvestrii  
A. da Silva Mansano Dornfeld¹; J. Souza¹; V. Zucolotto¹; ¹ University of São Paulo, São Carlos/BR

P 10.06  Targeted Metabolomics: a promising tool to support nanomaterial grouping  
A. Bannuscher¹; A. Bahl¹; K. Kettler¹; A. Luch¹; A. Haase¹; ¹ German Federal Institute for Risk Assessment (BfR), Berlin/D

P 10.07  Grouping approaches for nanomaterials based on oxidative stress responses  
A. Giusti¹; R. Tsekovska²; G. Ionita³; D. Pietraforte¹; F. Barone⁴; E. Mariussen¹⁺; E. Rundén-Pran²; M. Dusinska¹; N. Jacobsen⁶; A. Bahl¹; S. Tanasescu²; T. Puzyn⁶; M. Apostolova¹; A. Haase¹; ¹ BfR, Berlin/D; ² Institute of Molecular Biology- Bulgarian Academy of Sciences, Sofia/BG; ³ Institute of Physical Chemistry of the Romanian Academy, Bucharest/RO; ⁴ Instituto Superiore di Sanità, Rome/IT; ⁵ Norwegian institute for air research, Kjeller/N; ⁶ National Research Centre for the Working Environment, Copenhagen/DK; ² German Federal Institute for Risk Assessment, Berlin/D; ⁷ University of Gdansk, Gdansk/PL

P 10.08  Physicochemical properties for nanomaterial characterization – which parameters are needed and how do we measure them?  
M. Visser¹; E. Bleeker²; M. Groenewold¹; K. Rasmussen¹; H. Rauscher²; A. Mech²; J. Riego Sintes²; D. Gilliland²; M. González²; P. Kearns²; K. Moss³; S. Brown⁴; ¹ RIVM, Bilthoven/NL; ² European Commission, Joint Research Centre (JRC), Ispra/IT; ³ Organisation for Economic Co-operation and Development (OECD), Paris/F; ⁴ United States Environmental Protection Agency (US-EPA), Washington DC/USA; ⁵ Business at OECD (BIAC), Paris/F

P 10.09  Considerations on photocatalytic Ag/TiO2 and Ag/NTiO2 nanoparticles for leather finishing and their toxicity  
C. Gaidau¹; D. Rebleanu¹; C. Constantinescu²; M. Calin²; ¹ R&D National Institute for Textiles and Leather (INCDTP)–Leather Footwear Research Institute (ICPI) Division, Bucharest, Romania, Bucharest/RO; ² Institute of Cellular Biology and Pathology “Nicolea Simionescu” of Romanian Academy, Bucharest, Romania, Bucharest/RO

P 10.10  A simple systematic approach to nanomaterial risk profiles from consumer safety perspective  
K. Kettler¹; C. Riebeling¹; D. Göhler²; M. Stintz³; M. Wiemann¹; J. Schneckenburger¹; T. Kuhlbusch²; W. Wohlenhe¹; A. Luch¹; A. Haase¹; ¹ German Federal Institute for Risk Assessment (BfR), Berlin/D; ² Technische Universität Dresden, Dresden/D; ³ Institute of Environmental Medicine of the Czech Academy of Sciences, Prague/CZ; ⁴ Westfälische Wilhelms-Universität Münster, Biomedical Technology Center, Münster/D; ⁵ German Federal Institute of Occupational Safety and Health (BAuA), Dortmund/D; ⁶ BASF SE Material Physics, Ludwigshafen/D

P 10.11  Comparative screening of a panel of silica nanoparticles using cellular and organismic assays: importance of size and surface  
F. Book¹; M. Ekvall¹; L. Hansson¹; T. Cederwall¹; G. Gupta¹; K. Bhattacharya¹; B. Fadeel¹; J. Sturve¹; T. Backhaus¹; ¹ Department 
of Biological and Environmental Sciences, University of Gothenburg, Gothenburg/S; ² Department of Biochemistry and Structural Biology, Lund University, Lund/S; ³ Institute of Environmental Medicine, Karolinska Institutet, Stockholm/S

P 10.12  Information needs to consider potential human health risks in decision-making in each phase of the nanomaterial or nano-enabled product development  
S. Dekkers¹; S. Wijnhoven¹; H. Braakhuis²; C. Noorlander¹; ¹ RIVM, Bilthoven/NL

P 10.13  Evaluation of the provisional Nano Reference Values (NRV)  
M. Visser¹; S. Dekkers¹; D. Huizer¹; H. Buist¹; T. Oosterwijk¹; P. Van Broekhuizen⁴; M. Groenewold¹; ¹ RIVM, Bilthoven/NL; ² Caesar Consult, Nijmegen/NL; ¹ TNO, Zeist/NL; ² Bureau KLB, Den Haag/NL

P 10.14  Cytotoxicity and genotoxicity data gap filling of different nanomaterials in Caco-2 cells for grouping approach  
F. Barone¹; I. De Angelis¹; C. Andreoli¹; A. Zijno¹; L. Conti¹; C. Battistelli³; C. Bossa¹; ¹ Istituto Superiore di Sanità, Rome/IT
P 11.15  
**Correlation between the thermodynamic parameters of the nanoparticles/proteins interactions and the dominant contributions determining the toxicity of the nanomaterials**  
S. Tanasescu¹; A. Precupas¹; D. Gheorghe¹; A. Botea-Petcu²; R. Sandu¹; V. Popa¹; E. Rundén-Pran³; E. Mariussen⁴; N. El Yamani⁵; A. Hudecova⁶; M. Dusinska⁷; A. Giusti³; A. Haase¹; ¹ Institute of Physical Chemistry „Ilie Murgulescu” of the Romanian Academy, Bucharest/RO; ² NILU - Norwegian institute for air research, Kjeller/N; ³ German Federal Institute for Risk Assessment (BfR), Berlin/D

P 11.16  
**GRACIOUS: Grouping, Read-Across and Classification framework for regulatory risk assessment of manufactured nanomaterials and Safer design of nano-enabled products**  
V. Stone¹; E. Bleeker²; T. Fernandes¹; J. Friesl³; D. Hristozov⁴; N. Jeliazkova⁵; H. Johnston¹; F. von der Kammer⁶; A. Oomen²; H. Rauscher⁷; D. Spurgeon⁸; C. Svendsen⁸; S. Vazquez-Campos⁹; A. Vichez; W. Wohlleben; ¹ Heriot-Watt University, Edinburgh/UK; ² The Dutch National Institute for Public Health and the Environment (RIVM), Bilthoven/NL; ³ Yordas, Lancaster/UK; ⁴ Green Decisions, Venice/I; ⁵ Idea Consultants, Sofia/BG; ⁶ University of Vienna, Vienna/A; ⁷ European Commission, Joint Research Centre (JRC), Ispra/I; ⁸ NERC, Swindon/UK; ⁹ LEITAT, Barcelona/UK; LEITAT, Barcelona/E; BASF, Ludwigshafen/D

P 11.17  
**An integrated approach to evaluating in vitro nanotoxicity in human lung cells**  
S. Kim¹; J. Oh²; T. Yoon²; S. Yoon¹; ¹ Korea Institute of Toxicology (KIT), Daejeon/ROK; ² Hanyang University, Seoul/ROK

---

### Tissue Barriers

P 12.01  
**Fate of nanoparticles in alveolar epithelial cells: uptake, autophagy, distribution and lysosomal exocytosis**  
E. Crandall¹; ¹ University of Southern California, Los Angeles, California/USA

P 12.02  
**Detection of SAS in receptor fluids from skin penetration tests**  
J. Bott¹; ¹ Fraunhofer Institute for Process Engineering and Packaging IVV, Freising/D

P 12.03  
**Size depending effects of microscaled and nanoscaled plastic particles on the intestinal barrier**  
V. Stock¹; L. Boehmert¹; E. Lisicki¹; J. Carmona¹; L. Pack¹; D. Lichtenstein¹; L. Voss¹; A. Breunung¹; H. Sieg¹; A. Lampen¹; ¹ German Federal Institute for Risk Assessment, Berlin/D

P 12.04  
**A Trophoblast-Pericyte based Blood-Placenta Barrier Model for Nanotoxicity Studies**  
E. Müller¹; A. Stelz²; N. Schwarze¹; F. Wiekhurst³; S. Dutz⁴; A. Hochhaus¹; J. Clement¹; C. Gräfe¹; ¹ Universitätsklinikum Jena, Abteilung Hämatologie und Internistische Onkologie, Jena/D; ² Physikalisch-Technische Bundesanstalt (PTB), Berlin/D; ³ Technische Universität Ilmenau, Institut für Biomedizinische Technik und Informatik, Ilmenau/D

P 12.05  
**Investigations on translocation and uptake processes of engineered nanoparticles at the human intestinal barrier**  
T. Schneider¹; V. Wanka¹; A. Mittag¹; M. Glei¹; ¹ Friedrich Schiller University Jena, Jena/D

P 12.07  
**Impact of exposure to Nanoparticles and Polycyclic Aromatic Hydrocarbon contaminants on human placental barrier**  
M. Nedder¹; S. Boland¹; X. Coumoul³; K. Andreau³; A. Chissey¹; C. Tomkiewicz³; A. Zerrad-Saadi¹; F. Vibert¹; T. Fournier¹; S. Gil¹; I. Ferecatu¹; ¹ INSERM UMR-S 1139 Paris Descartes University, Paris/F; ² CNRS UMR 8251 Paris Diderot University, Paris/F; ³ INSERM UMR-S 1124 Paris Descartes University, Paris/F

---

### Toxicity mechanism at a nanoscale

P 13.01  
**Understanding the implications of engineered nanoparticle interactions with epidermal keratinocytes**  
A. Gautam¹; M. Rakshit¹; K. Nguyen²; T. Nguyen²; C. Tay³; K. Ng⁴; ¹ School of Materials Science and Engineering, NTU, Singapore/SGP; ² School of Materials Science and Engineering, NTU; School of Biological Sciences, NTU, Singapore/SGP; ³ School of Materials Science and Engineering, NTU; Skin Research Institute of Singapore, Singapore/SGP

P 13.02  
**Transient DNA damage following exposure to gold nanoparticles**  
P. Wick¹; S. May¹; C. Hirsch¹; J. Kaiser¹; N. Bohmer¹; ¹ Empa - Swiss Federal Laboratories for Materials Science and Technology, St. Gallen/CH; ² DEHEMA e.V., Frankfurt/D

P 13.03  
**Carboxylic Acids Accelerate Acidic Environment-Mediated Nanoceria Dissolution**  
R. Yokel¹; U. Graham¹; M. Hancock¹; J. Unrine¹; A. Dozier²; E. Grulke¹; ¹ University of Kentucky, Lexington/USA; ² CDC/NIOSH, DART, Cincinnati, OH/USA

P 13.04  
**Nanoparticles activate the epidermal growth factor receptor via a non-canonical mechanism in lung epithelial cells**  
D. Stöckmann¹; T. Spannbrucker¹; N. Ale-Agha¹; A. Kümper²; A. Kraegeloh²; K. Unfried³; ¹ IUF - Leibniz-Institut für umweltmedizinische Forschung, Düsseldorf/D; ² INM - Leibniz-Institut für Neue Materialien gGmbH, Saarbrücken/D; ³ IUF Leibniz-Institut für umweltmedizinische Forschung, Düsseldorf/D
<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 13.05</td>
<td>Exposure to nanoparticles specifically extends neutrophilic life span: a toxicologically relevant endpoint for nanoparticle safety</td>
<td>T. Hornstein; T. Spannbrucker; K. Unfried; IFU - Leibniz-Institut für umweltmedizinische Forschung, Düsseldorf/D</td>
</tr>
<tr>
<td>P 13.08</td>
<td>Au nanorod-induced NLRP3 inflammasome activation is mediated by ER stress</td>
<td>R. Vandebriej; S. Remy; J. Vermeulen; E. Hurkmans; N. Bastus; B. Pelaaz; V. Puntes; W. Parak; I. Penningins; L. Nelissen; 1 National Institute for Public Health and the Environment, Bilthoven/NL; 2 Vito NV, Mol/B; 3 Institut Catala de Nanociencia i Nanotecnologia (ICN2), Barcelona/E; 4 Philips Universtäts Marburg, Marburg/D</td>
</tr>
<tr>
<td>P 13.09</td>
<td>Early molecular signature of cell transformation induced by nano-silica materials in the murine Bhas 42 cell line model</td>
<td>A. Kirsch; D. Hélène; S. Hervé; F. Caroline; G. Laurent; G. Yves; Institut Nationalal de Recherche et de Sécurité (INRS)/Centre de Recherche en Automatique de Nancy (CRAN), Vandoeuvre-Lès-Nancy/F; 2 Centre de Recherche en Automatique de Nancy (CRAN), Vandoeuvre-Lès-Nancy/F; 3 Institut Nationalal de Recherche et de Sécurité (INRS), Vandoeuvre-Lès-Nancy/F</td>
</tr>
<tr>
<td>P 13.11</td>
<td>Non-cytotoxic doses of ZnO nanoparticles regulate self and cross adaptive responses in human keratinocytes</td>
<td>Z. Wu; A. Gautam; K. Ng; C. Tay; Nanyang Technological University, Singapore/SGP</td>
</tr>
<tr>
<td>P 13.13</td>
<td>Co-exposure to silver nanoparticles and cadmium induce metabolic adaptation in HepG2 cells</td>
<td>R. Rank Miranda; V. Gorshkov; B. Korzeniewska; S. J Kempf; F. Filipak Neto; F. Keldsen; 1 University of Southern Denmark, Odense/DK; 2 Federal University of Parana, Curitiba/BR</td>
</tr>
<tr>
<td>P 13.14</td>
<td>Toxicity of gold nanorods on Ceriodaphnia dubia and Danio rerio and their recovery after post exposure</td>
<td>J. Souza; A. da Silva Mansano Dornfeld; F. Venturini; V. Marangoni; B. Dressler; V. Zucolotto; 1 Nanomedicine and Nanotoxicology Group/Physics Institute of São Carlos, São Carlos/BR</td>
</tr>
<tr>
<td>P 13.15</td>
<td>Genotoxicity from as-produced and post-production modified multi-walled carbon nanotubes</td>
<td>K. Siegrist; S. Reynolds; C. Mitchell; D. Lowry; M. Kashon; L. Cena; L. Bishop; J. Bonner; A. Bauer; A. Erdely; L. Sargent; 1 University of Colorado, Aurora/USA; 2 CDC/NIOSH/HLED, Morgantown/USA; 3 University of California, Riverside/USA; 4 West Chester University, West Chester/USA; 5 Meso Scale Diagnostics, Rockville/USA; 6 North Carolina State University, Raleigh/USA</td>
</tr>
<tr>
<td>P 13.16</td>
<td>Calmodulin regulated interplay of Reactive Oxygen Species and Intracellular Calcium homeostasis in Carbon Black nanoparticle induced lung toxicity</td>
<td>N. Verma; 1 University of Erlangen-Nuremberg, Germany, Erlangen/D</td>
</tr>
<tr>
<td>P 13.17</td>
<td>Silver nanoparticles modulate LPS-induced secretion of pro-inflammatory cytokines in human lung and macrophage-like cells</td>
<td>A. Gliga; J. De Loma; S. Di Buchianico; S. Skoglund; S. Keshavan; I. Odnevall-Wallinder; B. Fadeel; H. Karlsson; 1 Institute of Environmental Medicine, Karolinska Institutet, Stockholm/S; 2 Department of Chemistry, KTH Royal Institute of Technology, Stockholm/S</td>
</tr>
<tr>
<td>P 13.18</td>
<td>Gene expression analysis enables toxicity ranking of multi-walled carbon nanotubes</td>
<td>D. Schaudien; M. Niehof; S. Reamon-Buettner; V. Eckert; C. Ziemann; A. Leonhardt; O. Creutzenberg; 1 Fraunhofer ITEM, Hannover/D; 2 Leibniz-Institute for Solid State and Materials Research, Dresden/D</td>
</tr>
<tr>
<td>P 13.19</td>
<td>Biocompatibility of Amine-Functionalized Silica Nanoparticles: The Role of Surface Coverage</td>
<td>I. Hsiao; S. Fritsch-Decker; A. Leidner; S. Grage; M. Meffert; S. Schrade; D. Gerthsen; A. Ulich; C. Niemeyer; C. Weiss; 1 Taipei Medical University, Taipei/RC; 2 Karlsruhe Institute of Technology (KIT), Institut of Toxicology and Genetics (ITG), Eggenstein-Leopoldshafen/D; 3 Karlsruhe Institute of Technology (KIT), Institute for Biological Interfaces (IBG 1), Eggenstein-Leopoldshafen/D; 4 KIT, Institute of Biological Interfaces (IBG-2), Karlsruhe/D; 5 Laboratory for Electron Microscopy, Karlsruhe Institute of Technology, Karlsruhe/D</td>
</tr>
<tr>
<td>P 13.20</td>
<td>The impact of copper nanoparticles on mechano-sensory based behavior of zebrafish embryos (D. rerio)</td>
<td>M. Burkard; Y. Yu; C. vom Berg; K. Schirmer; Eawag Aquatic Water Science, Duebendorf/CH; 2 Nanjing Tech University, Nanjing/CN; 3 Eawag Aquatic Water Science, Dübendorf/CH</td>
</tr>
<tr>
<td>P 13.21</td>
<td>Mechanic approaches to unravel potential adverse effects of multiwalled cabon nanotubes in human mesothelial cells</td>
<td>S. Reamon-Buettner; I. Voelpel; A. Hiemisch; V. Eckert; D. Schaudien; C. Ziemann; 1 Fraunhofer Institute for Toxicology and Experimental Medicine ITEM, Hannover/D; 2 Leibniz Institute for Solid State and Materials Research, Dresden/D</td>
</tr>
<tr>
<td>P 13.22</td>
<td>ENM Inhalation During Gestation Disrupts Plasma Estrogen and Vascular Kisspeptin Reactivity</td>
<td>E. Bowridge; A. Abukabda; C. McBride; T. Bachelor; T. Goldsmith; T. Nurkiewicz; 1 West Virginia University, Morgantown/USA; 2 Western University, Morgantown/USA</td>
</tr>
</tbody>
</table>
P 13.23  
The role of surface chemistry and particle size on the protein corona composition of silica and carbon aggregated or monodisperse nanomaterials in plasma.

A. Marucco¹; M. Poggidius¹; L. Soddu²; G. Bernardini³; E. Dunne⁴; D. Kenny⁴; M. Monopol³; I. Fenoglio⁵; ¹ University of Torino, Department of Chemistry, Torino/Italy; ² Royal College of Surgeons in Ireland, Molecular and Cellular Therapeutics, Dublin/IRL; ³ Royal College of Surgeons in Ireland, Department of Pharmaceutical and Medicinal Chemistry, Dublin/IRL

P 13.24  
Nanoparticle-Cell Interaction - Surface Chemistry Triggers Inflammation Response

J. Demut¹; M. Haist¹; M. Rabe¹; C. Grütter³; R. Quaas³; F. Müller³; D. Fischer²; A. Hochhaus¹; J. Clement¹; ¹ Universitätsklinikum Jena, Abteilung Hämatologie und Internistische Onkologie, Jena/D; ² Friedrich-Schiller-Universität Jena, Institut für Pharmazie, Jena/D; ³ micromod Partikeltechnologie GmbH, Rostock/D; ⁴ Chemicell GmbH, Berlin/D; ⁵ Friedrich-Schiller-Universität Jena, Otto-Schott-Institut für Materialforschung, Jena/D

P 13.25  
Ligand-free gold silver alloy nanoparticles as model materials for understanding silver-associated toxicity

S. Barcikowski¹; C. Rehbock¹; M. Stiesch-Scholz²; ¹ University of Duisburg-Essen, Essen/D; ² Hannover Medical School, Hannover/D

P 13.26  
Discerning the role of iron, copper and carbonaceous core in the toxicity of PM toward rat lung macrophages and epithelial cells

I. Tacu¹; C. Albrecht¹; I. Kokalari²; A. Marucco¹; O. Abollino¹; M. Malandrin³; R. Schins¹; I. Fenoglio¹; ¹ University of Torino, Torino/Italy; ² IFU – Leibniz Research Institute for Environmental Medicine, Dusseldorf/D

P 13.27  
ICONS - Integrated Testing Strategy for Mechanistically Assessing the Respiratory Toxicity of Functionalized MWCNTs

C. Ziemann¹; S. Reamon-Buettner¹; D. Lison²; S. van den Brul³; S. Simon³; J. Bonner³; O. Creutzberg³; ¹ Fraunhofer Institute for Toxicology and Experimental Medicine ITEM, Hannover/D; ² Université Catholique de Louvain, Louvain/B; ³ Babes-Bolyai University, Cluj/RO; ⁴ North Carolina State University, Raleigh/USA

P 13.28  
Toxicological analysis of nanomaterials using a gastrointestinal tract (GIT) tri-culture model: The role of food matrix and transformations across the GIT on bioactivity

K. Bhattacharya¹; D. Bitounis¹; R. Zhang¹; C. Ho¹; R. Yusoff¹; K. Ng²; J. Loo³; D. McClements²; P. Demokritou¹; ¹ Harvard T. H. Chan School of Public Health, Boston/USA; ² Michigan State University, East Lansing, MI/USA

P 13.29  
Epithelial inflammation is a consequence of ineffective alveolar clearance of carbon nanotubes

C. Voss¹; E. Elorduy Vergara¹; S. Hirn¹; N. Habel-Unegwitter¹; T. Furong¹; S. Chen¹; K. Kostarelos¹; W. Kreyling¹; T. Stöger¹; ¹ PETA International Science Consortium Ltd., London/UK; ² Northwestern University, Chicago/USA; ³ National Institute of Occupational Safety and Health, Morgantown, WV/USA; ⁴ West Virginia University, Morgantown, WV/USA; ⁵ University of Copenhagen, Copenhagen/DK; ⁶ The National Research Center for the Working Environment, Copenhagen/DK

P 13.30  
Development of an In Vitro System to Assess Pulmonary Fibrosis Following Exposure to Nanomaterials

J. Melbourne¹; ¹ PETA International Science Consortium Ltd., London/UK

P 13.31  
Epithelial inflammation is a consequence of ineffective alveolar clearance of carbon nanotubes

C. Voss¹; E. Elorduy Vergara¹; S. Hirn¹; N. Habel-Unegwitter¹; T. Furong¹; S. Chen¹; K. Kostarelos¹; W. Kreyling¹; T. Stöger¹; ¹ PETA International Science Consortium Ltd., London/UK; ² Northwestern University, Chicago/USA; ³ National Institute of Occupational Safety and Health, Morgantown, WV/USA; ⁴ West Virginia University, Morgantown, WV/USA; ⁵ University of Copenhagen, Copenhagen/DK; ⁶ The National Research Center for the Working Environment, Copenhagen/DK

P 13.32  
The effect of physicochemical characteristics of nano-sized TiO2 on enhancement of atherosclerogenesis

S. Ichihara¹; Y. Suzuki¹; A. Hayashida¹; E. Watanabe¹; E. Watanabe¹; E. Watanabe¹; E. Watanabe¹; Y. Osada¹; T. Furutani²; K. Izuoka²; G. Ichihara³; ¹ Jichi Medical University, Shimotsuke/J; ² Chonbuk National University, Jeonju/K; ³ Tokyo University of Science, Noda/J

P 13.33  
Microscopy-based high-throughput assays enable multi-parametric analysis to assess adverse effects of nanomaterials in various cell lines

I. Hansjösten¹; S. Diabaté²; C. Weiss³; I. Lynch³; E. Valsami-Jones³; ¹ Karlsruhe Institute of Technology (KIT), Eggenstein/DE; ² Université Catholique de Louvain, Louvain/B; ³ Babes-Bolyai University, Cluj/RO; ⁴ North Carolina State University, Raleigh/USA

P 13.34  
Understanding the human health impacts of graphene-based nanomaterials under occupational exposure scenarios

H. Risby¹; A. Tarat¹; S. Doak¹; M. Clift¹; ¹ Swansea University Medical School, Swansea/UK; ² Manchester Metropolitan University, Manchester/UK; ³ National Institute for Occupational Safety and Health, Morgantown, WV/USA; ⁴ West Virginia University, Morgantown, WV/USA; ⁵ University of Copenhagen, Copenhagen/DK; ⁶ The National Research Center for the Working Environment, Copenhagen/DK

P 13.35  
The effect of chemical composition and redox modification of engineered nanomaterials on their adjuvant activity in airway-sensitised mice

S. Dekkers¹; J. Wagner¹; R. Vandenbriel¹; E. Eldridge¹; W. de Jong¹; J. Harckema¹; F. Cassee¹; ¹ RIVM, Bilthoven/NL; ² Michigan State University, East Lansing, MI/USA

P 13.36  
Genotoxicity of long and straight multi-walled carbon nanotubes in interleukin 1 receptor knock-out and wild-type mice after inhalation exposure

H. Norppa¹; K. Siivola¹; H. Lindberg¹; S. Suhonen¹; A. Koivisto¹; H. Wolff⁴; C. Moore⁵; K. Savolainen¹; J. Catalán¹; ¹ Finnish Institute of Occupational Health, Helsinki/FIN; ² University of Saragossa, Saragossa/E

P 13.37  
Effects of diet and inhalation of nanoparticles generated by gas metal arc stainless steel welding on male reproductive parameters in Sprague-Dawley rats

A. Skovmand¹; A. Erdely²; J. Antonini¹; T. Norkiewicz³; S. Georricke-Pesch⁵; U. Vogel⁶; K. Hougaard⁷; ¹ The National Research Centre for the Working Environment, Kobenhavn Ø/D; ² National Institute for Occupational Safety and Health, Morgantown, WV/USA; ³ National Institute of Occupational Safety and Health, Morgantown, WV/USA; ⁴ West Virginia University, Morgantown, WV/USA; ⁵ University of Copenhagen, Copenhagen/DK; ⁶ The National Research Center for the Working Environment, Copenhagen/DK; ⁷ The National Research Center for the Working Environment, Copenhagen/DK
P 13.38  Multi-Walled Carbon Nanotubes: Interaction with Lung Epithelial Cells  
C. Schmitz¹; ¹ INM – Leibniz-Institut für Neue Materialien gGmbH, Saarbrücken/D

P 13.39  Deducing the mechanisms associated with the potential genotoxic impact of Au and Ag ENPs upon different lung epithelial cells in vitro.  
S. Llewellyn¹; W. Parak²; M. Burgum¹; S. Evans¹; K. Chapman¹; G. Jenkins¹; S. Doak¹; M. Clift¹; ¹ Swansea University Medical School, Swansea/UK; ² University of Hamburg, Hamburg/D

P 13.40  Effects of crystalline nanocellulose particles on alveolar macrophage polarization, viability and phagocytic function  
J. Samulin Erdem¹; T. Ervik¹; M. Kasem¹; D. Ellingsen¹; H. Wallin¹; S. Zienolddiny¹; ³ The National Institute of Occupational Health, Oslo/N

P 13.41  Inflammatory responses of anastase and rutile TiO2 nanomaterials  
P. Danielsen¹; K. Knudsen¹; J. Sarli²; U. Vogel²; J. Strancar³; P. Umek³; T. Koklic³; H. Wolff⁴; ¹ The National Research Center for the Working Environment, Copenhagen/DK; ² The National Research Centre for the Working Environment, Copenhagen/DK; ³ Jozef Stefan Institute, Ljubljana/SLO; ⁴ FIOH, Helsinki/FIN

P 13.42  Pulmonary toxicity of alumina nanoparticles and hydrogen chloride gas mixtures aerosols on rats after acute inhalation  
A. Bourgeois¹; S. François¹; A. Boyard¹; S. Renault¹; F. Fargeau¹; C. Frederic¹; S. Dekali¹; ¹ IRBA, Brétigny-sur-Orge/F

Toxicology and ecotoxicity of graphene and other 2D materials

P 14.01  Graphene oxide interaction with human placental trophoblast viability, functionality and barrier integrity  
M. Kuck¹; L. Aengenheister¹; L. Diener¹; A. Rippl¹; S. Vranic²; L. Newman¹; E. Vazquez³; K. Kostarelos²; P. Wick²; T. Bürgki-Thurnherr¹; ¹ Empa - Swiss Federal Laboratories for Materials Science and Technology, St.Gallen/CH; ² University of Manchester, Manchester/UK; ³ University of Manchester, Manchester/UK; ⁴ University of Castilla-LaMancha, Ciudad Real/E; ⁵ University of Manchester, Manchester/UK

P 14.02  Graphene oxide is captured and digested in neutrophil extracellular traps  
S. Mukherjee¹; B. Lazzeratto¹; A. Gliga¹; L. Newman¹; A. Rodrigues¹; K. Kostarelos²; P. Malmberg³; B. Fadeel¹; ¹ Karolinska Institutet, Stockholm/S; ² University of Manchester, Manchester/UK; ³ The University of Manchester, Manchester/UK; ⁴ Chalmers University of Technology, Göteborg/S

P 14.03  Heat shock protein as a sensitive biomarker of human primary erythroid model for nanotoxicology study in hematological system  
S. Aueviriyavit¹; N. Rujanapan²; J. Jeong³; V. Viprakasit²; R. Maniratanachote¹; ¹ National Nanotechnology Center, National Science and Technology Development Agency, Pathum Thani/T; ² Department of Pediatrics and Immunology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok/T; ³ BioNanotechnology Research Center, Korea Research Institute of Bioscience and Biotechnology, Daejeon/ROK

P 14.05  PLATOX – In vitro and in vivo investigations to generate valid toxicity data for risk assessment of carbon-based nanoplatelets  
O. Creutzenberg¹; C. Ziemann²; H. Oliveira³; L. Farcal¹; S. Burla¹; ¹ Fraunhofer IEM, Hannover/D; ² CESAM & CICECO, Aveiro/P; ³ BIO-TOX, Cluj-Napoca/RO

P 14.06  Size-dependent pulmonary response to graphene oxide sheets  
A. Rodrigues¹; C. Bussy²; ¹ University of Manchester, Manchester/UK; ² The University of Manchester, Manchester/UK

P 14.08  A secretome analysis to assess the cytotoxicity of graphene oxide in vitro: the impact of protein corona  
L. Franqu²; A. Borges²; G. da Silva²; R. Domingues³; C. Bussy²; A. Leme¹; D. Martinez¹; ¹ University of Campinas and Brazilian National Center for Research in Energy and Materials, Campinas/BR; ² Brazilian Biosciences National Laboratory (LNBio), Campinas/BR; ³ Center for nuclear energy in Agriculture (CENA) and Brazilian Nanotechnology National Laboratory (LNNano), Campinas/BR; ⁴ University of Manchester, School of Health Sciences & National Graphene Institute, Manchester/UK; ⁵ Brazilian Nanotechnology National Laboratory (LNNano) and University of Campinas, School of Science and Technology and Center for nuclear energy in Agriculture (CENA), Campinas/BR

P 14.09  Interaction of graphene related materials with human lung epithelial cells, macrophages and fibroblasts in vitro  
D. Korejwo¹; S. Chortarea¹; W. Netkueakul¹; J. Wang¹; B. Rothen-Rutishauser¹; T. Bürki-Thurnherr¹; P. Wick¹; ¹ Empa - Swiss Federal Laboratories for Materials Science and Technology, St. Gallen/CH; ² Empa - Swiss Federal Laboratories for Materials Science and Technology, Dübendorf/CH; ³ University of Fribourg, Fribourg/CH

P 14.10  Assessment of the cutaneous effects of graphene-based materials  
M. Pelin¹; L. Fusco¹; S. Sosa¹; E. Vazquez³; M. Prato³; A. Tubaro¹; ¹ University of Trieste, Trieste/I; ² Universidad de Castilla-LaMancha, Ciudad Real/E; ³ University of Fribourg, Fribourg/CH

P 14.11  In vitro toxicity assessment of abraded epoxy/graphene-based material composites on human macrophages  
W. Netkueakul¹; S. Chortarea¹; T. Hammer¹; D. Korejwo¹; P. Wick¹; T. Bürki-Thurnherr¹; J. Wang¹; ¹ Empa - Swiss Federal Laboratories for Materials Science and Technology/ ETH Zurich, Zurich/CH; ² Empa - Swiss Federal Laboratories for Materials Science and Technology, St. Gallen/CH
Posters:

NanoCASE - The Platform for Evaluation and Analytics for Nanomaterials and Nanoproducts

https://www.nanocase.ch

NanoCASE GmbH
Engelburg/Gaiserwald
Switzerland
info@nanocase.ch

We support you building your self-control

- You are manufacturing nanomaterials or products containing nanomaterials and you are already on the market or start to place them on the market.
- You want to train your employees in producing and using nanomaterials at the workplace in a safe way.
- You want to analyze your nanoproducts or nanomaterials or you need toxicological expertise, you want to control the safety of your workplaces and you want to reduce the risks for consumers, employees and the environment.

For this purpose NanoCASE GmbH is your right partner.

NanoCASE offers a complete service and helps you to consider the safety aspects of your products in their complete life-cycle and to take reasonable precautions.
<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 14.12</td>
<td>Toxicity and Transformation of Graphene Oxide and Reduced Graphene Oxide in Bacterial Biofilm</td>
<td>Z. Guo¹; B. Zhao²; E. Valsami-Jones³; ¹ University of Birmingham, Birmingham/UK; ² Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing/CN</td>
</tr>
<tr>
<td>P 14.13</td>
<td>Macrophage responses to 2D materials</td>
<td>K. Maciaszek¹; V. Stone¹; D. Brown¹; ¹ Heriot-Watt University, Edinburgh/UK</td>
</tr>
<tr>
<td>P 14.14</td>
<td>PLATOX – Comparative in vitro investigations on the (geno)toxic and pro-inflammatory potential of carbon-based nanoplatelets in primary rat alveolar macrophages and NR8383 cells</td>
<td>C. Ziemann¹; T. Gripp¹; H. Brockmeyer¹; H. Oliveira³; L. Farca³; O. Creutzenberg¹; ¹ Fraunhofer Institute for Toxicology and Experimental Medicine ITEM, Hannover/D; ³ CESAM &amp; CICECO, University of Aveiro, Aveiro/P; ³ BIOTOX SRL, Cluj-Napoca/RO</td>
</tr>
<tr>
<td>P 15.01</td>
<td>Respiratory and Cardiovascular Health Risk of Engineered Nanomaterials Released from Printing Equipment</td>
<td>L. Peh¹; T. Poh¹; S. Ramasoori Krishnan²; X. Huang²; P. Tiew²; N. Mohamed Ali³; K. Bhattacharya³; D. Singh³; M. Setyawati³; M. Kathawala³; M. Riediker¹; D. Christiani³; D. Bello²; S. Chotirmall³; P. Demokritou¹; K. Ng¹; ¹ Nanyang Technological University, Singapore/SGP; ² Institute of Occupational Medicine, Singapore/SGP; ³ Harvard University, Boston/USA</td>
</tr>
<tr>
<td>P 15.02</td>
<td>Silica nanoparticles are retained in macrophages</td>
<td>J. Bourquin¹; A. Petri-Fink¹; B. Rothen-Rutishauser¹; ¹ University of Fribourg, Fribourg/CH</td>
</tr>
<tr>
<td>P 15.03</td>
<td>Application of air-liquid interface exposure combined with high-throughput RT-qPCR to investigate the toxicological impact of nanoparticles</td>
<td>M. Hufnagel¹; S. Schoch²; B. Dr. Strauch²; A. Prof. Dr. Hartwig²; ² Karlsruher Institut für Technologie (KIT), Karlsruhe/D; ³ Karlsruhe Institute of Technology (KIT), Karlsruhe/D</td>
</tr>
<tr>
<td>P 15.04</td>
<td>Interference of Engineered Nanomaterials in Flow Cytometry: A Case Study</td>
<td>N. Bohmer¹; A. Ripp¹; S. May¹; A. Walter¹; M. Heo¹; M. Kwak¹; N. Song¹; P. Wick¹; C. Hirsch¹; ¹ Swiss Federal Laboratories for Materials Science and Technology (Empa), St. Gallen/CH; ² Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne/CH; ³ Korea Research Institute of Standards and Science (KRISS), Daejeon/ROK</td>
</tr>
<tr>
<td>P 15.05</td>
<td>Quantification of released multiwalled carbon nanotubes (MWCNT) from photodegraded MWCNT/polymer composites in different environmental media</td>
<td>M. Hennig¹; I. Politowski¹; M. Siedt¹; A. Livora¹; H. Maes²; N. Siebers¹; A. Schäffer¹; ¹ RWTH Aachen Universität, Aachen/D; ² Eurofins Agroscience Services Ecotox GmbH, Niefern-Öschelbronn/D; ³ Forschungszentrum Jülich GmbH, Institute of Bio- and Geosciences, IBG-3: Agrosphere, Jülich/D</td>
</tr>
<tr>
<td>P 15.07</td>
<td>The role of rigidity of high aspect ratio nanomaterials in mouse pleural inflammation</td>
<td>D. Lee¹; ¹ donga university, College of Life Science and Technology Building 2F M6213, Donga university, Saha-gu, Busan, Republic of Korea/ROK</td>
</tr>
<tr>
<td>P 15.08</td>
<td>The Nanosafety Compendium: A Collection of Resources and Tools to Support Nanotoxicology, Risk &amp; Safety Testing</td>
<td>C. Schimpel¹; S. Resch¹; A. Falk¹; ¹ BioNanoNet Forschungsgesellschaft mbH, Graz/A</td>
</tr>
<tr>
<td>P 15.09</td>
<td>Perturbation of Protein Conformation has Minor Impact on Nanoparticle Corona Composition</td>
<td>F. Kieldsen¹; V. Gorshkov¹; J. Bubis¹; E. Solovyeva¹; M. Gorshkov¹; ¹ University of Southern Denmark, Denmark/DK; ² University of Southern Denmark, Odense/DK; ³ Russian Academy of Sciences, Moscow/RUS</td>
</tr>
<tr>
<td>P 15.10</td>
<td>Predicting dissolution and transformation of inhaled nanoparticles in the lung using abiotic flow cells: The case of barium sulfate</td>
<td>J. Keller¹; U. Graham¹; J. Koltermann-Jüly¹; R. Gelein²; L. Ma-Hock²; ² Medical University of Warsaw, Warsaw/PL; ³ University of Insubria, Varese/I; ³ Department of Veterinary Medicine, University of Cambridge, Cambridge/UK</td>
</tr>
<tr>
<td>P 15.11</td>
<td>Impedance Flow Cytometry for in vitro Screening of Graphene-encapsulated Magnetic Nanoparticles</td>
<td>M. Ostermann¹; I. Rios Mondragon¹; H. Wen²; A. Sauter²; M. Bystrzejewski³; I. Grudziński³; M. Cimpan¹; ¹ University of Bergen, Bergen/N; ² Royal Norwegian Naval Academy, Bergen/N; ³ University of Warsaw, Warsaw/PL; ² Medical University of Warsaw, Warsaw/PL</td>
</tr>
<tr>
<td>P 15.12</td>
<td>Metal oxide nanoparticles: size role in membrane interactions</td>
<td>D. Zanella¹; E. Bossi¹; R. Gornati¹; N. Faria¹; I. Powell²; G. Bernardini¹; ² Department of Biotechnology and Life Sciences, University of Insubria, Varese/I; ² Department of Veterinary Medicine, University of Cambridge, Cambridge/UK</td>
</tr>
</tbody>
</table>
P 15.14 Comparison of two TiO₂ nanoparticles toxicity on lung, blood and liver cells after repeated respiratory exposure in rats
C. Relier¹; M. Dubreuil¹; S. Turpin¹; F. Robidel¹; G. Lacroix²; B. Trouiller¹; ¹ INERIS, Verneuil-en-Halatte/F

P 15.15 Establishing nanomaterial grouping approaches based on the profiles of protein interactions
M. Eravci¹; A. Bahl¹; W. Wohlleben²; B. Hellack³; I. Brinkmann⁴; A. Luch³; A. Haase³; ¹ Bundesinstitut für Risikobewertung, Berlin/D; ² BASF SE, Ludwigshafen/D; ³ Institut für Energie- und Umwelttechnik e.V. (IUTA), Duisburg/D; ⁴ Evonik Resource Efficiency GmbH, Hanau/D

P 15.16 Effect of nanoparticles on liver function: 2D versus 3D culture
Y. Kohl¹; P. Mann¹; ¹ Fraunhofer-Institut für Biomedizinische Technik IBMT, Sulzbach/D

P 15.17 Fast Formation of the Protein Corona in the Rat Lung Studied with Functionalized Paramagnetic SiO₂ Nanoparticles
M. Wiemann¹; A. Vennemann¹; ¹ IBE R&D Institute for Lung Health gGmbH, Münster/D

P 15.18 Grouping nanomaterials by biodissolution and transformation - abiotic dissolution rates compared to macrophage-assisted dissolution and pulmonary clearance in vivo
J. Koltermann-Jüll¹; J. Keller¹; A. Vennemann²; L. Ma-Hock³; K. Werle³; R. Landsiedel³; W. Wohlleben³; M. Wiemann³; ¹ BASF SE, Ludwigshafen/D; ² IBE R&D Institute for Lung Health, Münster/D

P 15.19 Exposure assessment of barium sulfate particles in a factory
G. Ichihara¹; Z. Huang²; S. Ichihara³; Y. Fujitani⁴; S. Hirano⁵; S. Takeuchi⁶; A. Hirano⁷; H. Huang⁸; ¹ Tokyo University of Science, Noda/J; ² Guangdong Prevention and Treatment Center for Occupational Diseases, Guangzhou/CN; ³ Jichi Medical University, Shimotsuke/J; ⁴ Hokkai University, Sapporo/J; ⁵ Mansoura Faculty of Medicine, Mansoura/ET; ⁶ Tokyo University of Science, Noda/J

P 15.20 Role of Nrf2 in inflammatory response of mice to zinc oxide nanoparticle
R. Sehsah¹; W. Wu¹; S. Ichihara²; N. Hashimoto³; Y. Hasegawa³; K. Ito³; M. Yamamoto⁴; A. Ali Elsayed⁵; S. El-Bestar⁶; E. Kamel⁷; G. Ichihara¹; ¹ Nagoya University, Nagoya/J; ² Jichi Medical University, Shimotsuke/J; ³ Hokkai University, Sapporo/J; ⁴ Tohoku University, Sendai/J; ⁵ Mansoura Faculty of Medicine, Mansoura/ET; ⁶ University of Paris VII Diderot, Paris/F; ⁷ Mansoura Faculty of Medicine, Mansoura/ET

P 15.21 Evaluation of spray coating, containing nanoparticles, generated by atomization process
J. Mejia¹; O. Fichera¹; J. Laloy¹; L. Alpan¹; S. Lucas¹; J. Dogné¹; ¹ University of Namur, Namur/B

P 15.22 Surface modification alters cytotoxicity of silica nanoparticles
S. Vranic¹; E. Watanabe¹; Y. Osada¹; S. Takeuchi¹; A. Hirano¹; T. Sakurai¹; A. Sato¹; S. Ichihara¹; W. Wu¹; L. Tran⁴; S. Boland⁵; G. Ichihara¹; ¹ Tokyo University of Science, Noda/J; ² Institute of Occupational Medicine, Edinburgh/UK; ³ Nagoya University, Nagoya/J; ⁴ Institute of Occupational Medicine, Edinburgh/UK; ⁵ University of Paris VII Diderot, Paris/F

P 15.23 Grouping of Rare Earth Oxide Nanoparticles by Pulmonary Inflammogenic Potential
D. Lee¹; W. Cho¹; ¹ Dong-A University, Busan/ROK

P 15.24 Development of OECD Test Guideline to address toxicokinetics of nanomaterials
S. Dekkers¹; R. Smith²; M. Groenewold¹; ¹ RIVM, Bilthoven/NL; ² Public Health England, Oxfordshire/UK

P 15.25 Behavior of nanoparticles and polymer nanocomposites during lab-scale combustion within the project 'ProCycle'
N. Teuscher¹; W. Baumann¹; M. Hauser¹; H. Paur¹; D. Stapf¹; ¹ Institute for Technical Chemistry, Karlsruhe Institute of Technology, Karlsruhe/D

P 15.26 The influence of surface charge in the genotoxic potential of nanomaterials.
G. Vales¹; S. Suohonén¹; K. Siivola¹; J. Catalán¹; K. Savolainen¹; H. Norppa¹; ¹ Finnish Institute of Occupational Health, Helsinki/FIN

P 15.27 MWNT inhalation toxicity – influence of aerosol characteristics
C. Guo¹; A. Buckley¹; S. Robertson¹; M. Wright¹; A. Hodgson¹; M. Leonard¹; R. Smith¹; ¹ Public Health England, Oxfordshire/UK

P 15.28 Genotoxic effects of lipopolysaccharide (LPS)
K. Aimonen¹; S. Suohonén¹; H. Lindberg¹; M. Hartikainen¹; J. Catalán¹; H. Norppa¹; ¹ Finnish Institute of Occupational Health, Helsinki/FIN

P 15.29 Isotope Labeling for Tracing Nanomaterials in Environmental and Biological Backgrounds
P. Zhang¹; Z. Zhang¹; E. Valsami-Jones¹; ¹ University of Birmingham, Birmingham/UK; ² Institute of High Energy Physics, Chinese Academy of Sciences (CAS), Beijing/CN

P 15.30 Exposure Monitoring Solution for Respirable Crystalline Silica based on Raman Spectroscopy
B. Zijlstra¹; J. Borek-Donten²; M. Manole²; R. Bieri²; ¹ Stat Peel AG, Niederurnen/CH; ² Stat Peel AG, Glarus/CH

P 15.33 Impact of nanocomposite cumbustion-generated aerosols on genomic stability
M. Hufnagel¹; N. Teuscher¹; J. Wall¹; M. Mackert¹; S. Mühlhop²; A. Hartwig¹; ¹ Karlsruhe Institute of Technology (KIT), Karlsruhe/D
P 15.34 **Comparative assessment of in vitro and in vivo toxicity induced by nine different multi-walled carbon nanotubes or nanofibers**
K. Fraser¹; V. Kodali²; M. Dahm³; M. Schubauer-Berigan⁴; T. Stueckle⁵; N. Yamamala⁶; T. Eye¹; L. Bishop³; S. Friend⁴; A. Stefaniak⁵; E. Birch¹; D. Evans¹; G. Casuccio¹; K. Bunker¹; M. Orandle³; A. Hubb⁴; R. Mercer³; A. Erdely²;¹ WVU/NIOSH, Morgantown, WV/USA; ² NIOSH/CDC, Morgantown, WV/USA; ³ NIOSH/CDC, Cincinnati, OH/USA; ⁴ RJ Lee Group, Monroeville, PA/USA

P 15.35 **Safe by Design in the Development of Nanomaterials**
I. Tavernaro¹; P. Herbeck-Engel²; A. Kraegeloh²; ¹ INM - Leibniz Institute for New Materials, Saarbrücken/D

P 15.36 **Nanoceria Uptake by Human and Murine M1 and M2 Macrophages: Phenotype-controlled Internalization and Bioprocessing**
U. Graham¹; D. Feola²; E. Grulke³; A. Dozier³; M. Hancock³; M. Tseng³; A. Butterfield²; G. Oberdörster³; R. Yokel³; ¹ CDC/NIOSH, DART, Lexington/USA; ² University of Kentucky, Lexington/USA; ³ University of Kentucky, Lexington/USA; ⁴ CDC/NIOSH, DART, Cincinnati/USA; ⁵ University of Louisville, Louisville/USA; ⁶ University of Rochester, Rochester/USA

P 15.37 **Ostwald Ripening and Particle Growth in Lung Macrophages after long-term, high Concentration BaSO₄ Nanoparticle Inhalation**
U. Graham¹; R. Landsiedel²; J. Brain³; R. Molina³; A. Dozier³; A. Elder³; W. Wohlleben⁵; L. Ma-Hock³; S. Groeters³; G. Oberdörster³; ¹ CDC/NIOSH, DART, Lexington/USA; ² BASF, Ludwigshafen/D; ³ Harvard T. H. Chan School of Public Health, Boston/USA; ⁴ CDC/NIOSH, DART, Cincinnati/USA; ⁵ BASF SE, Ludwigshafen/D; ⁶ University of Rochester, Rochester/USA

P 15.38 **Incorporation of Ba Ions into Bone after Bioprocessing and Dissolution of Inhaled BaSO₄ Nanoparticles**
U. Graham³; G. Oberdörster³; J. Brain³; R. Molina³; A. Dozier³; L. Ma–Hock³; S. Groeters³; R. Landsiedel³; ¹ CDC/NIOSH, DART, Lexington/USA; ² University of Rochester, Rochester/USA; ³ Harvard T. H. Chan School of Public Health, Boston/USA; ⁴ CDC/NIOSH, DART, Cincinnati/USA; ⁵ BASF, Ludwigshafen/D; ⁶ BASF SE, Ludwigshafen/D; ⁷ BASF SE, Ludwigshafen/D

P 15.39 **Comparative study of Food additives TiO₂ and SiO₂**
Z. WANG¹; R. Yusoff²; L. Nguyen³; P. Chiew⁴; K. Ng³; ¹ Agri-Food & Veterinary Authority of Singapore, Singapore/SGP; ² School of Materials Science and Engineering, Nanyang Technology University, Singapore/SGP; ³ School of Materials Science and Engineering, Nanyang Technology University, Singapore/SGP; ⁴ Agri-Food & Veterinary Authority of Singapore, singapore/SGP

P 15.40 **Optical Quantification of Surface Groups on Nanoparticles with Multimodal Cleavable Reporters**
N. Nirmalananthan¹; ¹ Federal Institute for Materials Research and Testing (BAM), Berlin/D

P 15.41 **The standard development of nanoparticle exposure assessment through SP/ICPMS equipment**
J. Park¹; K. Kim¹; H. Jeon¹; S. Kim¹; ¹ KIST Europe Forschungsgesellschaft mbH, Saarbrücken/D
EXHIBITION FLOORPLAN

EXHIBITORS

- **VITROCELL® Systems GmbH**
  - Booth: A1
- **Nano**
  - Booth: A2
- **Schaefer Technologie GmbH**
  - Booth: A3
- **acCELLerate GmbH**
  - Booth: A4
- **EBRC Consulting GmbH**
  - Booth: A5
- **VSPARTICLE B.V.**
  - Booth: A6
- **Titanium Dioxide Manufacturers Association (TDMA)**
  - Booth: A7
- **TSI GmbH**
  - Booth: A8
- **Palas GmbH**
  - Booth: A9
**acCELLerate GmbH**  
Booth: A4  
Osterfeldstraße 12-14  
22529 Hamburg  
Germany  
www.accellerate.me  

acCELLerate develops instaCELL® bioassay kits for various in vitro applications in toxicology. The kits are based on functionally cryopreserved cells which can be used instantly like a reagent without prior cultivation. Reliability, reproducibility and flexibility of any cell based assay are increased by the use of instaCELL® bioassay kits. A certified quality management and a GxP compliant documentation enables the use of the kits even for regulatory purposes.

**EBRC Consulting GmbH**  
Booth: A5  
Raffaelstrasse 4  
30177 Hannover  
Germany  
www.ebrc.de  

EBRC is a privately-owned consulting organisation based in Hannover, Germany, providing consulting services with a focus on chemical, biocidal and agrochemical industries. Specialised scientific experience is available in all key disciplines relevant for product safety with respect to human health and environment. Task force management and coordination of industry consortia is another important aspect of our work.

**Nano**  
Booth: A2  
c/o Springer Nature  
Database Research Group  
Tiergartenstrasse 17  
69121 Heidelberg  
Germany  
https://nano.nature.com  

Nano (nano.nature.com) is a non-journal service by Nature Research launched in 2016. This unique solution combines the key features of an A&I and Database for nanotechnology literature and nanomaterials. For this platform indexing and extraction of the data is based on both human and artificial intelligence. The database part of Nano provides structured information gathered from multiple sources for thousands of similar nanomaterials. Nano content comes from nanoscience-related journals by multiple publishers including ACS, Elsevier, Wiley, Springer, Nature and more.

**Palas GmbH**  
Booth: A9  
Greschbachstraße 3b  
76229 Karlsruhe  
Germany  
www.palas.de  

**PALAS® – MORE THAN 30 YEARS OF EXPERTISE IN AEROSOL TECHNOLOGY**  
With over 60 patents submitted, Palas® has set the standard in aerosol and nanoparticle technology for more than 30 years. Through continuous innovation, we achieve extraordinary quality and durability in our products. The result is unique technical and economic advantages for our customers.

**SCHAEFER Technologie GmbH**  
Booth: A3  
Robert-Bosch-Str. 31  
63225 Langen  
Germany  
www.schaefer-tec.com  

SCHAEFER Technologie with its main office in Langen, Germany is specialized for the sales and support of products in the field of Nano-Bio technology.  

Our highlights are the CytoViva Darkfield Hyperspectral Microscope, for the easy visualization and spectral characterization of nanoscale materials; and the NanoLab 3D Advanced Particle Sizer, for measurements of nanoparticles in highly concentrated solutions.  

In addition, SCHAEFER is also offering correlative light and electron microscopes and optical microrheometers. More details you can find here: www.schaefer-tec.com.
### Titanium Dioxide Manufacturers Association (TDMA)

**Booth: A7**

The Titanium Dioxide Manufacturers Association (TDMA) represents the major producers of titanium dioxide (TiO$_2$) and has been their voice in Europe since 1974.

Our members develop products and applications that are seen in almost every aspect of daily life. Across the globe, TiO$_2$ is used in everything from paints, plastics and paper to make-up and sunscreen.

The products and applications developed by TDMA members are at the heart of this incredible innovation. The role of TDMA is to support our members by promoting and defending the merits of TiO$_2$ in all suitable applications. We provide comprehensive, authoritative and trusted information about the safety and use of TiO$_2$.

### TSI GmbH

**Booth: A8**

As an international leader in measurement technology for over 50 years, TSI designs and manufactures precision instruments for aerosol measurement which are recognized worldwide.

We have been setting the standards for measurements related to nanoparticles, offering a full suite of instruments for generation or dispersion, collection and measurement of (nano-)particles in the gas phase.

We are looking forward to discuss your specific needs at our booth.

### VITROCELL® Systems GmbH

**Booth: A1**

VITROCELL® is specialised in the development of advanced in vitro exposure systems. VITROCELL® realizes turnkey installations for in vitro inhalation toxicology where gases, environmental atmospheres, nanoparticles and complex mixtures are analyzed on lung cells at the air/liquid interface.

VITROCELL® in vitro Exposure Stations are designed for fully automated exposure of environmental pollutants to cells of the respiratory tract.

The customers of VITROCELL Systems GmbH are leading research institutes, contract research organisations, regulatory authorities as well as the pharmaceutical and other industries throughout the world.

### VSPARTICLE B.V.

**Booth: A6**

Based on decades of fundamental aerosol research at the Delft University of Technology VSPARTICLE was founded in 2014 to make the spark discharge technology available to researchers. CEO Aaike van Vugt, together with Prof. Andreas Schmidt-Ott and Dr. Tobias Pfeiffer noticed that the nanomaterials they could make within a few hours took some of their colleagues months of hard work. They decided not to sell the nanomaterials, but to improve and sell the machine, providing research and industry with the tool to rapidly advance the field of nanotechnology and advanced materials.

The commercially available nanoparticle generator (VSP-G1) and deposition accessories (VSP-A series) to produce and immobilize pure inorganic nanoparticles are now commercially available. The company has grown to 16 employees and has its own lab facility to perform research on aerosol processes and develop new products and applications, mainly in collaboration with universities or other institutes.